Environmental Assessment (EA)
For
Oil & Gas Competitive Leasing
Certain Parcels within the
Bakersfield Field Office
March 12, 2008

EA No. CA-160-07-143

U.S. Department of the Interior
Bureau of Land Management
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Environmental Assessment (EA) for Leasing Certain Parcels within the Bakersfield Field Office for the March 12, 2008 Oil and Gas Lease Sale

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INTRODUCTION

The proposed action is to offer approximately 3,597.31 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.

All of the lands were nominated by industry, and therefore represent areas of high interest (See Appendix A description of lands). The parcel descriptions in Appendix A are based on the Expressions of Interest filed by industry; however, the lands will be re-parcelized for the Lease Sale Notice, which will create additional parcels. Of the approximately 3,597.31 acres of Federal mineral estate land that are considered for leasing, approximately 590.23 acres are public surface with Federal mineral estate and approximately 3,007.08 are split-estate (private surface with Federal subsurface minerals). All parcels would be subject to special leasing stipulations that would protect both endangered species and sensitive species and their habitat.

This Environmental Assessment (EA) is tiered to the Caliente Resource Management Plan/Environmental Impact Statement (RMP/EIS) dated May 5, 1997. The RMP/EIS is the most current land use plan located in the BLM Bakersfield Field Office. A more complete description of activities and impacts related to oil and gas leasing, development, production, etc. can be found in Chapter 5, page 33 of the RMP. Whether specifically mentioned or not, standard operating practices in the oilfield include measures to protect the environment and resources such as groundwater, air, wildlife, historical and prehistoric concerns, and others.

I. Background on BLM Oil and Gas Leasing and Lease Management

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.

2. Review process

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 (see 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 Bakersfield 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 existing document previously discussed.

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. BLM conducts and documents additional environmental analysis at the APD stage. BLM may require reasonable mitigation measures in the APD, consistent with the lease terms and stipulations.

3. Directional drilling from adjacent land to a federal 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.

4. 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 Limited Surface Use – Protected Species and Limited Surface Use – Sensitive Species (see Appendix B) 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.

Most new leases in California are never drilled, and only a very few result in producing wells. In fact, out of 445 parcels covering nearly 350,000 acres leased since September 1, 1997, only fourteen leases have had wells drilled on them. Of those, five had multiple wells, three had multiple producing wells, and the most wells drilled on any parcel was three. Land considered in this EA may have an overall higher potential for development, since some parcels are in or near existing developed fields with actively producing wells and all of them were specifically nominated for oil and gas leasing by the public. However, many of the lands that were leased in the past also met the same criteria, and they were never developed.

II. Purpose and Need for the Action

This action is to conduct a competitive oil and gas lease auction. 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.

Federal Onshore Oil and Gas Leasing Reform Act of 1987 Sec. 5102(a)(b)(1)(A) (Reform Act) directs the BLM to conduct quarterly oil and gas lease auctions with each state whenever eligible lands are available for leasing. By conducting a lease auction of the Federal mineral estate, it provides for a potential increase of energy reserves for the U.S., it provides 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. Description of the Proposed Action and Alternatives

To facilitate discussion, each parcel of land is identified by a number beginning with Parcel number 5. Map 1 in Appendix A shows the general location of each parcel and more details can be found on the website: http://www.blm.gov/ca/st/en/fo/bakersfield. 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. BLM will provide a crosswalk between the parcel numbers used in this EA and the parcel number actually used in the oil and gas lease auction.

Proposed Action

The proposed action is to offer the unleased federal minerals estate identified by the Parcel number referenced on Appendix A for oil and gas competitive auction to develop the federal mineral estate. All of the federal interests (surface and minerals) are within the jurisdiction of the Bureau of Land Management, Bakersfield, California. The counties involved in this proposal are Kern and Fresno. The location range is from Central Kern County to Fresno County. All or portions of Parcel Numbers 7, 8. 9, 10, 12, 13 and 14 are within the administrative boundaries of oil fields, and Parcel numbers 5, 6, 11, 18,

19, 20, 22,and 23 are 1-5 miles from oilfield boundaries. Those oilfields are: Guijarral Hills, Mt. Poso, Chico Martinez, Cal Canal, Cymric, Devil's Den, and Midway Sunset.

All of the parcels would have the Limited Surface Use – Protected Species and Limited Surface Use – Sensitive species stipulations attached to each lease form 3100-11 upon lease issuance. See attached Appendix B for the text of these stipulations.

A number of parcels are private surface overlying federal minerals, known as "split-estate". The BLM has split estate guidance, (Washington Instruction Memorandum No. 2003-131) effective April 2003. The guidance 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.

No Action

Under the No Action alternative, the proposed parcels identified on Appendix A will not be offered for competitive oil and gas lease auction. In this option, 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 would not be recovered if the lands were not leased.

Alternatives Considered but Not Further Analyzed - Exchange or Sale

In lieu of leasing, the surface and mineral estate (split estate lands) under BLM jurisdiction could be considered potentially suitable for disposal through exchange under Section 206 of FLPMA. The mineral estate could also be considered for sale under Section 209 of FLPMA. Either of these actions would privatize the mineral rights, as opposed to merely leasing them for a set period of time, as in the proposed action. Analyzing the potential sale or exchange of these nominated lands and the associated policy implications are beyond the scope of this document. Therefore, an exchange or sale alternative will not be further analyzed. This option will be more fully addressed in the new Caliente RMP, slated for completion in 2011.

IV. Conformance with the Existing Land Use Plans

The 1997 Caliente Resource Management Plan (RMP identifies all of these lands as open to oil and gas leasing, subject to certain environment controls indicated in the plan, Ch. 5 page 34. Consequently, this action is in conformance with the Plan. Most importantly, because every parcel is within potential threatened and endangered species and sensitive species habitat, all parcels would contain both Limited Surface Use –Protected Species and Limited Surface Use – Sensitive Species stipulations. These stipulations would ensure through a site specific biota survey and NEPA analysis that all protected or sensitive species issues were addressed prior to any surface disturbance. This would ensure protection of the resources and also provide notification to the lessee that further consultation and mitigation/compensation might be necessary prior to authorization of surface disturbance. No new surface disturbance in those areas is authorized in this proposed action – this EA is for competitive oil and gas auction only. Further analysis and approval would be required prior to actual surface disturbance.

Management Area General Objectives

The following objectives from the Caliente RMP will apply to all oil and gas related activities within the subject parcels:

• manage public lands to provide healthy, sustainable, biologically diverse ecosystems contributing goods, services and other social and cultural needs for local communities, the region and nation;

• manage public lands to meet the following minimum Standards of Ecosystem Health (See Chapter 6 Pg. 49 of the 1997 Caliente RMP for further explanation and indicators used to determine whether or not these standards are being met):

• Soils exhibit functional biological and physical characteristics that are appropriate to soil type, climate, and land form.

• Healthy, productive and diverse populations of native species, including special status species (Federal T&E, Federal proposed, BLM sensitive, or Calif. State T&E) are maintained or enhanced where appropriate.

• Riparian/wetland vegetation, structure and diversity and stream channels and floodplains are functioning properly and achieving advanced ecological status.

• Surface and groundwater quality complies with California or other appropriate water quality standards.

• provide a leadership role in developing and implementing regional conservation strategies,

• dedicate public lands to meet San Joaquin Valley conservation goals,

• integrate management objectives with and assist local county governments, private organizations, and state agencies in the development and implementation of local management plans (e.g. Habitat Conservation Plans, mitigation banks, county general plans, air and water quality plans), and

• collaborate with the oil and gas industry in meeting mutually beneficial management objectives.

Allocations

All 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

Oil and gas leasing and development have been previously addressed in more detail in the **1997 Caliente RMP/EIS beginning in Chapter 2, page 68**. 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.

Final Caliente RMP/EIS dated May 5, 1997

This action is also within the scope of the Caliente RMP Biological Opinion dated March 31, 1997 (101-97-F-64).

V. Affected Environment

Socio-Economic

The current Federal oil and gas leases in California produce approximately 16.9 million barrels of oil and 4.6 billion cubic feet of gas per year. Approximately 80-90% of this production comes from Kern County. The market value of these products from Kern County is over $1 billion per year. This produces over $100 million dollars in U.S. royalties.

Visual Resource Management

The parcels up for competitive oil and gas lease auction are in Visual Resource Management Class III and Class IV areas. Parcel Number 6 is in Classes III and IV, Parcel Numbers 19, 20, 22, and 23 are in Class III, and Parcel Numbers 7, 8, 9, 10, 11, 12, 13, 14, and 18 are in Class IV.

VRM Class III. This classification means that the existing characteristic landscape has been and will continue to be partially retained. The level of change in any of the basic landscape elements due to management activities may be moderate and evident.

VRM Class IV. This classification means that the characteristic landscape has had major modifications and such modifications may continue. The level of change in the basic landscape elements due to management activities can be high. Such activities may dominate the landscape and be the major focus of viewer's attention.

Recreation

The vast majority of the acres proposed for lease, 3,007 of the 3,597 acres have private surface ownership and do not provide for public recreation opportunities. Parcels that have both federal surface and mineral estates (approximately 509 acres) are scattered and have limited public access. As a result, there are few recreation opportunities associated with the lands proposed for lease. The limited public use occurring on these lands include hiking, hunting and OHV use. Lease auction of these parcels will have little to no effect on recreational opportunities.

Air, Soil, and Water

Air Quality

The project area is located in Kern and Fresno Counties. These counties are located in one air basin - the San Joaquin Valley Air Basin. Oversight authority for air quality matters rests at the county level with the San Joaquin Valley Air Pollution Control District (*SJVAPCD*). At the state level, regulatory duties lie with the California Air Resources Board (CARB) and at the federal level with the U.S. Environmental Protection Agency (EPA), Region IX. The Bureau of Land Management has air program responsibilities through its permitting programs and Clean Air Act requirements to analyze all actions for conformity to air quality plans.

The *SJVAPCD* has prepared air quality plans for both PM10 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 PM10 precursors in the San Joaquin Valley Air Basin" and "Extreme Ozone Attainment Demonstration Plan, San Joaquin Valley Air Basin Plan Demonstrating Attainment of Federal 1-hour Ozone Standards." These plans include sections on emissions inventory and control strategies. These sections include discussions on oil and gas development. The attainment status of the San Joaquin Valley Air Basin is as follows:

Standard	State Ambient Air Quality Standard	Federal Ambient Air Quality Standard
PM_{10}	Non-attainment	Non-attainment
Carbon Monoxide	Attainment	Unclassified/attainment
Ozone	Non-attainment	Non-attainment

The USEPA designated the non-attainment areas for the new 8-hour ozone standard in April 2004 and the new PM2.5 standard in 2005. The air plans for these new designations have not been prepared yet. Therefore, this EA will refer to existing plans. Due to the nature of these two pollutants, many of the provisions from the existing plans would be in the new plans. The Oil and Gas industry is highly regulated by the districts. The air plans are implemented through rule making which include a number of categories including permitting, equipment requirements and performance standards, dust and precursor emissions (NOx and SOx) and others. Any oil and gas and lands activities authorized by BLM, including oil and gas leasing and rights-of-way, would also have to comply with all of the applicable rules and permitting requirements.

Currently there are a number of emission sources in the air basin which affect pollution levels. The *SJVAPCD* has documented these in their air plan inventories. They show the baseline (1990) emissions for NOx at 787 tons per day in the summer time. Of that total, 165.1 tons (21%) were from oil and gas production. Kern County oil and gas activities accounted for approximately 15% of the NOx emissions (117.3 tons per day). Kern County has 1,000-2,500 new oil and gas wells drilled every year. In addition, emissions from hundreds of thousands of automobiles and trucks and significant other industrial and agricultural sources accounted for another 147 tons of NOx per day in Kern County in 1990.

References
http://www.arb.ca.gov/desig/desig.htm
http://www.epa.gov/region09/air/sips/index.html

Soils

Soils on these properties are typical of those developed from relatively fine-grained residual or alluvial materials under semi-arid to arid conditions. A characteristic soil tends to be very deep, well-drained, light colored, and loamy in texture with some rock fragments. Some parcels may contain soils with an abundance of alkaline salts and carbonates. These soils are also characterized by moderately slow permeability, slow surface runoff and slight erosion hazards on slopes. In areas of slightly greater slope (9-15%), runoff and erosion are moderate. Where slopes are greater than 30%, surface runoff is rapid and erosion hazard is moderate to severe. In some areas, especially where Torriorthents soils occur, plant growth may be naturally reduced because the potential rooting depth of plants is restricted by excess salts that have not leached from the soil.

Water Quality

The parcels are in areas where there are or may be fresh water aquifers. Other than those, there are few or no other surface waters that are fresh.

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, regulations, and policies to protect both surface and groundwater.

Climate Change

Recent analysis of global climate model predictions predicts that southern California will become hotter and drier (Christensen et al. 2007). 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.

Biological Resources

To facilitate discussion, the properties included in this action have been divided into six Biological Units, i.e., groupings of adjacent parcels with similar ecological values. Unit names reflect some aspect of local geography. Information presented for each Biological Unit includes general topography, notable disturbance, vegetation, common animals, and potential sensitive species. For some units, particular characteristics of individual parcels are also noted.

Special Status Species. Special Status Species includes federally listed, state listed and BLM California sensitive species. Each unit discussion includes a discussion of Special Status Species.

Huron Unit (Parcel 5)

The Huron Unit consists of 200 acres located on the west side of the San Joaquin Valley, about four miles southwest of the town of Huron, just north of highway 5. Elevation ranges from 445 to 465 feet. Topography is essentially flat, with a very gentle decline to the northeast. The entire parcel has been converted to agriculture.

This parcel is under active cultivation with row crops. Vegetation consists of planted crops and its associated weeds. There is no native habitat in the immediate area. Wildlife would be limited to species which frequent agricultural areas such as crows, California ground squirrel, desert cottontail, and pocket gopher. There is a slight possibility that very mobile species, such as the San Joaquin kit fox or burrowing owl could occasionally make use of the parcel.

Orchard Peak Unit (Parcel 6)

The Orchard Peak Unit consists of 640 acres located in the Bluestone Ridge on the west side of the San Joaquin Valley, one mile northeast of Orchard Peak. Elevation ranges from 1,200 to 2,200 feet. Topography consists of a series of steep ridges and canyons, draining primarily to the east. Very little disturbance is visible from aerial photos. Current use appears to be as grazing lands.

Vegetation in this unit appears to be primarily non-native grassland, with upper Sonoran sub-shrub scrub (sometimes called coastal scrub). There are a few junipers (*Juniperus californica*) on the unit: however, true juniper woodland community is only present to the west of this site. Some scrub areas may be composed primarily of saltbush (*Atriplex* spp.).

