

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
HOLLISTER FIELD OFFICE
ENVIRONMENTAL ASSESSMENT
DOI-BLM-CA-0900-2011-04-EA**

**Oil & Gas Competitive Lease Sale
September 14, 2011**

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Chapter 1. Purpose and Need Statement

I. INTRODUCTION/BACKGROUND

The Hollister Field Office is considering a competitive oil and gas lease sale that would take place at the BLM California State Office in Sacramento, CA on September 14, 2011. The proposed action is to offer approximately 2,605 acres of Federal mineral estate for competitive oil and gas leasing. This action is intended to meet Bureau of Land Management (BLM) responsibilities under the Mineral Leasing Act of 1920, as amended, Mining and Minerals Policy Act of 1980, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act), to conduct competitive oil and gas lease auctions within the state of California.

BLM has the responsibility to conduct quarterly competitive oil and gas lease auctions in accordance with Section 5102(2)(1)(A) of the Reform Act. The Reform Act directs the BLM to conduct quarterly oil and gas lease auction within each state whenever eligible lands are available for leasing. BLM policy is to offer, as expeditiously as possible, those lands available for oil and gas exploration and possible development, consistent with the Federal Land Policy and Management Act (FLPMA) of 1976, National Environmental Policy Act (NEPA) of 1969, and other applicable laws, regulations, and policies.

A legal description of the parcels considered for the BLM's September 14, 2011 competitive oil and gas lease sale are detailed in Table 1 and Table 2 of this EA. Of the approximately 2,605 acres of Federal mineral estate land that are considered for leasing, approximately 360 acres are public surface with Federal mineral estate and approximately 2,245 acres are split-estate (private surface with Federal subsurface minerals). All parcels would be subject to special leasing stipulations that would protect special status species and their habitat.

This Environmental Assessment (EA) is tiered to the BLM Hollister Field Office's Proposed Resource Management Plan and Final Environmental Impact Statement (PRMP/FEIS) dated June 2006. A description of potential activities and impacts related to oil and gas leasing, development, production, etc. can be found in Chapter 3 (pg. 3.12-1) and Chapter 4 (pg. 4.12-1) of the 2006 PRMP/FEIS. Each individual resource section in the EIS further describes the potential impacts of these activities, and Appendix D identifies stipulations and conditions that would apply to new leases and to new operations on existing leases as conditions of approval for Applications for Permit to Drill (APD) or geophysical exploration permits. This information is incorporated into this EA by reference here and other relevant resources section within the document.

II. PURPOSE AND NEED

The BLM periodically conducts mineral estate lease auctions for lands that are managed by the federal government, whether managed by the Department of Interior (BLM, Bureau of Indian Affairs, Fish and Wildlife Service, Park Service), Department of Agriculture (Forest Service), or other Departments.

The need for the proposed action is based on the BLM's responsibility under the Federal Onshore Oil and Gas Leasing Reform Act of 1987 Sec. 5102(a)(b)(1)(A) (Reform Act), which directs the agency to conduct quarterly oil and gas lease auctions with each state whenever eligible lands are available for leasing. The purpose of conducting lease auctions of the Federal mineral estate is to increase energy reserves for the U.S., provide a steady source of significant income, and at the same time meets the requirements identified in the Energy Policy Act, Sec. 362(2), Federal Onshore Oil and Gas Leasing Reform Act of 1987, and The Mineral Leasing Act of 1920, Sec. 17.

III. CONFORMANCE WITH BLM LAND USE PLANS

The proposed action is in conformance with the 2007 Record of Decision (ROD) for the Hollister Resource Management Plan (RMP), which identifies all of these lands as open to oil and gas leasing, subject to certain environment controls indicated in the plan (ref. 2007 ROD Section 3.12.2 pp. 3-28 and 3-29).

In particular, ENERG-C1 requires oil and gas leases in ACECs to include a "No Surface Occupancy" stipulation. Additionally, all the leases being considered in this EA would be subject to standard stipulations and mitigation measures for special status species (ENERG-C4) because all the parcels are within potential threatened and endangered species and/or sensitive species habitat. These stipulations require notification to the lessee that additional mitigation measures may be necessary prior to authorization of surface disturbance within the lease, and that all special status species issues (including consultation with the USFWS pursuant to Section 7 of the Endangered Species Act) are addressed prior to the authorization of any surface disturbance.

The HFO's 2007 Biological Opinion prepared by the US Fish and Wildlife Service provides adequate analysis of the impacts of mineral leasing on special status species.

All the lands evaluated for competitive oil and gas lease auction in this EA are already currently classified as available for leasing; therefore, no special allocations are proposed within this EA. Oil and gas leasing and development have been previously addressed in more detail in the 2006 Hollister PRMP/FEIS. All future oil and gas related activities contemplated on lands offered in

the proposed action are within the scope of those actions previously analyzed in the RMP/EIS document, and no decisions made as a result of this EA will change or modify the decisions of the existing document.

IV. RELATIONSHIP TO STATUTES, REGULATIONS AND OTHER PLANS

A. National Environmental Policy Act of 1979 (NEPA)

The phased approach for NEPA compliance has been determined by the Ninth Circuit Court of Appeals to be a valid method to comply with applicable laws and regulations (Ninth Circuit Court of Appeals, Northern Alaska Environmental Center et al vs. Kempthorne, 2006). In that decision, the Court said “Uncertainty is inherent in multi-staged projects and a phased analysis for both environmental and cultural (is appropriate).” At the leasing stage, a more generalized study is appropriate because it is not yet known which, if any, of the parcels will actually be developed, and the site specific analysis is more appropriately deferred to when development is proposed.

The Secretary of the Interior is responsible under the Mineral Leasing Act of 1920, as amended, for leasing and managing Federal oil and gas resources on public land. Acting for the Secretary, BLM has conducted ongoing oil and gas leasing activities for many years in the Hollister Field Office and throughout California.

The review process required before oil and gas drilling can occur is described in detail in Title 43 Code of Federal Regulations Part 3100 and BLM Manual 3100. In summary, BLM offers lands for oil and gas lease to the highest qualified bidder in a competitive auction. The lease term is 10 years, and for as long thereafter as oil and gas can be produced in paying quantities, and the maximum lease size offered by BLM is 2,560 acres, (see FOGRA of 1987 Sec. 5102(b)(1)(A)). BLM conducts and documents an environmental analysis at the lease issuance stage, unless an adequate analysis was included in an existing environmental document. Although most of the issues regarding oil and gas leasing on the lands covered by this document were addressed in previous documents, there are a few areas where either conditions have changed or else BLM policy has been modified, or both. Hence, this EA is tiered to the Hollister Field Office’s Proposed Resource Management Plan and Final Environmental Impact Statement (2006).

After obtaining a lease and prior to drilling any well, a lessee and/or operator submits an Application for Permit to Drill (APD), indicating the specific location of the drilling site. Under the phased approach, BLM would only analyze site-specific impacts related to oil and gas activities after an Application for Permit to Drill (APD) has been received by the Field Office. A review of engineering design as well as potential effects to sensitive resources would be

undertaken. Special conditions would be noted on the application at this review stage of an oil and gas project by either the operator or the BLM. Modified proposals would be developed cooperatively with the applicant to ensure that the modified project still meets the applicant's objective. BLM may require reasonable mitigation measures in the APD, consistent with the lease terms and stipulations. Any special conditions would be attached to the APD by the BLM and the applicant would be informed within seven days of receipt of the APD.

B. Endangered Species Act of 1973 (ESA)

Pursuant to Section 7(a) of the ESA, the BLM's Hollister Field Office formally consulted the Sacramento Branch of the US Fish and Wildlife Service (FWS) on oil and gas leasing and development on BLM public lands and split-estate mineral lands in Fresno, Madera, Merced, San Benito, and Monterey counties in 1994. The resulting Biological Opinion (1-1-94-F-47), prepared by the FWS, considered the effects of mineral leasing on the suite of plant and animal species included in the FWS Recovery Plan for Upland Species of the San Joaquin Valley, California (1998), as well as vernal pool fairy shrimp and the California red-legged frog.

In 2006, the Hollister Field Office again requested formal consultation with the FWS Ventura Field Office to consider the effects of BLM's land use decisions in the Proposed RMP and Final EIS for the Southern Diablo Mountain Range and Central Coast of California (2006) to Federally-listed species that are known or have potential to occur on BLM public lands and split-estate mineral lands within the boundary of the Hollister Field Office. The resulting Biological Opinion (1-8-07-F-19), prepared by the FWS, considered the effects of mineral leasing on the suite of species that were addressed in previous consultations, as well as other plant and animal species, including the California condor and the California tiger salamander.

Both of the FWS Biological Opinions (BO) referenced above concluded that oil and gas leasing and development on BLM public lands and split-estate mineral lands in Fresno and Monterey counties is not likely to jeopardize the continued existence of Federally-listed species. As noted by FWS on page 180 of the 2007 BO (1-8-07-F-19), "We have reached this conclusion for the following reasons: BLM's program guidance is generally designed to promote the conservation of these species; BLM has proposed to evaluate and survey public lands within the [Hollister Field Office] prior to conducting any project-level activities that may potentially affect any of the listed species or their habitats; and BLM will work with the Service to prioritize specific parcels of public lands for habitat evaluations and species surveys even in the absence of specific proposed activities in these areas." Therefore, any proposed development is also subject to the reasonable and prudent measures outlined in the FWS Biological Opinions referenced above to avoid and minimize effects to special status species listed under the Endangered Species Act of 1973.

C. Supplemental Procedures for Fluid Minerals Leasing, an amendment to the State Protocol Agreement between California Bureau of Land Management and the California State Preservation Officer and the Nevada State Historic Preservation Officer.

These Supplemental Procedures state that a Class I record search and Tribal consultation will be considered adequate inventory and identification methodology for the purposes of Fluid Minerals decisions at the leasing stage. This proposal and analysis deal only with the action of leasing, and does not consider ground disturbing activities. Any subsequent realty or oil and gas projects or development will be subject to a separate NEPA document and compliance with Section 106 of the National Historic Preservation Act. As oil and gas development actions or associated realty actions are proposed, the areas of potential effect (APE) will be defined and assessments of the impacts upon cultural resources will be undertaken. NEPA and Sec. 106 compliance will be completed on all undertakings.

In the event that cultural resources are identified within a project area, an evaluation of significance will occur and steps will be taken to mitigate impacts to that resource. Mitigation most frequently involves site avoidance, but may include data recovery through excavation. It should be noted that BLM has discretionary control over mitigation stipulations and/or avoidance measures imposed on a project. Although a lessee has a right to develop a lease, BLM may require development activities to be moved up to 200 meters in any direction. This should allow nearly all sites to be avoided. Sites that cannot be avoided will be evaluated for listing on the National Register and mitigation measures will be instituted if the site is found eligible. Should development uncover subsurface sites, the lessee is required to halt all work until the site can be evaluated and proper mitigation and avoidance measures identified.

Prior to any future development within the lease parcels listed above, a Class III complete coverage field survey for project APEs will be completed for those areas not previously inventoried or those which have been judged inadequately surveyed in the past. Impacts to any sites identified during the course of these inventories will be addressed through the procedures outlined above.

D. Oil and Gas Lease Reform Policy - Land Use Planning and Lease Parcel Reviews

BLM's Washington Office Instruction Memorandum (IM) No. 2010-117 establishes a process for ensuring orderly, effective, timely, and environmentally responsible leasing of oil and gas resources on Federal lands.

This policy (1) addresses land use plan review, state office standardization of lease stipulations, and adaptive management; (2) introduces the Master Leasing Plan concept; and (3) identifies process requirements for reviewing oil and gas leasing expressions of interest.

The Master Leasing Plan (MLP) concept is a mechanism for completing additional planning, analysis, and decision-making that may be necessary for areas meeting the listed criteria.

The preparation of an MLP is required when all four of the following criteria are met:

- A substantial portion of the area to be analyzed in the MLP is not currently leased.
- There is a majority Federal mineral interest.
- The oil and gas industry has expressed a specific interest in leasing, and there is a moderate or high potential for oil and gas confirmed by the discovery of oil and gas in the general area.
- Additional analysis or information is needed to address likely resource or cumulative impacts if oil and gas development were to occur where there are:
 - multiple-use or natural/cultural resource conflicts;
 - impacts to air quality;
 - impacts on the resources or values of any unit of the National Park System, national wildlife refuge, or National Forest wilderness area, as determined after consultation or coordination with the NPS, the FWS, or the FS; or
 - impacts on other specially designated areas.

As stated in Leasing Reform IM 2010-117, the BLM has the discretion to complete an MLP for areas that do not meet the MLP criteria. MLP's would ordinarily be initiated as a land use plan amendment. However, if it is anticipated that the likely outcome of the MLP would not result in the creation of new lease stipulations or changes to existing RMP decisions warranting a plan amendment, it may not be necessary to initiate the MLP as a plan amendment.

The Hollister Field Office has reviewed the Reasonable Foreseeable Development Scenario (RFDS) and the analysis of impacts from oil and gas exploration and development identified in the Proposed RMP and Final EIS for the Southern Diablo Mountain Range and Central Coast of California (2006) to consider whether they are consistent with the intent of the Master Leasing Plan concept.

The Hollister Field Office determined that the area considered in this EA does not meet the criteria for an MLP and that a MLP is not necessary based on the following rationale:

1. BLM anticipates that the likely outcome of the MLP would not result in the creation of new lease stipulations or changes to existing RMP decisions

2. Stipulations for No Surface Occupancy and Controlled Surface Use are already incorporated in areas where major or moderate constraints are necessary for protecting resource values.
3. Under the new policy, only parcels with an expression of interest would be offered during competitive oil and gas lease sales. This type of approach to leasing would ensure that important resource values warranting protection in an area where the mineral development potential and the mode of development are presently unknown would be considered. This approach to leasing could also provide the opportunity to lease a limited and less sensitive portion of the area for development. If oil and gas are successfully discovered and produced, there would then be the opportunity to analyze the impact of additional leasing.
4. Planned or required unitization of Federal lands might be considered in areas where working with only one operator, rather than many, would increase the opportunity for eliminating redundant infrastructure and thereby reduce habitat fragmentation.
5. Phased development may be required where it is important to leave areas of habitat undisturbed by construction and drilling traffic while other areas are developed. Developed areas would be put into interim reclamation before drilling would move on to the next area.
6. Caps or limits on new surface disturbance (pending acceptable interim/final reclamation) could be enforced on the percent of bare ground allowed in a developed area at any one time in order to preserve habitat or reduce erosion in areas with highly erosive soils.
7. Use of existing infrastructure would be emphasized to consolidate facilities and avoid redundant and unnecessary disturbance.
8. Operators would be encouraged to develop multiple wells per well pad to limit the number of surface locations in scenic areas, fragile soil areas, or important wildlife habitat while still allowing the necessary number of downhole locations.
9. Operators could reduce/capture emissions to ensure that development does not contribute to eventual nonattainment of air quality standards.
10. Liquids gathering systems could be developed to centralized offsite production facilities and greatly reduce traffic during the life of the field in areas of important wildlife habitat or fragile soils.
11. Placement of all linear disturbances (e.g., powerlines, pipelines) in corridors would be designed to eliminate unnecessary cross-country fragmentation of habitat.
12. Interim reclamation of roadway disturbance up to or including the road surface and reclamation of pads to the well head would reduce vegetative loss, reduce opportunity for invasive species, stabilize soils, protect water and air quality, and maintain visual resources.
13. Final reclamation would be required to fully restore important ecosystems, wildlife habitat, scenic resources, and re-establish the native plant community.

E. Title 43 Code of Federal Regulations Part 3100 and BLM Manual 3100

1. Federal Lands

BLM administers public land in accordance with the Federal Land Policy and Management Act (FLPMA) of 1976 and other laws. Sometimes public land includes the surface estate and the subsurface mineral estate, and sometimes it involves split estate where BLM controls either the surface or subsurface mineral estate but not both. BLM can lease public land including split estate lands where the surface estate is owned by another party. For parcels considered in this EA that are split estate, the lessee and/or operator would be responsible not only for adhering to BLM requirements, but also for reaching an agreement with the private surface landowner regarding access, surface disturbance and reclamation.

Sixteen (16) of the parcels proposed for oil and gas leasing are private surface overlying Federal mineral estate, known as ‘split estate’. The BLM has split estate guidance (Washington Instruction Memorandum No. 2003-131) and a recent Instruction Memorandum No. 2009-184, Courtesy Notification of Surface Owners When Split Estate Lands are Included in an Oil and Gas Notice of Competitive Lease Sale. This IM establishes a BLM requirement to notify surface owners, as a courtesy to inform surface owners when their lands are included in a list of lands to be offered for competitive sale.

Parties filing an Expression of Interest (EOI) to offer lands at a competitive oil and gas lease sale are required to provide the BLM with names and addresses of any surface owners where split estate lands are included in their EOI.

2. Directional drilling from adjacent land to a federal lease

On occasion, it may be desirable or necessary to drill a well from a surface location that is not directly above the drilling target. This is known as directional drilling. Even though the surface location may not be within the federal mineral lease, BLM has the authority to regulate drilling from adjacent, non-federal land if Federal minerals are involved by requiring a drilling application. Such directional drilling is subject to applicable environmental laws, including National Environmental Policy Act (NEPA) of 1969 and the Endangered Species Act (ESA) of 1973, as amended. BLM will process this type of application in the same manner as for an application on leased lands. On split estate lands where the surface is not federally owned, the surface owner may allow other activities to occur that are not related to the Federal mineral estate. Those activities are not a direct or indirect result of the federal lease sale, nor are they reasonably foreseeable, and therefore are not part of this analysis.

3. Lease terms and stipulations

A lease for oil and gas gives a lessee (holder of the lease) the right to drill and produce, subject to the lease terms, any special stipulations, other reasonable conditions, and approval of an Application for Permit to Drill (APD). The regulations at 43 CFR 3101.1-2 define the reasonable measures which BLM can require of a lessee. These include, but are not limited to, moving the proposed drilling site up to 200 meters, delaying surface disturbance or drilling up to 60 days, or requiring special reclamation measures. Generally, the BLM cannot deny a lessee the right to drill once a lease is issued unless the action is in direct conflict with another existing law. Stipulations such as the Endangered Species Stipulation in Appendix D of the record of Decision for the Hollister RMP (2007) are appropriate where sensitive and significant values exist which could be impacted by development of the oil and gas lease.

Any surface disturbing activity requires prior approval of the BLM. Such approval would include a site-specific evaluation and compliance with NEPA requirements. Routine activities including, but not limited to, cleaning out wells, well tests, monitoring activities, repairing and maintenance of equipment, and routine workovers do not require BLM approval, but would require adherence to all applicable laws and regulations.

For those parcels that are “split-estate” (private surface overlying federal minerals), the BLM requires the lessee/operator to make a good faith effort to obtain an agreement with the private surface owner prior to access on the leased land issued through competitive bid.

Where the lessee/operator is unable to reach a surface use agreement with the private surface owner, the lessee/operator can file a surface owner protection bond. This bond should be in an amount sufficient to protect against damages to the surface as allowed in the statute that reserved the mineral rights to the Federal government. However, the minimum of the surface owner protection bond is \$1,000.00.

4. Restoration Measures and Clean up Costs

All lessees/operators of an oil and gas lease are required to submit to the BLM proper bonding prior to any application for permit to drill (APD) approval. The range of the bond amount varies from \$20,000 to \$300,000. The bond serves to plug and abandon wells, clean up the leased area, surface restoration, and also to pay for any outstanding rentals or royalties due on the lease should the lessee/operator default on those obligations.

The BLM’s Bakersfield Field Office has a mechanism for tracking operations of oil and gas leases. The BLM has an inspection and enforcement team that frequently inspect leases and is effective in assuring that the operations of leases are in compliance. These inspections include review on all well abandonments for proper reclamation.

The BLM is partnered with California Division of Oil, Gas, and Geothermal Resources (CDOGGR) for orphaned and idle wells. A 2008 Memorandum of Understanding (MOU) is in place that addresses these types of wells and what the obligations are of the BLM and the State Division of Oil and Gas.

The BLM currently has only one orphan well on Federal lands in California. The BLM and CDOGGR have a very active and successful Idle Well Management Plan which prevents idle wells from being orphaned. The CDOGGR has an orphan well abatement fund which replenishes each year, and also has an acute well abatement fund for emergency purposes. The CDOGGR is working on an orphan facilities fund. The BLM appropriates funds as required to perform the work. In the past, BLM has partnered with CDOGGR to abandon Federal orphan wells. The results of these programs have been very successful.

V. CONSISTENCY WITH LOCAL PLANS

BLM coordination with local and state governments allows regulators to identify mitigation through inter-agency consultation with potential co-permitting agencies, including the County of Monterey, County of Fresno, Monterey Bay Unified Air Pollution Control District, San Joaquin Valley Unified Air Pollution Control District, California Division of Oil, Gas, & Geothermal Regulation, and the US Fish and Wildlife Service.

Monterey County General Plan

The Monterey County General Plan was originally approved in 1982. An update to the General Plan has been underway since 1999, with the most recent iteration of the Draft General Plan released on October 26, 2010. Accordingly, BLM has drawn upon both the original General Plan and the 2010 Draft General Plan to determine the consistency of the proposed action with the existing (and proposed) decisions in the Monterey “South County Area Plan”, as identified in these documents.

South County land use is characterized by extensive areas of low intensity uses, dominated by grazing, dryland and irrigated farming, watershed, recreation, and small communities. The bulk of the industrial use in South county is due to the presence of extensive oil extraction operations near San Ardo. Much of this area is used in conjunction with grazing (South County Area Plan at p. 72).

The South County planning area is the largest of eight planning areas identified in the Monterey County General Plan. The South County planning area also has the lowest population density: 2.8 persons per square mile in 1980, compared with 87 persons per square mile countywide. It

should be noted that 68 percent of South County is devoted to agriculture and 28 percent is under public land ownership. Thus, the density throughout South County is not uniform (South County Area Plan, at p. 27).

Approximately 28% of South County is publicly owned and is generally not subject to private development. Most of South County's public lands are in federal ownership -- 212,089 acres out of 225,519. The remainder is owned by the Monterey County Flood Control and Water Conservation District; this 13,430 acres includes San Antonio Reservoir and a large area around the reservoir (South County Area Plan, at p. 32). It should also be noted that due to the presence of military installations, leasing arrangements, and other access restrictions, not all land in public ownership is available for use by the general public.

Both the 1982 and 2010 General Plan(s) identify the split-estate parcels proposed for oil and gas leasing as unincorporated lands in South County. The BLM-administered lands in the region are officially designated as “Unimproved lands and watershed areas” in both documents. The County describes them as lands which are generally vacant and which may serve as valuable watershed. Unimproved lands and watershed areas total 38,217 acres or almost 5% of South County. Watershed uses are particularly important in this region due to the location of San Antonio Reservoir. This water body is the fourth largest land use in the area, totaling 5,687 acres or about 15% of the unimproved lands and watershed areas.

Monterey County General Plan Goal #35 recognizes the significance of unimproved lands and watershed areas in protecting and maintaining the County’s natural resources and rural character and places emphasis on protection of the County's critical watersheds. As such, the General Plan states that the County shall ensure that land uses in and surrounding critical watershed areas will not compromise the important resource value of these areas; and any development in critical watershed areas shall be designed, sited, and constructed in a manner which minimizes negative effects on the watershed.

Fresno County General Plan

The Fresno County General Plan (2000) is a comprehensive, long-term framework for the protection of the county’s agricultural, natural, and cultural resources and for development in the county. The Plan sets out a vision reflected in goals, policies, programs, and diagrams for Fresno County for the period 2000 to 2020 and beyond. In 2006, the County embarked on its first review and revision of the 2000 General Plan.

To implement the elements described above, the Fresno County General Plan includes regional plans and community plans. The Coalinga Regional Plan (1996) covers the area where the Federal mineral estate being considered for oil and gas leasing is located. The Fresno County

General Plan carries forward major policies in the Coalinga Regional Plan that have been in place since the mid-1970s.

The Coalinga Region contains a wide range of physiographic features and natural resources. It includes a city containing about 11,217 inhabitants situated within an agricultural valley. Most of the area is comprised of vast expanses of undeveloped lands with environmental resources important to the County. Limited quantities of high quality water are available, yet some areas are subject to seasonal flooding. It is the County's major petroleum-extraction area and holds other valuable mineral resource mining sites. The area also offers scenic recreation areas, some with varied collections of fossils and gemstones (Fresno County, Coalinga Regional Plan, 1980, at p. 1).

The Coalinga Region is a significant oil and gas resource area. Productive oil and gas fields are scattered throughout Jacalitos Canyon and the Kreyenhagen Hills. County policy seeks to protect these oil and gas resource areas from incompatible land uses which would preclude resource extraction (Coalinga Regional Plan, at p. 5).

These General Plans establish broad goals, policies and thresholds of significance that guide countywide development. Additionally, they provide policies, tailored specifically to address local conditions and community concerns, and zoning ordinance, which are the primary tools used to implement the goals and policies contained in the General Plans and the Area Plans. These are typically technical in nature and provide specific project level standards for development.

This EA focuses on proposed oil and gas leasing of Federal mineral estate and consistency with land use policies and compatibility with surrounding uses. The proposed lease sale is consistent with the General Plans referenced above because BLM's standard lease stipulations and other mitigation measures identified in the EA would prevent adverse impacts to watershed areas and other sensitive resources. The reasonable foreseeable development of Federal mineral estate described in Chapter 4 of this EA would not compromise the important resource value of these areas. Additionally, upon issuance of the lease, BLM maintains the authority to preclude surface disturbance and site specific reviews of applications for permits to drill (APD's) are required to ensure that developments shall be designed, sited, and constructed in a manner which minimizes negative effects on special status species habitat, critical watershed areas, or other resource values.

Compliance with the requirements found in the County ordinances, such as reclamation bonds for oil and gas operations, is typically a routine engineering and design matter and not considered a land use issue. Furthermore, compliance with these ordinances is not optional or subject to "discretionary" permitting, so they are not evaluated in this EA.

VI. ISSUES AND SCOPING

BLM proposed a competitive lease sale for all BLM-administered lands in southern Monterey County in 2009 that included twenty-one parcels containing 35,287 acres of federal land and split-estate. All of the parcels being considered for the proposed 2011 oil and gas lease sale were also included in the 2009 proposal, except for Unit 1 and Unit 4.

The Ventana Conservation and Land Trust is a conservation organization focused specifically on the natural and cultural resources of the interior of southern Monterey County. A protest was filed by the Ventana Conservation and Land Trust (pursuant to 43 CFR 3120.1-3) to supplement another protest prepared by the Center for Biological Diversity (CBD) and Los Padres Forest Watch. These groups formally protested the inclusion of all 21 parcels in the proposed 2009 competitive oil and gas lease sale for the reasons outlined below.

As detailed in their final protest letter, “the Trust believes the development of oil and gas leases as illustrated in the bid documents will seriously impact regional viewsheds, water quality, air quality and rural lifestyle attributes of southern Monterey County.” The protest letter urges BLM to conduct additional environmental review prior to conducting any further lease sales in southern Monterey County. The following issues are incorporated by reference and analyzed in this EA in Chapters 3 & 4 under the resources sections noted below each issue:

- a. Inventory of potentially impacted endangered species impacts and determination if mitigation planning is adequate under USFWS recovery plan standards for a variety of plant and animal species
 - the Kit Fox and the Tule Elk both range over the drilling lease lands. The Tule Elk population on adjacent Fort Hunter Liggett is one of two such significant populations in the state. Tule Elk is a managed, California designated species of critical importance and of considerable rarity; its range used to include the entire coast range and central Valley of California. Although there are now about 23 populations of Tule Elk present in California, and some limited hunting harvesting is permitted, one of two of the largest and significant remaining populations range into the lease areas (personal observation). Fort Hunter Liggett has made programmatic efforts to ensure the survival of the Kit Fox and Arroyo Toad, together with Fairy Shrimp, another species that may well be present in certain of the lease areas in the Lockwood and Hames Valley.

[Addressed in this EA in Chapter 3, Section G, 1 and Chapter 4(III), Section G, 1. Special Status Species]

- b. Effects on jurisdictional waters, surface water quality, and percolation of oil recovery chemicals and byproducts into essential local residential, agricultural, and potable water supply.
- Long term effects on ground water aquifers essential for agricultural activities.
 - Prediction and modeling of surface water quality and ground water quality effects; the aquifer in Hames Valley is critical for domestic consumption as there is no regional public water purveyor and both residences and farms operate off of well water.

[Addressed in this EA in Chapter 3, Section F and Chapter 4(III), Section F. Water Quality]

- c. Adverse consequences for farming and grazing activities [inc.] the need for redundant transportation and storage or processing facilities.

[Addressed in this EA in Chapter 3, Section F, J, & L and Chapter 4(III), Section F, J (Livestock Grazing), & L (Farmland).]

- d. Clarification of the grade of oil and gas involved and predictions about infrastructure needed to remove and transfer the oil for processing
- Detailed inventory of potential ancillary oil extraction facilities is essential for this valley system. The topography in this area is not suitable for road development without seriously scarring the properties within the lease area. A study of the alternative of surface transportation versus pipeline linkage between developed fields would be critical.
 - Potential for on drilling site oil flaring, heating, pumping and storage

[Addressed in this EA in Chapter 4(II), Assumptions Incorporated into the Analysis; A. Hollister RFDS: General Discussion]

- e. Prediction and modeling of air quality effects specific to the Hames Valley and tributary valley systems and cumulative effects from leases.

[Addressed in this EA in Chapter 4(III), Section D, 1. Air Quality]

- f. Inventory and significance testing for cultural resources associated with historic anglo uses, historic native Californian uses and sites, assessment of the potential for the presence of sites sacred to the Salinan, Esselen and Chumash, significance testing for all such sites, and mitigation planning for both drilling pads and all ancillary infrastructure

[Addressed in this EA in Chapter 3, Section H and Chapter 4(III), Section H. Culutural Resources]

- g. Conflicts with the County's General Plan, watershed plans, and other documents that set forth the long term land use and water conservation efforts associated with this Valley.
 - Conflicts with agricultural resources and uses, potential development of this Valley as part of the County "wine region" plan set forth in the Draft General Plan, conflicts with views, scenic resources and social and economic impacts on rural communities.

[Addressed in this EA in Chapter 1(V), Consistency with Local Plans and Zoning and Chapter 3, Section B and Chapter 4(III), Section B. Socioeconomic Conditions and Environmental Justice]

- h. Effects of the project on climate change and the effects of climate change, as a cumulative impact, on resources that may be affected by oil and gas leasing.

[Addressed in this EA in Chapter 4(I), Incomplete or Unavailable Information; C. GHG Emissions & Chapter 4(III), Section D, 3. Climate Change]

- i. Address the issue of oil drilling where new techniques of deep horizontal drilling and fracking have made heretofore economically unfeasible resources a focus of development by a major oil company.

[Addressed in this EA in Chapter 4(I), Incomplete or Unavailable Information; B. Hydraulic Fracturing]

- j. Evaluate "environmental justice" issues associated with this project

[Addressed in this EA in Chapter 3, Section B and Chapter 4(III), Section B. Socioeconomic Conditions and Environmental Justice]

The VCLT protest letter received by BLM's Hollister Field Office also identifies the following issues, which were determined to be outside the scope of the proposed action because they are not directly related to the proposed action or are outside the authority of the BLM.

- k. Long term effects of salt water intrusion by mineral extraction.

Based on current knowledge of seawater intrusion into the Salinas Valley's 180 ft./400 ft. aquifers(s) and the distance of the proposed leases from these aquifers, potential water demands

associated with oil and gas development activities (up to 5 million gallons) would not contribute to sea water intrusion.

Chapter 2. Proposed Action and Alternatives

NOTE TO READER: To facilitate the analysis, each parcel of land being considered for oil and gas leasing in this EA is identified by a Unit number and a Parcel number. Map 1 and Map 2 in Appendix A show the general location of each Unit and Parcel. For the actual competitive oil and gas lease auction, new parcel numbers will be generated that are different from the parcel number used in this EA.

LEASING STIPULATIONS COMMON TO ALL ACTION ALTERNATIVES

Oil and Gas Lease Stipulations

All of the parcels would have the BLM Standard Lease Stipulations (BLM Form 3100-11) and all parcels would be subject to special leasing stipulations that would (1) protect special status species and their habitat, including but not limited to the “Endangered Species Stipulation” outlined in the Record of Decision for the Hollister Field Office RMP for the Southern Diablo Mountain Range and Central Coast of California (BLM 2007), Appendix D (pg. D-9), which would be attached to each lease upon issuance; and (2) protect cultural resources under "Stipulation #4: Cultural Resource Stipulation" of the Lease Sale Notice which states if any lease is found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders, the “BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.”

All the parcels in western Fresno County (Unit 4) are within the Panoche-Coalinga Area of Critical Environmental Concern (ACEC). In conformance with the existing land use plan decision ENERG-C1 (ref. 2007 ROD), all oil and gas leases for parcels in Unit 4 would stipulate “No Surface Occupancy” in special status species habitat.

Furthermore, BLM reserves both the authority to preclude all activities pending submission of site-specific proposals and the authority to prevent proposed activities if the environmental consequences are unacceptable. As stated in the Endangered Species Stipulation described in Appendix D of the Hollister PRMP/FEIS (2006), “the lessee is hereby notified that, if T&E

species are found during the inventories, the surface disturbing activities may be prohibited on portions of, or even all of the lease, unless an alternative is available that meets all of the following criteria: (a) the proposed action is not likely to jeopardize the continued existence of the T&E species, (b) the proposed action is not likely to destroy or adversely modify critical habitat for the T&E species, and (c) the proposed actions are consistent with USFWS recovery plans and/or BLM resource management plans. This denial authority will also apply to directional drilling proposals which require federal approval to drill into the leased mineral estate from adjacent lands.”

UNITS 1, 2, & 4 ALTERNATIVE (PROPOSED ACTION)

Competitive Oil and Gas Lease Sale

The Bureau of Land Management (BLM) proposes to conduct a quarterly competitive oil and gas lease sale of the unleased Federal mineral estate in southern Monterey County and western Fresno County. A total of 2,605 acres of Federal minerals were analyzed for competitive lease. The locations of these parcels are identified in Table 1 below.

Table 1: Lease Parcels in Units 1, 2, & 4

Parcel #	Mer.	Twp	Range	Sec.	Subdivision	Acres	Surface Owner
0	21	0220S	0080E	1	NWNW	40.21	PVT
1	21	0220S	0080E	1	S2SW	80.00	USA
2	21	0240S	0100E	5	NWSW, S2SW	120.00	USA
2	21	0240S	0100E	5	NWNW	37.29	PVT
2	21	0240S	0100E	6	LOTS 3-7, S2NE, SENW, E2SW, SE;	410.58	PVT
2	21	0240S	0100E	6	NWNW	40.00	USA
2	21	0240S	0100E	7	LOTS 2, 3, NE, E2SE;	316.92	PVT
2	21	0240S	0100E	8	NW, S2;	480.00	PVT
2	21	0240S	0100E	9	SW, W2SE;	240.00	PVT
2	21	0240S	0100E	17	N2, N2SW, SESW, SE;	600.00	PVT
16	21	0210S	0150E	22	NWNE	40.00	USA
17 & 18	21	0210S	0150E	22	NESE, SWSE	80.00	PVT

Parcel #	Mer.	Twp	Range	Sec.	Subdivision	Acres	Surface Owner
19	21	0210S	0150E	26	E2NE	80.00	USA
20	21	0220S	0160E	34	NENW	40.00	PVT
Total Acres						2,605.40	

The proposed action is to offer 2,605 acres of unleased Federal minerals estate identified by the parcel numbers referenced on Map 1 and Map 2 in Appendix A for oil and gas competitive auction to develop the Federal mineral estate.

Of the approximately 2,605 acres of Federal mineral estate land that are considered for leasing, only 360 acres are public surface with Federal mineral estate and approximately 2,245 acres are “split-estate” (private surface with Federal subsurface minerals). The BLM’s guidance on “split-estate” (Washington Instruction Memorandum No. 2003-131) effective April 2003, addresses the purpose and the action that must be completed prior to any approval for new drilling. It also explains the rights, responsibilities, and opportunities of the BLM, lessee/operator, and the private surface owner. In addition, the recently revised Onshore Order No. 1 also contains details about permits issued on split estate lands.

All of the federal interests (surface and minerals) are within the jurisdiction of the BLM’s Hollister Field Office, Hollister, California. There are 4 parcels in Unit 4 that are partly within the administrative boundary of existing oilfields; however, all parcels being considered under the proposed action are within 0.5-5 miles of the administrative boundaries of an existing oilfield.

UNIT 3 ALTERNATIVE

The oil and gas industry is encouraged to submit an "expression of interest" for federal land parcels in California that have potential for development. Under the BLM’s new policy for oil and gas leasing reform, the California State Office is only considering competitive oil and gas leasing for the BLM-administered lands with an expression of interest (EOI) in western Fresno and southern Monterey counties (ref. Map 1 & 2 in Appendix A).

EOI’s were submitted for the parcels identified in Table 2 below. They are also identified as Unit 3 on Map 1 in Appendix A. The Hollister Field Office analyzed the effects of the oil and gas leasing on these parcels based on the Reasonable Foreseeable Development Scenario in this EA.

Under this alternative, all the parcels in Units 1, 2, and 4 (ref. Table 1) would still be offered in the September 14, 2011 competitive oil and gas lease sale. Additionally, all the Federal mineral

estate in Unit 3, which includes Parcels #3 to #15, would be auctioned in the September 14, 2011 competitive oil and gas lease sale (ref. Table 2).

However, BLM determined the EOI's submitted were incomplete because they did not include spilt-estate surface owners contact information. No response was provided to repeated requests for the required information. Therefore, all of the parcels considered for oil and gas leasing in Unit 3 were analyzed in this EA, but they are not included in the Proposed Action because the EOI's were not submitted in a timely manner to be included in the September 14, 2011 competitive oil and gas lease sale.

Table 2: Lease Parcels in Unit 3

Parcel #	Mer.	Twp	Range	Sec.	Subdivision	Acres	Surface Owner
3	21	0210S	0100E	22	SENE	40.00	PVT
4	21	0210S	0100E	22	SENW	40.00	PVT
5 & 6	21	0210S	0100E	34	NENE, NESE;	80.00	PVT
7	21	0210S	0110E	32	SESE;	40.00	PVT
8	21	0210S	0110E	33	SE;	160.00	PVT
8	21	0210S	0110E	34	S2;	320.00	PVT
9	21	0220S	0110E	4	ALL	632.48	PVT
10	21	0220S	0110E	8	LOTS 1-4, NENW, S2NW, N2S2;	443.70	PVT
9	21	0220S	0110E	9	N2, NESE, S2SW, SE;	600.00	PVT
11	21	0220S	0110E	11	ALL	640.00	PVT
12	21	0220S	0110E	19	NENE;	40.00	PVT
13	21	0220S	0110E	20	SENE;	40.00	PVT
13	21	0220S	0110E	21	NE, NENW, S2NW, SW, W2SE;	520.00	PVT
14 & 15	21	0220S	0110E	35	SENE, E2NE, W2NW;	200.00	PVT
Total Acres						3,796.18	

NO ACTION ALTERNATIVE:

Under the No Action alternative, none of the 6,401 acres of Federal mineral estate from the parcels identified in Units 1, 2, 3, & 4 would be offered for competitive oil and gas leasing. Under this alternative, BLM would not meet the requirement to offer lands available for oil and gas auction under the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act) and Energy Policy Act of August 5, 2005, Section 362(a)(1). In addition, the potential reserves that might be recovered and the potential income that might be generated would not be realized if the lands were not leased.

ALTERNATIVES CONSIDERED BUT NOT ANALYZED:

NO SURFACE OCCUPANCY ALTERNATIVE

Under the Endangered Species Stipulation described in Appendix D of the Hollister PRMP/FEIS (2006), BLM reserves both the authority to preclude all activities pending submission of site-specific proposals and the authority to prevent proposed activities if the environmental consequences are unacceptable.

Based on BLM's authority to prevent proposed activities if the environmental consequences are unacceptable and the Hollister Field Office's 2005 Reasonable Foreseeable Development Scenario described in Chapter 4 of this EA, the proposed oil and gas lease sale would not adversely affect Federally-listed species beyond the thresholds identified in FWS Biological Opinion 1-1-94-F-47. Therefore, the Hollister Field Office determined that an alternative to lease all the parcels being considered in this EA with a No Surface Occupancy stipulation was not necessary.

2009 OIL AND GAS LEASE SALE NOTICE

A competitive lease sale for all BLM-administered lands in southern Monterey County was proposed on June 23, 2009, and included twenty-one parcels containing 35,287 acres of federal land and split-estate.

In response to concerns expressed by Congressman Sam Farr and local Tribes, BLM postponed this competitive oil and gas lease auction "citing the need for more extensive consultation with land owners, tribal leaders, and other community interests," as described in a BLM News Release (CA-SO-09-15) published on June 10, 2009.

Under the BLM's new policy for oil and gas leasing reform announced on May 17, 2010 (Instruction Memorandum No. 2010-117), the California State Office is only considering

competitive oil and gas leasing for the Federal mineral estate with an expression of interest (EOI). As result, approximately 29,000 acres (~82%) of the lands identified in the 2009 lease sale are not analyzed in this EA because no expressions of interest wee submitted for these parcels.

Chapter 3. Affected Environment

The HFO is subdivided into four management areas (MAs): San Joaquin, Salinas, Central Coast, and San Benito (see Figure 1 in Appendix A of the BLM’s 2006 FEIS).

A. Oil and Gas Resources

The 2006 FEIS for the Hollister PRMP briefly describes oil and gas development in the areas of high, moderate, and low-to-none development potential on private and Federal mineral estate, regardless of ownership. The size of each category is shown in Table 3.12-1 and illustrated on Figure 15 in Appendix A of the BLM FEIS (2006).

Table 3.12-1 Areas of Oil and Gas Development Potential()*

Category	Total Acres
High	1,883,449
Moderate	2,402,432
Low to None	2,529,259
Total	6,815,140

(*) Includes all private and Federal mineral estate within the Hollister Field Office boundary

The five areas with the highest potential for development in the Hollister Field Office in order of importance are the following:

- San Joaquin MA, Contra Costa County, gas fields that produce from Eocene and Paleocene sedimentary rocks;
- Central Coast MA, Santa Clara Mountains of San Mateo and Santa Cruz Counties that may produce from Lower Tertiary and Upper Cretaceous formations;
- San Benito MA, San Benito County, Sargent Oil Field that produces from the Miocene Monterey Formation and Pliocene Purisima Formation of the San Juan Valley sedimentary basin;
- San Benito/San Joaquin MAs, San Benito and Fresno Counties, several oil fields that produce from Miocene and Pliocene marine sedimentary rocks; and

- Central Coast/San Benito MAs, Monterey and San Benito Counties, San Ardo oil fields that produce from the Miocene Monterey formation in the Salinas sedimentary basin.

The southern portion of the HFO has moderate potential with several wells that “show” or produce oil. However, the majority of the area has not shown economic quantities to develop the resource. Most of the existing oil and gas production within the HFO occurs within the oil fields near Coalinga and the Jacalitos Valley in the San Joaquin Management Area (MA). There is also some historic production in the San Ardo oil fields located within the Salinas MA; however, little of this area is on Federal mineral estate. Likewise, the Vallecitos oil fields are in the San Benito MA, but, again, little of the production is on Federal mineral estate.

The Hollister PRMP/FEIS for the Southern Diablo Mountain Range and the Central Coast of California (BLM 2006) reports that exploratory oil wells have historically been drilled on less than 5 percent of the leases issued on Federal mineral estate, and only one of 15 to 20 exploratory wells actually results in the discovery of oil. The U.S. Geological Survey estimates that there are more than two billion barrels of undiscovered recoverable reserves in the 30 oil and gas fields throughout the 588,197 acres of split estate administered by the HFO. However, based on studies and evaluations of historic trends prior to 1993, BLM geologists have projected that the probability of a new field discovery on Federal mineral estate in the Hollister Field Office over the next 15 years is less than 5 percent.

Historically, both oil and gas and mineral development have been low on Federal mineral estate managed by the HFO. More recently, natural gas reserves have gained interest nationally and in California with the possibility of expanding production capacity on public lands using hydraulic fracturing technology.

Pursuant to Section 3108, Division 3 of the Public Resources Code, each year the California Department of Conservation’s Oil and Gas Division makes the total amount of oil and gas produced in each county public for the benefit of all interested persons. According to the information available from the 2009 Annual Report of the State Oil & Gas Supervisor, there are no existing natural gas wells in Monterey County.

According to the Monterey County General Plan’s associated South County Area Plan, the most notable examples of mineral extraction in South County are the oil fields located in the San Ardo area. In fact, almost all of the oil production in Monterey County is from the San Ardo fields. Known reserves, as of 1978, totaled 203 million barrels. Production at the San Ardo field totaled 12.7 million barrels in 1978, from 930 active wells. Oil exploration throughout South County is on the increase.

B. Socioeconomic Conditions & Environmental Justice

Social and Economic Values

This section identifies the regional employment and compensation levels in the industries and provides a context for the types of socioeconomic values would be most affected by the proposed action (farming, mining, accommodation and food services, and retail trade). This information is supplied to show how much the regional economy depends on the sectors that would receive the greatest impacts and how much the regional economy depends on the counties that would be most affected by future development of energy and minerals.

The Federal mineral estate in the southern portion of the HFO has historically been a source of both oil and natural gas. Production has declined in the recent past, and potential appears to be limited. In 2004, annual production in the HFO stood at 585 million cubic feet of natural gas and 50,500 barrels of oil. Both of these figures were less than 2/100 of a percent of the total production of natural gas and oil in California that year.

Federal oil and gas leases in California produced more than 20 million barrels of oil and 5 billion cubic feet of gas in 2008. According to Minerals Management Service statistics, the value of these products was nearly \$2 billion, generating royalties and other related revenue of more than \$175 million. This revenue was split 50:50 with the State of California.

The Hollister PRMP/FEIS (BLM 2006) provided total employment and personal income figures for the Central Coast analysis area which includes Monterey and Santa Cruz Counties and the Diablo Range analysis area, which includes Fresno, Merced, and San Benito Counties. This section presents more detailed data concerning compensation and employment in Monterey and Fresno counties. Specifically, Tables C-4 and C-5 show the percentage changes in compensation by industry between 2001 and 2007 and between 2007 and 2008. Table C-8 shows the percentage change in employment by industry between 2001 and 2007.

Table C-4: Compensation of Employees by Industry, Percent Change 2001 to 2007

Industry	Monterey County	Fresno County
Total average compensation per job (dollars) ¹	30.3	31.3
Compensation of employees, received ²	30.9	42.5
Farm compensation	-2.9	1.9
Nonfarm compensation	33.3	43.9
Private compensation	27.3	44.3
Forestry, fishing, and related activities	87.7	36.6
Forestry and logging	NA	NA
Fishing, hunting, and trapping	NA	NA
Agriculture and forestry support activities	88.0	35.7

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Industry	Monterey County	Fresno County
Mining	27.7	-15.1
Oil and gas extraction	NA	NA
Mining (except oil and gas)	NA	NA
Support activities for mining	NA	NA
Utilities	14.0	88.7
Construction	23.9	66.2
Construction of buildings	28.6	63.3
Heavy and civil engineering construction	0.8	145.2
Specialty trade contractors	27.7	53.1

NA: Not available, either to avoid disclosure of confidential information or because data was not available for one of the years presented. Source: BEA 2009b

Table C-5: Compensation of Employees by Industry, Percent Change 2007 to 2008

Industry	Monterey County	Fresno County
Total average compensation per job (dollars) ¹	3.5	3.5
Compensation of employees, received ²	3.5	2.8
Farm compensation	11.9	12.1
Nonfarm compensation	3.1	2.6
Private compensation	2.1	1.7
Forestry, fishing, and related activities	2.5	3.0
Forestry and logging	NA	NA
Fishing, hunting, and trapping	NA	NA
Agriculture and forestry support activities	NA	NA
Mining	17.6	21.5
Oil and gas extraction	NA	NA
Mining (except oil and gas)	NA	NA
Support activities for mining	NA	NA
Utilities	11.4	16.5
Construction	-7.9	-7.7
Construction of buildings	NA	NA
Heavy and civil engineering construction	NA	NA
Specialty trade contractors	NA	NA

NA: Not available, either to avoid disclosure of confidential information or because data was not available for one of the years presented. Source: BEA 2009b

Table C-8: Employment by Industry, Percentage Change 2001 to 2007

Industry	Monterey County	Fresno County
Total employment	2.9	10.5
Farm employment	-15.2	-15.3
Nonfarm employment	4.4	12.3
Private employment	4.6	13.5
Forestry, fishing, and related activities	23.8	-10.4
Mining	4.7	-34.7
Utilities	-16.7	35.5
Construction	6.0	31.3
Manufacturing	-34.7	0.9

In 2001, of the major industry sectors, Government and Government Enterprises provided the greatest value of compensation in Monterey and Fresno counties. However, Forestry, Fishing, and Related Activities also provided one of the highest levels of compensation in both Monterey and Fresno counties.