The strongest influence on vegetation appears to be slope aspect: grassland is dominant on south-facing slopes, while shrub communities are more common on north-facing slopes. Shrubs in this area include species such as California sagebrush (*Artemesia californica*), California buckwheat (*Eriogonum fasciculatum*), matchweed (*Gutierrezia californica*), black sage (*Salvia melifera*), saltbush (*Atriplex polycarpa*), and yucca (*Yucca whipplei*). Grassland and understory annuals include species such as the non-native wild oats (*Avena* spp.), bromes (*Bromus* spp.), and filaree (*Erodium* spp.) as well as native

bunchgrasses (*Poa secunda* and *Nassella* spp.). Native wildflowers include species such as fiddleneck (*Amsinckia* spp.), popcorn flower (*Crypthantha* spp.), locoweed (*Astragalus* spp.), lotus (*Lotus* spp.), lupine (*Lupinus* spp.), phacelia (*Phacelia* spp.), and poppy (*Eschscholtzia* spp.). Potential weeds on this parcel include tamarisk, horehound, tree tobacco and Russian thistle.

Numerous animal species are to be expected from the parcel area. Reptiles may include western fence lizard, side-blotched lizard, desert night lizard, western whiptail, gopher snake, and western diamondback rattlesnake. Birds to be expected include turkey vulture, golden eagle, red-tailed hawk, American kestrel, mourning dove, killdeer, greater roadrunner, barn owl, Say's phoebe, Ash-throated flycatcher, scrub jay, common raven, yellow-billed magpie, bushtit, rock wren, tree swallow, violet-green swallow, cliff swallow, Bewick's wren, California towhee, California quail, Phainopepla, loggerhead shrike, lark sparrow, dark-eyed junco, western meadowlark, lesser goldfinch, and the house finch. Mammals expected include desert cottontail, black-tailed hare, California ground squirrel, Bottas' pocket gopher, desert woodrat, California vole, coyote, raccoon, striped skunk, mule deer, long-tailed weasel, badger, bobcat, and wild pig.

Special status animal species that may be present include San Joaquin kit fox, San Joaquin antelope squirrel, burrowing owl and pallid bat. The area is within the historic range of the California condor. Although critical habitat for the California red-legged frog and California tiger salamander occurs west of this unit, the parcel does not appear to have any potential habitat (breeding or aestivation habitat) for either species.

The Orchard Peak Unit is within the historical range of the federally endangered California jewelflower (*Caulanthus californicus*). The recently delisted Hoover's woollystar (*Eriastrum hooveri*) may also be found on these parcels. A number of BLM sensitive plant species from the Temblor region may possibly occur within this unit as well: pale-yellow layia (*Layia heterotricha*), Munz's tidy tips (*Layia munzii*), showy madia (*Madia radiata*), Hall's tarplant (*Deiandra halliana*), Mason's neststraw (*Stylocline masonii*), Lemmon's jewelflower (*Caulanthus coulteri* var. *lemmonii*), Temblor buckwheat (*Eriogonum temblorense*) straight-awned spineflower (*Chorizanthe rectispina*), San Benito spineflower (*Chorizanthe biloba* var. *immemoria*), recurved larkspur (*Delphinium recurvatum*), round-leaved filaree (*California macrophylla*), shining navarretia (*Navarretia nigelliformis* ssp. *radicans*), Panoche peppergrass (*Lepidium jaredii* spp. *album*), and San Bernardino aster (*Symphyotrichum defoliatum*).

Chico Martinez Unit (Parcels 7, 8, 9, 10)

The Chico Martinez Unit consists of 220 acres located on the west side of the San Joaquin Valley, on the eastern edge of the Temblor range, east of the Chico Martinez ACEC and within the Chico Martinez Oil Field. Elevation ranges from 850 to 1,120 feet. The parcels lie just to the east of the Temblor range, but are mostly flat. The southwestern corner of parcel 8 contains some Temblor foothills. All of the parcels contain roads and parcels 7 and 8 show evidence of previous oil development.

Vegetation in the Chico Martinez Unit is predominately a mixture of sparse saltbush scrub and non-native annual grassland with prominent bare shale expanses on some of the south-facing slopes. Shrubs present include species such as common saltbush (*Atriplex polycarpa*), bladderpod (*Isomeris arborea*), buckwheat (*Eriogonum fasciculatum* var. *porifolium*), goldenbush (*Ericameria linearifolia*), and snakeweed (*Gutierrezia californica*). Grassland species would include the weedy non-native annual bromes (*Bromus* spp.), non-native filaree (*Erodium cicutarium*), and native wildflowers such as goldfields (*Lasthenia* spp.), phacelia (*Phacelia* spp.), lupines (*Lupinus* spp.), locoweeds (*Astragalus* spp.), fiddleneck, (*Amsinckia* spp.), and pepperweed (*Lepidium* spp.). Much of the area has been previously disturbed. Additional weeds to be expected include horehound (*Marrubium vulgare*) and Russian thistle (*Salsola tragus*)

Wildlife typical of the saltbush scrub and non-native grasslands within the Chico Martinez Unit include side-blotched lizards, western whiptail, blunt-nosed leopard lizard, coachwhip, gopher snake, common kingsnake, western diamondback rattlesnake, turkey vulture, Northern harrier, red-tailed hawk, American kestrel, mountain plover, long-billed curlew, mourning dove, greater roadrunner, barn owl, burrowing owl, horned lark, common raven, Northern mockingbird, LeConte's thrasher, water pipit, loggerhead shrike, lark sparrow, sage sparrow, white-crowned sparrow, western meadowlark, desert cottontail, black-tailed hare, San Joaquin antelope squirrel, California ground squirrel, San Joaquin pocket mouse, Heerman's kangaroo rat, giant kangaroo rat, short-nosed kangaroo rat, deer mouse, southern grasshopper mouse, coyote, San Joaquin kit fox, badger, and bobcat.

There are several California and federally listed animals in the Chico Martinez area, including blunt-nosed leopard lizard (*Gambelia sila*, Federally Endangered, California Endangered); San Joaquin antelope squirrel (*Ammospermophilus nelsoni*, California Threatened), and San Joaquin kit fox (*Vulpes macrotis mutica*, Federally Endangered, California Threatened). Prairie falcons have also been reported in the area. Recent biological surveys conducted during geophysical projects in the Chico Martinez area have not identified widespread small mammal burrowing, possibly a consequence of the shale soil, which is a poor substrate for burrowing activity.

Rare plants in the area include the federally endangered San Joaquin woollythreads (*Monolopia congdonii*), the recently delisted Hoover's woollystar (*Eriastrum hooveri*), and the BLM sensitive Temblor buckwheat (*Eriogonum temblorense*).

California Aqueduct Unit (Parcels 11, 12, 13, 14)

The California Aqueduct Unit consists of 1,560 acres located on the west side of the San Joaquin Valley, northwest of the town of Buttonwillow. Elevation ranges from 275 to 475 feet. The area's topography consists of an essentially flat, gentle alluvial fan draining to the northeast. Parcels 11 and 13 are bisected by the California Aqueduct, parcels 12 and 14 lie to the west of the canal.

Vegetation in the California Aqueduct Unit is primarily agricultural. Only the eastern portion of parcel 13 has native vegetation. All the other parcels have some kind of agriculture, either row crops or pistachios, with the general trend in the area being conversion to pistachio orchards. The eastern portion of parcel 13 supports alkali sink vegetation and is within a much larger expanse of this rare and rapidly disappearing vegetation. The alkali sink area is designated a reserve area in the Draft Kern Valley Floor Habitat Conservation Plan due to the quality of the habitat. Alkali sink vegetation consists of low shrubs and herbs, species adapted to low levels of precipitation and soils with high alkalinity and salts. Some areas supporting this vegetation type are flooded during years of high rainfall. Typical shrubs include iodine bush (*Allenrolfea occidentalis*), alkali heath (*Frankenia salina*), glasswort (*Salicornia subterminalis*), and seepweed (*Sueda moquinii*). Saltgrass (*distichlis spicata*) is common and saltbush (*Atriplex* spp.) is present in the less alkaline sites. Alkali sink vegetation includes wildflowers such as pepperweed (*Lepidium* spp.), goldfields, (*Lasthenia* spp.), and Indian paintbrush (*Castilleja* spp.). Weedy species include saltcedar (*Tamarix* spp.), Russian thistle (*Salsola tragus*), five hook bassia (*Bassia hyssopifolia*), and red brome (*Bromus madritensis* ssp. *rubens*) in the less alkaline sites.

Wildlife on the cultivated parcels would be limited to mobile species that wander onto the edges of the cultivated fields. Native lands from nearby support saltbush scrub with kangaroo rats (giant, Heerman's and short-nosed), grasshopper mouse, California pocket-mouse, San Joaquin kit fox, California ground squirrel, desert cottontail, black-tailed jackrabbit, burrowing owl, short-eared owl, horned lark, meadowlark, loggerhead shrike, and side-blotched lizard. Kern mallow is also

known from the nearby native parcel, but is not likely to occur on the subject parcel. The alkali sink habitat on the eastern portion of parcel 13 may provide habitat for Tipton kangaroo rats.

Several California and federally listed animals have the potential to occur in the California Aqueduct area: giant kangaroo rat, Tipton's kangaroo rat and San Joaquin kit fox. BLM sensitive animal species potentially present include burrowing owl, short-nosed kangaroo rat, San Joaquin pocket mouse, Tulare grasshopper mouse, and pallid bat.

The California Aqueduct Unit is within the historical range of the federally endangered California jewelflower (*Caulanthus californicus*), a historical record next to parcel 14 is now within agricultural lands. The known distribution of the federally endangered Kern mallow (*Eremalche parryi* ssp. *kernensis*) occurs 4 miles south of these parcels. The recently delisted Hoover's woollystar (*Eriastrum hooveri*) is expected on these parcels. Special status plant species reported nearby and with high potential of occuring on parcel 13 include Lost Hills crownscale (*Atriplex vallicola*), showy madia (*Madia radiata*), and recurved larkspur (*Delphinium recurvatum*).

Deepwell Ranch Unit (Parcel 18)

The Deepwell Ranch Unit consists of 40 acres located in the low hills to the west of the Sierra Nevadas, north of the Kern River. Elevation ranges from 940 to 1,060 feet. Topography ranges from gentle to moderately sloped hills. Current use appears to be as grazing lands and the only disturbance visible from aerial photos is a small dirt road in the extreme north west corner.

Vegetation consists of non-native annual grassland, dominated by introduced species such as red brome (*Bromus madritensis* ssp. *rubens*), red-stemmed filaree (*Erodium cicutarium*), and foxtail fescue (*Vulpia myuros*). Native wildflowers present include species such as fiddleneck (*Amsinckia* sp.), lupine (*Lupinus* sp.), pepper grass (*Lepidium* sp.), popcorn flower (*Crypthantha* sp.), locoweed (*Astragalus* sp.), and lotus (*Lotus* sp.). Goldenbush (*Isocoma acradenia* var. *bracteosa*) would be encountered as a minor component of the vegetation, with isolated individuals of other native shrubs such as common saltbush (*Atriplex polycarpa*) and bladderpod (*Isomeris aborea*). Weedy species in the area include horehound (*Marrubium vulgare*), Russian thistle (*Salsola tragus*), tree tobacco (*Nicotiana glauca*), and white horse-nettle (*Solanum elaegnifolium*).

Wildlife typical of the area includes species such as black-tailed hare, desert cottontail, California ground squirrel, Botta's pocket gopher, coyote, kit fox, American badger, red-tailed hawk, mourning dove, burrowing owl, western kingbird, common raven, white-crowned sparrow, western meadow lark, side-blotched lizard, and western rattlesnake. Heerman's kangaroo rat and western whiptail may also be present.

Potential sensitive animal species for these parcels include blunt nosed leopard lizards, kit fox and burrowing owl. Blunt-nosed leopard lizards (federally endangered) are historically known from the Kern Front Oilfield. Blunt-nosed leopard lizards have not been observed in the area in recent times (past 10 years). In years of light to average rainfall, when annual vegetation is sparse, areas of the parcel may provide suitable habitat for blunt-nosed leopard lizards. San Joaquin kit fox (federally endangered) are known to occur in the vicinity. The parcel may provide denning and foraging habitat for kit fox.

Potential listed plants for this parcel include the federally endangered Bakersfield cactus (*Opuntia basilaris* var. *treleasei*) and the federally threatened San Joaquin adobe sunburst (*Pseudobahia peirsonii*). BLM sensitive species that may have potential of being in this area include oil neststraw (*Stylocline citroleum*), striped adobe lily (*Fritillaria striata*), and recurved larkspur (*Delphinium recurvatum*).

Temblor Unit (Parcels 19, 20, 22, 23)

The Temblor Unit consists of 900 acres located in the Temblor Range, southwest of Derby Acres. Elevation ranges from 1,900 to 2,600 feet. Topography ranges from moderate to steeply sloped hills. Current use is grazing, hunting, and recreational vehicle travel. Disturbance visible from aerial photos includes road networks, off road vehicle tresspass, cattle trailing, and bare zones surrounding cattle troughs.

Vegetation in the Temblor Unit consists of upper Sonoran subshrub scrub, saltbush scrub, and non-native annual grassland. Both the upper Sonoran subshrub scrub and saltbush scrub vegetation communities consist of soft-wooded, relatively low shrubs about four feet tall in a fairly open structure and with a non-native grassland understory. Characteristic shrubs of the upper Sonoran subshrub scrub include interior goldenbush (*Ericameria linearifolia*), desert tea (*Ephedra californica*), California buckwheat (*Eriogonum fasciculatum* var. *polifolium*), alkali goldenbush (*Isocoma acradenia* var. *bracteosa*), bladderpod (*Isomeris arborea*), and snakeweed (*Gutierrezia californica*). Saltbush scrub is dominated by common saltbush (*Ariplex polycarpa*), but may also include elements from the upper Sonoran subshrub scrub. The non-native grassland is dominated by European species such as filaree (*Erodium circutarium*), red brome (*Bromus madritensis* ssp. *rubens*), soft chess (*B. hordeaceus*), ripgut (*B. diandrus*), and Arabian grass (*Schismus* spp.). The native one-sided bluegrass (*Poa secunda* ssp. *secunda*) is also present. Native wildflowers present include species such as fiddleneck (*Amsinckia* spp.), lupine (*Lupinus* spp.), pepper grass (*Lepidium* spp.), popcorn flower (*Crypthantha* spp.), locoweed (*Astragalus oxyphysus* var. *nigracalyx* and *A. lentiginosus*), dove weed (*Eremocarpus setigerus*), clover (*Trifolium* spp.), red maids (*Calandrinia ciliata*), annual buckwheat (*Eriogonum* spp.), owl's clover (*Castilleja* spp.), and vinegarweed (*Trichostemma ovatum*). Weedy species in the area include horehound (*Marriubium officinalis*) and in the vicinity of cattle troughs, cheeseweed (*Malva parviflora*).

Wildlife typical of the Temblor Unit include desert cottontail, black-tailed hare, San Joaquin antelope ground squirrel, California ground squirrel, Botta's pocket gopher, San Joaquin pocket-mouse, short-nosed kangaroo rat, Heerman's kangaroo rat, deer mouse, southern grasshopper mouse, coyote, San Joaquin kit fox, badger and bobcat. Evidence of small mammal activity is widespread across the landscape. Bat species, such as pallid bat, Mexican free-tail bat and western pipistrelle, forage in the open habitat. Characteristic bird species include turkey vulture, northern harrier, red-tailed hawk, American kestrel, California quail, mourning dove, roadrunner, barn owl, burrowing owl, horned lark, raven, mockingbird, loggerhead shrike, lark sparrow, sage sparrow, white-crowned sparrow and western meadowlark. The presence of mature saltbush influences the presence of many bird species and some of the mammal species. Reptile species include side-blotched lizard, southern alligator lizard, western whiptail, coachwhip, gopher snake, common kingsnake and western rattlesnake.

Several California and federally listed animals have the potential to occur in the general area: blunt-nosed leopard lizard (*Gambelia sila*, FE, CE); giant kangaroo rat (*Dipodomys ingens*, FE, CE); San Joaquin antelope squirrel (*Ammospermophilus nelsoni*, CT) and San Joaquin kit fox (*Vulpes macrotis mutica*, FE, CT).

The Temblor Unit supports potential habitat for two BLM sensitive species, Temblor buckwheat (*Eriogonum temblorense*) and Tejon Poppy (*Eschscholtzia lemmonii* spp. *kernensis*). The recently delisted Hoover's woollystar (*Eriastrum hooveri*) may also be found on these parcels.

RIPARIAN AND WETLAND HABITAT

Riparian habitat may occur in the Orchard Peak Unit. Two locations, within an unnamed intermittent drainage and tributary, appear to support woody vegetation that may be cottonwoods, willows or *Baccharis* sp. Each site may be only 1-2 acres in size. One unnamed solid line drainage also occurs in the Orchard Peak Unit, although it does not appear to support riparian vegetation according to 2003 aerial photographs. Approximately ¼ mile of the California Aqueduct crosses parcel 13 in the California Aqueduct Unit. There is no riparian habitat associated with the California Aqueduct on parcel 13. The portion of parcel 13 east of the California Aqueduct is alkali sink habitat that may experience occasional flooding.

Cultural Resources

The lease parcels identified in this document fall within the prehistoric territories of the Salinan Indians, Chumash Indians and three Yokut tribelets; the Tachi, Tulumne, and Paleumne. To facilitate discussion, the properties in this action have been divided into three units corresponding to Native American ethnographic territories. In several instances these groupings were similar to the units created in the Biological Resources section of this document, therefore where possible those unit names have been included.

Parcels 5 and 6 (Huron Unit and Orchard Peak Unit) Tachi Yokuts and Salinan Indians

Parcels 5 and 6 are located in an area difficult to categorize ethnographically. It appears that the region was used by both the Salinan and the Tachi Yokuts. For example, several sources indicate that Yokuts territory extended west to the watershed of the Coast Range; which would have encompassed these properties. However, the largest documented prehistoric Salinan village site was located at the present-day town of Cholame, west of parcel 6. Consequently, it would seem that this region would have been traveled by both groups during hunting and gathering activities, as well as trading expeditions. Since the Salinan had access to marine resources within their territory and the Yokuts had resources particular to the San Joaquin Valley and its lakes, trade between these two tribal groups was highly probable.

Salinan territory stretched from the California Coast to the edge of the Coast Ranges. Their language is included in the Hokan language family, as is the dialects of their neighbors the Chumash and Esselen. Apparently the Salinan made use of many edible resources; in fact sources indicate that they utilized many species of fish, reptiles, birds, and mammals. Plant foods included six varieties of acorn, berries, pine nuts, wild oats, sunflower, chia, sage, Yucca, prickly pear and bulbs. Salinan material culture is typical of California groups; they manufactured basketry, flaked stone tools, and shell beads for trade and decoration among other goods.

The Tachi Yokuts were one of fifteen tribelets belonging to the Southern Valley Yokuts. Their territory included the western and eastern shores of Tulare Lake, which would have afforded them an abundance of lake and marshland resources; and extended west to the Kettleman Hills and Lemoore. As a result, Tachi Yokuts subsistence practices focused upon fishing, hunting waterfowl and terrestrial animals, and the gathering of plant foods.

The historic period began upon the coast of California much sooner than the interior, therefore affecting the Salinan population before the Yokuts. In fact, two of the earliest missions in California were located in Salinan territory; San Antonio de Padua Mission was established in July 1771, and Mission San Miguel was founded in July 1797. Don Pedro Fages is recorded as the first European to enter the San Joaquin Valley, during an expedition in 1772. Other Spanish explorations in this region included Father Francisco

Garces, whose travels in 1776 included the Kern River and the San Joaquin Valley before reaching the California Coast. Within a few decades the traffic of Spanish missionaries and soldiers turned into a larger population of Euro-American pioneers, working as trappers, miners and farmers. Once the settlers moved into the area, primarily for ranching and agricultural purposes, territories of both the Salinan and Yokuts became severely restricted.

Parcels 7-14 and 19-20 and 22-23 (Chico Martinez, California Aqueduct, and Temblor Unit) Tulumne Yokuts and Inland Chumash The seven parcels listed above fall within the prehistoric territory of the Tulumne Yokuts who were concentrated around portions of Buena Vista Lake, but their range extended northwest to McKittrick, north between Lokern and Lost Hills, west to Bitterwater Creek near Taft, and south to San Emigdio. Tulumne territory is well known due to several prominent archaeological investigations conducted in the vicinity of Buena Vista Lake prior to the 1960s. In fact, the excavations at Tulumne village sites and cemeteries dominate the archaeological information associated with Southern Valley Yokuts. Parcels 22 and 23 located within the Temblor range may have been a transition area between the Yokuts and the Inland Chumash to the West. The Inland Chumash were concentrated to the west of parcels 22 and 23 in the Cuyama Valley but archaeological evidence indicates that they may have visited this area throughout prehistory.

Parcel 18 (Deepwell Ranch) Paleumne Yokuts
The Paleumne Yokuts had several villages located within a few miles of Poso Creek and north to Little Poso Creek; the village sites of Wahkoiu (Wah-koi-oo), Sike Tepu (Sick-ē Tē-poo) and Báakeu (Bā-ā-kē-oo). Although these villages were located within a distinct area, near the major drainage of Poso Creek, the territory of the Paleumne Yokuts is said to have extended north as far as White River. Parcel 18 lies within the Paleumne Yokut prehistoric territory although it is north of the known primary village locations.

The bulk of the plant foods in the Yokuts diet were acorns, chia seeds, manzanita berries, and wild oats; while hunted animals consisted of deer, quail, rabbits, squirrels, waterfowl, and fish. Some examples of goods manufactured and utilized among the Yokuts included flaked stone tools, intricate basketry, tanned animal hides, and the bow and arrow. Prehistoric sites common to Salinan and Yokut groups include temporary hunting camps, pictograph rock art, bedrock mortar and millingstone food processing stations, lithic scatters, and habitation sites.

A very limited amount of cultural resources surveys have been conducted on lands identified in this document. Therefore, if realty or oil and gas projects are proposed on these lands, Native American consultation and archaeological surveys will be conducted to identify national register eligible properties. These archaeological surveys will be conducted to fulfill our legal obligations under Section 106 of the National Historic Preservation Act.

Livestock Grazing

The lands proposed for leasing for which BLM owns the surface estate may also be leased by the BLM for livestock grazing. Small portions of grazing allotments #00063 (Chico Martinez), and #00015 (North Temblor) are included in the proposed action. These allotments are authorized for grazing of cattle or sheep, with varying seasons of use and other terms and conditions.

Lands

The lands proposed for leasing are mainly: 1) scattered split estate mineral parcels under the jurisdiction of BLM and 2) a few scattered parcels of full fee estate (surface + mineral estate) under the jurisdiction of

BLM. For the split estate parcels, the United States not only owns any minerals in the land, but also surface entry rights that 'float' over the entire parcel.

Parcel 5 is a split estate parcel located in southwestern Fresno County east of the town of Coalinga near Interstate 5. Direct access to the parcel may be available from Phelps or Butte Avenue. Primary land use in the area is agricultural development.

Parcel 6 is a split estate parcel located in western Kern County near the intersection of Kings, Monterey, and San Luis Obispo Counties. Livestock grazing is the primary land use in the area. There is no physical access to the parcel for the United States and any lessees.

Parcels 7, 8, 9, and 10 are located in western Kern County near the San Luis Obispo County line. These are surface and minerals estate parcels managed by BLM. The primary land use in the area is oil and gas development. Strip mining has occurred in the area in the past. Seventh Standard Road provides legal access into the area with physical access to each parcel provided by various oilfield and mining access roads. The parcels are near BLM's Chico Martinez ACEC. A right-of-way is located on Parcel 10 for a road and oil pipeline (S 1047).

Parcels 11 and 12 are split estate parcels located in southwestern Kern County west of the town of Buttonwillow and east of State Highway 33. The main land use in the area is agricultural development. Both parcels are within FPC O 12/20/1965 Wdl Pwr Proj 2426. The California Aqueduct traverses north/south through the center of parcel 11 and is near parcel 12 (NE1/4SE1/4 Sec. 30). Parcel 11 may be accessible via Lerdo Highway. Legal access is not available to parcel 12. Physical access may be present via roads along the aqueduct.

Parcels 13 and 14 are split estate parcels located in southwestern Kern County west of the town of Buttonwillow and east of State Highway 33. The primary land use in the area is agricultural development. Physical access is available via existing farm roads. The United States has no legal access rights to either of the parcels. Parcel 13 is within FPC O 12/20/1965 Wdl Pwr Proj 2426 for the California Aqueduct.

Parcel 18 is a split estate parcel located in south central Kern County approximately four miles east of State Highway 65. Oil and gas development has occurred in this area in the past, with the current use being livestock grazing. The United States has no legal access rights to this parcel. Physical access is present via a few dirt roads, one crossing the northwest corner of the parcel.

Parcel 19 includes BLM surface and mineral estate in Lots 4 and 5 and is split estate on the remainder of the parcel. Parcel 20 is split estate. Parcels 22 and 23 are BLM surface and mineral estate. These parcels are located in western Kern County in the Temblor Range near the eastern boundary of the Carrizo Plain National Monument. Physical access exists to portions of the parcels; however, these roads also cross private lands where the United States has no legal access rights. The primary land use in the area is livestock grazing.

Farmland

A portion of Parcel numbers 11, 13, and 14 are located on acreage designated as farmland, or are currently under production as farmland. These parcels are on split estate lands that currently appear to be orchards or cotton fields.

Oil and Gas Resource

The parcels are in Kern County and Fresno County. All parcels (about 3,597.31 acres) are classified as having high potential for occurrence of hydrocarbons, with nearly all of them being nominated for leasing by members of the oil and gas industry. This is one of the oldest oil districts in the United States, and has been extensively developed in the anticlinal trends along the east and west sides of the Valley since the 1870's.

Most reservoirs in the area are sandstones which have adequate porosity and permeability for the migration of oil and gas. Some reservoirs in the area are fractured siliceous organic shales of the Monterey formation. The Monterey formation is both source and reservoir rock. Compression and diagenesis severely degrade reservoir quality at depths exceeding 12,000 feet to the extent that only dry gas is produced from greater depths.

The following statistics are from the California Division of Oil, Gas, and Geothermal Resources (CDOGGR) website shown below. There are over 75 oil and gas fields in the Valley, including several giant fields (more than 100 million barrels of oil each). As of 2006, cumulative production in the area was about 12 billion barrels of oil equivalent. In recent years, the Valley has accounted for about 85-90% of California's development completions. Over 90% of the wells are on private leases. Between 2001 and 2005, there were a total of 10,873 wells drilled in DOGGR District 4, which is mainly Kern County. In the same 4 years, there were a total of 807 permits issued to drill wells on federal lands throughout California. Approximately 90% of those wells were in Kern County (720+ wells). The ratio of 720 federal vs. 10,873 total (6.6% federal) has remained relatively constant throughout time, although the exact numbers are not readily available.

The San Joaquin Valley is expected to continue as the primary source of oil in California's oil and gas development. Additional information such as the number of existing wells and expected drilling, completion and abandonment rates is in the section on Environmental Consequences.

Sources: ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2005/PR06_Annual_2005.pdf for 2005
Similar for other years 2001-2004.

VI. Environmental Consequences

Social-Economic

The proposed action will potentially allow new development of these parcels for oil and gas production. This would create 10-15 temporary jobs primarily related to drilling and completion of wells, and will create a demand for supplies and services that will likely come from nearby areas.

Visual Resources

All new development will take BLM Best Management Practices into consideration. This includes, but is not limited to, proper site selection, minimizing disturbance, selecting colors that blend with the background, and reclaiming areas that are not in active use. Wherever practical, no new development will be allowed on ridges or mountain tops in Visual Area III. Overall, the goal is to not reduce the visual qualities that currently exist.

Recreation

There will be no impacts on the limited recreation opportunities as a result of this action because there is no recreation impacted around these parcels.

Analysis Assumptions

Reasonable Foreseeable Oil and Gas Development (RFD) Scenario

(1) General Discussion

Exploration activities within the area will generally focus on oil and not natural gas. The mid to southern San Joaquin Basin is primarily an oil province with small amounts of natural gas as an associated product. Less commonly, non-associated gas is also found. Exploration will 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 *IV. Conformance with Existing Land Use Plans)*. Detailed descriptions of typical oil and gas activities may be found in the Caliente Resource Management Plan, December 1996, Ch. 5 page 45.

Exploration Activities

After seismic and/or detailed stratigraphic basin studies are made, an APD may be submitted. Because of the location of nearly all of the lands within this EA, many of the APDs would be for exploration drilling, which includes drilling to discover entirely new fields, or discovery of previously untapped reservoirs within existing fields. Drilling to discover new fields is of greatest concern in this EA because in most cases it would involve disturbances of previously undisturbed lands. Historically in the San Joaquin Valley, only about 10-15% of wildcat wells were successfully completed as producers. In fact, since 1990, 64 exploratory wells have been drilled (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) has been discovered. The remaining 85-90% of the wells are non-producers 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. It should be noted that of the eight wells drilled as wildcats (not within the administrative boundaries of an oilfield) on federal leases issued since September 1, 1997, approximately four wells were successful (3 out of 4 were on the same lease).

Production Drilling

Development wells include step-out or field extension wells, enhanced oil recovery wells, or other infield wells. Even though the drilling of development wells will be adjacent to or actually within areas of current production, it still may require some disturbance on previously undisturbed lands.

Based on the data for the past 10 years, up to 25,000 wells are projected to be drilled on Federal, state and private lands in the San Joaquin Valley in the next 10 years. If historical trends continue (and there is no data to suggest otherwise), about 5-10% of those, or 1,250-2,500, will be on federal mineral estate. Nearly all of these will be within the same general area of the state as lands covered by this EA. The vast majority (over 90%) of these wells will be on private land.

Approximately 95-97% of the wells projected to be drilled during the next ten years will be development wells (as opposed to exploratory wells). An estimated 90-95% of the development wells will be successful, while the remainder will be unsuccessful and will be plugged and abandoned upon completion of drilling.

Although new wells continue to cause surface disturbance, the number of wells being plugged and abandoned after reaching their economic limit is increasing. Recent trends have shown that the total acres of newly disturbed land are being significantly offset by the fact that there are nearly as many wells being abandoned as are being drilled in this area. According to the CDOGGR, during the last 5 years for which records are available (2001-2005), there were 10,873 wells drilled, of which 10,746 were completed. However, during that same period, 8,844 wells were abandoned. It is reasonable to assume that this trend will continue. Even though the new disturbances will undoubtedly be significantly offset by these reclamation activities, the beneficial effects of that offset were not considered. (Data from the California Department of Conservation, Division of Oil and Gas – see below).