Contributions from other public land management activities and resource uses represent only marginal revenues to local and State governments, based on the very limited Federal revenue from grazing fees, and fees for recreation special use permits. Payment in Lieu of Taxes (PILT) based on BLM land ownership in the HFO contributed about \$225,000 to local government revenues in 2004, a very small portion of total government revenues. As with other quantifiable economic indicators such as personal income, the public land resources in the HFO are simply too small relative to other public revenue generators to make a significant contribution (BLM FEIS 2006). Nonetheless, the functionality of public lands as an energy resource does play a role in the local economy by creating jobs and increasing local revenues.

In addition to the contribution of public land resources to local income and employment, other socioeconomic elements that are more difficult to quantify are affected. These social values often emphasize the importance of public lands as scenic or visual resources, traditional use areas, and reservoirs of wildlife habitat in areas where these values are rapidly being lost to development and where population growth in the area would only increase these values on public lands into the future. Additionally, potential increases in traffic and noise associated with oil and gas exploration and development may impact private property residents and/or conflict with other existing land use activities.

Environmental Justice

The requirements for environmental justice review during the environmental analysis process were established by EO 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.”

BLM’s 2006 FEIS (Table 3.15-5) describes the results of the 2000 U.S. Census with regard to ethnicity and poverty in the counties that make up the Central Coast and Diablo Range analysis areas. Most of the counties share the same general ethnic patterns that the State of California exhibits – a very large Hispanic population, ranging from 25 to 50 percent of the population; distinct minority populations of African Americans, generally comprising less than 5 percent of the population; Asian/Pacific Islanders, comprising between 5 and 10 percent of the population; and a very small Native American population. Native American values associated with the lands being considered for oil and gas leasing are described in the Cultural Resources section of this EA.

The percent of the population with personal income below the poverty level is extremely high in Fresno County, over 20 percent of the population. With the very low and declining real per capita income shown in BLM’s 2006 FEIS (Table 3.15-4), these poverty levels are not surprising.

C. Visual Resource Management

Only a few areas of the Hollister Field Office (HFO) public lands have outstanding scenic quality, including the Ventana Wilderness Additions and the public lands highly visible from U.S. Interstate 5 (Panoche Hills Wilderness Study Areas (WSAs), and the Joaquin Ridge/Rocks).

The parcels being considered for leasing under the proposed action consist of non-contiguous lands and isolated parcels spread across 2 counties, so the landscape varies greatly, from nearly level in some areas to rugged, mountainous terrain, generally located in rural ranching areas. Elevations range from 1,000 feet to more than 3,000 feet. Modifications of public lands typically consist of range management projects such as fence lines and livestock and wildlife water developments. Electrical transmission lines, radio communication towers, water storage tanks, and oil and gas facilities are also located on some BLM lands.

San Joaquin Management Area

All the parcels being considered for leasing in Fresno County are designated VRM Class IV, which signifies the management objective is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

BLM public lands in this MA are highly visible from U.S. Interstate 5. In the southern portion of the San Joaquin MA lie the Coalinga oilfields. The predominant features in the area are the low, rolling foothills and valley grasslands along the western edge of the San Joaquin Valley. Significant topographic features include the Kettleman Hills, the Kreyenhagen Hills, the Alcalde Hills, and Anticline Ridge. This very arid area lies in the rain shadow of the Diablo Range to the west. BLM lands in this area are not of outstanding visual quality and are typical of the region.

Salinas Management Area

All the parcels being considered for leasing in Monterey County are designated VRM Class III, which signifies the management objective is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate and may attract the attention but should not dominate the view of the casual observer.

Vegetation includes forested areas, chaparral, and open grassland. About two-thirds of the public lands managed by the HFO consist of chaparral and oak woodland vegetation. Approximately one-third of the parcels being considered for leasing under the proposed action (primarily on the eastern slopes of the Diablo Range and the southern Salinas Valley) consist of annual grassland and half-shrub vegetation.

BLM-administered lands in Monterey County that are visible from U.S. Highway 101 include the large tracts within the Sierra de Salinas and Gabilan Mountain Range, which are generally visible from U.S. Highway 101, from the Pinnacles National Monument, and from BLM lands adjacent to the Ventana Wilderness. A few other isolated BLM parcels lie in eastern Monterey County at the San Benito County line, about 5 miles west of Pinnacles National Monument.

The scattered parcels being considered for leasing under the proposed action are a small portion of the overall landscape and are not highly visible from any key observation points. BLM lands in this area are not of outstanding visual quality and are typical of the region.

D. Air and Atmospheric Values

1. Air Quality

At the federal level, regulatory responsibilities for air quality lie with the U.S. Environmental Protection Agency (EPA), Region 9. At the state level, regulatory responsibility is delegated to the California Air Resources Board (CARB). Oversight authority for air quality matters rest at the county level(s) with the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) and the Monterey Bay Unified Air Pollution Control District (MBUAPCD).

EPA uses six "criteria pollutants" as indicators of air quality, and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS). One set of limits (primary standard) protects health; another set of limits (secondary standard) is intended to prevent environmental and property damage. States may have standards that are more restrictive than the federal thresholds, but they cannot be less restrictive. A geographic area that meets or exceeds the primary standard is called an attainment area; areas that do not meet the primary standard are called nonattainment areas. (<http://www.epa.gov/air/caa/peg/>).

Designations in relation to the State standards are made by the CARB while designations in relation to the National standards are made by EPA. State designations are reviewed annually while the National designations are reviewed when either the standards change, or when an area requests that they be re-designated due to changes in the area's air quality. Designations are made by air basin and in some cases, designations are made at the county level. Designations are made by pollutant according to the following categories:

Attainment – Air quality in the area meets the standard.

Nonattainment Transitional – Air quality is approaching the standard (State only).

Nonattainment – Air quality in the area fails to the applicable standard.

Unclassified – Insufficient data to designate area, or designations have yet to be made.

Nonattainment designations are of most concern because they indicate that unhealthy levels of the pollutant exist in the area, which typically triggers a need to develop a plan to achieve the applicable standard.

As a federal agency, BLM is required to comply with all applicable air quality laws, regulations, standards and implementation plans. The BLM Manual 7300-Air Resource Program Management indicates responsibilities and requirements to analyze all actions for conformity to air quality plans through its permitting programs under the Clean Air Act, as amended (42 USC 7401 et seq.).

For the purpose of monitoring and regulating air quality, the state of California has been divided into 15 air basins based on meteorological and geographic similarities. The parcels being considered for oil and gas leasing under the proposed action are in two of these air basins. Fresno County is in the San Joaquin Valley Air Basin, and Monterey County is in the North Central Coast Air Basin.

As recognized by the California Air Resources Board (2007), California’s climate and geography are conducive to the formation and accumulation of air pollution (especially in the Central Valley) where some of the parcels proposed for leasing are located. Although air pollution levels in the state have improved significantly in the past few decades, Californians currently experience the worst air quality in the nation (U.S. Global Change Research Program 2009).

San Joaquin Valley Air Basin

The state attainment status reported for any given year is based on the previous three years of data. The attainment status of the San Joaquin Valley Air Basin is shown in the table below, according to State Ambient Air Quality Standards and National Ambient Air Quality Standards (NAAQ’s). There are no federal nonattainment listings for nitrogen dioxide or sulfur dioxide; however, the EPA has identified nitrogen oxides (NO_x) and sulfur dioxide (SO₂) as precursors that must be addressed in air quality plans for the 1997 PM_{2.5} standards (SJVUAPCD 2008).

Table 1. Attainment status of the San Joaquin Valley Air Basin

Standard	National Ambient Air Quality Standard^a	State Ambient Air Quality Standard^b
1-hour Ozone	No federal standard ^f	Nonattainment/Severe
8-hour Ozone	Nonattainment/Serious ^e	Nonattainment
Carbon Monoxide	Attainment/Unclassified ^g	Attainment/Unclassified ^g
PM10	Attainment ^c	Non-attainment
PM2.5	Nonattainment ^d	Nonattainment
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead	No Designation/Classification	Attainment

Standard	National Ambient Air Quality Standard ^a	State Ambient Air Quality Standard ^b
(Particulate)		

- a. See 40 CFR Part 81
- b. See CCR Title 17 Sections 60200-60210
- c. On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 maintenance plan.
- d. The Valley is designated nonattainment for the 1997 federal PM2.5 standards. EPA released final designations for the 2006 PM2.5 standards in December 2008 (effective in 2009), designating the Valley as nonattainment for the 2006 PM 2.5 standards.
- e. On April 30, 2007 the Governing Board of the San Joaquin Valley Air Pollution Control District voted to request EPA to reclassify the San Joaquin Valley Air Basin as extreme nonattainment for the federal 8-hour ozone standard. The California Air Resources Board, on June 14, 2007, approved this request. This request must be forwarded to EPA by the California Air Resources Board and would become effective upon EPA final rulemaking after a notice and comment process; it is not yet in effect.
- f. Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. However, EPA had previously classified the SJAVB as extreme nonattainment for this standard. Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.
- g. Kern County is classified as Attainment for CO.

Within the San Joaquin Valley Air Basin, Fresno County has consistently been in exceedances of the NAAQ's for 1-hour and 8-hour ozone. In the year 2007 alone, the San Joaquin Valley experienced 65 days above the National 8-hour ozone standard, and 138 days above the more stringent State 8-hour ozone standard (California Air Resources Board, 2007). Concentrations of several pollutants not only exceed California's health-based standards, but are often measured at levels up to two to three times the state standards (CARB 2007). Furthermore, residents in nearly every area in the state are exposed to PM levels over the current standards. Nonattainment area designations were made for the new 8-hour ozone standard in April 2004 and the San Joaquin Valley 2007 8-hour Ozone Plan was approved by the CARB in June 2007.

The EPA recently re-designated the San Joaquin Valley to attainment of the NAAQS for PM10 and approved the 2007 PM10 Maintenance Plan.

In 1997, the EPA set two PM2.5 standards, a 24-hour standard and an annual standard. Based on data from 2004 to 2006, the San Joaquin Valley complied with the 24-hour standard. In 2006, EPA revised the 24-hour standard to a lower level. Attainment plans for this new standard will be required; however, the 2008 PM2.5 Plan focuses on the strategy to attain the 1997 annual standard. The 2008 PM2.5 Plan builds upon the strategy adopted in the 2007 8-Hour Ozone Plan to bring the Valley into attainment of the 1997 NAAQS.

Emissions, in general, are emitted from large stationary fuel combustion sources (such as electric utilities and industrial boilers), industrial and other processes (such as metal smelters, petroleum refineries, manufacturing facilities, and solvent utilization), and mobile sources including highway vehicles and non-road sources (such as mobile equipment, marine vessels, aircraft, and locomotives). The EPA figure below indicates national total emissions by source category for the year 2007.

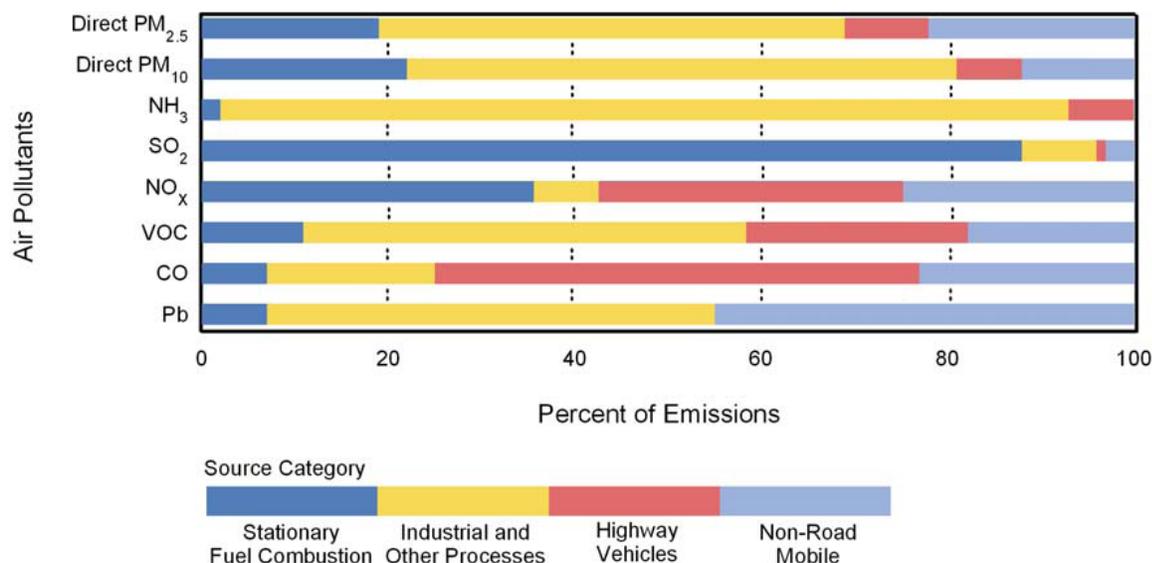


Figure 1. Distribution of national total emissions by source category for specific pollutants, 2007. (Source: U.S. Environmental Protection Agency. November 2008. National Air Quality Status and Trends. Office of Air Quality Planning and Standards, Air Quality Assessment Division Research Triangle Park, North Carolina.)

Currently there are a number of emission sources in the air basin which affect pollution levels. The Districts have documented these in their air plan inventories. The SJVUAPCD shows the baseline (1990) emissions for NO_x at 787 tons per day in the summer time. Of that total, 165.1 tons (21%) were from oil and gas production.

The SJVUAPCD has prepared air quality plans for PM₁₀, PM_{2.5}, and ozone for inclusion in the State Implementation Plan. The San Joaquin Valley has the following plans in place to address air quality: Best Available Control Measures/Technology and Reasonable Available Control Measures/Technology Demonstration for Sources of PM₁₀ and PM_{2.5} precursors in the San Joaquin Valley Air Basin, San Joaquin Valley 2007 8-hour Ozone Plan, and 2008 PM_{2.5} Plan. The 2008 PM_{2.5} Plan builds upon the strategy adopted in the 2007 8-Hour Ozone Plan to bring the Valley into attainment of the 1997 NAAQS.

These plans include sections on emissions inventory and control strategies and include discussions on oil and gas development. They are implemented through rule making categories including permitting, equipment requirements, performance standards, dust and precursor emissions (NO_x and SO₂), and several others. Any oil and gas activities authorized by BLM would also have to comply with all of the applicable air quality rules and regulations, and air permit requirements. Nearly all activities that have the potential to emit criteria pollutants are regulated by local, state, and federal air regulatory agencies.

SJVUAPCD Rule 9110 (adopted October 20, 1994) specifies the criteria and procedures for determining the conformity of federal actions with the District’s air quality implementation plan. Rule 9110 indicates general conformity applies to federal actions except actions with emissions less than the de minimis levels and actions exempt or presumed to conform.

North Central Coast Air Basin

Current State and National designations shown below were reported by the Monterey Bay Unified Air Pollution Control District for the North Central Coast Air Basin in January 2009.

Pollutant	State Standards	National Standards
Ozone (O ³)	Nonattainment 1)	Attainment 2)
Inhalable Particulates (PM10)	Nonattainment	Attainment
Fine Particulates (PM 2.5)	Attainment	Unclassified/Attainment 3)
Carbon Monoxide (CO)	Monterey Co. – Attainment San Benito Co. – Unclassified Santa Cruz Co. – Unclassified	Attainment
Nitrogen Dioxide (NO ²)	Attainment	Attainment
Sulfur Dioxide (SO ²)	Attainment	Attainment
Lead	Attainment	Unclassified/Attainment 4)

Notes:

- 1) Effective July 26, 2007, the ARB designated the NCCAB a nonattainment area for the State ozone standard, which was revised in 2006 to include an 8-hour standard of 0.070 ppm.
- 2) On March 12, 2008, EPA adopted a new 8-hour ozone standard of 0.075 ppm, while temporarily retaining the existing 8-hour standard of 0.08 ppm. EPA is expected to issue new designations by March 2010.

- 3) In 2006, the Federal 24-hour standard for PM_{2.5} was revised from 65 to 35 µg/m³. Although final designations have yet to be made, it is expected that the NCCAB will remain designated unclassified/attainment.
- 4) On October 15, 2008 EPA substantially strengthened the national ambient air quality standard for lead by lowering the level of the primary standard from 1.5 µg/m³ to 0.15 µg/m³. Initial recommendations for designations are to be made by October 2009 with final designations by January 2012

Violations of ambient air quality standards are determined through data collected at air quality monitoring stations located throughout the air basin, including a monitoring station located in King City. This station measures regional pollution levels such as dust (PM-10) and photochemical smog (ozone). The station also monitors nitrogen dioxide (NO²), carbon monoxide (CO) and ultra-fine particulate matter (PM-2.5). Because of the relatively short distance of the parcels proposed for oil and gas leasing to the King City monitoring station, the pollution levels in King City are considered representative of baseline conditions.

The table below shows the exceedances and design values for State standards based on the North Central Coast Air Basin Air Monitoring Stations from 2006-2008.

Station Specific Exceedances and Design Values for the State 8-Hour Ozone Standard and the State 24-Hour PM10 Standard

Station	2006		2007		2008		3-Yr Totals		Design Value	
	O ³	PM10								
Pinnacles	18	--	17	--	26	--	61	--	0.089 ppm	--
King City	1	0	0	0	0	5	1	5	0.068 ppm	NA
Air Basin	20	4	17	1	26	10	63	15	0.089 ppm	88.3 µg/m ³

Notes: Dated 9/24/2009

- 1) The 2008 State 8-hour ozone standard is 0.070 ppm. The State 24-hour PM₁₀ standard is 50 µg/m³.
- 2) Many of the 2008 exceedances of the National ozone standard were affected by smoke from the 2008 California Wildfire Siege, whereby over 1,000,000 acres of wildland vegetation burned statewide including over 250,000 acres in Monterey County alone.
- 3) Three-year PM₁₀ Design Values are not yet available for King City due to a change in the site location from 750 Metz Road to 415 Pearl Street in May 2007.
- 4) On a day when more than one station exceeds the standard, only one air basin exceedance day is counted. For this reason, the number of air basin exceedance days can be less than the sum of the number of station exceedance days.
- 5) Abbreviations: NA: Not Available; -- : Pollutant not monitored
- 6) Source: ARB California Air Quality Data

Planning for attainment of state standards is embodied in the 1991 AQMP. The 1997 update demonstrates that the 20 percent reduction target in ozone precursor emissions from the 1987 baseline has been met and that no new control measures (contingency measures) are needed beyond those already in the plan. The 2000 AQMP update for state standards concluded that the NCCAB will remain on the borderline between attainment and non-attainment of the state 1-hour ozone standard. A combination of meteorological variability, pollution transport from outside the air basin and local sources will all contribute to a continuing small, but non-zero, number of violations.

Planning for PM-10 attainment is conducted separately from ozone planning. Reports by the MBUAPCD indicate that basin-wide attainment of the PM-10 standard due to in-basin sources was likely within this decade. The effects of local contamination and “natural” sources such as sea salt or smoke from wildfires may maintain isolated PM-10 “hot spots” beyond 2010.

2. Climate and Meteorology

San Joaquin Valley Air Basin

The Central Valley is one of the dominant features in the California landscape. The valley extends nearly 500 miles in length, while the width of the floor is approximately 45 miles. The San Joaquin Valley is surrounded by the Sierra Nevada Mountains to the east, the Pacific Coast range to the west, and the Tehachapi Mountains to the south.

California lies within the zone of prevailing westerlies and on the east side of the semi-permanent high pressure area of the northeast Pacific Ocean. The basic flow in the free air above the State, therefore, is from the west or northwest during most of the year. Within the State, several mountain chains are responsible for deflecting these winds and wind direction is likely to be more a product of local terrain than it is of prevailing circulation.

Isotherms run mostly north-south, parallel to the contours of the mountains, instead of east-west as is common in most parts of the temperate zone. The climate and geography of the Valley create optimal conditions for forming and trapping air pollution. The San Joaquin Valley is particularly vulnerable to air pollution formation because of its topography, climate, and growing population. Surrounding mountains trap airborne pollutants near the Valley floor where people live and breathe. In addition, the Valley’s hot summer temperatures promote the formation of harmful ground-level ozone, a major component of smog (<http://www.valleyair.org>).

The northern Central Valley has a hot Mediterranean climate while the southern portions in rain shadow zones are dry enough to be considered low-latitude desert. It is hot and dry during the summer and cool and damp in the winter, when frequent ground fog known regionally as “tule fog” can obscure visibility. Summer daytime temperatures are generally in the 90 degree (°F)

range, and heat waves may bring temperatures in excess of 104° F. The rainy season occurs mid autumn to spring and the northern half of the Valley receives greater precipitation than the arid southern half. Normal annual precipitation in this area is 5.72 inches, based on the 1961-1990 record period.

North Central Coast Air Basin

The Monterey Bay and Salinas Valley area is characterized by a “Mediterranean” climate with warm, dry summers and cool, moist winters. Daily variations in the valley climate are influenced by the interaction between ocean and land air masses that create on-shore (up-valley) winds in the daytime and weak offshore (down-valley) breezes at night. Inversion layers, which tend to aggravate pollution problems created by automobile emissions, are present in the valley a significant part of the year. However, meteorological conditions in Monterey County are generally favorable in terms of maintaining relatively good air quality because onshore winds across Monterey Bay normally bring clean air into the region. Nonetheless, degraded air quality may sometimes be experienced due to the dust and odor may be experienced around agricultural operations or other localized sources.

At the National Climate Data Center (NCDC) station in Monterey, on the basis of a 50-year record, the average annual temperature is 57° F, and the average annual precipitation is 20 in., occurring as rain during the winter and early spring. However, the distribution of precipitation across the area is dependent on the topography and the prevailing winds, with an increase in precipitation concomitant to an increase in altitude. Precipitation also decreases with latitude from north to south in the study unit. Fifty-year climate records from NCDC stations from Santa Cruz to Paso Robles show that the mean annual precipitation decreases from 31 in. in Santa Cruz in the north, to 13 in. in Paso Robles in the south (USGS 2005).

Annual precipitation for Central California from 2007-2008 was considerably lower than the normal at 66%. Whereas, annual precipitation from 2008-2009 was about 95% of the normal average rainfall.

3. Climate Change

Climate change refers to any significant change in measures of climate (e.g., temperature or precipitation) lasting for an extended period of time (decades or longer). Climate change may result from natural processes, such as changes in the sun’s intensity; natural processes within the climate system (such as changes in ocean circulation); human activities that change the atmosphere’s composition (such as burning fossil fuels) and the land surface (such as urbanization) (IPCC 2007).

Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The primary greenhouse gases that enter the atmosphere as a result of anthropogenic activities include carbon dioxide (CO²), methane (CH⁴), nitrous oxide (N²O), and fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These synthetic gases are powerful GHGs that are emitted from a variety of industrial processes.

Ongoing scientific research has identified the potential impacts of anthropogenic greenhouse gas (GHG) emissions and changes in biological sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO²e concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC 2007) recently concluded that “warming of the climate system is unequivocal” and “most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.”

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires and activities using combustion engines; changes to the natural carbon cycle; and changes to radioactive forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years. In contrast, black carbon is a relatively short-lived pollutant, as it remains in the atmosphere for only about a week. It is estimated that black carbon is the second greatest contributor to global warming behind CO² (Ramanathan and Carmichael, 2008).

Global mean surface temperatures have increased nearly 1.8° F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited temperature increases of nearly 2.1° F since 1900, with nearly a 1.8° F increase since 1970 alone. If emissions proceed at a medium to high rate, temperatures in California are expected to rise 4.7° to 10.5° F by the end of the century; a lower emissions rate would keep the projected warming of the state to 3 to 5.6° F (Luers et al. 2006). Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.5° to 10.4° F above 1990 levels. The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. Recent analyses of global climate model predictions indicate that southern California will become hotter and drier (Christensen et al. 2007). Higher temperatures are projected to increase the frequency, intensity, and duration of conditions conducive to air pollution formation, potentially increasing the number of days conducive to air pollution by 75 to 85 percent in the San Joaquin Valley, under a higher emissions scenario, and by 25 to 35 percent under a lower emissions scenario (California Climate Action Team 2006). In California, annual precipitation will decrease and most areas will have fewer heavy precipitation events. Overall, snow depth will decrease as a result of delayed autumn snowfall and earlier spring snowmelt.

There will be increases in extreme hot temperature events, more prolonged hot spells, an increased diurnal temperature range, and a concurrent decrease in extreme cold events. This prediction is the most current and thorough analysis of expected global climate change and is based on information from four sources: Atmosphere-Ocean General Circulation Model (AOGCM) simulations, downscaling of AOGCM-simulated data using techniques to enhance regional detail, physical understanding of the processes governing regional responses, and recent historical climate change. Based on the “Climate Scenarios” analysis summarized by the California Climate Change Center (2006), the projected temperature increases in California would result in widespread consequences including:

- Increased frequency, duration, and intensity of conditions conducive to air pollution
- Rising sea levels, which would inundate coastal areas, accelerate coastal erosion, threaten inland water systems and disrupt wetlands and natural habitats An increase in coastal water temperatures
- A 70-90 percent reduction of Sierra Nevada snowpack
- Range expansion in many species, range contractions in other species with significant populations already established
- A likely shift in the ranges of existing invasive plants and weeds
- Up to a 55 percent increased risk of large wildfires

Although there is a lot of new information indicating the type and nature of impacts on particular biological resources (butterflies, polar bear, etc.), it is often difficult to discern just how global climate change is affecting resources on a local or regional level. Existing and anticipated effects of climate change on resources and resource uses are incorporated into the relevant sections below and discussed in cumulative impacts.