Source: ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2005/0101summary3_05.pdf.

The total number of acres of Federal mineral estate in the San Joaquin Valley is about 440,000 acres. The total number of acres in the parcels to be offered in this lease auction is about 3,597.31 acres, or less than 1% of the total. During the past 10 years, BLM has issued 445 leases throughout the state, covering 347,000 acres. On all of that land, only 21 wells have been drilled, of which approximately half were productive. All of the dry holes and several that were productive only for a short time have already been plugged, and the wellsites are in various states of reclamation, depending on how long it has been since abandonment. Fourteen leases had 1-2 wells, one lease had 3 wells, and the remaining 430 leases have not seen any drilling activity. The number of leases and acres specifically in the San Joaquin Valley is not readily available, but it would obviously be smaller.

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, so we do not expect these particular parcels to see anomalous levels of drilling. Data to suggest otherwise is not available. The maximum number of wells on any new lease has been three wells. There is no data to suggest that any of these parcels are likely to have more wells than that. Based strictly on the historic levels of activity on new federal leases in California within the last 10 years, during a wide range of product prices, we would expect less than one well total on all of these parcels. However, in order to analyze the sorts of impacts that could happen if a couple of the wildcat (exploratory) wells were successful and required five development wells apiece, we will analyze the impacts of up to 20 wells being drilled on the lands offered herein. This assumes 10 exploratory wells and 10 development wells, with no particular area being any more likely than another to contain a higher percentage of wells. Roughly 29% of the lands being offered are within administrative boundaries of existing fields (1,030 acres out of 3,590). Two parcels, 7 and 14, have wells that were formerly productive but have since been abandoned as depleted. Six parcels, 10, 11, 12, 14, 18, and 19, contain dry holes (wells drilled in the past that were plugged and abandoned as unproductive). Parcels 7, 8, 9, 10, 12, 13, and 14 are all or partly within the administrative boundaries of oil fields, and the other parcels are 1-5 miles from oil field boundaries. Although it could be argued that some areas are closer to known production than others, and therefore more likely to see development, it could be countered that those same areas have been more effectively "condemned" by the presence of actual unsuccessful exploratory wells that were drilled in the past. Overall, there is not enough data to make any more accurate projections of where activity might occur, and whether it would be successful.

Some of the leases may have more than one well, some only one well and some no wells. Any future development on parcels in this lease auction would therefore represent only a very small portion of the total wells drilled on Federal mineral estate, and is well within the scope of activities which have been previously analyzed in the Caliente Resource Management Plan and the Reasonable Foreseeable Oil and Gas Development. The total maximum number of wells expected on these parcels, 20, is insignificant in comparison to the total number of wells and other activities expected in the area.

For details on the projected miles of seismic lines run, number of wells, amount and size of surface facilities, and total acres of disturbance, see Table 1 below.

TABLE 1. Maximum expected gross surface disturbance on March 12, 2008 lease auction tracts with Preferred Alternative **Lease with Limited Surface Use - Protected Species (LSU - Protected Species) and Limited Surface Use – Sensitive Species (LSU – Sensitive Species) Stipulations - Proposed Action)**

Surface Disturbing Activity	Number	ACRES			
		Perm.	Temp.	Transient	Total
In-field Dev. Wells Drilled	10 wells	10			10
Tank Batteries	2	2			2
Exploration Wells, incl. roads	10 wells	20	20		40
Cross Country Seismic Lines	20 miles			30	30
Surface Disturbance, acres		32	20	30	82

The acres of disturbance were based on the following estimates:

Description	Number	Unit Surface Disturbance (acres)	Total Surface Disturbance (acres)
Exploratory Wells Well Pads Roads (1 mile, 20' wide – With turnouts and cut and fill due to hilly terrain, effective width increased to 25')	10 wells 10 x 1 miles	1 acre/well 3 acre/mile	10 (5 perm, 5 temp) 30 (15 perm, 15 temp) (Assumes 5 of the 10 exploratory wells are dry, and therefore dist. is temporary)
Development Well Pads Roads (20' wide, 1,000' long) Facilities	10 10 x 1,000' 2	0.5 acre/well 2.4 acre/mile 1 acre/facility	5 (5 perm) 5 (5 perm) 2 (2 perm)
Seismic (12' wide road)	20 miles	1.5 acre/mi	30 (30 transient)
TOTAL			32 perm, 20 temp, 30 trans

Note: We will require that significant efforts be made to use existing roads, rights of way, and to minimize disturbance wherever possible. For the last eight exploratory wells, only one required compensation under the Oil and Gas Programmatic Biological Opinion. However, for purposes of this EA, we are assuming that all of the wells, both exploratory and development may disturb previously undisturbed habitat.

Ongoing Reclamation of Existing Disturbed Surfaces

The potential disturbance of up to 82 acres, 60% of which is transient or temporary, will be significantly offset by the fact that there are nearly as many wells being abandoned as are being drilled in this area. According to the CDOGGR, during the last 5 years for which records are available (2001-2005), there

were 10,873 wells drilled, of which 10746 were completed[1]. However, during that same period, 8,844 wells were abandoned. It is reasonable to assume that this trend will continue. Even though the new disturbances will undoubtedly be significantly offset by these reclamation activities, the beneficial effects of that offset were not considered.

Source: ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2005/0101summary3_05.pdf.

Proposed Action Alternative – Effects on Critical Elements

Resources in addition to those discussed below were considered as a part of the scoping process. Those resources were dropped from further consideration once it was determined that there was minimal potential for them to sustain significant impacts. The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order, and must be considered in all environmental assessments. Those elements that are affected are discussed below in greater detail.

Critical Element	Affected		Critical Element	Affected	
	YES	NO		YES	NO
Air Quality	X		Wastes, Hazard/ Solid		X
ACEC's		X	Water Quality		X
Cultural Resources		X	Wetlands/Riparian		X
Floodplains	X		Wild and Scenic Rivers		X
Native Amer. Concerns		X	Wilderness		X
T & E Species	X		Weeds		X
Environmental Justice		X	Farmland	X	

ACEC's (Area of Critical Environmental Concern) and other Special Management Areas

All parcels identified in this EA are not in or adjacent to any ACEC areas and are not in or adjacent to the Carrizo Plain National Monument.

Floodplains

Parcel numbers 5, 11, 12, 13, 14, 18, 19, 20, 22 and 23 are in an area of minimal flooding.

Parcel 6, Parcel 7 (section 1), Parcel 8, Parcel 9, and Parcel 10 are located within the 100-year floodplain of Chico Martinez Creek, ephemeral in nature. Even though this creek is usually dry, construction of oil/gas wells, pipelines, facilities, and other equipment will be prohibited in the portions of these parcel that are within the 100-year floodplains. A map showing the restricted areas is available in the Bakersfield Field Office of the BLM. Regardless of where on the parcel development may be proposed, site-specific NEPA analysis would identify measures to minimize the risk of flood damage to oil and gas facilities/wells and oil spills or other contamination entering the above mentioned creek boundary.

Impacts to Air Quality

Introduction - Impacts would be in the form of gaseous and particulate matter that is emitted into the air as a result of the activities being analyzed. 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

[1] (Publication PR06, Annual Report of the State Oil & Gas Supervisor, California Department of Conservation, Division of Oil, Gas, and Geothermal Resources; 2001-2005, Sacramento, CA.

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.

The analysis is based upon various activities' potential to emit. The analysis is further limited by the need to look at changes in emissions that would occur as a result of the proposed action. Many similar regional activities that produce emissions would not be impacted by the proposed action and would not be addressed in this analysis. The activities associated with the proposed action that would have an impact on air quality include construction activities at the well pad, establishing vehicle routes, vehicle access, drilling operations, development, production, and rights-of-way. Changes in these activities would result in changes in disturbance rates to soil surfaces and would result in changes in PM10 and PM2.5 emissions. In addition, combustion emissions and other gaseous emissions including ozone precursors such as nitrous oxides and reactive organic gases would be produced. Based upon the potential to emit and emissions that are likely to be affected by the proposed action, this analysis primarily addresses the particulate emission PM10 and the ozone precursor emissions. In addition, these two pollutants are important because the affected area is classified as federal nonattainment areas for PM10, PM2.5 and ozone (both 1-hour and 8-hour).

Planning Assumptions for Air Quality: State Implementation Plans (SIPs) are prepared for most of the federal nonattainment areas. These SIPs are designed to result in compliance with the NAAQS by federal deadlines. The SIPs are implemented through a series of rules. In addition, air quality is highly regulated by a number of additional federal, state and regional regulations and rules. These regulations and rules apply to many of the activities in the proposed action. These activities would be required to be conducted in compliance with the regulations and rules. As the new air plans for PM2.5 and the 8-hour ozone standards are developed, activities would be conducted in compliance with those plans also. A certain degree of uncertainty exists as to the exact development schedules, location of wells, which wells would produce, the number of wells that would be drilled and a number of other factors which are addressed in the RFD. This analysis is based on the same assumptions as to a normal expected activity level as reflected in the discussion in the RFD.

Expected Impacts - The proposed action could ultimately result in a number of activities which would generate emissions. Project emissions include direct emissions of nitrogen oxides (NOx), sulfur oxides (SOx), and Volatile organic compounds (VOC) (which are precursor emissions for ozone and PM2.5), carbon monoxide (CO), particulate matter smaller than 10 microns (PM10), and particulate matter smaller than 2.5 microns (PM2.5). 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.

The expected emissions from the proposed action would be low both in relation to the overall activity in the five county region, and by itself. Over the next ten years the proposed action is projected to result in permanent disturbance of less than 32 acres, temporary disturbance less than 20 acres, transient disturbance less than 30 acres, and the development of up to 20 new wells. As noted previously, this is an unlikely scenario, and would require as many new wells on these few parcels as there have been on the

last 445 parcels. Using our proposed action's maximum estimates for oil and gas development, the estimated emissions for 20 wells that are steam enhanced would be less than 15,056 pounds per year of volatile organic compounds (VOC). VOCs are compounds that are the precursor to ozone. According to the San Joaquin Valley Air Pollution Control District (*SJVAPCD*) 15,056 pounds of VOCs per year is below the de minimis level of 10 tons per year for VOCs.

An emission formula and emission factor was provided by Air Quality Engineer Leonard Scandura of the *SJVAPCD*. The formula is E= A x EF where E= emissions, A= activity or source, and EF is the constant emission factor. Based on a maximum of 20 wells during the next 10 years (2 wells per year), and assuming half of the exploration and all of the development wells are productive, the net number of new permanent wells would be 1.5 wells per year. By the end of 10 years, there would be 15 new permanent wells. The emission factor for a steam-enhanced oil well is 2.75 pounds of VOCs per day. Plugging in the numbers our formula is as follows:

E= 15 wells x 2.75 lbs of VOC/day
E= 41.25 lbs of VOC/day
E= 41.25 lbs of VOC/day x 365 days per year= 15,056 lbs of VOC/year (7.5 tons/year).

According to the California Air Resources Board website (www.arb.ca.gov)* the total emissions for oil and gas production in the San Joaquin Valley are 30.50 tons per day, which equals 11,133 tons of VOC/year. The maximum VOC/year from wells drilled on these leases is 7.5/11,133 = .067% of the total average emissions of VOCs contributed by oil and gas production in the San Joaquin Valley Air Basin.

According to the California Air Resources Board emission factors for NOx (nitrogen dioxide), SOx (sulfur dioxide), PM10 and PM 2.5 are not available for individual wells, but can be calculated using total emission per day calculations that we have attained from the California Air Resources Board website. These emissions totals are as follows:

Table 1-1 Emissions from Oil and Gas Production

Source	VOC (tons/day)	NOx (tons/day)	SOx (tons/day)	PM10 (tons/day)	PM2.5 (tons/day)
Oil and Gas Production	28.32	0.28	0.05	0.02	0.02
Oil and Gas Production (combustion)	2.18	11.75	1.54	1.42	1.42
total	30.50	12.03	1.59	1.44	1.44

This table illustrates 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.

For the purpose of this exercise, there are a number of assumptions. First, as a maximum, it is assumed that the emission numbers in the above table are for wells alone and not for all of the other equipment and sources previously described. In making this assumption, BLM is conceding that these estimates are above actual individual well emission factors, and the numbers calculated are higher than actual emission factors that would be found if the appropriate data were available. We are also using a 45,000 oil and gas well estimate gathered from the California Division of Oil and Gas (www.consrv.ca.gov/DOG) for the number of total oil and gas wells in the San Joaquin Valley. We are also assuming, as previously stated,

that the 20 wells predicted in this EA will be spread over 10 years, with an average of two wells being drilled per year. Finally, we are using the values for Kern County, CDOGGR District 4, and the San Joaquin Valley APCD in analyzing the environmental effects related to air quality under this EA. This is necessary because the data are not available on an individual field or well by well basis. This will not cause a statistically significant error because all of the parcels except 1 (parcel 5) are in Kern County. With this said, the following emission calculations are for each of the listed pollutants in the above table with the exception of VOC which was calculated in the above section.

Using a derivative of the E= A x EF formula and the information from table 1-1 the emission calculations for NOx are as follows:

12.03 tons NOx/day = 24,060 lbs NOx/day

EF = E/A
EF = 24,060 lbs NOx/day / 45,000 total wells = .53 lbs NOx/day/well

Based on a maximum of 20 wells during the next 10 years, there is an average of 2 wells per year. At the end of 10 years, there would be a maximum of 15 producing wells (see previous discussion). Consequently, total NOx emissions are:

E = 15 wells x .53 lbs NOx/day = .8.0 lbs NOx/day

8.0 lbs NOx/day x 365 days/year = 2,927 lbs NOx/year

This is .033 % (8.0 lbs/day / 24,060 lbs NOx/day) of the total oil and gas production emissions for NOx, and below the de minimis level for NOx of 10 tons/year/stationary source.

The emission calculations for SOx are as follows:

1.59 tons SOx/day = 3,180 lbs SOx/day

EF = E/A
EF = 3,180 lbs SOx/day / 45,000 total wells = .07 lbs SOx/day/well

At the end of 10 years, the 15 wells (see previous discussion) would emit a maximum of 1.05 lbs SOx/day (see below):

E = 15 wells x .07 lbs SOx/day = 1.05 lbs SOx/day

1.05 lbs SOx/day x 365 days/year = 383 lbs SOx/year

This is 1.05 lbs/day / 3180 lbs SOx/day = 0.033 % of the total oil and gas production emissions for SOx, which is below the de minimis level for SOx of 10 tons/year/stationary source.

The emission calculations for PM10 are as follows:

1.44 tons PM10/day = 2,880 lbs PM10/day

EF = E/A
EF = 2,880 lbs PM10/day / 45,,000 total wells = .064 lbs PM10/day/well

At the end of 10 years, the 15 wells (see previous discussion) would emit a maximum of 0.96 lbs PM10/day (see below):

E = 15 wells x .064 lbs PM10/day = 0.96 lbs PM10/day

0.96 lbs PM10/day x 365 days/year = 350 lbs PM10/year

This is 0.96 lbs/day / 2,880 lbs PM10/day = 0.033 % of the total oil and gas production emissions for PM10, which is below the de minimis level for PM10 of 15 tons/year/stationary source.