With enactment of the California Global Warming Solutions Act of 2006 (AB 32; Stats. 2006, chapter 488), the California Air Resources Board (ARB) was tasked with several new

responsibilities to help address the threat of global warming. AB 32 requires that by 2020 California's greenhouse gas emissions be reduced to 1990 levels, which represents a 25% reduction under a business as usual scenario. Two of these new responsibilities, greenhouse gas emissions inventory and mandatory reporting, are complementary efforts undertaken by CARB to assess and monitor California's progress toward greenhouse gas (GHG) emissions quantification and mitigation. The first effort established the California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit. The second effort led to the adoption by the ARB of a regulation to require the mandatory reporting and verification of greenhouse gas. To improve ARB's estimates of GHG emissions in California, they designed an Oil and Gas Industry Survey to accurately quantify equipment and operation processes for the 2007 calendar year. The ARB Stationary Source Division is conducting studies aimed at reducing GHG emissions of carbon dioxide and fugitive methane from oil and natural gas productions, and the Oil & Natural Gas Production, Processing, and Storage (Extraction) measure is scheduled to be adopted in early 2010 (<http://www.arb.ca.gov/cc/oil-gas/oil-gas.htm>). A number of scoping plan measures have already been approved and/or adopted, including the Heavy-Duty Vehicle GHG Emission Reduction, Low Carbon Fuel Standard, Landfill Methane Control Measure, Tire Pressure and Tread Programs, Cool Car Standards and Test Procedures, and Port Ship Electrification (http://www.arb.ca.gov/cc/scopingplan/sp_measures_implementation_timeline.pdf).

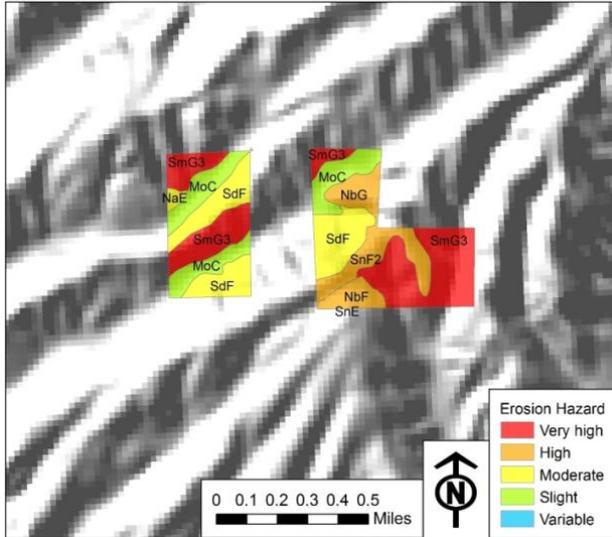
These measures and efforts will contribute to the goal of achieving emissions reductions, as outlined in the AB 32 Implementation Timeline.

E. Soil Quality

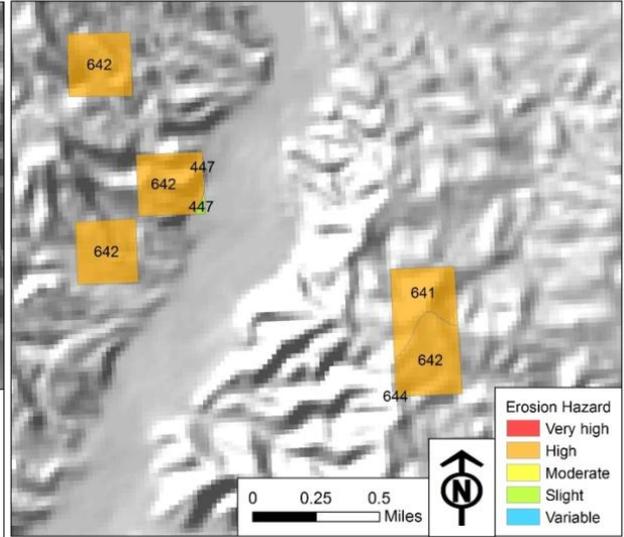
Soils of Parcels 1 – 15 in Monterey county are largely derived from Pliocene (2 – 5 MYA) and Miocene-aged (5 – 23 MYA) marine sedimentary rocks including sandstone, shale, and conglomerate (Table E-1; Cook 1978). Slopes range from 0 – 75% with the majority of the area of most parcels being on steeper slopes (15 – 75%). Soil textural class of most soil types within the parcels ranges from clay loam to silty clay loam, resulting in slow to moderate permeability (infiltration rate). The combination of relatively slow permeability and steep slopes results in medium to very rapid surface runoff, garnering an erosion hazard rating of high to very high for large areas of the parcels (Figure E-1). Erosion hazard is a relative rating of the susceptibility of a soil type to erosion.

Soils of Parcels 16 – 20 in Fresno county are largely derived from Pliocene-aged marine sedimentary rocks including sandstone, shale, and conglomerate (Table E-2; Arroues 2006). Slopes range from 0 – 50% with the majority of the area of most parcels being on steeper slopes (15 – 50%), Soil textural class of most soil types within the parcels ranges from sandy loam to clay loam, resulting in moderately slow to moderately rapid permeability. The combination of

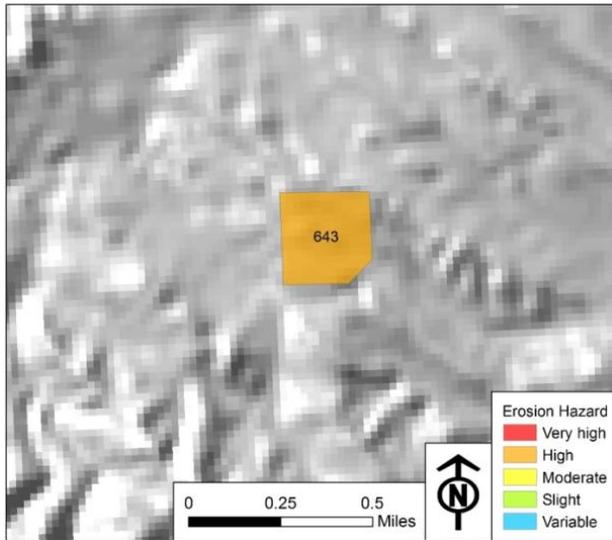
moderate permeability and steep slopes results in medium to very high surface runoff, garnering an erosion hazard rating of high for large areas of the parcels (Figure E-1).



UNIT 3. Parcels 14 and 15.



UNIT 4. Parcels 16, 17, 18 and 19.



UNIT 4. Parcel 20.

F. Water Quality

Based on United States hydrography data, there are no perennial or major intermittent creeks on any of the units. Units 2, 3 and 4 all contain minor intermittent creeks and/or drainages. In particular, Parcel 2, Parcels 5 – 6, Parcels 9 – 15, Parcel 16, Parcel 18, and Parcel 19 all contain minor intermittent drainages. A spring is mapped on Parcel 20.

All parcels are within watersheds governed by basin plans subject to federal and state Clean Water Acts. BLM will require full compliance with all applicable federal, State, and local laws, policies, and rules and regulations to protect both surface and groundwater.

The parcels in southern Monterey County are part of the Salinas River watershed and play an important role in recharging fresh water aquifers. These watersheds also supply several rivers, lakes, or streams. However, none of the parcels proposed for oil and gas leasing contain surface water year round.

Monterey County's South County Area Plan notes the quality of surface and ground water in South County varies greatly with location. "Natural contamination is present from waters draining the Diablo Mountain Range, which are typically high in mineral concentrations. In contrast, there is generally very good quality surface water draining from the Santa Lucia Range into the Nacimiento and San Antonio Rivers, and eventually into their reservoirs to supply good quality water into the Upper Salinas River."

Additionally, the South County Area Plan characterizes large portions of the western half of South County as having groundwater quality and supply problems. In particular, "the areas between Jolon-San Lucas Road and Lockwood-San Lucas Road, along Jolon-Bradley Road to Highway 101, and near Lake San Antonio contain groundwater high in sulphur." Similarly, the Plan describes existing water quality problems in San Ardo where "the water in the area of oil drilling is high in sulphur". Nevertheless, the Plan states "the Lockwood Valley itself has exceptionally good water." Whereas, "groundwater in Hames Valley has high mineralization and sulphur." However, the lands east of US Hwy. 101 that are being considered for oil and gas leasing are sparsely developed; consequently water data are scarce.

The United States Geologic Survey (USGS) investigated ground-water quality in the Monterey Bay and Salinas Valley from July through October 2005 as part of the California Ground-Water Ambient Monitoring and Assessment (GAMA) program. The USGS study focused on the Salinas Valley ground-water basin as defined by the California Department of Water Resources, and includes information from the Paso Robles Area Subbasin, as defined by the DWR Bulletin 118 (2003).

For the purposes of this study, the Quaternary alluvium that fills the valleys in this subbasin is designated as the [Paso Robles] study area (fig. 6), which excludes the higher altitude Quaternary-Pleistocene deposits. The MSPR study area is bounded to the east by the Temblor Range, to the south by the La Panza Range, to the west by the Santa Lucia Range, and to the north by the Upper Salinas Valley Aquifer Subbasin (California Department of Water Resources, 2003).

Mean annual precipitation at Paso Robles is 13 in. and mean annual temperature is 60°F, based on a 50-year record from NCDC. Sources of ground-water recharge include infiltration of precipitation, return flow from irrigation, and seepage from rivers and streams.

The [Paso Robles] study area covers approximately 300 mi² of valley sediments in the low-lying areas along the San Antonio and Nacimiento Rivers in the west, the Salinas River and Huerhuero Creek in the south, the Estrella River in the center, and the San Juan Creek to the southeast (fig. 6). These rivers and their tributaries drain the [Paso Robles] study area. Water-bearing formations in this study area include the Quaternary alluvium, which consists of unconsolidated, fine- to coarse-grained sand with pebbles and boulders up to 130 ft thick near the Salinas River (California Department of Water Resources, 1999).

According to the USGS study, the ground-water samples were analyzed for 270 constituents and water-quality indicators, including volatile organic compounds (VOCs), pesticides, pesticide degradates, and nutrients. Dissolved noble gases were also analyzed in collaboration with Lawrence Livermore National Laboratory.

In this study, only six constituents, alpha radioactivity, N-nitrosodimethylamine, 1,2,3-trichloropropane, nitrate, radon-222, and coliform bacteria were detected at concentrations higher than health-based regulatory thresholds. Six constituents, including total dissolved solids, hexavalent chromium, iron, manganese, molybdenum, and sulfate were detected at concentrations above levels set for aesthetic concerns.

One-third of the randomized wells sampled for the Monterey Bay and Salinas Valley GAMA study had at least a single detection of a VOC or gasoline additive. Twenty-eight of the 88 VOCs and gasoline additives investigated were found in ground-water samples; however, detected concentrations were one-third to one-sixty-thousandth of their respective regulatory thresholds. Compounds detected in 10 percent or more of the wells sampled include chloroform, a compound resulting from the chlorination of water, and tetrachloroethylene (PCE), a common solvent.

Pesticides and pesticide degradates also were detected in one-third of the ground-water samples collected; however, detected concentrations were one-thirtieth to one-fourteen-thousandth of their respective regulatory thresholds. Ten of the 122 pesticides and pesticide degradates investigated were found in ground-water samples. Compounds detected in 10 percent or more of the wells sampled include the herbicide simazine, and the pesticide degradate deethylatrazine.

In conclusion, the USGS study states “future work will combine the data presented in this report with various statistical and qualitative approaches to identify the natural and human factors affecting ground-water quality, and to detect changes in ground-water quality”. Nevertheless, the summary above clearly indicates the greatest source of groundwater contamination comes from agriculture in the region.

G. Biological Resources Including Riparian and Wetlands

1. Vegetation

Parcels 1 – 15 in Monterey County consist of a mosaic of dry upland vegetation communities including grassland, chaparral, and oak woodland (Table G-1). Specific vegetation types include: annual brome grasslands, red brome grasslands, wild oats grasslands, yellow star-thistle fields, California sagebrush scrub, California sagebrush scrub – California buckwheat scrub, California sagebrush – black sage scrub, California buckwheat scrub, black sage scrub, chamise chaparral, chamise – black sage chaparral, Eastwood manzanita chaparral, scrub oak chaparral, scrub oak – chamise chaparral, blue oak woodland, and knobcone pine forest (Sawyer et al. 2009). Some sparsely-vegetated to barren areas (badlands) are present, particularly on steep slopes at the heads of canyons and gullies.

Parcels 16 – 20 in Fresno County are markedly hotter and drier than the Monterey county parcels and consist primarily of dry upland open grassland (Table G-1). Specific vegetation types include: annual brome grasslands, red brome grasslands, allscale scrub, and spinescale scrub (Sawyer et al. 2009).

Table G-1. Vegetation cover on Parcels 1 - 20. Vegetation type follows Sawyer et al. (2009).

Vegetation type ↓ Parcel →	UNIT 1	UNIT 2	UNIT 3													UNIT 4					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Annual brome grasslands	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Red brome grasslands	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wild oats grasslands	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Yellow star-thistle fields	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
California sagebrush scrub	X	X	X					X	X	X	X	X		X	X	X					
California sagebrush - California buckwheat scrub	X	X						X	X	X	X	X		X	X	X					
California sagebrush - black sage scrub	X	X						X	X	X	X	X		X	X	X					
California buckwheat scrub	X	X						X	X	X	X	X		X	X	X					
Black sage scrub	X	X						X	X	X	X	X		X	X	X					
Chamise chaparral	X	X						X	X	X	X	X		X		X					
Chamise - black sage chaparral	X	X						X	X	X	X	X		X		X					
Eastwood manzanita chaparral	X	X																			
Scrub oak chaparral	X	X						X	X	X	X	X		X	X	X					
Scrub oak - chamise chaparral	X	X						X	X	X	X	X		X		X					
Allscale scrub																	X	X	X	X	X
Spinescale scrub																	X	X	X	X	X
Blue oak woodland								X	X	X	X	X		X	X	X					
Knobcone pine forest	X																				

2. Special Status Species

In this section all potentially affected species listed under the Federal or California State Endangered Species Acts are discussed, as well as other species otherwise considered by the State of California to have heightened conservation status. BLM sensitive species are also discussed. Monterey County units of the proposed lease sale fall entirely within the ranges of all species discussed; therefore one treatment is provided for all Monterey County units.

Special Status Animal Species -- Monterey County Units

Units 1-3 fall within the range of the following sensitive species (Table G-2).

Table G-2.

Species	Occurrence	Federal status	State status	BLM status
<i>Invertebrates</i>				
Vernal Pool fairy shrimp (<i>Branchinecta lynchi</i>)	potential	T	-	-
<i>Amphibians</i>				
Arroyo toad (<i>Anaxyrus californicus</i>)	potential	T	SSC	-
California Tiger Salamander (<i>Ambystoma californiense</i>)	potential	T	T	-
California red-legged frog (<i>Rana draytonii</i>)	potential	T	SSC	-
Western spadefoot toad (<i>Spea hammondi</i>)		-	SSC	S
<i>Reptiles</i>				
San Joaquin coachwhip (<i>Masticophis flagellum ruddocki</i>)	likely present	-	SSC	-
Blainville's horned lizard (<i>Phrynosoma blainvillii</i>)	likely present	-	SSC	-
Southwestern pond turtle (<i>Actinemys marmorata pallida</i>)	potential	-	SSC	S
Silvery legless lizard (<i>Anniella pulchra pulchra</i>)	likely present	-	SSC	
Two-striped garter snake (<i>Thamnophis hammondi</i>)	potential	-	SSC	S
<i>Birds</i>				

Species	Occurrence	Federal status	State status	BLM status
Burrowing owl (<i>Athene cunicularia</i>)	likely present	-	SSC	S
Least Bell's vireo (<i>Vireo bellii</i>)	potential	E	E	-
California condor (<i>Gymnogyps californianus</i>)	potential	E	E	
Tricolored blackbird (<i>Agelaius tricolor</i>)	potential	-	SSC	S
Golden eagle (<i>Aquila chrysaetos</i>)		-	-	S
Bald eagle (<i>Haliaeetus leucocephalus</i>)		D	E,FP	
American peregrine falcon (<i>Falco peregrinus anatum</i>)		D	E,FP	
<i>Mammals</i>				
San Joaquin Kit fox (<i>Vulpes macrotis</i>)	likely present	E	E	-
American badger (<i>Taxidea taxa</i>)		-	SS	-
Yuma Myotis (<i>Myotis yumanensis</i>)		-	-	S
Western Small-footed Myotis (<i>Myotis ciliolabrum</i>)		-	-	S
Long-eared Myotis (<i>Myotis evotis</i>)		-	-	S
Fringed Myotis (<i>Myotis thysanodes</i>)		-	-	S
Western mastiff-bat (<i>Eumops perotis californicus</i>)		-	-	S
Townsend's western big-eared bat (<i>Plecotus townsendii</i>)		-	SSC	S
Pallid bat (<i>Antrozous pallidus</i>)		-	SSC	S

San Joaquin kit fox was historically widespread in the Salinas Valley but documented sightings have decreased over the past five decades such that virtually no individuals have been observed outside of Camp Roberts since the 1970's. The CNDDDB also shows two records of sightings near Unit 2 and two sightings near Unit 3 in the Salinas Valley from the early 1970's. The CNDDDB shows two additional occurrences near the Salinas River from 1999 and 2002 that are approximately 5 miles east of Unit 1. Within Camp Roberts, no kit foxes have been observed since 2007.

California condors are the focus of an captive breeding program administered by the US Fish and Wildlife Service and the National Parks Service. These agencies have established condor release sites at the Pinnacles National Monument and the Los Padres National Forest in Monterey County. The condors released from these sites tend to concentrate their activities in the local region, but are gradually increasing their range throughout the central and southern California. All the proposed lease sale units in Monterey County are within the current range of the California condor.

California red-legged frogs were likely common in low-gradient riparian habitat throughout the Salinas Valley and surrounding hills. Although recent sightings of red-legged frogs in the vicinity of the proposed units are sparse or absent, it is possible that red-legged frogs or their habitat are present on or near the proposed units.

California tiger salamanders were not historically known from the immediate region of the lease sales, although the units broadly fall within the range of the species. The nearest known populations are in the rift valley to the east of the project area, which probably constitute the southwesternmost populations of salamanders in the region (excepting the disjunct population near Santa Maria far to the south). It is possible, but unlikely, that tiger salamanders or their habitat are present on or near the eastern units of the Monterey lease sale.

Least Bell's Vireos do not presently exist in the project area but the Draft Recovery Plan for the species includes a Salinas River population as a necessary criterion for delisting.

Special Status Animal Species -- Fresno County Unit

Unit 4 falls within the range of the following species (Table G-3):

Table G-3.

Species	Occurrence	Federal status	State status	BLM status
<i>Invertebrates</i>				
Vernal Pool fairy shrimp (<i>Branchinecta lynchi</i>)	potential	T	-	-
<i>Amphibians</i>				
California Tiger Salamander (<i>Ambystoma californiense</i>)	potential	T	T	-
California red-legged frog (<i>Rana draytonii</i>)	potential	T	SSC	-
Western spadefoot toad (<i>Spea hammondi</i>)		-	SSC	S

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Species	Occurrence	Federal status	State status	BLM status
<i>Reptiles</i>				
Blunt-nosed leopard lizard (<i>Gambelia sila</i>)	likely present	E	E,FP	-
San Joaquin coachwhip (<i>Masticophis flagellum ruddocki</i>)	likely present	-	SSC	-
Blainville's horned lizard (<i>Phrynosoma blainvillii</i>)	likely present	-	SSC	-
Silvery legless lizard (<i>Anniella pulchra pulchra</i>)	likely present	-	SSC	-
Southwestern pond turtle (<i>Emys marmorata</i>)	potential	-	SSC	S
<i>Birds</i>				
Burrowing owl (<i>Athene cunicularia</i>)	likely present	-	SSC	S
Mountain plover (<i>Charadrius montanus</i>)	potential	P	SSC	S
<i>Mammals</i>				
San Joaquin Kit fox (<i>Vulpes macrotis</i>)	likely present	E	T	-
American badger (<i>Taxidea taxus</i>)	likely present	-	SSC	-
San Joaquin antelope squirrel (<i>Ammospermophilus nelson</i>)	likely present	-	T	-
Giant kangaroo rat (<i>Dipodomys ingens</i>)	likely present	E	E	-
San Joaquin pocket mouse (<i>Perognathus inornatus inornatus</i>)	potential	-	-	S
Short-nosed kangaroo rat (<i>Dipodomys nitratooides</i>)	likely present	-	SSC	S
Yuma Myotis (<i>Myotis yumanensis</i>)	potential	-	-	S
Western Small-footed Myotis (<i>Myotis ciliolabrum</i>)	potential	-	-	S
Long-eared Myotis (<i>Myotis evotis</i>)	potential	-	-	S
Fringed Myotis (<i>Myotis thysanodes</i>)	potential	-	-	S
Western mastiff-bat (<i>Eumops perotis californicus</i>)	potential	-	-	S
Townsend's western big-eared bat (<i>Plecotus townsendii</i>)	potential	-	SSC	S
Pallid bat (<i>Antrozous pallidus</i>)	potential	-	SSC	S

San Joaquin kit fox foraging or dispersal habitat is widespread throughout the San Joaquin Management Area and the California Natural Diversity Database (CNDDDB) shows records of multiple sightings near the Unit 4 parcels in Fresno County.

Giant kangaroo rat is potentially in Unit 4, although it appears to fall into a large gap in the known distribution of the species, rendering its presence unlikely. The CNDDDB records do not show any occurrences of the species within 10 miles of the parcels being considered for oil and gas leasing.

Blunt-nosed leopard lizard has been well-documented through multiple observations on and in the immediate area of all the parcels in Unit 4.

California red-legged frogs are broadly distributed in the Coast Ranges but sparse to nonexistent in San Joaquin Valley draining watersheds. No sightings are known from the region of these parcels and red-legged frogs are not considered likely to occur there.

California tiger salamanders were not historically known from the immediate region of the lease sales, although the units broadly fall within the range of the species.

Special Status Plant Species – Monterey County (Units 1,2, & 3)

Purple amole (*Chloragalum purpureum* var. *purpureum*) is a bulb-bearing, perennial forb in the lily (Liliaceae) family (Table G-4; USFWS 2008). The species contains a basal cluster of linear leaves and a single, multi-branched inflorescence up to 16 inches tall, bearing many small purple flowers. Purple amole is endemic to the Santa Lucia Range of Monterey and San Luis Obispo counties. The species is currently known from only two localities including the far eastern portion of military-administered Fort Hunter-Liggett and at nearby Camp Roberts. The species has a very limited range. The species was federally-listed Threatened in 2000 with primary threats cited as direct loss of plants and habitat loss and fragmentation from military facility development and military training activities. Other identified threats include competition from invasive annual grassland plant species, feral pigs (*Sus scrofa*) disturbing habitat and consuming bulbs, and lack of fire (altered wildland fire regime).

Purple amole grows in open grassland and grassland interspersed with oak woodland. Herbaceous cover where the species occurs is usually locally sparse. Slope is typically less than 10% (valleys, low rolling hills) and soil texture is a gravelly, silt to clay loam. The purple amole populations at Fort Hunter-Liggett are located approximately 10 miles northwest of proposed Oil and Gas Lease Parcel 2. Populations at Camp Roberts are located approximately 7 miles south of the parcel. Although the majority of Parcel 2 contains slopes that are too steep (>> 10%) and/or support vegetation types (chaparral) not conducive to supporting purple amole, some

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areas of the parcel on its south-western margin appear to be within the habitat parameters of slope < 10%, stony loam soil and grassland and oak woodland vegetation communities which support the species at Fort Hunter-Liggett and Camp Roberts (personal communication with Jodie Olson, Biologist at Camp Roberts, 1/13/11). To our knowledge, no surveys have been conducted for purple amole on Parcel 2.

Ten BLM sensitive plant species have been identified as having potential to occur on the Oil and Gas Lease Parcels 0 – 15 based upon CNDDDB data and proximity of previously recorded occurrences of the species to parcels (Table G-4). Those species include dwarf calycadenia (*Calycadenia villosa*), Abbott's bush mallow (*Malacothamnus abbottii*), Davidson's bush mallow (*Malacothamnus davidsonii*), Carmel Valley bush mallow (*Malacothamnus palmeri* var. *involutus*), Hardham's evening primrose (*Camissonia hardhamiae*), Jolon clarkia (*Clarkia jolonensis*), Adobe navarettia (*Navarretia nigelliformis* ssp. *radians*), Indian Valley spineflower (*Aristocapsa insignis*), prickly spineflower (*Chorizanthe rectispina*), and umbrella larkspur (*Delphinium umbraculorum*). None of the identified BLM sensitive plant species listed in have been documented on any of the parcels, nor have any surveys been conducted for these species on any of the parcels to our knowledge. Each parcel contains habit with the range of conditions required to support most or all of the identified BLM sensitive plant species.

Special Status Plant Species – Fresno County (Unit 4)

San Joaquin woolly-threads (*Monolopia congdonii*) is a woolly, multi-branched, annual forb in the sunflower (Asteraceae) family (Table G-5; USFWS 1998). The species consists of a rosette of trailing stems up to 18 inches long bearing densely matted hairs. Numerous tiny yellow flower heads occur clustered at stem tips. San Joaquin woolly-threads is endemic to the San Joaquin Valley. The species is known to occur in the foothills and associated local valleys at the western margin of the San Joaquin Valley from Panoche Hills (Fresno County) to Carrizo Plain (San Luis Obispo County) and Cuyama Valley (Santa Barbara County), as well as the very southern end of the San Joaquin valley floor between the cities of Taft and Bakersfield (Kern County). The species was federally-listed Endangered in 1990 with primary threats cited as habitat loss due to agriculture, oil development, and urban development. San Joaquin woolly-threads grows in open grassland, usually where invasive annual grassland cover is reduced. Soils are typically silty or sandy loam.

San Joaquin woolly-threads (*Monolopia congdonii*) is known to occur in the southern ½ of Unit 4: Parcel 19 (Hollister BLM suboccurrence 3200). The species was documented in the parcel in 1991 and 1993, but no individuals of the species have been observed there since. San Joaquin woolly-threads has a high potential to occur on Parcels 16, 17, 18, and 20 based on the close proximity of previously recorded populations of the species by the Hollister BLM and CNDDDB and habitat characteristics (open grassland; sandy loam soil) conducive to supporting the species.

Parcels 16 – 20 should be regarded as potential or known occupied habitat for San Joaquin woolly-threads.

California jewelflower (*Caulanthus californicus*) is a rosetted, annual forb in the mustard (Brassicaceae) family (Table G-5; USFWS 1989). The species consists of a basal rosette of leaves bearing a multi-branched inflorescence up to 20 inches tall bearing many white flowers with maroon tips. California jewelflower is endemic to the San Joaquin Valley. The species is known to occur at the western margin of the San Joaquin valley at Kreyenhagen Hills (Fresno County), Carrizo Plain (San Luis Obispo County), and Santa Barbara Canyon/Cuyama Valley (Santa Barbara County). The species was federally-listed Endangered in 1990 with primary threats cited as habitat loss due to agriculture, oil development, and urban development. California jewelflower grows in open grassland, usually where invasive annual grassland cover is locally reduced. Soils are typically silty or sandy loam.

Parcels 16 – 20 are all within the historic range of federally-listed Endangered California jewelflower (*Caulanthus californicus*; USFWS 1998). Known populations of California jewelflower are known to occur 3 miles south of Parcels 16 – 19 and 6 miles north of Parcel 19. Parcels 16 – 20 should be regarded as potential habitat for California jewelflower.

Eight BLM sensitive plant species have been identified as having potential to occur on Oil and Gas Lease Parcels 16 - 20 based upon CNDDDB data and proximity of previously recorded occurrences of the species to parcels (Table G-5). Those species include Hall's tarplant (*Deinandra halliana*), pale yellow layia (*Layia heterotricha*), Munz's tidy tips (*Layia munzii*), showy madia (*Madia radiata*), Panoche pepper grass (*Lepidium jaredii* ssp. *album*), Lost Hills crownscale (*Atriplex vallicola*), round leaved filaree (*California macrophylla*), and recurved larkspur (*Delphinium recurvatum*). None of the identified BLM sensitive plant species listed in have been documented on any of the parcels, nor have any surveys been conducted for these species on any of the parcels to our knowledge. Each parcel contains habit with the range of conditions required to support most or all of the identified BLM sensitive plant species.

Table G-4. Special status species that may occur on the Monterey county parcels. Species list compiled from California Natural Diversity Database (CNDDDB 2011). Species habitat characteristics from Hickman (1993) and Calflora (2011).

Common name	Species	Family	Status	Habitat
Purple amole	<i>Chlorogalum purpureum</i> var. <i>purpureum</i>	Liliaceae	Federally-listed Threatened	Gravelly clay soil; Grassland and oak woodland
Dwarf calycadenia	<i>Calycadenia villosa</i>	Asteraceae	BLM Sensitive; CNPS List 1B	Sandy soil
Abbott's bush mallow	<i>Malacothamnus abbottii</i>	Malvaceae	BLM Sensitive; CNPS List 1B	Riparian zone, sandbars
Davidson's bush mallow	<i>Malacothamnus davidsonii</i>	Malvaceae	BLM Sensitive; CNPS List 1B	Sandy soil; Uplands in chaparral and oak woodland
Carmel Valley bush mallow	<i>Malacothamnus palmeri</i> var. <i>involutus</i>	Malvaceae	BLM Sensitive; CNPS List 1B	Sandy soil; Grassland and oak woodland
Hardham's evening primrose	<i>Camissonia hardhamiae</i>	Onagraceae	BLM Sensitive; CNPS List 1B	Sandy soil
Jolon clarkia	<i>Clarkia jolonensis</i>	Onagraceae	BLM Sensitive; CNPS List 1B	Dry woodland
Adobe navarretia	<i>Navarretia nigelliformis</i> ssp. <i>radians</i>	Polemoniaceae	BLM Sensitive; CNPS List 1B	Vernal pools; Clay depressions
Indian Valley spineflower	<i>Aristocapsa insignis</i>	Polygonaceae	BLM Sensitive; CNPS List 1B	Sandy soil in grassland and pine-oak-juniper woodland
Prickly spineflower	<i>Chorizanthe rectispina</i>	Polygonaceae	BLM Sensitive; CNPS List 1B	Sandy soil
Umbrella larkspur	<i>Delphinium umbracolorum</i>	Ranunculaceae	BLM Sensitive; CNPS List 1B	Moist oak woodland

Table G-5. Special status species that may or are known to occur on the San Joaquin Valley parcels. Species list compiled from California Natural Diversity Database (CNDDDB 2011). Species habitat characteristics from Hickman (1993) and Calflora (2011).

Common name	Species	Family	Status	Habitat
San Joaquin woolly threads	<i>Monolopia congdonii</i>	Asteraceae	Federally-listed Endangered	Sandy loam soil; Grassland, rolling hills, valley floor
California jewelflower	<i>Caulanthus californicus</i>	Brassicaceae	Federally-listed Endangered	Sandy loam soil; Grassland, rolling hills
Hall's tarplant	<i>Deinandra halliana</i>	Asteraceae	BLM Sensitive; CNPS List 1B	Grassland, rolling hills
Pale yellow layia	<i>Layia heterotricha</i>	Asteraceae	BLM Sensitive; CNPS List 1B	Grassland, rolling hills
Munz's tidy tips	<i>Layia munzii</i>	Asteraceae	BLM Sensitive; CNPS List 1B	Grassland
Showy madia	<i>Madia radiata</i>	Asteraceae	BLM Sensitive; CNPS List 1B	Grassland
Panoche pepper grass	<i>Lepidium jaredii</i> ssp. <i>album</i>	Brassicaceae	BLM Sensitive; CNPS List 1B	Grassland, rolling hills
Lost Hills crownscale	<i>Atriplex vallicola</i>	Chenopodiaceae	BLM Sensitive; CNPS List 1B	Grassland, rolling hills
Round leaved filaree	<i>California macrophylla</i>	Geraniaceae	BLM Sensitive; CNPS List 1B	Grassland
Recurved larkspur	<i>Delphinium recurvatum</i>	Ranunculaceae	BLM Sensitive; CNPS List 1B	Grassland

3. Riparian and Wetland Habitat

In the Monterey County units there are no perennial or major intermittent creeks on any of the units. Units 2, 3 and 4 all contain minor intermittent creeks and/or drainages. In particular, Parcel 2, Parcels 5 – 6, Parcels 9 – 15, Parcel 16, Parcel 18, and Parcel 19 all contain minor intermittent drainages. A spring is mapped on Parcel 20. Habitat in these drainages is composed of seasonally dry creek bed interspersed with seasonal instream pools. No permanent pooling is likely to occur in any of these drainages. No significant presence of vegetation specific to riparian zones is expected to occur in any of the drainages.

The Fresno County parcels frame a small reach of Jacalitos Creek but do not directly lie on top of riparian resources. The main access to the parcels would be expected to stem from an existing road that follows Jacalitos Creek.

H. Cultural Resources & Native American Values

The lease parcels within the Units identified for the proposed action fall within the prehistoric territories of the Salinan Indians for Monterey County and the Yokuts Indians for Fresno County (Heizer 1978). Prehistoric sites common to these regions include, bedrock mortar and millstone food processing stations, lithic scatters and quarries, and camp or village sites. From the historic era to modern times, location of the proposed lease parcels in Jacalitos Canyon of Fresno County have been subject to oil field production, as well as livestock and agricultural operations for proposed lease parcels in Monterey County. Historic properties occurring in the area may include facilities associated with the early phases of agricultural and/or oil field development.

Previous tribal consultation for a proposed June 2009 oil and gas lease sale was completed for the same locations in Monterey County, including email, phone calls, and certified letters containing a description and map showing proposed oil and gas lease sale parcel locations. In this certified letter the BLM requested information regarding sites of traditional cultural value which may lie within the boundaries of the listed lease sale parcels. No concerns were expressed by these groups or individuals as a result of this consultation except for the Salinan Tribe of Monterey, San Luis Obispo, and San Benito Counties. Primary consultation dialogue occurred through the tribe's Traditional Lead which identified several areas that were sacred or were known to contain cultural and/or archeological resources. Prior to the proposed sale, the Hollister Field Office recommended certain areas of the proposed lease sale be withheld, however the BLM decided to not go forth with any lease sale for those proposed lands that FY.

I. Paleontological Resources

Paleontological resources are the fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. Paleontological resources on federal lands are protected by the Paleontological Resources Preservation Act of 2009.

Units 1 and 2 are located upon the Miocene-aged (5.3 – 20.0 MYA) Monterey Shale Formation (Dibblee and Minch 2007a, 2006a). The Monterey Shale consists of siliceous shale and chert that originated from a shallow marine environment. Monterey Shale is rich in fossils of marine-dwelling organisms including diatoms (Bacillariophyta), multicellular algae (Phaeophyta), mollusks (Mollusca), bivalves (Bivalvia), gastropods (Gastropoda), arthropods (Arthropoda, Crustacea), and vertebrates (Vertebrata; UCMP 2011). Vertebrates recovered from the Monterey Shale have included sharks (Chondrichthyes), birds (Aves), and whales and porpoises (Cetacea).

Unit 3 is located upon the Pliocene-aged (2.7 – 5.3 MYA) Pancho Rico Formation (Dibblee and Minch 2006b, 2007b, 2007c, 2007d, 2007e). The Pancho Rico Formation consists of sandstone and diatomaceous mudstone that originated in a shallow marine environment. Fossils are primarily from marine-dwelling organisms and include diatoms (Bacillariophyta), mollusks (Mollusca), bivalves (Bivalvia), and gastropods (Gastropoda).

Unit 4 is located upon the Pliocene-aged (2.7 – 5.3 MYA) Etchegoin Formation (Dibblee and Minch 2005, 2006c). The Etchegoin Formation consists of sedimentary rocks that originated from a shallow, marine (tidal) environment. The sedimentary rocks are dominated by fine to medium-grained sandstone which can be interbedded with clay shale and/or mudstone. Due to the formation having formed within a marine-terrestrial interface, the formation contains fossils of both marine and terrestrial-dwelling organisms. Marine organism fossils include diatoms (Bacillariophyta), sea urchins (Echinoidea), bivalves (Bivalvia), gastropods (Gastropoda), and arthropods (Arthropoda, Crustacea; UCMP 2011). Terrestrial-dwelling organism fossils include both plants and animals. Plant fossils consist of woody plant leaf impressions and fossilized wood. Vertebrate fossils recovered from the Etchegoin Formation include horses (Equidae), camels (Camelidae), deer (Cervidae), peccary (Tayassuidae), and mastodon (Mammutidae).

J. Livestock Grazing

The public lands in Parcels 16, 17, 18, and 19 proposed for oil and gas leasing for which BLM owns the surface estate, are also leased by the BLM for livestock grazing. The federal surface lands in these parcels make up portions of grazing lease allotment WJM Sheep Co. (grazing lease number 4345). These lands in this allotment are authorized for grazing of cattle annually as

resource conditions allow. The lands in Parcel 20 for which BLM owns the subsurface estate only, are within the Kreyenhagen allotment (grazing lease 4316).

K. Lands

Most of the HFO's holdings lie within the San Joaquin MA. In the Salinas MA all but a few scattered parcels in the extreme southeast corner and another isolated parcel in the northern portion are currently designated for future disposal.

L. Farmland

Prime farmland is of major importance in meeting our Nation's short and long term needs for food and fiber. The United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) distinguishes four categories of farmlands, each with specific criteria. The categories are "prime farmlands," "farmlands of statewide importance," "unique farmlands," and "farmlands of local importance." As defined by the USDA, this land has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and is available for these uses. However, the USDA farmland classifications only apply to split-estate parcels.

None of the parcels being considered for oil and gas leasing under the proposed action have soil map units that are identified by the USDA-NRCS (2008) as important (or prime) farmlands.

As indicated on Figure 3 of the Monterey South County Area Plan (2010), most of the important farmlands in South County are in the "local importance" category. Soils in this category have prime characteristics but are not irrigated. As described in the Plan, "much of the farming in South County is non-irrigated, or "dryland" farming. This includes crops such as barley, oats, wheat and grains. Irrigated croplands in the "prime" and "statewide" categories are only found along Highway 101 to Sargeants Road and in the Lockwood and Hames Valleys. A small area of "unique" farmlands is found between San Lucas and San Ardo on the east side of the valley floor. Irrigated row crops in South County include sugar beets, tomatoes, lettuce, peppers, grapes, broccoli, alfalfa and beans."

Since the early '90's the Monterey County Water Resources Agency has collected ground water extraction data from well operators to provide documentation of the reported amount of ground water that is extracted from the Salinas Valley Ground Water Basin each year for agricultural and urban use. The MCWRA's 2009 Ground Water Summary Report present a synopsis of current water extraction within the Salinas Valley that is summarized by hydrologic subarea and type of use. According to the MCWRA, agricultural pumping in the Upper Valley accounted for

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138,972 acre-feet¹ of groundwater extraction in 2009, which represents almost 30% of the agricultural water use in the Salinas Valley Ground Water Basin.

The MCWRA report notes that “changing weather patterns, variable soils, and crop types affect the amount of water needed for efficient irrigation. Even during a normal rain year, pumping rates will vary from one area to another and crop types will vary depending on economic demand”. The report also includes a summary of agricultural and urban water conservation improvements reported to be adopted, to reduce the total amount of water pumped

M. Recreation

Unit 1: Parcel 1 (80 ac.) is the only BLM public land parcel with legal public access for non-motorized recreation activities like hunting. None of the other lands in public ownership that are being considered for oil and gas leasing in Unit 2: Parcel 2 (160 ac.) and Unit 4: Parcels 16 – 18 (120 ac.) are available for recreational use because there is no legal public access to these lands.

N. Special Designations - Area of Critical Environmental Concern

All the parcels in Unit 4 that are being considered for leasing in Fresno County are located within the Panoche-Coalinga Area of Critical Environmental Concern (ACEC). None of the other parcels being considered for oil and gas leasing are included in a special designation area.

The Panoche-Coalinga ACEC was originally designated in 1984 and included 43,357 acres of BLM public land known to provide special status species habitat, cultural resources and/or paleontological resources associated with the Moreno shale formation. Under the Record of Decision for the revised Hollister RMP (2007), the Panoche-Coalinga ACEC boundary was expanded to include 12,772 acres of additional BLM-managed lands that also contain the values for which the ACEC was established.

¹ An acre-foot is a common unit to measure volumes of water, typically for use in irrigation. One acre-foot is the volume of water sufficient to cover an acre of land to a depth of 1 foot (43,560 cubic feet, approximately 325,851 U.S. gallons, or approximately 1,233.48 cubic meters). On average, 1 acre-foot of water is enough to meet the demands of 4 people for a year.

Chapter 4. Environmental Impacts

I. Incomplete and/or Unavailable Information

A. Site Specific Analysis of Future Lease Development

The BLM's commitment is to find the proper balance between public use and the protection of sensitive resources. However, the site-specific analysis of impacts from oil and gas development is constrained at the leasing stage because there is no reliable information available on where and how these resources would be developed.

Actually, withholding analysis of impacts until an application for a permit to drill (APD) has been submitted is the only meaningful way to analyze such issues as air quality impacts, water quality impacts, infrastructure extensions, because analyzing site-specific impacts across a large tracts of lands that may or may-not be developed is not feasible. Subsequent analysis of site-specific impacts also provides an opportunity for public comment on the process of authorizing new oil and gas developments, as well as compatibility with other land use issues in the County.

Private surface land owners with split-estate parcels that are being considered for oil and gas leasing have been notified that the subsurface rights under their properties are being offered for sale and future development.

B. Hydraulic Fracturing Technology

The geologic formation in the areas being considered under the proposed lease sale is Monterey shale, and residents are concerned about the impacts to local ranching and agricultural operations from the amount of water needed for this type of drilling and/or potential risk of groundwater contamination associated with hydraulic fracturing of the Monterey shale.

The U.S. Environmental Protection Agency (EPA) hosts a website (http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_hydrowhat.cfm) that describes the process of hydraulic fracturing as follows:

“Hydraulic fracturing (HF) is a well stimulation process used to maximize the extraction of underground resources; including oil, natural gas, geothermal energy, and even water. The oil and gas industry uses HF to enhance subsurface fracture systems to allow oil or natural gas to move more freely from the rock pores to production wells that bring the oil or gas to the surface.

The process of hydraulic fracturing begins with building the necessary site infrastructure including well construction. Production wells may be drilled in the vertical direction only

or paired with horizontal or directional sections. Vertical well sections may be drilled hundreds to thousands of feet below the land surface and lateral sections may extend 1000 to 6000 feet away from the well.

Fluids, commonly made up of water and chemical additives, are pumped into a geologic formation at high pressure during hydraulic fracturing. When the pressure exceeds the rock strength, the fluids open or enlarge fractures that can extend several hundred feet away from the well. After the fractures are created, a propping agent is pumped into the fractures to keep them from closing when the pumping pressure is released. After fracturing is completed, the internal pressure of the geologic formation cause the injected fracturing fluids to rise to the surface where it may be stored in tanks or pits prior to disposal or recycling. Recovered fracturing fluids are referred to as flowback. Disposal options for flowback include discharge into surface water or underground injection.

Surface water discharges of the flowback are regulated by the National Pollutant Discharge Elimination System (NPDES) program, which requires flowback to be treated prior to discharge into surface water or underground injection prior to discharge. Treatment is typically performed by wastewater treatment facilities. Underground injection of flowback is regulated by either EPA Underground Injection Control (UIC) program or a state with primary UIC enforcement authority. Injection of natural gas production wastes would be considered a Class II injection well.”

The website also includes a link to an EPA study that on hydraulic fracturing in coalbed methane reservoirs to evaluate the potential risks to underground sources of drinking water (USDW). EPA finished the study in 2004 and “concluded that there was little to no risk of fracturing fluid contaminating underground sources of drinking water during hydraulic fracturing of coalbed methane production wells”. However, EPA retained the right to conduct additional studies, and EPA projects that shale gas will comprise over 20% of the total U.S. gas supply by 2020.

Due to the expansion of HF over a wider diversity of geographic regions and geologic formations and increasing public concerns, in 2010 the U.S. House of Representatives Appropriation Conference Committee identified the need for a focused study of hydraulic fracturing’s potential impact on drinking water, human health, and the environment.

Accordingly, EPA’s Office of Research and Development (ORD) announced in March 2010 that it will study the potential adverse impact that hydraulic fracturing may have on drinking water. EPA will use the results from the study to help evaluate potential risks associated with hydraulic fracturing in an effort to protect America’s communities and resources.

Hydraulic fracturing technology has been in use in California for over thirty years in the Monterey shale formations located on-shore in Kern County and off-shore in Santa Barbara County. The table below provides a summary of oil and gas activities in California from 2000 – 2010, and shows that less than one-third of total wells drilled in the State were hydraulically fractured. To date, there is no direct evidence that communities where hydraulic fracturing has been allowed have had any issues with contamination of drinking water.

Hydraulic Fracturing (HF) Data for Total Number of Wells Drilled in CA 2000 – 2010

Fiscal Year	Total Wells	Diatomite	Non-Diatomite	10% of Non-Diatomite	Diatomite + 10% Other	Final HF Wells (est.)	% Of Total
2000	138	3	135	13.5	16.5	17	12.3
2001	115	0	115	11.5	11.5	12	10.4
2002	105	0	105	10.5	10.5	11	10.48
2003	142	5	137	13.7	18.7	19	13.38
2004	196	109	87	8.7	117.7	118	60.20
2005	281	195	86	8.6	203.6	204	72.60
2006	157	26	131	13.1	39.1	39	24.84
2007	277	46	231	23.1	69.1	69	24.91
2008	263	20	243	24.3	44.3	44	16.73
2009	180	16	164	16.4	32.4	32	17.78
2010	211	26	185	18.5	44.5	45	21.33
TOTAL:	2065	446	1619	161.9	607.9	610	29.54

Water is needed to complete the hydraulic fracturing process, and it is a central component of the waste products (approx. 99%). The volume of water needed for hydraulic fracturing varies by site and type of formation, but estimates provided by EPA suggest two to five million gallons of water may be necessary to fracture one horizontal well in a shale formation, and it's reasonable to assume that water used for fracturing fluids would be acquired from surface water or groundwater in the local area.

According to EPA's Office of Research and Development HF research study information:

“Wastewaters from the hydraulic fracturing process may be disposed in several ways. For example, the flowback water following fracturing may be returned underground using a permitted underground injection well, discharged to surface waters after treatment to remove contaminants, or applied to land surfaces. Not all fracturing fluids injected into the geologic formation during hydraulic fracturing are recovered. Estimates of the fluids recovered range from 15-80% of the volume injected depending on the site. Some companies reuse flowback to hydraulically fracture more than one well as a way of conserving water and recycling the fluids.

Public concerns have focused recently on the impacts of the hydraulic fracturing process used during natural gas production from shale and coalbed methane formations. Potential risks to surface and underground sources of drinking water might occur at various points in the hydraulic fracturing process. The likelihood of those risks causing drinking water contamination will be evaluated during the EPA hydraulic fracturing study. Contaminants of concern to drinking water include fracturing fluid chemicals and degradation products and naturally occurring materials in the geologic formation (e.g. metals, radionuclides) that are mobilized and brought to the surface during the hydraulic fracturing process.”

BLM's 2008 MOU with CDOGGR requires that State regulations for oil and gas drilling are applied to applications for permits to drill on Federal mineral estate to prevent surface and groundwater contamination and ensure protection of sensitive resources. However, BLM and CDOGGR both consider hydraulic fracturing to be a “routine” drilling operation, so there are no special regulations for the use of this technology on private or Federal mineral estate in California.

Concerns from within the Lockwood-Hames Valley community are focused on the distinctions between vertical drilling in shallow wells like the nearby San Ardo oil fields and the potential hydraulic fracturing methods that may be used on Federal mineral estate in the region.