The emission calculations for PM2.5 are as follows:

1.44 tons PM2.5/day = 2,880 lbs PM2.5/day

EF = E/A
EF = 2,880 lbs PM2.5/day / 45,,000 total wells = .064 lbs PM2.5/day/well

At the end of 10 years, the 15 wells (see previous discussion) would emit a maximum of 0.96 lbs PM2.5/day (see below):

E = 15 wells x .064 lbs PM2.5/day = 0.96 lbs PM2.5/day

0.96 lbs PM2.5/day x 365 days/year = 350 lbs PM2.5/year

This is 0.96 lbs/day / 2,880 lbs PM10/day = 0.033 % of the total oil and gas production emissions for PM2.5, which is below the de minimis level for PM2.5 of 15 tons/year/stationary source.

In regards to both PM10 and PM2.5, the *SJVAPCD* does not have a standard for calculating emissions for individual wells (Leonard Scandura, *SJVAPCD*). Therefore, there is not enough information to make accurate predictions in terms of how much PM10 and PM 2.5 will be emitted during well pad construction. Although we cannot make these predictions with any true certainty, we do know that the *SJVAPCD* requires all construction work 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 *SJVAPCD* as insignificant in regards to PM10 and PM2.5 emissions. According to our predictions no project associated with this proposed action will be greater than 5 acres in total disturbance.

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 would include such items as dust control using application of water or pre-soaking and limiting traffic speed on unpaved roads. It would also 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 would likely result in fines and could also lead to the loss of the BLM and air district authorizations.

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 NOx 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.

Conformity:
The USEPA rules require federal agencies to determine whether a proposal conforms to the existing SIPs. 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.

Works Referenced:

www.valleyair.org
www.epa.gov
www.arb.ca.gov (www.arb.ca.gov/app/emsinv/emssumcat_query.php?F_YR=2006&F_DIV=-4&F_SEASON=A&SP=2007&F_AREA=AB&F_AB=SJV#3)
www.consrv.ca.gov/DOG

Impacts to soil

The parcels associated with the proposed action are on both disturbed and undisturbed surface. We are projecting that no more than 20 wells will be drilled on these parcels over the next ten years. The impacts due to this disturbance will be reduced because most or all surface disturbing activities will be subject to rehabilitation and mitigation measures that are included in sundry notices and applications for permit to drill. Impacts associated with development of these leases may include erosion due to the development of well pads on slopes and other unstable geography. These impacts will be mitigated on a site-specific basis using best management practices, and proper well placement. Impacts from spills/contamination are expected to be very localized because all activities will be subject to spill prevention and control plans, and any contamination will be removed/mitigated as required in those plans.

Impacts to Water

Many of the parcels are in areas where there are or may be fresh water aquifers. All such aquifers will be fully protected by using standard oilfield practices such as requiring a string of casing to be cemented across all fresh water aquifers and by requiring compliance with all appropriate laws, regulation, and BLM policies, including, but not limited to, state and federal Clean Water Act(s), Memoranda of Understanding (MOUs) between BLM, EPA, CDF&G, and CDOGGR, and compliance with Regional Water Quality Control Board requirements.

Where there is a threat to water quality or where water quality does not meet state standards, coordination must occur with the regional water quality control board(s). Where aquatic or riparian habitat may be impacted, coordination with CDF&G must occur. All parcels that contain any water bodies (streams, lakes, springs, etc.) must have adopted Best Management Practices (BMP) for all activities associated with oil and gas operations that could affect water quality. A list of areas where there are aquifers that are considered to be fresh can be found in Volumes I, II, and/or III of California Oil and Gas Fields, published by the California Conservation Division[2].

[2] CD-1; California Oil & Gas Fields, Volume I: Central California, 1998; Volume II: Southern, Central Coastal, and Offshore California, 1992; and Volume III: Northern California, 1982; California Department of Conservation, Division of Oil, Gas, and Geothermal Resources; Sacramento, CA. (Publications TR10, TR11, and TR12 in PDF Format.)

Although there are few or no ponds, lakes, or streams that contain water year round, there is one ephemeral drainages/creeks –Chico Martinez Creek that crosses portions of Parcel numbers 6, 7 (sec. 1), 8, 9 and 10). Conditions of approval will be attached to permit approvals that require protective measures to be taken where spills or other contamination are potentially a concern to surface or underground water. In addition, Special Stipulation 7 will be added to these parcels (see above) that will prevent facilities/wells from being installed within those 100-year floodplains. This will protect all waters in the area, including those mentioned previously, from contamination related to floods.

Farmland

A portion of Parcel numbers 11, 13, and 14 are located on acreage designated as farmland. These parcels are on split estate lands that currently appear to be orchard or cotton fields. Although there may be local or state laws that require the lease holder to compensate the landowner for any crop loss or damage caused by the development of the lease, the only compensation provided by federal law on these split estate land is the value of crops and improvements that are related to stock-raising; such as corn, hay, barn and fences for livestock.

Climate Change

The amount of greenhouse gasses (CH_4 and CO_2) generated by the predicted development of 20 wells over the next ten years is expected to be minimal. In 2006, 1,307 new oil and gas wells were drilled in the San Joaquin Valley District Four; this added to the approximately 45,000 existing wells (CDOG annual report, 2005). The current leasing proposal represents less than 0.2 percent of the annual new well activity for the area and a much smaller fraction of the existing well population.

In 2005, total CH_4 emissions from all U.S. petroleum operations were 28.5 Tg CO_2 Eq. (approximately 31 million tons) (EPA 2007). Of this, over 95% stems from crude oil production, less than 1% from transportation, and slightly more than 2% from refining operations. Only rough estimates of the amount of greenhouse gasses produced by the 20 wells are 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). Emissions from these wells would be expected to be lower than the national average because of vapor recovery systems and other pollution controls mandated by the San Joaquin Valley Air Pollution Control District. Values for carbon dioxide emissions are expected to follow a similar pattern.

The level of greenhouse gas associated with the proposed action (possible 20 wells) is not expected to detectably influence climate change.

Biological Resources

Impacts to Habitat from Oil and Gas Activities

A likely effect of new oil and gas activities on these lease parcels would be the loss or alteration of habitat. BLM estimates that wells, roads, facilities and seismic exploration could result in permanent impacts to 32 acres, temporary impacts to 20 acres and transient impacts to 30 acres. This totals 82 acres within the 3,597 acres being offered in this lease sale (Table 1). These estimates of habitat loss or alteration are within the range expected and analyzed in the Caliente RMP, EIS Ch. 4 and Biological Opinion.

Of the 3,597 acres, 1,879 acres are presently native lands and 1,718 acres are under active cultivation. If all 82 acres of disturbance were to occur on native lands this would amount to approximately 4% of the native lands offered under this lease auction.

Impacts to habitat on cultivated lands would depend on whether the lands are under active cultivation or are fallowed at the time of any development. If the land is under active cultivation, impacts to native vegetation and wildlife are likely to be minimal. If the lands are fallow, the area may be a bare area of cultivated soil or a weedy field of non-native plants. If wildlife (such as burrowing mammals or birds) reoccupies fallow fields, their habitat could be impacted by oil development and exploration activities

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 woodland since shrubs and trees take longer to become re-established. Shrublands and woodlands also support a greater diversity and number of wildlife species as trees and 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. Roads 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.

Approximately 2,020 acres are relatively flat and includes 1,718 acres of cultivated land and 302 acres of native habitat. The cultivated lands have relatively good access with existing roads in the interior or on the edge of the parcels. Well pad and road construction on these cultivated parcels will result in minimal impacts to biological resources due to the presence of existing roads and the currently disturbed nature of the parcels. The 302 acres of flat, native land includes the Chico Martinez Unit and the eastern half of parcel 13 in the California Aqueduct Unit. All parcels in the Chico Martinez Unit contain roads, and parcels 7 and 8 show evidence of previous oil development. The presence of existing roads and previously disturbed areas will reduce impacts to biological resources from any new wells in the Chico Martinez Unit.

The remaining 1,577 acres range from hilly to steep terrain. 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.

Impacts from Seismic Exploration

The projected 20 miles of seismic exploration would result in about 30 acres of surface disturbance, based on a 12' wide road. BLM typically requires receiver lines to be hand carried, helicopter-transported, or transported by light all-terrain vehicles. This eliminates cross-country truck travel on the receiver lines. The source points are typically located along lines using buggy-type vibroseis vehicles, or buggy-mounted or heliportable drills for shot holes. If exploration is conducted using continuous vibroseis source points, there would be about 24 acres of surface disturbance. The use of shot holes or heliportable drills in hilly terrain would reduce this disturbance estimate. Monitoring and post-project reports from previous geophysical projects indicates that seismic projects result in transitory impacts to soil and vegetation. Transitory impacts generally recover within one growing season if normal rainfall is received. Larger shrubs can be damaged by cross-country source vehicle travel, and may take several years (3 to 10) to recover or reoccupy the travel route. In most cases, off road vehicle use is limited to one or two passes. Use of ATV's rather than full size vehicles also helps to reduce soil disturbance.

If a seismic project is proposed within endangered species habitat, it would be subject to ESA compliance. In Kern County, the existing Oil and Gas Programmatic Biological Opinion requires pre-activity surveys, take-avoidance and mitigation measures for geophysical operations. The implementation of these measures would minimize impacts to habitat features used by listed species and minimize habitat disturbance. While seismic activities may disturb and displace wildlife during the operations, in many instances, small mammals are observed to dig into vibroseis footprints and vehicle tracks following project impacts. Any seismic activity on the single parcel in Fresno County, parcel 5, is likely to make use of the existing agricultural roads and have little to no impacts on biological resources.

Impacts to Species from Oil and Gas Activities

Potential impacts to plants include direct mortality from earth excavation or crushing by vehicles. Adverse impacts could also result from soil erosion resulting in loss of the supporting substrate for plants, or from soil compaction resulting in reduced germination rates. Impacts to plants occurring after seed germination but prior to seed set could be particularly harmful as both current and future generations would be adversely affected. Weeds which are introduced and/or promoted by soil disturbing activities compete against and displace native vegetation.

Development associated with oil and gas activities has the potential to affect rare plants. Soil disturbing activities directly affect species by destroying habitat, churning soils, impacting biological crusts, disrupting seedbanks, burying individual plants, and generating sites for undesirable weedy species. Weeds may be introduced during construction and operation of the lease. Roads generate weedy habitat along their edges, as well as avenues for weed invasion into unoccupied territory. Dust generated by construction activities and travel along dirt roads can affect nearby plants by depressing photosynthesis, disrupting pollination, and reducing reproductive success. Oil or other chemical spills could contaminate soils as to render them temporarily unsuitable for plant growth until cleanup measures were fully implemented. If cleanup measures were less successful, longer term impacts could be expected.

Potential impacts to animals, including listed species, include direct mortality or injury, loss of dens or burrows, displacement, and human disturbance. 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. These potential impacts are within the range analyzed in the Caliente RMP, EIS Ch. 4 and Biological Opinion.

Roads and large areas of disturbance can be a barrier to movement for some animal species. Animals in the San Joaquin Valley suite of sensitive animal species, however, generally do not have difficulty crossing roads or disturbed areas. It is not unusual to observe kangaroo rats, kit foxes, antelope squirrels or blunt-nosed leopard lizards crossing roads. This tendency does expose these animals to vehicle strikes, especially on paved roads with higher vehicle speeds. The impact of roads, large areas of disturbance, barriers and vehicle strikes is within the range analyzed in the Caliente RMP, EIS Ch. 4 and Biological Opinion.

Structures such as utility poles, buildings, and pumping units may provide perches for raptors. Addition of such structures in flat terrain may increase predation rates on small mammals and other prey species. The types of structures typically found in oilfields, however, do not tend to provide nesting structures for raptors, including ravens. Introducing nesting structures can have a greater impact on prey species since much more prey is taken by raptors that are rearing young, and the nest site is continuously occupied for the season increasing the duration and frequency of the predation effect. The effect of introducing structures that will only serve as perches is not expected to be significant as such perches are likely to only occasionally be used for hunting.

Individual projects would be subject to NEPA and ESA review. If a project is determined to adversely affect listed species, the project would be subject to compliance with the Oil and Gas Programmatic Biological Opinion (BO) or a project level consultation. Under the Oil and Gas Programmatic Biological Opinion, listed species and habitat surveys are required prior to BLM authorizations and surface disturbing activities. Habitat features used by listed plants and animals, special status plant populations, and important habitats are avoided as required in the BO. Direct incidental take is avoided for San Joaquin kit fox and blunt-nosed leopard lizards, and direct take is avoided to the greatest extent practicable for the other listed animals species (rarely resulting in direct take). Impacts to the habitats supporting these species are mitigated through the Biological Opinion's requirement that "compensation habitat" be acquired and managed as habitat in perpetuity in an agency-approved off-site location. The BO requires that three acres be acquired for each acre subject to permanent disturbance and 1.1 acres be acquired for each acre of temporary disturbance. The BO also requires that each acre of BLM listed species habitat on federally owned surface be "replaced", acre for acre, since the BLM lands are considered conserved lands by the Recovery Plan and Draft Kern Valley Floor Habitat Conservation Plan.

In addition to NEPA and ESA review, all new oil and gas leases would be subject to the "Limited Surface Use – Protected Species" and "Limited Surface Use – Sensitive Species" stipulations. Leasing of lands under these constraints will provide strong protection for protected species and special status species.

Effects to Federally Listed and Proposed Species, and Critical Habitat

Several federally listed species (Bakersfield cactus, California jewelflower, Kern mallow, Hoover's woollystar, San Joaquin woollythreads, San Joaquin adobe sunburst, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, San Joaquin kit fox, California condor) may occur on or in the vicinity of several of the parcels. If exploration or development occurs on one of these parcels, the proposed action may affect listed species.

Section 7 of the Endangered Species Act requires a federal agency to complete Formal Consultation with the USFWS prior to undertaking an action which may affect a listed species. Formal Consultation addressing the impacts of oil and gas leasing, exploration and development, to these species, was completed on March 31, 1997 (Caliente RMP Biological Opinion 1-1-97-F-64). The U.S. Fish and Wildlife Service concluded that oil and gas leasing, exploration and development, as proposed by the Caliente RMP, was not likely to jeopardize the continued existence of these species. The proposed action is in compliance with the Caliente RMP, and thus, is consistent with the March 31, 1997 Caliente RMP BO. Should an exploration or development proposal be submitted for any of these leases, it will be subject to additional site specific ESA review as described above.

There will be no effect to critical habitat as none of the parcels include designated or proposed critical habitat. Critical habitat for the California red-legged frog and California tiger salamander occurs west of the Orchard Peak Unit, but does not extend onto any of the offered parcels.