Interested parties in the community contend that there is “no data on the record that demonstrates that such drilling will not damage surface water, shallow and deep aquifers”. In lieu of this information, the members of Halt Oil Lease Drilling Now (HOLD) and the Southern Monterey Rural Planning Association suggests the following incomplete or unavailable information needs to be incorporated into the BLM, State, and local government decision-making processes for oil and gas leasing and development on private and Federal mineral estate (source: group email from Steve Craig, VCLT, dated 3-06-2011):

1. geologic cross sections showing aquifers and oil bearing strata with drilling locations and proof of non-transmissivity between the oil bearing strata and the aquifer--unfortunately, this is not a type of testing required by anyone, and we are learning by failures, which is risky with water supplies. ... Any cross sections must be produced by registered and certified petroleum engineers and these need to be reviewed by third party consultants, or on staff petroleum engineers.
2. a list of chemicals to be used in the entire drilling process, whether directional, vertical or horizontal
3. name of drilling firms to be used (only certain firms fracture drill)
4. name and boundary of the relevant aquifers, both shallow and deep, with gradients on the groundwater through which they will drill and below which the fracking impacts will be limited (this of course is hard to predict, rock being what it is)
5. definition of what constitutes production testing and extraction--this should be separated out by type of platform in place, period of testing, equipment on site, etc.
6. require the maintenance of a cumulative project list of all drilling, shallow and deep in every County
7. a requirement to produce monthly reports to responsible agencies of progress in the drilling, depth, consequences
8. a pre-drilling review of Clean Water Act 404, 101 jurisdiction and CDFG Streambed Agreement eligibility for access roads, pipelines, etc.
9. uniform BMPs for setbacks from watercourse, impoundments etc.
10. a uniform fee for all responsible agencies to set up mitigation data banks for any new well approval (for emergency response, clean up etc)
11. a petroleum engineer needs to set up uniform definitions of the various types of drilling being done and set up a protocol of monitoring for each. This should be done at the state level and the findings should be put into a CEQA appendix so every County has a uniform standard for investigation and monitoring.

C. Greenhouse Gas (GHG) Emissions

Climate change analyses are comprised of several factors, including greenhouse gases (GHGs), land use management practices, the albedo effect, etc. The tools necessary to quantify climatic impacts are presently unavailable. As a consequence, impact assessment of specific effects of anthropogenic activities cannot be determined. Additionally, specific levels of significance have not yet been established. Therefore, climate change analysis for the purpose of this document is limited to accounting and disclosing of factors that contribute to climate change. Qualitative or quantitative evaluation of potential contributing factors are included where appropriate and practicable.

Statement of Reason

The incomplete or unavailable information referenced above is not relevant to the analysis of impacts from BLM's competitive oil and gas lease sale because the reasonable foreseeable development scenario suggests there would be very little (if any) disturbance to the human environment as a result of the alternatives analyzed in this EA. Additionally, the information cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known.

Summaries of existing credible scientific evidence which is relevant to evaluating the "reasonably foreseeable" impacts on the human environment from site-specific oil and gas drilling, hydraulic fracturing, and greenhouse gas emissions have been included in the appropriate sections of this EA. As a result, the agency's evaluation of such impacts is based upon theoretical approaches or research methods generally accepted in the scientific community.

II. Assumptions Incorporated into the Analysis:

A. Hollister Field Office Reasonable Foreseeable Oil and Gas Development Scenario (RFDS)

Appendix F of the Hollister Field Office's Proposed RMP and Final EIS for the Southern Diablo Mountain Range and Central Coast of California (2006) contains the BLM's Hollister Field Office Reasonable Foreseeable Oil and Gas Development Scenario (RFDS). The RFDS estimates the level and type of future oil and gas activity on BLM public lands and split-estate within the entire Field Office boundary, and provides a basis for the analysis of direct, indirect, and cumulative effects.

The scenario first describes the steps involved in exploring for and developing deposits of oil and gas. Trends and assumptions affecting oil and gas activity are discussed, followed by estimates

for future oil and gas exploration and development. The scenario for reasonably foreseeable development is based on known or inferred oil and gas potential, and applies the conditions and assumptions discussed below.

General Discussion

Based on an analysis of past oil and gas related activities within the boundaries of the Hollister Field Office (HFO) and the very small amount of Federal mineral estate within areas of high development potential, BLM projects that oil and gas activities on Federal mineral estate within the Hollister Field Office area boundary will continue at a relatively minimal level. Overall, within the next 15-20 years, total surface disturbance due to all oil and gas activities on Federal mineral estate to be no more than 74 acres. This estimate includes geophysical exploration (seismic), 5 exploration wells, 10 development wells and associated facilities, roads, and a transmission pipeline that could be linked to existing transmission lines within the area. One third of this disturbance, 26 acres, will be temporary, and would be mostly to totally reclaimed within a few months to a couple of years. Over the long term, both new and existing oil and gas related activities would eventually be abandoned, the lands would be reclaimed, and the sites would be restored to as near a natural condition as practical.

The total surface disturbance for up to 10 development wells would be 10 acres for well pads, 12 acres for roads, and 24 acres for a single transmission line 10 miles long. No more than 1 acre would be required for the small facility (meter, separator) on each of two parcels, for a total of 2 acres. The total surface disturbance caused by seismic operations, exploration drilling, and development would be 74 acres, as shown in the table below.

RFDS Estimates of Surface Disturbance on Federal Mineral Estate

Description	Number	Unit Surface Disturbance (acres)	Total Surface Disturbance (acres)
Exploratory Wells			
Well Pads	5 wells	1 acre/well	5
Roads (40' wide)	5 x 0.5 miles	4.8 acre/mile	12
Development			
Well Pads	10	1 acre/well	10
Roads (40' wide)	10 x 0.25 mi	4.8 acre/mile	12
Facilities	4	1 acre/facility	4
Seismic (2 track x 18")	25 miles	0.36 acre/mi	9
Pipeline (20' wide)	10 miles	2.4 acres/mi	24
		Total:	74

Exploration Activities

Exploration activities within the area would generally focus on oil and not natural gas.

Exploration for subsurface hydrocarbon deposits would use such tools as geophysical surveys (usually this means running seismic lines), and drilling exploration wells. A brief summary of these activities follows. In all cases, a site specific EA would be prepared prior to approval of any application to conduct surface disturbing activities (see previous discussion under Conformance with BLM Land Use Plans).

Geophysical exploration: Geophysical exploration is conducted to determine the subsurface structure of an area and the potential for mineral resources. There are three geophysical survey techniques that are generally used to define subsurface characteristics through measurements of the gravitational field, magnetic field, and seismic reflections.

Gravity and magnetic field surveys—involve small, portable measuring units that are easily transported by light off-highway vehicles, such as 4-wheel drive pickup trucks and jeeps, or aircraft. Both off and on-highway travel may be necessary. Although these two survey methods can take measurements along defined lines, it is more common to have a grid of distinct measurement stations. Surface disturbance resulting from these surveys is negligible, consisting almost exclusively of soil or vegetation compaction that persists no more than a few months.

Seismic reflection surveys—are the most common of the geophysical methods, and they produce the most detailed subsurface information. Seismic surveys are conducted by sending shock waves, generated by a small explosion or by mechanically beating the ground with a thumping or vibrating platform.

In the **explosive method**, small charges are detonated on the surface or in a shallow drill hole. The surface charge method uses 1 to 5-pound charges attached to wooden laths 3 to 8 feet above the ground. Placing charges lower than 6 feet usually results in destruction of vegetation, whereas placing the charges higher, or on the surface of deep snow, results in little visible surface disturbance. In the drill hole method, holes for the charges are drilled using truck-mounted or portable air drills. In general, this method uses 4 to 12 holes per mile of line, and a 5 to 50-pound explosive charge is placed in each hole, covered, and detonated. The shock wave created is recorded by geophones placed in a line on the surface. In rugged terrain, a portable drill carried by helicopter can sometimes be used. The vehicles used for a drilling program may include heavy truck-mounted drill rigs, track-mounted drill rigs, water trucks, a computer recording truck, and a light pickup.

In the **mechanical method**, four large trucks are usually used, each equipped with pads about 4-foot square. The pads are lowered to the ground, and the vibrations are electronically triggered from the recording truck. Once information is recorded, the trucks move forward a short distance and the process is repeated. Surface disturbance includes flattening of vegetation and compaction of soils.

In either type of seismic reflection surveys, existing roads and trails are used where possible. However, off-road travel is necessary in some cases. Several trips per day are made along a seismograph line, usually resulting in a well defined two-track trail.

Exploration Drilling

After a parcel is leased, there may or may not be any actual disturbance. In fact, historically, a large majority of leases are relinquished without ever having any actual surface disturbance. In the event that an Application for Permit to Drill (APD) is submitted, a site specific evaluation will be made by the BLM to ensure compliance with NEPA requirements. Based on the results of that evaluation, additional Conditions of Approval may be added, and the operator may only begin construction after complying with lease stipulations and Conditions of Approval of the drilling permit. When a site requires construction of an access road, the shortest feasible route is usually selected to reduce the haul distance and construction costs. Environmental factors or a landowner's wishes may dictate a longer route in some cases. Drilling in the planning area is expected to be done using existing roads and construction of only short (approximately 0.5 mile) roads to access drill site locations.

During the first phase of exploration drilling, the operator would move construction equipment over existing maintained roads to the point where the access road begins. Less than 0.5 mile of moderate duty access road per well with a gravel surface 20 feet wide is expected for construction. With ditches, cuts, and fill, the total width of surface disturbance would average 40 feet. The second part of the drilling phase is the construction of a drill pad up to 1 acre in size. The likely duration of well drilling, testing, and abandonment is 3 or 4 months per site. The total disturbance for each exploratory well and any new road is estimated to be 3.4 acres. The total surface disturbance caused by exploratory drilling of 3-5 wells as described in the RFDS is expected to be no more than 10-17 acres.

The total number of acres of Federal mineral estate in the Hollister Field Office is about 872,000 acres, including the 588,197 acres of split estate administered by the HFO, where BLM administers the subsurface mineral rights and the surface land is owned by private entity. The total number of acres in the parcels to be offered in this lease auction is about 2,605 acres or less than 1% of the total. From the lease sales conducted in the HFO boundary during the past 20 years, none of the leases have had any wells drilled on them.

Lands considered in this EA are all within 5 miles of existing oil fields, and they are all in areas classified as “high potential.” However, virtually all of the lands that were leased in the past also met the same criteria, and yet were never developed.

This 10 year time frame includes periods with both very high and very low oil and gas prices: on average, it is a relevant base period from which reasonable projections can be made. Because prices are significantly higher now than in the past, there is a possibility that drilling on new leases will increase. However, the new leases offered herein still represent only a small fraction of lands already leased and available for drilling. As mentioned earlier, only one new lease within the past 20 years had more than 1 well drilled on it. Based on the historic levels of activity on new federal leases in California within the last 20 years, during a wide range of product prices, we would expect no more than one well total on all of these parcels, with no particular area being more likely than another to be drilled.

Location of Parcels and Past Drilling Activity

Even though there are 30 active oil fields and gas fields that are partly or totally within the HFO boundary, only 9% land within the productive boundaries of those fields contains Federal minerals (5400 federal acres out of a total of more than 58,000 acres). In the past ten years, 1030 wells have been drilled on private land in the HFO boundary, but no wells have been drilled on Federal minerals within the entire HFO boundary. Consequently, based on the history of oil and gas exploration in the planning area, it is projected that no more than three to five exploratory wildcat wells (wells outside of the productive boundary of existing oil and gas fields) would be drilled on Federal mineral estate in the planning area during the life of this plan. Although the success rate for wildcat wells has improved markedly during the past decade, largely due to improved seismic data, it is still unlikely that any new fields would be discovered by drilling on Federal minerals because there is so little activity in areas with significant amount of Federal mineral estate.

Most drilling is expected to occur in areas of land designated as high development potential, which are depicted in the HFO’s 2006 FEIS (Appendix A, Figure 15). Although there is a low probability that a field will be discovered on federal land, if a field containing Federal mineral estate were to be discovered in the northern portion of HFO boundary, it is likely that the discovery would be gas because all of the occurrences in that area are gas. Conversely, if a field containing Federal mineral estate were to be discovered in the southern portion of HFO boundary, it is likely that the discovery would be oil because all of the occurrences in that area are oil.

Although it could be argued that some areas are closer to known production, and therefore more likely to see development, it is also possible that those areas have been more effectively “condemned” by the unsuccessful exploratory wells that were drilled in the past. Overall, there

is not enough data to make more accurate projections of where activity might occur, and whether it would be successful.

Field Development and Production

Exploratory drilling is not expected to lead to the development of a producing field in the planning area due to the low probability of success statewide with oil and gas statistics. Nonetheless, the following scenario describes the operations and effects associated with field development.

The minimum size considered economically feasible would depend mainly on its proximity to existing infrastructure. There are 35 fields within the HFO boundary, mostly in the extreme southern and extreme northern portions of the area, and it is likely that any pipelines from a new field would be relatively short. The wells within the actual productive boundaries (smaller than the administrative boundaries) of gas fields are spaced on average at 80-160 acres. For oil fields in the HFO area, spacing is much closer. In the larger oilfields, usual development spacing is typically at 5-7 acres per well. However, spacing can be as close as well well per acre in areas with heavy oil. Although it is unlikely that a new field will be discovered on Federal minerals, for planning purposes we will assume a fairly small to mid size oil field may be discovered somewhere within the planning area. The average field size in the FO area is over 1900 acres, but that is significantly skewed by the presence of a few very large fields. The bottom 80% of the active fields in the FO area average 650 acres, about one square mile. If a single oilfield of that size was discovered, on average it would contain 9.1% Federal mineral estate, about 60 acres. At 5-7 acres per well, it would take approximately 10 wells to fully develop the parcel. Each development well would require an estimated 0.25 mile of road, which would have a surface of crushed aggregate or gravel approximately 20 feet wide (total disturbed width of 40 feet). Well pads would be no more than 1 acre in size. Oil/gas produced would be carried by pipelines that could be linked to existing and proposed transmission lines in the planning area. Average infield pipeline length is estimated to be 0.25 mile per well, which could probably be largely contained within the road right of way and little new surface disturbance would be required. The total distance from a new field to an existing transmission pipeline is likely to be less than 10 miles. The width of the surface disturbance for pipelines would average 20 feet.

The total surface disturbance for up to 10 development wells would be 10 acres for well pads, 12 acres for roads, and 24 acres for a single transmission line 10 miles long. No more than 1 acre would be required for the small facility (meter, separator) on each parcel. For planning purposes, we will assume that the wells may be on two separate parcels, so there would be a total of 2 acres for facilities. The total surface disturbance caused by seismic operations, exploration drilling, and development would be 74 acres.

Plugging and Abandonment

Wells that are drilled and determined to be dry holes are plugged according to a plan designed for the condition of each well. Plugging involves placing cement plugs at strategic locations in the hole. Drilling mud is used as a spacer between the plugs to prevent communication between fluid-bearing zones. The drill casing is cut off at least 5 feet below ground level and capped by welding a steel plate on the casing stub. After plugging, all equipment and debris would be removed and the site restored as near as reasonably possible to its original condition. It is projected that much of the surface disturbance from exploratory activities and all of the seismic activities would be of short duration (between a few months and a couple of years). The impacts from the successful development wells would last longer, but it would still be completely reclaimed eventually.

Conclusion

Therefore, it is reasonable to project that only one exploration well would result from the proposed lease sale. Any future development on parcels in this lease auction would therefore represent only a very small portion of the total wells drilled on the Federal mineral estate, and is well within the scope of activities which have been previously analyzed in the Hollister Field Office RFDS (2005).

During the past 10 years, more than 1000 wells have been drilled within the HFO area, 93% of which were within field boundaries, with only 7% being classified as wildcats (outside administrative field boundaries). Although there are nearly 5400 acres of Federal mineral estate within these productive boundaries (9% of the total), there was not a single well on Federal mineral estate. It is reasonable to assume that this trend will continue.

B. Direct Effects of the Proposed Action

There would be no direct effects from the proposed competitive oil and gas lease sale because this is primarily an administrative action that only conveys the mineral rights to the potential lease. As described in the previous sections, lease-holders are required to submit plans for any exploration or development that may occur and a site specific EA would be prepared to identify mitigation measures necessary to avoid undue degradation to the environment prior to approval of surface disturbing activities.

When BLM is considering a mere leasing proposal, the analysis of effects is only based on the reasonable foreseeable development scenario because there is no information available to determine when or where any actual disturbance would occur on any of the proposed leases, or if any disturbance would occur at all. When an application for a permit to drill is submitted, BLM then has a concrete, site-specific proposal that can be analyzed for direct impacts to the human

environment and identify any mitigation measures necessary to avoid or minimize those effects. Therefore, the following analysis of impacts on the human environment does identify potential direct effects of future oil and gas exploration and development activities; however, BLM reserves both the authority to preclude all activities pending submission of site-specific proposals and the authority to prevent proposed activities if the environmental consequences are unacceptable.

III. Unit 1, 2, & 4 Alternative (Proposed Action) - Direct & Indirect Impacts

A. Oil and Gas Resources

Potential indirect impacts of the proposed lease sale on natural resources that may result from future energy and minerals exploration and development 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 of the BLM's Proposed RMP and Final EIS for the Southern Diablo Mountain Range and Central Coast of California (2006) and this EA.

Historically in the San Joaquin Valley, only about 10-15% of wildcat wells have been successful in finding commercial quantities of oil and gas. In fact, between 1990 and 2007, 64 total exploratory wells were drilled, both federal and private (source: personal email from Mark Gamache, CDOGGR, to Jeff Prude, BLM, dated 3-27-07), and only one relatively small field (Rose field, discovered July 2000) was discovered.² The remaining 85-90% of the wells are non-commercial which are immediately plugged and abandoned (P&A'd), so any disturbance associated with the drilling of these P&A'd wells would be temporary.

Most drilling is expected to occur in areas of land designated as high development potential, which are depicted in the HFO's 2006 FEIS (Appendix A, Figure 15). Although there is a low probability that a new commercial oil or gas field will be discovered on federal land, if a field containing federal land were to be discovered in the northern portion of HFO boundary, it is likely that the discovery would be gas because all of the occurrences in that area are gas. Conversely, if a field containing federal land were to be discovered in the southern portion of HFO boundary, it is likely that the discovery would be oil because all of the occurrences in that area are oil.

After seismic and/or detailed stratigraphic basin studies are made, an application for a permit to drill (APD) may be submitted. Any APDs submitted for parcels in Monterey or Fresno counties

² A new field discovery, reportedly near the Elk Hills field in Kern County, was reported by Oxy in July 2009.

would likely be for exploration drilling, because of the location the lands being considered for oil and gas leasing, and due to the characterization of these lands as “rank wildcat territory”. “Exploration drilling” includes drilling to discover entirely new fields, or discovery of previously untapped reservoirs within existing fields. Drilling to discover new fields has the greatest potential to impacts the human environment because it would be more likely to involve disturbances of undisturbed lands.

BLM’s RFDS for oil and gas estimates that over the next 15 to 20 years, no more than 15 wells will be drilled on BLM-managed land. Based on the estimates identified under the “Assumptions Incorporated into the Analysis” (Chapter 4, Section II), these activities combined would not disturb more than 74 acres of federal lands within the HFO. This includes the construction of some associated roads and facilities and installation of pipelines to existing infrastructure. There may also be geophysical exploration associated with oil and gas.

Based on the conclusion that only one exploration well would result from the proposed lease sale, any future development on parcels in the proposed lease sale would represent a minor long-term benefits to development of oil and gas resources on Federal mineral estate.

B. Social and Economic Conditions

The proposed action would potentially allow new development of these parcels for oil and gas production. Due to the very small amount of development expected on these lands, it is not likely that there will be any measurable impact to the local economy. Nevertheless, there would be some minor benefits to the local economy through potential jobs, sales, and revenue to local governments. The Mineral Leasing Act, as amended Onshore Order No. 1 provides rights to private landowners prior to development and requires compensation and reclamation bonds.

BLM Standard Lease Terms require operations to be conducted in a manner that minimizes adverse impacts to other land uses or users. Therefore, prior to authorization of any surface disturbing activities, BLM would consider potential conflicts between other current and future uses of the proposed lease areas. Based on the reasonable foreseeable development of the proposed leases, the proposed action would have negligible effects on the Lockwood-Jolon community plans for the development of an intensified rural community and agricultural activities.

The proposed action would not have disproportionate adverse impacts on low-income or minority communities based on the same rationale for social and economic effects.

C. Visual Resource Management

The proposed action is consistent with the designated VRM Class III because the level of change to the landscape of southern Monterey County and the scenic values of Lockwood Valley, Hames Valley, and the U.S. Hwy 101 corridor from the reasonable foreseeable development of the proposed oil and gas leases would be minor and may attract the attention but would not dominate the view of the casual observer.

The effects of the proposed action on visual resources in Fresno County would be negligible because of the discrete location of the proposed leases and the amount of surface disturbance associated with the RFDS is consistent with Class IV visual resource management objectives.

D. Air and Atmospheric Values

1. *Air Quality, Climate, & Meteorology*

The BLM's 2006 FEIS for the Hollister PRMP describes the following effects of energy and mineral development on public lands being considered for oil and gas leasing under the proposed action on page 4.1-2.

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 air permit would be approved.

Therefore, the proposed action would have direct impacts to air quality in the form of gaseous and particulate matter that is emitted into the air as a result of the activities associated with oil and gas lease development. However, all of the pollutants subject to analysis are addressed in

federal, state and local laws, statutes, regulations and rules. The federal and state ambient air quality standards define the criteria pollutants that are part of the emissions that are typically analyzed. In addition to the criteria pollutants, there are criteria for air toxics, hazardous air pollutants (HAPs), Prevention of Significant Deterioration (PSD), fugitive dust and regional haze.

Although the RFDS suggests that oil and gas leasing activity would result in less than ten wells throughout the entire Hollister Field Office, the proposed action could result in a number of activities which generate emissions. Project emissions include direct emissions of nitrogen oxides (NO_x), sulfur oxides (SO_x), and volatile organic compounds (VOC) (which are precursor emissions for ozone and PM_{2.5}), carbon monoxide (CO), particulate matter smaller than 10 microns (PM₁₀), and particulate matter smaller than 2.5 microns (PM_{2.5}). These emissions are associated with combustion sources and fugitive sources associated with exploration, drilling, production and abandonment such as seismic exploration/diesel drill rig engines, drill pad construction equipment (e.g., dozers, backhoe, grader, etc.), temporary production flares, remedial well work, equipment trucks, hauling of liquids, drill rig crew trucks/vehicles, portable lift equipment, portable testing equipment and temporary and permanent production facilities.

In addition, PM₁₀ will be released during the drill pad construction phase and from the daily ingress and egress of vehicles on the unpaved access roads. The primary emission sources during any new construction at the drill sites and on rights-of-way would be from heavy equipment exhaust and fugitive dust. Other emission sources will occur during the operation and maintenance of these leases and rights-of-way. These sources include oil facilities, gas facilities, operator vehicle traffic, and gas powered oil well pumping units.

According to the California Air Resources Board emission factors for VOCs (volatile organic compounds), NO_x (nitrogen dioxide), SO_x (sulfur dioxide), PM₁₀ and PM 2.5 are not available for individual wells, but can be calculated using total emission per day calculations that have been attained from the California Air Resources Board website. These emissions totals are shown in the following table, for 2006.

Table 4. Estimated Statewide Annual Emissions from Oil and Gas Production, 2006

SOURCE	VOC (TONS/DAY)	NO_x (TONS/DAY)	SO_x (TONS/DAY)	PM₁₀ (TONS/DAY)	PM_{2.5} (TONS/DAY)
Oil and Gas Production	47.87	2.77	0.28	0.06	0.06
Oil and Gas Production (combustion)	26.32	20.39	1.95	1.76	1.81
Total (tons/day)	74.19	23.16	2.23	1.82	1.87

This table illustrates the projected emissions for oil and gas production sources in tons of pollutants per day. Oil and gas production is defined as any source used in the production of oil and gas, including but not limited to wells, pumps, tanks, roads, maintenance traffic, and heaters. Steam generators are calculated separately and are represented on the table as oil and gas production (combustion). For our analysis, these numbers are summed together to get the total amount of pollutants emitted by oil and gas production statewide.

In regards to both PM10 and PM2.5, the SJVUAPCD does not have a standard for calculating emissions for individual wells (Source: conversation 2007 with Leonard Scandura, SJVUAPCD). An emission formula and emission factor was provided by Air Quality Engineer Leonard Scandura of the SJVAPCD. The formula is $E = A \times EF$ where E= emissions, A= activity or source, and EF is the constant emission factor. Based on the Estimated Statewide Annual Emissions from Oil and Gas Production (2006) estimated emissions were calculated for one well.

For one well, estimated emissions of PM2.5, PM10, and SO_x range from approximately 30-36 lbs/year. Per well, NO_x emissions are estimated at 375 lbs/year and 1,200 lbs/year of VOCs. This range of pollutant emissions represents 0.002% of the total emissions from oil and gas production, statewide. The expected emissions from the proposed action would be low both in relation to the overall activity in the region, and by itself. Small scale projects that have minimal impacts that are of short-duration would not likely contribute significantly to cumulative impacts (EPA 315-R-99-002; May 1999).

At the leasing stage, it is extremely difficult to generate a meaningful estimate of emissions associated with an unknown well type, target depth, in an unknown location, with an unknown lessee, operator, drilling contractor, etc. Since current federal oil and gas operators utilize various drilling contractors and construction companies, modeling at this time would be hypothetical. In order to complete a more thorough analysis of emissions and impacts, details on fleet will be obtained at the application stage. Vehicle and equipment make, model, engine size, etc., trip length, project acreage, construction schedule are among several variables required to generate emissions estimates. Combined, these factors determine the intensity, duration, and characteristics of associated pollutants.

The SJVAPCD does not permit individual wells; generally a facility such as a tank setting that serves a number of wells is the permitted stationary source. Wells in California are subject to Fugitive Inspection and Maintenance, Rule 4409.

Indirect effects of point source emissions from legal and illegal motorized vehicle and off highway vehicle use associated with these lease offerings as proposed would be negligible. As detailed in the affected environment, the San Joaquin Valley Air Basin is in nonattainment for ozone, and PM2.5. The District's adopted ozone and PM10 plans are already providing benefits

for PM2.5 levels. The District attributes the Valley reaching attainment of PM10 standards ahead of schedule to the control strategies set forth in the 2003 PM10 Plan and the 2006 PM10 Plan (SJVAPCD 2008).

BLM requires that the lessee/operator take on the responsibility for ensuring that all operations are properly permitted with the appropriate agencies, and that the operations are in compliance with all mobile and stationary source guidelines. Mitigation measures are imposed by the air permitting authority and would include such items as use of low-emission construction equipment, use of low sulfur fuel, and/or use of the existing power transmission facilities, where available, rather than temporary power generators. The failure of the lessee/operator to follow the air quality rules and permit requirements would result in penalties and would also lead to the loss of the BLM and air district authorizations.

The State and local air districts have air quality primacy; BLM may however choose to implement emissions control measures to reduce effects on air quality. BLM may apply emission control measures, apply Best Management Practices (BMPs) and implement adaptive management practices to reduce particulate matter emissions even though air quality standards would not be violated without implementation of such measures. BLM Best Management Practices and Options for Air Quality Control for Specific Activities would be applied. For oil and gas activities, BLM may impose controls on engines (drilling rigs), roads, monitoring devices, haul vehicles, noise, and sources of VOCs (condensate tanks, dehydrators, separators). To reduce fugitive dust on roads, watering, graveling, applying surfactants, paving, inducing speed limits, and/or restricting vehicle access are control measures commonly implemented by BLM. Graveling can provide up to 85% reduction in fugitive dust; paving can provide even more. Water is cheap but temporary; magnesium chloride (a common surfactant) is more expensive and lasts about one year; and paving is the most expensive but it is long-term. A reduction in levels of fugitive dust, particulate and combustion emissions can be achieved by imposing a combination of control measures and technologies.

The SJVUAPCD requires all construction work (earth moving) to follow rule eight which details requirements for PM10, PM2.5, and fugitive dust minimization. More specifically under rule 8021, any project that is over 5 acres in non-residential areas will need to have a dust control plan that details particulate matter minimization (www.valleyair.org).

Projects less than 5 acres are considered by the SJVUAPCD as insignificant in regards to PM10 and PM2.5 emissions. According to the 2005 RFDS associated with the proposed action, total disturbance will be less than or equal to 10 acres for one well; therefore the proposed action would result in minor short-term adverse impacts air quality from particulate emissions.

2. *Climate Change*

The California Global Warming Solutions Act of 2006 (AB 32) is one of the first laws in the United States that mandates regulation of greenhouse gases at a state level. In April 2009, the U.S. Supreme Court ruled that the EPA has the authority to regulate GHGs under the Clean Air Act (*Massachusetts vs. EPA*, 05-1120). It is anticipated that, as more information becomes available, and as California moves to implement the greenhouse gas regulations under the California Global Warming Solutions Act of 2006 (AB-32), additional restrictions will be placed on all activities, including those associated with the drilling and production of oil wells in the State. All current and future operations on federal lands will be subject to those requirements.

The Department of the Interior is exploring whether global and regional climate modeling can be scaled to the point that it can be used to manage parks and refuges³. A new Secretarial order was issued in 2009⁴ which directs each bureau to:

“consider and analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, and/or when making major decisions affecting DOI resources.”

With respect to climate change, climate plays a significant role in the production of ozone. Sunlight and high temperatures are a major catalyst in reactions between VOCs and NO_x in the production of ozone. With an increase in overall temperature, we can expect to have more hot days and less precipitation that will lead to a higher production of ozone.

The primary sources of greenhouse gases associated with oil and gas exploration and production are carbon dioxide (CO₂) and methane (CH₄). In addition, nitrous oxide (N₂O) and VOCs are indirect air pollutants that contribute to ozone production and aid in prolonging the life of methane in the atmosphere. GHGs are produced and emitted by various sources during phases of oil and gas exploration, well development, production, and site abandonment. The American Petroleum Institute (API) categorizes sources of emissions from all oil and gas operations into the following classifications⁵:

³ GAO-07-863, 2007

⁴ Secretary of the Interior Order 3226, Amendment 1; January 16, 2009

⁵ American Petroleum Institute, *Compendium of Greenhouse Gas Emissions Methodologies For The Oil and Natural Gas Industry*; August 2009.

Direct Emissions

Combustion Sources – includes stationary devices (boilers, heaters, internal combustion engines, flares, burners) and mobile devices (barges, railcars, and trucks for material transport; vehicles for personnel transport; forklifts, construction equipment, etc.)

Process Emissions and Vented Sources - includes process emissions from glycol dehydrators, stacks, vents, ducts; maintenance/turnaround; and non-routine activities such as pressure relief valves, emergency shut-down devices, etc.

Fugitive Sources- includes fugitive emissions from valves, flanges, pumps, connectors, etc.; and other non-point sources from wastewater treatment

Indirect Emissions

Emissions associated with company operations, such as off-site generation of electricity, hot water or steam, and compression for on-site power, heat and cooling.

Direct and indirect GHG emissions may occur from various sources during each phase of exploration and development. During exploration and development, emissions are generated from well pad and access road construction, rigging up/down, drilling, well completion, and testing phases. GHG emissions for these phases are mainly CO² emissions from fuel in internal combustion engines of diesel trucks, equipment, and rigs. As Zahniser (date unknown) noted in the Characterization of Greenhouse Gas Emissions Involved in Oil and Gas Exploration and Production Operations, Review for the California Air Resources Board, an additional one-time and potentially long term effect could include carbon sinks lost due to surface and vegetation disturbance associated with well site development.

Nearly 87% of U.S. greenhouse gas emissions come from energy production and use (Karl et al. 2009). In California, oil and gas production contributed a total of 18.64 million tons of CO₂ equivalent in the year 2006 (California Greenhouse Gas Inventory, 2000-2006). Of this total, 17.88 million tons of CO₂ equivalent were from fuel use associated with oil and gas extraction (CARB 2008). Oil and gas extraction/supply accounted for 3% of existing 1990 emissions estimates (total gross emissions of 433.28 MMT CO₂e) (CARB 2007).

Only rough estimates of the amount of greenhouse gasses produced by one well is possible since greenhouse gas emissions are based on the amount of oil produced (EPA 1999). If we assume that a new well produces an average of 4,000 barrels per year, annual methane emissions would be 25 lbs (.01 tons) per well (see EPA 1999 for formulas).

While global and national GHG inventories are established, regional and state specific inventories are in varying levels of development. Quantification techniques are in development – for example, there is a good understanding of climate change emissions related to fuel usage. Analytical tools necessary to quantify climatic impacts at the project level are presently unavailable. As a consequence, impact assessments of specific effects of anthropogenic activities are difficult to determine. The U.S. Global Change Research Program recognizes that further work is needed on how to quantify cumulative uncertainties across spatial scales, and the uncertainties associated with complex intertwined natural and social systems (Karl et al. 2009).

The current leasing proposal represents a fraction of the existing well population. For this analysis, the RFDS predicts that one well will be drilled as a result of the range of alternatives, including the proposed action. Emissions from the construction of one well would be expected to be lower than the national average because of vapor recovery systems and other pollution controls (Best Performance Standards) mandated by the San Joaquin Valley Air Pollution Control District. Values for GHG emissions are expected to follow a similar pattern. Thus, direct GHG emissions from the alternatives considered in this EA, including the proposed action, would be undetectable on a nationwide basis and would be expected to have a very minor influence on global climate change. This is consistent with the SJVAPCD conclusion that existing science is inadequate to support quantification of impacts that project level GHG emissions would have on global climate change (SJVAPCD 2009b).

However, the effects of project specific GHG emissions are cumulative, and without mitigation their incremental contribution to global climatic change could be considered cumulatively considerable (SJVAPCD 2009a). The APCD's best approach in addressing cumulative impacts would be to require all projects to reduce their GHG emissions, through project design elements or mitigation.

There is no generally accepted guidance for determining significance of project specific GHG impacts (SJVAPCD, 2009a). The SJVAPCD recognizes that project proponents, lead agencies, the District and the public need clear guidance; therefore, the District Board has recently directed staff to develop guidance for addressing GHG impacts. The District Proposal includes the requirement that projects not implementing Best Performance Standards (BPS) must quantify GHG emissions and reduce or mitigate GHG emissions by 29% to be less than significant. Developing Performance Based Standards will streamline the significance determination process.

The proposed District policy for addressing GHG emissions impacts for stationary source projects indicates that the need to quantify project specific impacts is negated if emissions reductions are achieved by implementing BPS (SJVAPCD 2009b). This approach is based on the use of BPS and their associated, pre-quantified GHG emission reduction effectiveness.

There is no reliable methodology to assess the relationship between the decision to lease and the ultimate consumption of the resources produced as a result of production from these lease(s). An attempt to analyze the impacts of GHG emissions and other climate change factors from the ultimate consumption of the resources produced from these leases would be a highly speculative exercise. The BLM does not dictate the destination of the resource produced from federal lands. The effects from consumption resulting from the proposed action are not only speculative, but are beyond the scope of BLM authority or control.

Conformity:

The USEPA rules require federal agencies to determine whether a proposal conforms to the existing State Implementation Plan (SIP). USEPA rules state that an analysis is not necessary when the total emissions do not exceed de minimis levels, comply with the SIP and do not exceed 10% of the regional emissions. As the emissions are well below de minimis levels, comply with the SIP, and are well below 10% of regional emissions, no further conformity analysis is necessary.

E. Soil Quality

Due to the abundance of soil types rated as having a high erosion hazard, there is high risk of soil erosion on all of the parcels. Under the leasing alternatives and the proposed action, oil exploration may result in minor, short-term, localized impacts to soil resources since the number of wells and associated roads would be few and any unproductive wells would be plugged and abandoned followed by restoration. Short-term adverse impacts to soils may include soil disturbance, compaction, and erosion, all of which would be alleviated with site restoration. Oil development may result in moderate, long-term, localized impacts associated with the construction phase and long-term maintenance of access roads, well-pads, wells, and oil pipelines. Most development disturbances associated with the short-term construction phase and not being subject to any further significant disturbance thereafter, would be expected to rapidly revegetate from soil seed bank. Long-term, localized disturbance of soils associated with the maintenance phase of development, however, could result in significant localized soil compaction and erosion.

Onsite impacts to soils as a subsequent result of leasing may include topsoil removal, grading, filling, and compaction; all of which reduce soil quality. Erosion is an offsite impact that presents potential water quality issues as a result of increased sediment and nutrients. Impacts associated with any lease development may include erosion subsequent to the construction of a well pad and/or access roads on slopes and/or other unstable geography. The risk of erosion on and adjacent to lease parcels is of greatest concern in areas where slopes exceed 30 percent, as the potential hazard of erosion increases as slope increases. Since many soils on these parcels

are described by NRCS as being susceptible to erosion in the absence of adequate (plant) cover, soil exposure should be minimized or reduced.

Existing land uses that have altered and continue to alter soils occur on many of the parcels associated with the alternatives and the proposed action. To minimize new or additional disturbance and impacts to soil quality, wells and access roads may be sited in areas that are disturbed by past land use. Soil impacts will be further reduced by identifying and protecting biological soil crusts; when soil crusts are present these will be conserved and stockpiled to encourage interim restoration subsequent to drilling. Regardless of crust presence or absence, topsoil conservation and replacement is generally used as mitigation to minimize impacts to soil and habitat, which contributes to the efficiency of site reclamation.

The intensity of both onsite and offsite effects of soil disturbance can be minimized by implementing basic principles of erosion control on construction sites, such as EPA's Reasonable and Prudent Practices for Stabilization (RAPPS) of Oil and Gas Construction Sites (cfpub.epa.gov/npdes/stormwater/oilgas.cfm). These impacts will be considered and mitigated on a site-specific basis using proper well placement and implementing best management practices (BMPs). Overall soil compaction may be reduced by restricting vehicle and equipment use to limited, perhaps previously disturbed areas. Simple erosion control practices will apply, such as minimizing slope gradient, clearing smaller areas of vegetation, and vigilant scheduling of any excavation to avoid rainfall periods. Road(s) designed in accordance with BLM standards (Manual 9113) will decrease erosion effects.

Any disturbances 1.0 acre or greater that result from oil and gas leasing of Federal mineral estate would likely be subject to the California Regional Water Quality Control Board Storm Water Pollution Prevention Plan (SWPPP). Any disturbance that persists as unreclaimed for a period of more than two years would be considered a permanent impact with an associated long term effect. To be considered a temporary disturbance, reclamation is required within less than a two year timeframe; such temporary disturbances would be considered short term effects to soil resources.

Impacts to soils from spills/contamination could cause a long term reduction in site productivity. Some of these direct impacts can be minimized or avoided through proper design, construction and maintenance; and by implementing BMPs. In the state of California, oil and gas operators are required to comply with state spill reporting requirements, per the California Office of Emergency Services (OES) and the CDOGGR. In addition, Federal lessees are required to comply with BLM spill reporting and clean up requirements. Any soil contamination resulting from an undesirable event will be removed and mitigated upon discovery as required in those plans.

F. Water Quality

This section provides an estimate of effects to surface and ground water from the proposed oil and gas lease sale. The proposed action would have no effects on the quality of drinking water delivered to consumers; because after withdrawal from the ground, drinking water typically is treated, disinfected, and (or) blended with other waters to maintain water quality. In addition, regulatory thresholds apply to treated water that is served to the consumer, not to raw ground water.

Potential indirect impacts to water resources that could result from long-term operation are primarily the potential for spills and releases, increased erosion, and stream sedimentation. There also may be short-term high water demands, increased short-term erosion, and stream sedimentation due to new construction.

Other potential impacts to surface water include sediment loading of stream channels due to the earthwork associated with site construction; introduction of pollutants via spills and releases to surface water from oil and produced water treatment, storage and handling facilities, sanitary facilities; oil and produced water transportation facilities (trucks, pipelines); and oil, produced water, and drilling fluids. Furthermore, water used during the early development of a field could have a short-term adverse effect on local stream flow; and secondary effects on downstream water use due to changes in water quantity or quality.

Potential watershed impacts are avoided by applying current laws and regulations that require environmental protection measures to mitigate potential impacts to both ground and surface water quality and/or by restricting surface occupancy on portions of a lease.

These include BLM's Standard Lease Stipulations and other permitting requirements from the California Division of Oil and Gas and local county governments, which have been designed to protect ground and surface water quality, and are expected to preserve ground water integrity in all cases. Additional site-specific mitigation measures and management restraints consistent with lease would be determined at the project-level if an application for a permit to drill is submitted on any of the leases included in the proposed action.

G. Biological Resources Including Riparian and Wetlands

1. Fish and Wildlife Habitat

For new leases offered in the past 10 years of lease sales, no new wells have been drilled on federal mineral estate within the administrative boundary of the Hollister Field Office. It is estimated that one well may be developed on the offered lease parcels. Development of the well

and any associated road and facilities could result in 9 acres of temporary disturbance and permanent impacts to 1 acre of habitat (refer to Chapter 4 of this EA, Section II, RFDS: Conclusion). This potential loss of habitat amounts to only 2% of the smallest parcels (Unit 3: Parcels 3 – 7, 12; Unit 4: Parcels 16 – 18, 20) with 40 acres of BLM surface. These estimates of habitat loss or alteration are within the range expected and analyzed in the Hollister Field Office Proposed RMP and Final EIS for the Southern Diablo Mountain Range and Central Coast of California (2006) and FWS Biological Opinion 1-8-07-F-19.

Measures to minimize impacts, such as those contained in Attachment Biology 1, would be employed to reduce the amount of habitat impacted. In addition, compensation, in the form of additional habitat protected, would be required. The rate of compensation would range from 1.1 acre (temporary impact) to 4 acres (permanent impact) for every acre disturbed.

Impacts to habitat on native lands would depend on the native vegetation type and the topography of the lease parcels. The lease parcels contain a combination of grassland, shrubland and woodland vegetation communities. Habitat disturbance in grasslands generally has less of an impact than disturbance in shrublands and woodlands since shrubs and trees take longer to become re-established. Shrublands and woodlands also support a greater diversity and number of wildlife species as shrubs provide a high variety of food and cover. As the diversity of habitat structure increases from grassland to shrubland to woodland, so does the wildlife species richness. Thus, there is more potential for impacts to wildlife in shrubland and woodland communities, than in grassland communities. The impacts associated with well pads and roads, however, would be very site-specific and are not expected to significantly affect these habitats at the community scale. The footprint of the disturbance is also expected to be a small proportion of the habitat area.

Topography can play a role in the amount of surface disturbance that results from well and road construction. Flat areas will require little or no cut and fill, and road routes are not constrained by topography. In hilly areas, cut and fill may be required which disturbs additional land. Road routes may have to travel longer distances to meet engineering requirements and may also require cut and fill. Areas lacking roads near potential drilling sites will have more disturbance, as the entire access route will need to be constructed rather than just a short spur route from an existing road.

The only relatively flat parcels being considered for oil and gas leasing are located in Unit 4, which is part of the Kreyenhagen Hills historic oilfields and nearly all 240 acres are previously disturbed habitat for native wildlife species. Only the parcels in Unit 4 have relatively good access with existing roads in the interior or on the edge of the parcels. Well pad and road construction on these parcels would result in minimal impacts to biological resources due to the presence of existing roads and the currently disturbed nature of the parcels.

The remaining 6,161 acres in Units 1, 2, and 4 is native habitat that ranges from gently sloping to moderately steep hills. These hilly parcels are likely to require new road construction to access well pads unless the wells are located adjacent to an existing road. While many of these lease parcels have one or more existing roads, it is likely that new roads would be required to reach the proposed well pad locations. As the terrain becomes steeper and hilly, more side slope, cut and fill construction may be required. Restoration of side slope, cut and fill pads and roads is more difficult. Impacts in such areas, even if the well is abandoned and the road restored, may persist as altered, but functional, habitat, for several decades.

Habitat restoration also takes longer in shrublands and woodlands as opposed to grasslands. Grassland habitats may resemble their pre-project conditions in 2 to 5 years. Shrublands may require 5 to 15 years and woodlands even longer as trees must be reestablished on the site. The parcels in this lease auction are generally grassland and shrubland habitats that return to their pre-project composition and structure relatively easily and quickly.

Certain type of soils and exposures may take longer to restore. Vegetation on exposed, dry shale areas may be slow to recover. Such areas, however, have naturally sparse vegetation and much exposed soil.

Although the impacts described above can occur as a result of oil and gas development, it is estimated that indirect effect will be limited to 1 well with 1 acre of habitat loss. This would have a localized, moderate effect on habitat in the immediate vicinity of the well and access road, but a negligible to minor impact on habitat within the parcels being considered for oil and gas leasing analyzed in this EA.

2. *Vegetation*

Under the proposed action, oil exploration may result in minor, short-term, localized impacts to vegetation resources since the number of wells and associated roads would be few and any unproductive wells would be plugged and abandoned followed by restoration. Short-term adverse impacts to vegetation may include physical damage or complete removal. Vegetation would be expected to recovery rapidly following restoration from existing soil seed bank. Oil development may result in moderate, long-term, localized impacts associated with the construction phase and long-term maintenance of access roads, well-pads, wells, and oil pipelines. Most development impacts associated with the short-term construction phase and not being subject to any further significant disturbance thereafter, would be expected to rapidly revegetate from soil seed bank. Long-term, localized impacts associated with the maintenance phase of development, however, could result in significant localized vegetation loss.

3. *Special Status Animal Species*

Since BLM retains the authority to preclude surface disturbance in the event that impacts to special status species from oil and gas activities would exceed the thresholds identified in the incidental take statement included in FWS Biological Opinion 1-1-94-F-47, the proposed lease sale would have no direct effects on federally listed species when compared to the environmental baseline under current management.

If a parcel is leased and developed, there could be indirect effects to biological resources from offering the parcels for lease. It is estimated that one well could be drilled as a result of offering the parcels for lease. Development of a lease can result in impacts to habitat and species.

All development proposals will be subject to site specific NEPA and ESA review. Species and habitat surveys will be required. Project design criteria, mitigation measures and compensation, would be similar to those detailed in Attachment Biology 1. Project design criteria, mitigation measures and compensation measures are applied at the time of the site-specific NEPA analysis and implementation of the ESA Section 7 biological opinion. BLM provides project-specific oversight of the implementation of all measures. The BLM requires post-project compliance reports to be submitted to document implementation of mitigation measures and their effectiveness. Although the effects disclosed below can result from oil and gas development, the likelihood and extent of such potential impacts from leasing the subject parcels would be reduced because of BLM's site specific NEPA and ESA review.

Potential impacts to animals, including listed species, include direct mortality or injury, loss of dens or burrows, displacement, and human disturbance. Roads and large areas of disturbance can also be a barrier to movement for some animal species.

Direct mortality or injury could result from vehicle strikes, or from collapsed dens and burrows resulting in animals being crushed or entombed. Burrows and dens could be destroyed or damaged by vehicle traffic, particularly heavy equipment. Animals could be displaced during project activities. Such displacement of animals into unfamiliar areas could increase the risk of predation and increase the difficulty of finding required resources such as food and shelter. Human disturbance could result in displacement of animals, even though dens and burrows may not be directly impacted. Human disturbance also might alter the behavior of animals (e.g., activity periods, space use) resulting in increased predation risk, reduced access to resources, and reduced breeding success. Project activities during the spring breeding season could increase the potential for adverse impacts. Animals could also become entrapped in oil spills, leaks, sumps or improperly maintained well cellars or other facilities.

A variety of project design features and minimization measures are typically employed to reduce impacts to individual animals and populations. Typical measures are contained in Attachment Biology 1. Speed limits and employee education are employed to reduce the likelihood of vehicle strikes. Dens are monitored and when vacant, excavated or temporarily blocked to prevent entrapment of animals. Pipes and culverts are searched before being moved or sealed. Biological monitors are required to assist crews and trouble shoot unexpected situations.

The habitat impacts have been calculated as 9 acres of temporary disturbance and 1 acre of permanent disturbance at an indefinite site within the target parcels. The predicted disturbance is a trivial fraction of the total surface area of the project site. The probability of disturbing important habitat for any special status animal species is low throughout Units 1 & 2 due to the absence or sparse presence of the target species there. On Unit 4, special status species have a higher likelihood of occurrence (particularly San Joaquin kit fox and blunt-nosed leopard lizard) but once again, the total predicted disturbance is trivial and represents only a remote probability of actual disturbance.

Review of existing literature on threats to California condor from oil development revealed that recovery planners formally dismissed oil development as a source of condor mortality in the final Recovery Plan. Additionally, the most comprehensive study to date of condor mortality found no instances of any feature associated with oil development that caused mortality of California condors. One anecdotal report of condors associating with oil rigs and becoming coated with oil was found on the web (<http://www.lpaw.org/about/critters/californiacondor.htm>) but no mortality or lasting injury was noted. The Sespe Oil Field, which has 200 functional wells (Los Padres Forest Watch, “Notice of Intent to File Suit Against Vintage Production, Vintage Petroleum, and Occidental Petroleum for Violations of the Clean Water Act,” January 25, 2008), is located in close proximity to the Sespe Condor Sanctuary, allowing ripe opportunity for interaction between condors and oil rigs. Condors are monitored intensely by radio and visual surveillance; any interaction with oil installations, and certainly any interaction that caused injury or mortality, would not go unnoticed. We consider it highly unlikely that low-density oil development would pose any threat whatsoever to the California condor.

4. *Special Status Plant Species*

Several special status plant species are suspected or known to occur on Units 2 and 4. Federally-listed Threatened purple amole may occur on Parcel 2 and federally-listed Endangered San Joaquin woolly threads and California jewelflower may occur on Parcels 16 – 20. San Joaquin woolly-threads is known to occur on Parcel 19. Surveys need to be conducted during appropriate season (spring, summer) to identify sites where special status plant species occur (occupied habitat) or potential habitat where they could occur, prior to exploration or development.

If surveys successfully identify the locations of existing populations of federally-listed plant species within the parcels, oil exploration and development activities can be planned to avoid impacting them. Under the avoidance scenario, adverse impacts to known listed plant species populations from proposed oil exploration and development activities would be negligible.