Relationship to San Joaquin Valley Endangered Species Recovery

The Caliente RMP specifies that that BLM land within the San Joaquin Valley be managed to contribute to regional conservation goals. Lands that have been identified by the Kern Valley Floor Habitat Conservation Plan and the San Joaquin Valley Recovery Plan as part of the regional conservation strategy are managed by BLM as reserves (red zone lands) or corridors (green zone lands). Of the lands offered in this sale 80 acres are within reserves (red zone) and 1,799 acres are within corridors (green zone). The remaining 1,718 acres are not part of the San Joaquin Valley strategy.

Within reserve and corridor lands, BLM requires mitigation and compensation for development activities. Disturbance of habitat is compensated at a rate of 1.1 acre for every acre temporarily disturbed, and 3 acres for every acre permanently disturbed. In addition, disturbance to BLM surface requires an additional replacement factor of 1 acre for every acre disturbed. Species surveys, avoidance of habitat features and implementation of measures to minimize take are also standard requirements. As an additional safety net, BLM has established a limit to the amount of disturbance on parcels in reserves and corridors. Disturbance on reserve lands is limited to 10% and on corridor lands to 25%.

The RFD estimates that up to 82 acres of disturbance could result from wells, roads, seismic exploration and other oilfield development. If all 82 acres of disturbance were to occur in the green zone (corridor), this would amount to approximately 5% of the green zone land offered in the lease auction. It is not possible for all of 82 acres of development to occur in the red zone (reserve) as only 80 acres are included in this lease sale and disturbance would be limited to 10% or 8 acres of the single offered parcel. Any disturbance in the green and red zone would require compensation. Additionally, any disturbance to BLM surface would require an additional acre for acre replacement factor.

BLM's program for the management of reserve and corridor lands has been reviewed and approved by the USFWS as part the Caliente RMP Biological Opinion 1-1-97-F-64 and the Oil and Gas Programmatic Biological Opinion 1-1-01-F-0063.

Species Specific Impacts

Table Biology 1 on page 46 and Table Biology 2 on page 47 list the Federally listed, state listed and BLM sensitive species with the potential to occur on the offered lease parcels.

Federally and State Listed Species

Bakersfield Cactus. Bakersfield cactus has a possibility to occur in the general area of the Deepwell Unit. Since Bakersfield cactus is easily identified, survey and avoidance should minimize or eliminate impacts to the species. Under the Oil and Gas Programmatic B.O., Bakersfield cactus is to be avoided by a 50-foot buffer.

California Jewelflower. Some of the proposed lease parcels are within the historic range of California jewelflower, but no extant populations are known within Kern or Fresno Counties. Under the Oil and Gas Programmatic B.O., any populations discovered will be avoided by a 50-foot buffer. Jewelflower plants can be identified during flowering season, typically February to March.

Kern Mallow. There is a slight chance that Kern Mallow might be encountered in the California Aqueduct Unit. Under the Oil and Gas Programmatic B.O., populations are to be avoided, to the greatest extent possible, otherwise, measures, such as delaying surface disturbance until after seed set, collection of seed, reseeding, and stockpiling of topsoil, may be required to minimize impacts.

San Joaquin Woollythreads. There is potential for woollythreads to be found within the Chico Martinez Unit. Constraints for woollythreads would be the same as those for Kern mallow.

San Joaquin Adobe Sunburst. San Joaquin adobe sunburst occurs in the foothills of the Sierra Nevada and has the possibility of occuring within the Deepwell Ranch Unit.. This species was not included in the oil and gas programmatic biological opinion, thus, any development with the potential to impact the adobe sunburst would have to acquire a new biological opinion from FWS. Population avoidance measures would have to be incorporated into any development plan. Formal consultation will occur before approving drilling permits in this area if there is a possibility that sunburst populations may be affected by the permit.

Hoover's Woollystar. Hoover's woollystar may be abundant at some lease parcels, particularly in gentle terrain, but it also occurs in rugged terrain. Hoover's woollystar could be adversely impacted by earth excavation, off-road vehicle traffic, erosion and spills. It is projected that the post-leasing activities will result in temporary or transient habitat disturbance. Hoover's woollystar can quickly colonize disturbed areas and is expected to re-colonize temporary or transient disturbance areas. Survey and avoidance measures will also be implemented for Hoover's woollystar to further minimize impacts to this species.

California Red-legged Frog and California Tiger Salamander. Critical habitat for the California red-legged frog and the California tiger salamander occurs 5 miles west and 7 miles southwest, respectively, of the Orchard Peak Unit. The nearest known location for red-legged frog and tiger salamander is approximately 5 miles and 7 miles respectively. A distance of 1.6 kilometers (1 mile) from a breeding site is generally used as a guideline for evaluating potential habitat use by red-legged frogs. A distance of 0.7 miles from a breeding site is generally used as a guideline for evaluating potential habitat use by tiger salamanders. Since the distance to critical habitat and the nearest known location is greater than the 1.6 kilometer and 0.7 mile guideline, it is unlikely that red-legged frog or tiger salamander occur in the Unit, and impacts are not expected.

Blunt-nosed leopard lizard. Blunt-nosed leopard lizards may occur within the Chico Martinez, Deepwell Ranch and Temblor Units. Potential impacts to blunt-nosed leopard lizards include direct mortality, loss or alteration of habitat, and harassment. Blunt-nosed leopard lizards are active during the day, which enhances the threat of some impacts, such as vehicle strikes. Project activities could destroy burrows used by blunt-nosed leopard lizards. Lizards can become entrapped or buried inside destroyed burrows as well. Discharge of waste water could drown lizards using drainages. Lizards can become entrapped or drown in oil or tarry substances. Improperly covered well cellars, buried valve boxes, buckets and vertical pipe sections can act as pitfall traps and entrap lizards. Pre-construction surveys and implementation of mitigation measures that are part of the Oil and Gas Programmatic Biological Opinion will reduce the potential for these impacts. BLM lease operating standards (e.g. waste water discharge policies, proper maintenance of equipment and facilities, etc) will also reduce the potential for these impacts.

California condor. The Orchard Peak Unit is within the historic range of the California condor. The several acres of road, well pad and facility construction are not expected to alter condor habitat at the site-specific or landscape scale. Condors are unlikely to land on the ground near the wells. However, the oil rig drilling structures and new powerlines could pose a risk of collision to condors. New road access into unroaded areas may pose an additional risk of harmful human interactions (shootings, microtrash, dumping of contaminants). The BLM lease operating standards would limit contaminant exposure and oil field guidelines developed for condor habitat would be implemented at the project stage to avoid such impacts.

Giant kangaroo rat. Potential impacts to giant kangaroo rats include direct mortality, loss of burrow systems, loss or alteration of habitat, and harassment. The construction and maintenance of wells pads, access roads, pipelines, and other oil field structures may trap or bury kangaroo rats in their burrows. Kangaroo rats can also drown or become entrapped in spilled oil or tarry substances. Kangaroo rats may also be killed by vehicles. Burrows can also be damaged or destroyed by project activities. Some habitat may also be lost or altered.

Giant kangaroo rats are known to occur near the California Aqueduct Unit and have the potential to occur in the Chico Martinez and Temblor Units. Pre-construction surveys and implementation of mitigation measures that are part of the Oil and Gas Programmatic Biological Opinion will reduce the potential for impacts. Giant kangaroo rats are mostly active at night and most vehicle traffic is expected during daylight hours. This combination will reduce the chances of a vehicle strike.

San Joaquin kit fox. San Joaquin kit fox may occur within all the units. Potential impacts to San Joaquin kit fox include direct mortality, loss of dens, loss or alteration of habitat, human disturbance, and exposure to oil field chemicals. Construction of well pads, access roads, and associated oil field facilities may trap or bury foxes, particularly if the construction occurs on or near a den site. Dens are ecologically important to kit foxes. Since kit fox use multiple dens, the occasional loss of a den is not expected to be significant. Activities near or impacts to natal dens could have more impact, particularly if such impacts occur while young pups are present. Disturbance to dens, especially natal dens, should be minimized due to survey and avoidance measures required by BLM for all actions.

The eastern portion of parcel 13 in the California Aqueduct Unit is located in the western Kern county core population, one of three core populations identified by the U.S. Fish and Wildlife Service as important for species recovery. One goal for the Western Kern county core population is to protect natural lands with appropriate land use and management. Any habitat disturbance on parcel 13 would be limited to 8 acres of habitat due to the red zone-reserve development restriction discussed above. This habitat loss is not expected to conflict with recovery plan goals as individual projects are expected to be relatively small (less that 3 acres on average) compared to the home range of a kit fox (average 1,144

acres) and widely dispersed over space and time. In addition, standard kit fox mitigation measures will be applied as appropriate to all BLM authorizations and projects.

Kit fox have been entrapped in well cellars that are not properly covered. In 1981 two kit fox pups were rescued from a concrete well cellar on NPR-2. In 1990, the remains of two kit fox pups were recovered from an abandoned well cellar.

The production, transportation, processing and storage of crude oil may result in some spills. The washes and drainages in which spilled oil collects are also primary travel routes and foraging areas for kit fox and other wildlife. Kit foxes could also drown in pooled oil, or become mired in tarry substances. In 1982, two kit fox pups were found dead in spilled oil on NPR-2 as a result of activities by a lessee. BLM has strict requirements for prompt containment and clean-up of such spills. This should help to reduce the impacts of oil spills on kit foxes.

Vehicle strikes are likely to occur as a result of project related traffic. Between 1983 and 1986, vehicles were the cause of about 6% of known kit fox deaths. As a comparison, during the same time period, coyotes were responsible for most (45%) of the known kit fox deaths.

Kit foxes are frequently observed near oil field facilities and commonly use developed areas. They do not seem to be particularly sensitive to human disturbance.

San Joaquin Antelope Squirrel. San Joaquin antelope squirrel have the potential to occur in the Orchard Peak, Chico Martinez and Temblor Units. Impacts to the San Joaquin antelope squirrel would be similar to those described for the giant kangaroo rat. Antelope squirrels are, however, more widely distributed and are more likely to occur on or near a project site than giant kangaroo rats. Pre-construction surveys and implementation of mitigation measures that are part of the Oil and Gas Programmatic Biological Opinion, pg. 9 will reduce the potential for many of these impacts. To comply with the California Endangered Species Act, BLM has developed "take avoidance" measures that will be incorporated into the Oil and Gas Programmatic Biological Opinion. Compliance with these take avoidance measures will minimize impacts to antelope squirrel.

BLM Sensitive Animal Species

Burrowing Owl. The burrowing owl has the potential to occur in all units. Potential impacts to burrowing owls include loss of burrows, entrapment in burrows, and collision with vehicles. Burrowing owl burrows would be treated like potential kit fox dens. Such dens would be monitored for use before destruction or plugging, allowing detection of burrowing owl use. If owl use if detected and the burrow cannot be avoided, burrow destruction or plugging would occur only after the owl has vacated the site. As a result some burrows sites may be lost, but individual owls should avoid becoming entrapped inside burrows.

Short-nosed kangaroo rat. Impacts to short-nosed kangaroo rats would be similar to those described for the giant kangaroo rat. Short-nosed kangaroo rats are also widely distributed, and like the antelope squirrel, are more likely to occur on or near a project site than giant kangaroo rats. Short-nosed kangaroo rats have the potential to occur in the Chico Martinez, California Aqueduct and Temblor Units.

San Joaquin pocket mouse and Tulare grasshopper mouse. The San Joaquin pocket mouse and the Tulare grasshopper mouse have the potential to occur in the Chico Martinez, California Aqueduct and Temblor Units. Impacts to these species would be similar to those described for the giant kangaroo rat.

Pallid bat. The pallid bat has the potential to occur in all units. Impacts to the pallid bat are not expected as roost sites (rocky grottos, buildings, mines) are not expected to be impacted by development activities, and very little foraging habitat would be altered.

BLM Sensitive Plant Species. Impacts to sensitive plants would be dependent on the location of the disturbance relative to populations of the species in question. The construction of roads, well pads, and similar development could destroy plants or disrupt continuity between populations. New weedy species could be introduced and weeds would benefit from the additional moisture generated by runoff from roads and pads. To minimize impacts to BLM sensitive species, mitigation measures would consider the type of impact, the rareness of the species, the population size and distribution, and the species' response to disturbance.

Indirect Effects to Biological Resources as a result of Climate Change

Since the level of greenhouse gas associated with the proposed action (possible 20 wells) is not expected to detectably influence climate change, indirect effects to biological resources are not expected. The effects to biological resources from climate change are discussed instead under cumulative effects.

RIPARIAN AND WETLAND HABITAT

Direct impacts to riparian areas should be minimal. BLM regulations prohibit operations in riparian areas unless BLM specifically approves such activity in a Surface Use Plan of Operations. Additional regulations, such as the requirement for obtaining Streambed Alteration Permits would also reduce the likelihood that riparian areas would be directly impacted by oil and gas activities. Any unavoidable impacts, such as road crossings, would require mitigation and possibly compensation.

Indirect impacts include possible spills into riparian areas. Pipelines, wells or tanks could leak oil or other fluids into drainages. If water is present in the drainage or mixed in with the oil, oil or other contaminants could travel down the riparian corridor. Water quality, vegetation and wildlife could be adversely affected. Most companies promptly respond to spills upon discovery, but damage can occur until discovery and containment. BLM has requirements for reporting oil spills; NTL-3A

Cultural Resources

Approval of this document will have no adverse effect upon cultural resources (per compliance with Section 106 of the National Historic Preservation Act). 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. Native American consultation was regarding the properties proposed for leasing in this document, and no traditional cultural properties or heritage related issues were identified. The potential exists for the Native American community to identify heritage related issues in the future as specific actions are proposed.

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 rarely include data recovery or compensation. It should be noted that BLM has discretional 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.

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 impacts and notify affected federal grazing lessees.

Lands

Leasing BLM lands for oil/gas exploration and production does not typically impact land uses in this area, because the chances of a successful new find are so slim. However, leasing can sometimes cause conflicts with other surface uses that may be taking place on the lands. This is especially possible if the leased lands are split estate, where the surface estate is privately owned and the mineral estate is under the jurisdiction of BLM. Surface owners are often not aware of the Federal ownership of the mineral estate, or are not aware of the implications of the Federal ownership. Along with the ownership of the minerals the Federal government retains the right to use any part of the surface for exploration or development. These "surface entry rights" can cause distress for private surface owners who do not wish to see new roads and well pads on their land. Adjacent private lands can also be impacted due to leasing, in that new road access to the leased areas is sometimes necessary. Although the responsibility for obtaining access to leased areas is the lessee's and not BLM's, leasing can sometimes cause an indirect impact to adjacent lands due to the need for road access.

Oil and Gas and Other Mineral Exploration and Development

This alternative will have a beneficial effect on mineral exploration and development, since the land will be offered for competitive auction. The practical utilization of the lands will have a positive local effect in the generation of long term jobs and revenues to the State and county. The royalties and rentals from competitive auctions are also a dependable source of long term income for the Federal government. The impacts from this particular auction may be small, including an unknown (but probably relatively small) amount of new reserves, due to the small amount of acreage offered. However, the positive action of the auction would provide the industry with increased opportunity for exploration, potentially resulting in increased stability and profitability of domestic companies.

In most instances, application of the **LSU – Protected Species** and **LSU – Sensitive Species** stipulations would not prevent surface occupancy for the entire lease. That is, an alternative site or other mitigation or compensation measure would probably be available that would still allow the lessee to drill and develop the lease.