Adverse impacts to potential habitat (areas between known populations) for the listed species from oil exploration would likely be minor, short-term, and localized since the number of wells and associated roads would be few and any unproductive wells would be plugged and abandoned followed by site restoration. Oil development may result in moderate, long-term, localized impacts to listed species potential habitat associated with the construction phase and long-term maintenance of access roads, well-pads, wells, and oil pipelines. Most development disturbances associated with the short-term construction phase and not being subject to any further significant disturbance thereafter would be expected to rapidly revegetate from soil seed bank. Long-term, localized disturbance of soils associated with the maintenance phase of development, however, could result in significant localized habitat impacts due to vegetation loss, soil compaction, and soil erosion.

5. Riparian and Wetland Habitat

Impacts to riparian habitat are not expected since the BLM would apply the Standard Lease Stipulation to move any proposed well pad location up to 200 meters in order to avoid riparian areas. Additionally, impacts would be avoided by applying current laws and regulations that require environmental protection measures to mitigate potential impacts to both ground and surface water quality and/or by restricting surface occupancy on portions of a lease.

These include BLM's Standard Lease Stipulations and other permitting requirements from the California Division of Oil and Gas and local county governments, which have been designed to protect ground and surface water quality. Additional site-specific mitigation measures, and management restraints consistent with lease would be determined at the project-level if an application for a permit to drill is submitted on any of the leases included in the proposed action.

H. Cultural Resources & Native American Values

The proposed action will have no adverse effect upon cultural resources in accordance with the State Protocol Agreement between the California BLM and California State Historic Preservation Officer (which addresses the responsibilities under Section 106 of the National Historic Preservation Act) and specific Supplemental Procedures for Fluid Minerals Leasing Amendment to the State Protocol Agreement. These Supplemental Procedures state that a Class I record search and Tribal consultation will be considered adequate for the purposes of fluid minerals lease sales. Any subsequent realty or oil and gas projects or development will be

subject to a separate NEPA document and compliance with Section 106 of the National Historic Preservation Act. As oil and gas development actions or associated realty actions are proposed, the areas of potential effect (APE) will be defined and assessments of the impacts upon cultural resources will be undertaken. In the event that cultural resources are identified within a project area, steps will be taken to mitigate impacts to that resource. Mitigation most frequently involves site avoidance but may include data recovery. Should development uncover subsurface archeological or cultural materials, the lessee is required to halt all work until the site can be evaluated and proper mitigation measures can be implemented.

Stipulation #4: Cultural Resource Stipulation of Lease Sale Notices state if any lease is found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders, the “BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.”

Tribal consultation for the proposed lease sale in September 2011 is being conducted through direct consultation with the State of California Native American Heritage Commission (NAHC) for Sacred Lands, utilization of the NAHC’s Native American contact list provided for this lease sale, and other Native American tribes and individuals that the Hollister Field Office consulted with for these areas in Monterey and Fresno Counties. There are no known adverse impacts to places of traditional cultural importance or value to Native Americans.

I. Paleontological Resources

Paleontological resources on federal lands are protected by the Paleontological Resources Preservation Act of 2009. Adverse impacts (destruction or degradation) to fossils of scientific interest is effectively a loss of potential scientific knowledge. Exploration and development activities have the potential to adversely impact paleontological resources on all of the parcels being considered for oil and gas leasing because they are all known to be underlain by fossil-bearing rock formations. It is often difficult to predict what the impacts of excavation will be to fossil resources since fossils are often not visible on the ground surface and typically have a scattered distribution below ground. Low scientific value invertebrate fossils are generally much more abundant in the Monterey, Pancho Rico, and Etchegoin formations than high scientific value vertebrate fossils. Therefore, exploration and development activities have a much lower probability of impacting fossils of high scientific value than those of low scientific value. Due to the unpredictable nature of excavation impacts to scientifically-valuable fossil resources, it is

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beneficial to have a trained paleontologist on-site during excavation to identify potential paleontological resources as they are unearthed and assess their scientific value.

J. Livestock Grazing

There are no substantial direct or indirect impacts anticipated to livestock grazing operations or opportunities from the proposed action because such grazing use could occur concurrently. Should development activities on the surface lands leased under this action be proposed, subsequent site-specific NEPA documentation will address any site specific impacts and affected federal grazing lessees would be notified.

K. Lands

BLM does not administer land use authorizations on the surface of split-estate lands. All the parcels in Unit 4 located in the Panoche Coalinga ACEC would stipulate “No Surface Occupancy” in special status species habitat. The remaining 240 acres in Units 1 and 2 that are in public surface ownership represent less than 10% and of the acres being considered for leasing under the proposed action. There are no existing ROWs or other land use authorizations on these parcels. The reasonable foreseeable development would be less than 9 acres total if exploration drilling were to occur on BLM-administered lands, which is less than 4% of the BLM surface acres in Units 1 and 2. Therefore, the proposed action would have negligible long-term effects on land use authorizations on BLM public lands.

L. Farmland

The proposed action would have no effects on prime or unique farmlands because none of the parcels being considered for oil and gas leasing include the requisite soil types. Similarly, the effects of future oil and gas exploration activities on water resources that support agricultural uses in the Salinas Valley are also negligible because the reasonable foreseeable development scenario would only require enough water supply to support one well.. Based on the EPA estimates up to 5 million gallons per well, the proposed action may result in an additional 15.37 acre-feet of groundwater extraction from the (Upper) Salinas Valley Basin. This total represent less than one-hundredth of a percent (0.00011) of the existing agricultural water use in this subregion according to the MCWRA 2009 Summary Report. Furthermore, the impacts to local ranching and agricultural operations from the amount of water needed for this type of drilling (2-5 million gallons) could be mitigated by reusing flowback to conserve water and recycle the fluids.

M. Recreation

The proposed action would have no effects on recreation resources because most of the parcels being considered for oil and gas leasing are privately owned “split-estate”. Based on the reasonable foreseeable development scenario, potential effects of oil and gas activities on 360 acres of BLM-administered lands in Units 1, 2, and 4 would be negligible because there is no legal public access except to the 80-acre parcel in Unit 1 that is disjunct from the rest of the public lands in the Williams Hill area where the majority of recreational visitor use occurs.

N. Special Designations - Area of Critical Environmental Concern

The Panoche Coalinga ACEC is an important area identified in the Recovery Plan for the Upland Game Species of the San Joaquin Valley, California (FWS 1997). The suite of endemic species targeted in the Recovery Plan that occur on BLM public lands in the Panoche Coalinga ACEC include the San Joaquin kit fox, the San Joaquin dune beetle, the giant kangaroo rat, and the blunt-nosed leopard lizard.

Given that this region of California is not well researched or described in archaeological and biological studies, the preservation of such resources is considered a priority for BLM management. Therefore, a No Surface Occupancy stipulation would be applied to all the parcels in Unit 4 that are included in the proposed oil and gas lease sale. As a result, there would be no direct impacts to values for which the Panoche-Coalinga ACEC was established. Based on the 2005 RFDS, the indirect effects of the proposed action would be minor and short-lived. These effects are analyzed in the appropriate resources sections for which the ACEC was established.

IV. Proposed Action Alternative – Cumulative Effects

Under the proposed action, most of the exploration and development areas are expected to be adjacent to existing disturbed private lands such as existing oil fields. Based on the Hollister Field Office RFDS, the cumulative effects of the proposed action would be minor because it’s unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

Nevertheless, reasonable foreseeable energy and mineral exploration and development would have minor cumulative impacts on social and economic conditions and public land resources within the Hollister Field Office such as fish and wildlife, air and water quality, cultural and visual resources. Potential cumulative effects on local communities and private landowners include opportunities for employment and income, as well as increased vehicular traffic (including commercial vehicles), and increased noise and dust generation.

A. Oil and Gas Resources

Nearly all of the minerals that are managed by the BLM that is most prospective for oil and gas (i.e., within the boundaries of existing producing areas) are not currently leased. The percent of private minerals within the project area where there is likelihood for development that are already leased is unknown. Nonetheless, there are many opportunities for development both on private and public minerals. Since the Hollister PRMP/FEIS (2006) was completed, permitting requirements have become increasingly stringent, especially regarding minimizing impacts to air quality and endangered species habitat. This has resulted in an unknown number of wells not being drilled on BLM-administered lands (i.e. at least one confirmed). However, the significant rise in oil prices since then has resulted in an increase in the number of wells drilled in Kern County. In any event, the extremely small amount of development projected for this sale, although positive for oil and gas development, is considered to be negligible from a cumulative impact viewpoint.

For a more complete discussion of the types of activities associated with exploration, drilling, and production, in addition to the environmental consequences to Minerals and the cumulative impacts on oil and gas resources see the Hollister PRMP/FEIS, Ch. 4 (pp. 4.12-1 to 4.12-4).

B. Social and Economic Conditions

Since the impacts of reasonable foreseeable development of federal mineral estate to the local economy would be negligible, there would be no adverse cumulative impacts on the socio-economic conditions in Monterey or Fresno counties.

C. Visual Resource Management

Cumulative effects on visual resources by energy and mineral development include decreased scenic opportunities, increased vehicular traffic, and access or viewing of areas that are disturbed by exploration or development activities. However, based on the Hollister Field Office RFDS, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

D. Air and Atmospheric Values

The cumulative impacts areas of analysis are the North Central Coast Air Basin and the San Joaquin Valley Air Basin. Energy and mineral extraction processes may impact air quality due to the production of air pollution including exhaust emissions and dust from ground disturbing

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activities. However, based on the 2005 RFDS, it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office. Therefore, the expected emissions from drilling one well on one acre would be minimal and low in relation to the overall activity in the region. Small scale projects that have minimal impacts that are of short-duration would not likely contribute significantly to cumulative impacts (EPA 315-R-99-002; May 1999).

Providing a local source for oil production in an area with substantial infrastructure for refining and marketing the petroleum would serve to decrease the imports of gasoline and other refined fuel products into California, and would partially offset much larger emissions from long distance transportation of those products by ocean tankers, albeit by a very limited amount.

Climate Change

The assumptions incorporated into this EA suggest that one well would be drilled as a result of the proposed action. There is no generally accepted guidance for determining significance of project specific GHG impacts (SJVAPCD, 2009a). Emissions from the construction of one well would be expected to be lower than the national average because of vapor recovery systems and other pollution controls (i.e. Best Performance Standards [BPS]) mandated by the San Joaquin Valley Air Pollution Control District. Values for GHG emissions are expected to follow a similar pattern. Thus, direct GHG emissions from the proposed action would be undetectable on a nationwide basis and would be expected to have a very minor influence on global climate change. This is consistent with the SJVAPCD conclusion that existing science is inadequate to support quantification of impacts that project level GHG emissions would have on global climate change (SJVAPCD 2009b).

However, the effects of project specific GHG emissions are cumulative, and without mitigation their incremental contribution to global climatic change could be considered cumulatively considerable (SJVAPCD 2009a). The APCD's best approach in addressing cumulative impacts would be to require all projects to reduce their GHG emissions, through project design elements or mitigation. The proposed District policy for addressing GHG emissions impacts for stationary source projects indicates that the need to quantify project specific impacts is negated if emissions reductions are achieved by implementing BPS.

Climate models predict that, as a result of global warming, Southern California will tend to be hotter and drier in the future, with an increase in the frequency and duration of drought (Christensen et al. 2007). Drier conditions for the San Joaquin and Salinas valleys means that overall, there will be less vegetative growth. A shift in vegetation zones is also expected. Oak and Juniper woodlands will give way to scrublands, and scrublands to grasslands. Future grasslands will have more areas of bare soil and vegetation will be sparser. Woodlands may disappear from some portions of the San Joaquin and Salinas valleys and become restricted to

the higher elevations of the San Joaquin and Salinas valleys and surrounding foothills. Plant communities and animal guilds may migrate upward or northward in elevation, as the general area becomes drier. With a slight drying, the wild oat grasslands in the northern part of the San Joaquin Valley would be expected to shift to brome-dominated grasslands. As precipitation levels and recharge decline, some springs will dry up, while others will diminish in flow. This may have consequences for those plants and animals depending on these water sources.

The result of this change in the San Joaquin and Salinas valleys may result in conditions that are similar to those currently experienced during a series of drought years when very little rain falls in the region. During current drought conditions, herbaceous vegetation cover and production decreases, while the amount of bare ground increases. In some locations, individual plants and stands of perennial shrubs become dormant or even die due to increased stress.

A more arid environment would have varied effects on the San Joaquin Valley suite of species. Currently, during a series of extremely low rainfall years when annual plant production is reduced or absent and food resources become scarce, populations of blunt-nosed leopard lizards and small mammals, including giant kangaroo rat, Tipton kangaroo rat and San Joaquin antelope squirrel, tend to decline (Germano and Williams 2005, Rathbun 1998, Williams et. al. 1993). The decline continues until more widespread germination of annual plants resumes (Germano and Williams 2005, Rathbun 1998, Williams et. al. 1993). In the predicted more arid climate, during years with a low to average rainfall, herbaceous plant production would be reduced, and grass cover would be sparser and less persistent than what currently occurs during average rainfall years. Annual vegetation that is lower and sparser may partially benefit the small mammals and lizards of the San Joaquin and Salinas valleys since persistent non-native plant cover reduces habitat suitability for these species (Germano et. al. 2001). Population levels of these species will reflect the benefits of a more open structure versus the liabilities of decreased food resources.

Since San Joaquin Valley animal species have evolved under desert conditions they may be better able to persist in a more arid climate than other species. During drought conditions, populations decline but do not completely disappear. Populations recover once rainfall sufficient for germination occurs. So long as future drought periods do not exceed the time period that source animals can persist, the San Joaquin Valley suite of species are expected to persist. A more arid climate may also promote a more open and sparser vegetation pattern that these species favor. The non-native grasses and filaree that have invaded the region over the past two hundred years may become less persistent and dense, favoring a habitat structure the San Joaquin Valley species prefer.

The indirect impacts from leasing these parcels would result in one acre of habitat disturbance or loss. Since the predicted changes discussed above that would generally maintain suitable habitat

for the natural communities of the San Joaquin and Salinas valleys, this level of habitat disturbance would have negligible cumulative impacts on the biological resources of the region.

E. Soil Quality

There are a number of past and existing disturbances on the parcels proposed for leasing. The direct and indirect effects of the proposed action are limited to the local region, based on the 2005 RFDS, which anticipates up to 74 acres of soil that may be temporarily or permanently impacted. Thus, development of one well (one acre of habitat) would be negligible even if the disturbance is new and occurs on previously undisturbed lands.

In 2010, a former Clean Water Act exemption under the 2005 Energy Policy Act for oilfield construction expires; therefore, all oil and gas construction projects measuring 1.0 acres in size or greater would be subject to the California Regional Water Quality Control Board Storm Water Prevention and Protection Plan (SWPPs) requirements, in compliance with state and federal Clean Water Acts. As a result, there will be no cumulative effects to soil resources from the proposed action because all oil field construction projects 1.0 acres or greater in size would require storm water protection plans in 2010.

F. Water Quality

Surface disturbance associated with energy and mineral extraction activities may impact water resources by increased sedimentation or accidental introduction of contaminants into ground- or surface water. By implementing standard operating procedures for oil field practices and BLM best management practices, direct impacts to water quality would be avoided. Since there would be no direct or indirect effects to water quality as a result of the proposed action, there will be no cumulative effects to water resources.

Furthermore, any oil field construction project 1.0 acre or greater in size would be subject to the California Regional Water Quality Control Board Storm Water Prevention and Protection plan (SWPPs) in 2010; development associated with the RFD for the proposed action would be subject to these requirements.

G. Biological Resources Including Riparian and Wetlands

Impacts on wildlife habitat and species include reduced habitat quality from clearing vegetation, increased potential for soil erosion and sediment transport to off-site streams, and altering topography. In addition, construction of new roads and increased vehicles may impact habitat

continuity, increase wildlife disturbance, and increase the potential for human and wildlife interaction.

Loss, degradation and fragmentation of habitat have resulted in population declines for many San Joaquin Valley species. Development for agriculture, energy production, and urban areas, and recreational activities such as off-highway vehicles, has resulted in loss of habitat. Development at key locations, roads, trails and water canals have fragmented habitat. Incompatible land uses, such as trash dumping and heavy grazing has degraded habitat. Invasion of non-native weeds, and increases in predators, such as ravens and red fox, also contribute to habitat degradation. Large landscape fires have replaced mature shrub communities with non-native grasslands that can persist for one or more decades.

The conservation and recovery strategy for San Joaquin Valley species is a system of reserves and corridors. In the Hollister RMP Record of Decision (2007), BLM committed to managing all BLM lands within the Panoche-Coalinga ACEC as part of the conservation and recovery system by requiring a “No Surface Occupancy” stipulation on all oil and gas leases in special status species habitat.

Since the early 1990’s, compensation has been required for most new developments in special status species habitat. For every acre permanently disturbed, 3 acres must be set aside, and for every acre temporarily disturbed 1.1 acres must be set aside. Numerous entities have secured or pledged lands in various locations to be retained for conservation and mitigation banking. Energy companies and conservation organizations have added compensation lands to the system in such areas as Lokern, Kettleman Hills, Buena Vista Valley and Buena Vista Hills. Future development is likely to require compensation and more lands are likely to be added to conservation and mitigation banking system.

Habitat loss, fragmentation and degradation are likely to continue as a threat to species conservation and recovery in the San Joaquin Valley. However, the requirement for compensation and replacement acres will help secure lands for the reserve and corridor system. As habitat is incrementally disturbed, habitat will also be incrementally conserved, helping to prevent significant habitat losses. This will allow the conservation and recovery strategy for the San Joaquin Valley species to be implemented and offset impacts from development.

The BLM has determined that there would be adverse cumulative effects to San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, San Joaquin antelope squirrel, and the ACECs designated to conserve these species if the amount of habitat disturbance exceeds the conservation objectives of the San Joaquin Valley reserve and corridor strategy. Adverse impacts to listed species conservation and recovery would be considered major if habitat disturbance exceeds more than 10% of the Panoche-Coalinga ACEC.

The cumulative effects analysis areas for this lease sale was conducted to see if the current and reasonable foreseeable habitat disturbance for each lease parcel in a reserve area or habitat corridor reduced corridor connectivity or exceeded the 90% criteria. However, based on the 2005 RFDS, the cumulative effects of the proposed action would be negligible because it's unlikely that there would be more than 74 acres (< 1% of ACEC) of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

H. Cultural Resources & Native American Values

Impacts on cultural resources include accidental impacts to unknown or undiscovered cultural resources by ground-disturbing activities. However, based on the Hollister Field Office RFDS, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

I. Paleontological Resources

Based on the Hollister Field Office RFDS, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

J. Livestock Grazing

Based on the Hollister Field Office RFDS, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

K. Lands

Based on the Hollister Field Office RFDS, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

L. Farmland

Based on the Hollister Field Office RFDS, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

M. Recreation

Based on the Hollister Field Office RFDS, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

N. Special Designations - Area of Critical Environmental Concern

The BLM has determined that the effects to the values for which the ACEC was established are cumulatively significant if the amount of habitat disturbance exceeds the resource management objectives. Based on the requirement for a "No Surface Occupancy" stipulation on oil and gas leases in the Panoche Coalinga ACEC, there would be no cumulative effects of the proposed action.

V. No Action Alternative – Direct, Indirect, and Cumulative Impacts

Should the No Action alternative be selected, these lands would not be leased for oil and gas at the present time. They would remain available for competitive leasing in the future, should circumstances change to make that option worth re-considering. If these parcels are not leased, then foreseeable future resources and uses, as well as their current rates of change, would remain as described in the Affected Environment. Cumulative impacts of management activities with the no action alternative on public lands would remain as they exist presently and as described in the Affected Environment section of this document.

A. Oil and Gas Resources

The no action alternative would represent a fundamental change in the decisions of the Hollister RMP and would not comply with Mineral Leasing Act of 1920 and subsequent amendments, The Federal Oil and Gas Royalty Management Act of 1976 (Public Law 94-579), the Energy Policy Act of August 5, 2005, and current regulations and policies to manage lands for multiple uses. Failure to make these lands available for leasing and subsequent development would also result in the loss of potential additional reserves of oil and/or gas. The amount and value of lost reserves would be difficult to predict at this time without additional data.

B. Social and Economic Conditions

There would be no effects on social and economic conditions because the leases would not be offered.

C. Visual Resource Management

There would be no effects on visual resources because the leases would not be offered.

D. Air and Atmospheric Values

There would be no effects on air quality because the leases would not be offered.

E. Soil Quality

There would be no effects on soil quality because the leases would not be offered.

F. Water Quality

There would be no effects on water quality because the leases would not be offered.

G. Biological Resources Including Riparian and Wetlands

There would be no effects on biological resources because the leases would not be offered.

H. Cultural Resources & Native American Values

There would be no effects on cultural resources or Native American values because the leases would not be offered.

I. Paleontological Resources

There would be no effects on paleontological resources because the leases would not be offered.

J. Livestock Grazing

There would be no effects on livestock grazing because the leases would not be offered.

K. Lands

There would be no effects on land use authorizations because the leases would not be offered.

L. Farmland

There would be no effects on farmlands because the leases would not be offered.

M. Recreation

There would be no effects on recreation resources because the leases would not be offered.

N. Special Designations - Area of Critical Environmental Concern

There would be no effects on special designations because the leases would not be offered.

VI. MITIGATION

Appropriate mitigation measures are incorporated into the proposed action and no additional mitigation should be necessary.

Chapter 5. Consultation and Public Involvement

I. PERSONS, GROUPS, AND AGENCIES CONSULTED

Mr. Doug Alger - Cultural Resources Coordinator, Salinan Nation Cultural Preservation Association

Mr. Ruben Barrios, Sr. - Chairperson, Santa Rosa Rancheria of Tachi Yokuts

Mr. John W. Burch - Salinan Tribe of Monterey, San Luis Obispo and San Benito Counties

Mr. Gregg Castro - Administrator, Salinan Nation Cultural Preservation Association

Mr. Robert Duckworth - Environmental Coordinator, Salinan Nation Cultural Preservation Association

Mr. Lalo Franco - Director, Cultural Resources Department, Santa Rosa Rancheria of Tachi Yokuts

Mr. Jose Freeman - President, Salinan Nation Cultural Preservation Association

Ms. Judith Bomar Grindstaff

Ms. Donna Haro - Xolon Salinan Tribe

Ms. Susan Latta - Salinan Tribe

Ms. Shirley Macagni - Cultural Resources Representative, Salinan Tribe of Monterey, San Luis Obispo, and San Benito Counties

Mr. Michael A. Martinez - Salinan Tribe

Ms. Bonnie Pierce - Salinan Tribe of Monterey, San Luis Obispo, and San Benito Counties

Xielolixii - Salinan-Chumash Nation

II. SUMMARY OF PUBLIC PARTICIPATION

Ventana Conservation and Land Trust has been actively engaged in coordinating with public and private agencies to establish good separation between various competing land uses in the southern Monterey area since January of 2000. Ventana Trust has also been active in easement enforcement for the protection of cultural resources in southern Monterey County including preservation of Native Californian prehistoric and historic sites and historic remnants of early occupation of California. The Trust staff has advised numerous local residents about landscape preservation, historic landscape reconstruction, and preservation and enhancement of streambeds and watersheds. The Ventana Conservation and Land Trust is the only conservation organization with a specific focus on the natural and cultural resources of the interior of southern Monterey County. The Trust also has ongoing working relationships with descendents of the Chumash, Salinan and Esselen nations whose resources have the potential to be disrupted by the sale of oil and gas leases and their subsequent development.

Because the Trust is familiar with the Endangered Species Act, cultural resource law and other practices related to government conservation efforts, the staff has worked on a number of programs to increase awareness on the part of landowners about the importance of maintaining cultural and natural resources, including watershed and air quality attributes that characterize this region.

The Trust believes the development of oil and gas leases as illustrated in the existing NEPA documents will seriously impact regional viewsheds, water quality, air quality and rural lifestyle attributes of southern Monterey County.

For this reason, the Trust became involved in this issue and worked to inform other agencies, including the County of Monterey, the Native American Heritage Commission, the Fish and Wildlife Service, the Department of Fish and Game and the State Office of Historic Preservation of the potential damage this set of leases may result in if permitted to proceed to production.

III. LIST OF PREPARERS

Sky Murphy – Visual Resources, Planning and Environmental Coordination (Point of Contact)

Tim Moore – Minerals/HazMat

Mike Westphal – Wildlife Biology

Ryan O’Dell – Plant Biology

Erik Zaborsky – Archeology/Tribal Liaison

Stacey Schmidt – Rangeland

Christine Sloand/Dan Byrne – Realty

David Moore – GIS/Outdoor Recreation

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