Cumulative Impacts

In the Caliente Resource Management Plan and EIS, published December 1996, BLM analyzed the overall effects of oil and gas activities in the area. The analyses and conclusions contained in those documents are still valid, and current cumulative impacts are still significantly under the level of cumulative impacts that were projected/analyzed in those documents. There have not been and are not expected to be any additional impacts in the parcels covered in this EA that would change those conclusions. In addition, it should be noted that there have been many lease sales since 1997, each of

which projected various numbers of wells, both exploratory and development, as well as other types of activities that would cause surface disturbance. Out of 445 leases that have been issued since September 1997, only 15 leases have seen any drilling at all. Exact amounts of disturbance are not available. Nearly all the projected disturbance on those leases never occurred.

Cumulative Impacts to Minerals

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 Minerals see the Caliente RMP/EIS, Ch. 5 Pg. 33 to which this document is tiered. These discussions include Reasonable Foreseeable Development scenarios (RFDs) and impacts, both general and cumulative. Many of these activities are also described in Appendix C.

Cumulative Impacts to Biological Resources

The southern San Joaquin Valley has experienced an increasing human population growth (22% in Bakersfield between 1990 and 2000) and ongoing land use changes across the landscape. There has been large scale conversion of agricultural lands to urban/industrial expansion in the metropolitan Bakersfield, Wasco, Delano, Arvin, and Shafter communities. In the past 10 years, oilfield exploration and development has increased in the CDOGGR oilfield boundaries. There has been extensive new development initiated in the shallow diatomite oil-bearing formations. Several cogeneration and power plants have been constructed in the foothill regions of the Sierra and inner Coast ranges. There has also been more rural housing development in the foothills north and northeast of Bakersfield.

It has been estimated that the leasing of the 3,597 acres for oil and gas resources may result in an estimated surface disturbance of up to 82 acres. Since it is highly unlikely that all the development would occur in only one lease parcel, the impacts of the 82 acres will be estimated to occur in units of five to ten acres per project, with several projects perhaps occurring simultaneously, but spread among the parcels by considerable distances.

The cumulative effects of the leasing and subsequent development would be additive, but insignificant, to the land uses that may occur in the foreseeable future. Foreseeable land uses that the BLM anticipates in or near the parcel areas is ongoing livestock grazing, dispersed recreation activities where there is public access and ongoing oil and gas activities within the existing oil fields. The livestock grazing would continue at current levels and would be authorized in a manner to meet the standards for rangeland health. Such grazing practices should maintain ecological health of the BLM natural lands where grazing is authorized. Livestock grazing on the private grazing lands within the project is also expected to continue at current practices. The BLM and private grazing is considered to be generally compatible with maintaining the landscape for biological resources and habitat for special status animals in the southern San Joaquin Valley.

The southern San Joaquin Valley is experiencing continued demand for dispersed recreation in the form of off highway vehicle (OHV) use on public and private lands, including those in oil fields. Such impacts may occur in the Chico Martinez, California Aqueduct and Temblor areas. To date, most OHV use has been on existing roads with occasional cross country travel that creates new habitat disturbance. The remaining parcels in this lease auction do not have ready public access that would make them susceptible to OHV use. The OHV use is additive surface disturbance in the oil fields and would be considered in calculating overall habitat disturbance objectives described below. Additional mitigation and restoration would be conducted in these parcels in order to maintain habitat objectives in preserve and corridor areas.

All of the parcels are inside or within 1-5 miles of the administrative boundaries of existing oilfields. While additional surface disturbance would result in further habitat loss if the new disturbance is located in an

undisturbed area, the small size of impact would not compromise the integrity of red zone preserves, green zone linkages, or special status populations due to implementation of the programmatic biological opinion. The on site impacts would be avoided through survey, take avoidance and mitigation measures, the total habitat disturbance would be off-set with habitat compensation, and the landscape-level function of the preserves and linkages would be maintained by the limits on red zone (10%) and green zone (25%) habitat disturbance. These disturbances from oil and gas activities, livestock grazing and OHV use would be below a cumulative effects level that would impair conservation or recovery of the San Joaquin Valley listed species.

Cumulative Effects to Biological Resources from Climate Change. 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 Valley 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 Valley and become restricted to the higher elevations of the San Joaquin Valley 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 southern San Joaquin Valley 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 Valley 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.

No Action Alternative

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 for the 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 on public lands would remain at insignificant levels and would not be discernable when combined with activities on surrounding private lands.

Air, Soil, and Water - The No Action Alternative would not affect air, soil, and water since these leases would not be offered.

Biological Resources - No impacts would occur.

Cultural Resources – No impacts would occur.

Livestock Grazing– No impacts would occur.

Lands – No impacts would occur.

Oil and Gas – The no action alternative would not comply with the Energy Policy Act of 2005 and the Mineral Leasing Act of 1920 and several existing regulations and policies to manage lands for multiple uses and to make all suitable lands available for oil and gas leasing unless they are withdrawn from leasing under the Mineral Leasing Act. Failure to make these lands available for leasing and potential subsequent development would also result in the loss of potential additional reserves of oil and/or gas. The amount of lost reserves would be difficult to predict at this time without additional data.

Recreation - The no action alternative would have no effect on the limited recreation opportunities.

Socio-Economic - No impacts would occur.

Visual Resources- No impacts would occur.

VII. Mitigation

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

VIII. Consultation and Coordination

Native American Contacts

Mr. Gene Albitre, President
Native American Heritage Preservation Council of Kern County

Mr. Neil Peyron, Chairperson
Tule River Reservation

Mr. Clarence Atwell, Chairperson
Santa Rosa Rancheria

Mr. Robert Duckworth, Salinan Representative

Salinan Tribe
C/O Ms. Susan Latta, Co-Chairperson

Mr. Milford Wayne Donaldson, State Historic Preservation Officer
Office of the Historic Preservation

San Joaquin Valley Air Pollution Control District
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IX. List of Preparers:

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Dylan Tucker, Rangeland Management Specialist
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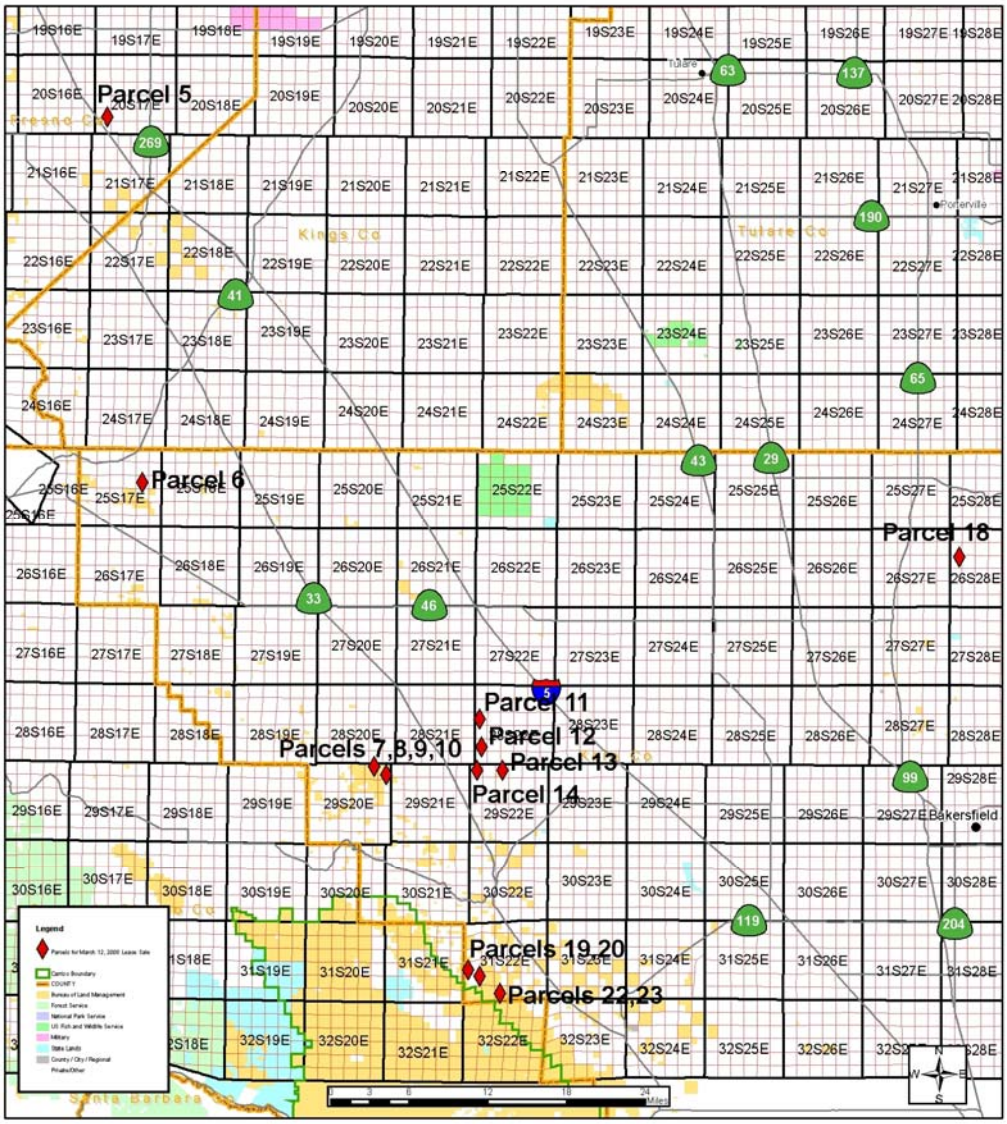
Appendix A
Description of Sale Parcels

Following is a map showing the general location of the parcels analyzed in this EA. A more detailed map can be found at http://www.blm.gov/ca/st/en/fo/bakersfield.html

Map 1 – Parcel Locations – March 12, 2008 Oil & Gas Competitive Lease Auction



The following public domain lands are subject to filings in the manner specified in the applicable portions of the regulations at 43 CFR, Subpart 3120. These parcel numbers will be different from those on the actual Lease Sale Notice, and officially parcelized for the day of the auction.

Parcel 5

T. 20 S., R 17 E., MD Mer.,
Sec. 30, SENE, SE;
Fresno County 200.00 acres
Split Estate Lands
Bakersfield FO
Subject to Special Stipulations

Parcel 6

T. 25 S., R 17 E., MD Mer.,
Sec. 14, All
Kern County 639.36 acres
Split Estate Land
Bakersfield FO
Subject to Special Stipulations

Parcel 7

T. 29 S., R 20 E., MD Mer.,
Sec. 5, Sec. 1, Lot 4;
Kern County 30.00 acres
Public Land
Bakersfield FO
Subject to Special Stipulations

Parcel 8

T. 29 S., R 20 E., MD Mer.,
Sec. 1, SENE, N2SE;
Kern County 120.00 acres
Public Land
Bakersfield FO
Subject to Special Stipulations

Parcel 9

T. 29 S., R 20 E., MD Mer.,
Sec. 2, Lot 2
Kern County 31.78 acres
Public Land
Bakersfield FO
Subject to Special Stipulations

Parcel 10
T. 29 S., R 20 E., MD Mer.,
Sec. 2, Lot 8;
Kern County 40.00 acres
Public Land
Bakersfield FO
Subject to Special Stipulations

Parcel 11

T. 28 S., R 22 E., MD Mer.,
Sec. 18, All;
Kern County 640.00 acres
Split Estate Lands
Bakersfield FO
Subject to Special Stipulations

Parcel 12

T. 28 S., R 22 E., MD Mer.,
Sec. 30, W2, SE;
Kern County 480.22 acres
Split Estate Lands
Bakersfield FO
Subject to Special Stipulations

Parcel 13

T. 29 S., R 22 E., MD Mer.,
Sec. 4, Lot 1 of NE /4, Lot 1 of NW/4;
Kern County 160.00 acres
Split Estate Lands
Bakersfield FO
Subject to Special Stipulations

Parcel 14

T. 29 S., R 22 E., MD Mer.,
Sec. 6, E2;
Kern County 317.89 acres
Split Estate Land
Bakersfield FO
Subject to Special Stipulations

Parcel 18

T. 26 S., R. 28 E., MD Mer.,
Sec. 18, NENE;
Kern County 40.00 acres
Split Estate Land
Bakersfield FO

Subject to Special Stipulations

Parcel 19

T. 31 S., R. 22 E., MD Mer.,
Sec. 19, Lots 2-9, S2 of Lot 10, S2SE;
Kern County 538.06 acres
Public Land except for;
Lot 4 and Lot 5
Bakersfield FO
Subject to Special Stipulations

Parcel 20

T. 31 S., R. 22 E., MD Mer.,
Sec. 30 NENE;
Kern County 40.00 acres
Split Estate Land
Bakersfield FO
Subject to Special Stipulations

Parcel 22

T. 31 S., R. 22 E., MD Mer.,
Sec. 33, NW/4;
Kern County 160.00 acres
Public Land
Bakersfield FO
Subject to Special Stipulations

Parcel 23

T. 31 S., R. 22 E., MD Mer.,
Sec. 33, Lots 7 & 8;
Kern County 160.00 acres
Public Land
Bakersfield FO
Subject to Special Stipulations

Appendix B
Special Lease Stipulations

Stipulation No. 1 - Limited Surface Use - Protected Species: All or a portion of this lease is within the range of one or more plant or animal species (shown in Biology Tables 4 and 6 following this stipulation) that are either listed as threatened or endangered, or are proposed for such listing by the U.S. Fish and Wildlife Service (USFWS).

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys, and consultation or conferencing with the USFWS. Notice is also given that surface-disturbing activities may be moved or modified, and that some activities may be prohibited during seasonal time periods. Surface-disturbing activities will be prohibited on the lease only where:

a. The proposed action is likely to jeopardize the continued existence of a listed or proposed species, or
b. The proposed action is inconsistent with the recovery needs of a listed species as identified in an approved USFWS Recovery Plan.

Prior to the authorization of any surface-disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year.

The Bureau of Land Management (BLM) may need to initiate consultation or conference with the USFWS if the site inspection concludes that a listed or proposed species may be affected by the proposed activity. The lessee should be aware that the USFWS has up to 135 days to render their biological opinion, and that there are provisions for an additional 60-day extension. Offsite habitat protection or enhancement for wildlife or vegetation (compensation) may be required by the USFWS when habitat is disturbed. The consultation may also result in some restrictions to the lessee's plan of development, including movement or modification of activities, and seasonal restrictions. Surface-disturbing activities will be prohibited on the lease if the consultation or conference concludes that either of the conditions identified in a or b above exist.

Stipulation No. 2 - Limited Surface Use - Sensitive Species: All or a portion of this lease is within the range of one or more plant or animal species (shown in Biology Tables 4, 5 and 7 following this stipulation) that are either Federal candidates for listing as threatened or endangered (Federal Candidate), or are listed by the State of California as threatened or endangered (State Listed), or are designated by the Bureau of Land Management (BLM) as Sensitive (Bureau Sensitive).

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys and coordination with the USFWS and California Department of Fish and Game. Notice is also given that surface-disturbing activities may be relocated beyond the standard 200 meters but not more than 1/4 mile and that surface disturbing activities may be prohibited during seasonal time periods.

Prior to the authorization of any surface-disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations

may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year. The BLM may need to coordinate with the USFWS or the California Department of Fish and Game if the site inspection concludes that a Federal Candidate, State Listed, or Bureau Sensitive species may be affected by the proposed activity. Coordination may delay application processing beyond established time frames.

To prevent or reduce disturbance to Federal Candidate, State Listed, or Bureau Sensitive species, surface operations may be moved up to 1/4 mile and surface-disturbing activities may be prohibited during seasonal time periods.

Table Biology 1. Federal and State Listed, and BLM Sensitive animal species with potential to occur on the lease parcels.

Species	Blunt-nosed leopard lizard	California condor	Giant kangaroo rat	Tipton kangaroo rat	San Joaquin kit fox	San Joaquin antelope squirrel	Burrowing owl	Short-nosed kangaroo rat	San Joaquin pocket mouse	Tulare grasshopper mouse	Pallid Bat
Status	**FE, SE**	**FE, SE**	**FE, SE**	**FE, SE**	**FE, ST**	**ST**	**BLM Sensitive**	**BLM Sensitive**	**BLM Sensitive**	**BLM Sensitive**	**BLM Sensitive**
Huron					Potential		Potential				Potential
Orchard Peak		Historic			Potential	Potential	Potential				Potential
Chico Martinez	Potential		Potential		Potential	Potential	Potential	Potential	Potential	Potential	Potential
California Aqueduct			Potential	Potential	Potential		Potential	Potential	Potential	Potential	Potential
Deepwell Ranch	Potential				Potential		Potential				Potential
Temblor	Potential		Potential		Potential	Potential	Potential	Potential	Potential	Potential	Potential

Status

FE – Federally Endangered
FT – Federally Threatened
SE – State Endangered
ST – State Threatened
BLM Sensitive – BLM California Sensitive Species

Occurrence

Potential – parcel is within species range or known occurrence nearby
Historic – within historic range of species, historic occurrence nearby

Table Biology 2. Federally Listed and BLM Sensitive plant species with potential to occur on the lease parcels.

Biological Unit:	HU	OP	CM	CA	DR	TR
FEDERALLY ENDANGERED						
Bakersfield cactus (*Opuntia basilaris* var. *treleasei*)					X	
California jewelflower (*Caulanthus californicus*)		X		X		
Kern mallow (*Eremalche parryi* ssp. *kernensis*)				X		
San Joaquin woollythreads (*Monolopia congdonii*)			X			
FEDERALLY THREATENED						
San Joaquin adobe sunburst (*Pseudobahia peirsonii*)					X	
FEDERALLY DELISTED						
Hoover's woolly-star (*Eriastrum hooveri*)		X	X	X		x
BLM SENSITIVE						
Hall's tarplant (*Deiandra halliana*)		X				
Lemmon's jewelflower (*Caulanthus coulteri* var. *lemmonii*)		X				
Lost Hills crownscale (*Atriplex vallicola*)				X		
Mason's neststraw (*Stylocline masonii*)		X				
Munz's tidy tips (*Layia munzii*)		X				
oil neststraw (*Stylocline citroleum*)					X	
pale-yellow layia (*Layia heterotricha*)		X				
Panoche peppergrass (*Lepidium jaredii* spp. *album*)		X				
recurved larkspur (*Delphinium recurvatum*)		X		X	X	
round-leaved filaree (*California macrophylla*)		X				
San Benito spineflower (*Chorizanthe biloba* var. *immemoria*)		X				
San Bernardino aster (*Symphyotrichum defoliatum*)		X				
shining navarretia (*Navarretia nigelliformis* ssp.		X				

radicans)						
showy madia (*Madia radiata*)		X		X		
straight-awned spineflower (*Chorizanthe rectispina*)		X				
striped adobe-lily (*Fritilaria striata*)					X	
Tejon poppy (*Eschscholtzia lemonii* spp. *kernensis*)						X
Temblor buckwheat (*Eriogonum temblorense*)		X	X			X

Key to Biological Units: HU = Huron, OP = Orchard Peak, CM = Chico Martinez, CA = California Aquaduct, DR = Deepwell Ranch, TR = Temblor.

Biology Table 3
Federally Listed, Proposed and Candidate Species
Designated and Proposed Critical Habitat
Bakersfield Field Office

COMMON NAME	SCIENTIFIC NAME	STATUS[1] SP	STATUS[1] CH	OCCURRENCE[2,3] C	V	S	CPNM	FM
Snails								
BANDED DUNE SNAIL	HELMINTHOGLYPA WALKERIANA	FE	CH	K	N3	N3		
Fairy Shrimp								
LONGHORN FAIRY SHRIMP	BRANCHINECTA LONGIANTENNA	FE	CH	N1	L1	N3	K	
VERNAL POOL FAIRY SHRIMP	BRANCHINECTA LYNCHI	FT	CH	N1	L1	N3	H	x
VERNAL POOL TADPOLE SHRIMP	LEPIDURUS PACKARDI	FT	CH	N3	N3	N3		x
Insects								
VALLEY ELDERBERRY LONGHORN BEETLE	DESMOCERUS DIMORPHUS	FT	CH	N	L	L		x
KERN PRIMROSE SPHINX MOTH	EUPROSERPINUS EURERPE	FT		N	K?	L	K	
Fish								
LITTLE KERN GOLDEN TROUT	ONCORHYNCHUS AQUABONITA WHITEI	FT	CH	N3	N3	N1		
CA GOLDEN TROUT	ONCORHYNCHUS MYKISS AGUABONITA	90-day		N3	N3	N2?		
LAHONTAN CUTTHROAT TROUT	ONCORHYNCHUS CLARKI HENSHAWI	FT		N3	N3	N3		N1
PAIUTE CUTTHROAT TROUT	ONCORHYNCHUS CLARKI SELENIRIS	FT		N3	N3	N3		N1
UNARMORED THREESPINE STICKLEBACK	GASTEROSTEUS ACULEATUS WILLIAMSONI	FE	PCH	N1	N3	N3		
TIDEWATER GOBY	EUCYCLOGOBIUS NEWBERRYI	FE	CH	N1	N3	N3		
STEELHEAD (southern CA coast)*	ONCORHYNCHUS MYKISS	FE	CH	N1	N3	N3		
STEELHEAD (south central CA coast)*	ONCORHYNCHUS MYKISS	FT	CH	N1	N3	N3		
Amphibians								
CA TIGER SALAMANDER (SB DPS)	AMBYSTOMA CALIFORNIENSE	FT	CH	H	N3	N3		
CA TIGER SALAMANDER (Cen CA DPS)	AMBYSTOMA CALIFORNIENSE	FT	CH	H	M1	H		H
ARROYO SOUTHWESTERN TOAD	BUFO MICROSCAPHUS CALIFORNICUS	FE	CH	LI	LI	N3		
CALIFORNIA RED-LEGGED FROG	RANA AURORA DRAYTONI	FT	PCH	M1	L1	L1		
MTN YELLOW-LEGGED FROG (So. CA DPS)	RANA MUSCOSA	FE		N3	N3	N3		
MTN YELLOW-LEGGED FROG (Sierran DPS)	RANA MUSCOSA	Candidate		N3	N3	N2		N1
Reptiles								
BLUNT-NOSED LEOPARD LIZARD	GAMBELIA SILA	FT		M1	K	K	K	x
ISLAND NIGHT LIZARD	XANTUSIA RIVERSIANA	FT		N1	N3	N3		
GIANT GARTER SNAKE	THAMNOPHIS GIGAS	FT		N3	L1	N3		x
Birds								
CALIFORNIA BROWN PELICAN	PELECANUS OCCIDENTALIS CALIFORNICUS	FE		K	N1	N1		
ALEUTIAN CANADA GOOSE	BRANTA CANADENSIS LEUCOPAREIA	FT		N1	L1	N1		
CALIFORNIA CONDOR	GYMNOGYPS CALIFORNIANUS	FE	CH	K	K	K		
BALD EAGLE	HALIAEETUS LEUCOCEPHALUS	FT		M2	H	M2	K	x
AMERICAN PEREGRINE FALCON	FALCO PEREGRINUS ANATUM	R		K	H	M2		
LIGHT-FOOTED CLAPPER RAIL	RALLUS LONGIROSTRIS LEVIPES	FE		N1	N3	N3		
CALIFORNIA CLAPPER RAIL	RALLUS LONGIROSTRIS OBSOLETUS	FE		N1	N3	N3		
WESTERN SNOWY PLOVER (COAST)	CHARADRIUS ALEXANDRINUS NIVOSUS	FT	CH	H	N3	N3		
CALIFORNIA LEAST TERN	STERNA ANTILLARUM BROWNI	FE		H	N3	N3		
MARBLED MURRELET	BRACHYRAMPHUS MARMORATUS	FT	CH	H	N3	N3		
WESTERN YELLOW-BILLED CUCKOO	COCCYZUZ AMERICANUS OCCIDENTALIS	Candidate		N3	L1	L1		
SOUTHWESTERN WILLOW FLYCATCHER	EMPIDONAX TRAILLII EXTERMIS	FE	PCH	N1	N1	K		
LEAST BELL'S VIREO	VIREO BELLII PUSILLUS	FE	CH	N2	N2	N2		
Mammals								
BUENA VISTA LAKE SHREW	SOREX ORNATUS RELICTUS	FE		N3	K	N3		
PACIFIC LITTLE POCKET MOUSE	PEROGNATHUS LONGIMEMBRIS PACIFICUS	FE		N3	N3	N3		
MORRO BAY KANGAROO RAT	DIPODOMYS HEERMANNI MORROENSIS	FE	CH	L1	N3	N3		
GIANT KANGAROO RAT	DIPODOMYS INGENS	FE		L1	K	N3	K	x
TIPTON KANGAROO RAT	DIPODOMYS NITRATOIDES NITRTOIDES	FE		N3	K	N3		
FRESNO KANGAROO RAT	DIPODOMYS NITRATOIDES EXILIS	FE	CH	N3	L1	N3		x
SAN JOAQUIN VALLEY WOODRAT	NEOTOMA FUSCIPES RIPARIA	FC		N3	N3	N3		
SAN JOAQUIN KIT FOX	VULPES MACROTIS MUTICA	FE		K	K	K	K	x
FISHER (West Coast DPS)	MARTES PENNANTI	Candidate		N3	N3	K		?
CA BIGHORN SHEEP (Sierra Nevada pop.)	OVIS CANADENSIS CALIFORNIANA	FE		N3	N3	N2		N1
GUADALUPE FUR SEAL*	ARCTOCEPHALUS TOWNSENDI	FT		L1	N3	N3		
NORTHERN SEA LION (eastern pop.)*	EUMETOPIAS JUBATUS	FT	CH	K	N3	N3		
SOUTHERN SEA OTTER	ENHYDRA LUTRIS NEREIS	FT		H	N3	N3		
GRAY WHALE*	ESCHRICHTIUS ROBUSTUS	REC		K	N	N		
BLUE WHALE*	BALAENOPTERA MUSCULUS	FE		L	N	N		
HUMPBACK WHALE*	MEGAPTERA NOVAEANGLIAE	FE		H	N	N		

[1] **STATUS**

Species (**SP**)

FE	endangered
FT	threatened
FPE	proposed endangered
FPT	proposed threatened
FC	candidate
REC	recovered
90-day	90-day'may be warranted' finding
not warr	not warranted

Critical Habitat (**CH**)

CH	designated critical habitat
PCH	proposed critical habitat

[2] **OCCURRENCE** on public land

K	known
H	highly likely
M1	likely but limited habitat
M2	likely but localized species
L	unlikely
L1	unlikely - local species and limited habitat
L2	unlikely - very localized species
N	very unlikely
N1	very unlikely - no suitable habitat
N2	very unlikely - limited suitable habitat exists but known not to be occupied
N3	very unlikely - outside of normal range
U	unknown

[3] Column headings referring to **Management Areas**

C	Coast
V	Valley
S	South Sierra
CPNA	Carrizo
FM	eastern Fresno and Madera counties.

Biology Table 4.
California State Listed Only Animal Species
Species that are both federally listed and state listed are NOT repeated on this list

Techachapi slender salamander
Batrachoseps stebbinsi

Kern Canyon slender salamander
Batrachoseps simatus

Southern rubber boa
Charina bottae umbratica53

Swainson's hawk
Buteo swainsoni

American peregrine falcon
Falco peregrinus anatum

Greater sandhill crane
Grus Canadensis tabida

Western yellow-billed cuckoo
Coccyzus americanus occidentalis

Willow flycatcher
Empidonax traillii

Belding's savannah sparrow
Passerculus sandwichensis beldingi

San Joaquin antelope squirrel
Ammospermophilus nelsoni

Biology Table 5.
Federally Listed Plant Species in the Bakersfield Field Office

Family	genus	species	ssp/ var	sub taxon name	Common Name	Federal status
Apiaceae	Lomatium	shevockii			Owens Peak lomatium	threatened
Asteraceae	Calycadenia	hooveri			Hoover's calycadenia	endangered
Asteraceae	Cirsium	crassicaule			slough thistle	endangered
Asteraceae	Cirsium	fontinale	var.	obispoense	Chorro creek bog thistle	endangered
Asteraceae	Cirsium	loncholepis			La Graciosa thistle	endangered
Asteraceae	Cirsium	rhothophilum			surf thistle	endangered
Asteraceae	Erigeron	multiceps			Kern River daisy	endangered
Asteraceae	Monolopia	congdonii			San Joaquin woollythreads	endangered
Asteraceae	Pseudobahia	peirsonii			Tulare pseudobahia	threatened
Brassicaceae	Caulanthus	californicus			California jewelflower	endangered
Cactaceae	Opuntia	basilaris	var.	treleasei	Bakersfield cactus	endangered
Ericaceae	Arctostaphylos	morroensis			Morro manzanita	threatened
Fabaceae	Lupinus	nipomensis			Nipomo mesa lupine	endangered
Hydrophyllaceae	Eriodictyon	altissimum			Indian Knob mountainbalm	threatened
Hydrophyllaceae	Eriodictyon	capitatum			Lompoc yerba santa	endangered
Liliaceae	Allium	shevockii			Spanish Needle onion	threatened
Liliaceae	Brodiaea	insignis			Kaweah brodiaea	endangered
Liliaceae	Fritillaria	striata			striped adobe-lily	endangered
Malvaceae	Eremalche	parryi	ssp.	kernensis	Kern mallow	endangered
Malvaceae	Sidalcea	hickmanii	ssp.	parishii	Parish's checkerbloom	candidate
Onagraceae	Clarkia	springvillensis			Springville clarkia	threatened
Polemoniaceae	Eriastrum	Hooveri			Hoover's eriastrum	delisted
Portulacaceae	Calyptridium	pulchellum			Mariposa pussypaws	threatened
Scrophulariaceae	Castilleja	campestris	var.	succulenta	succulent owl's-clover	threatened
Scrophulariaceae	Castilleja	mollis			soft-leaved indian paintbrush	endangered
Scrophulariaceae	Mimulus	gracilipes			slender-stalked monkeyflower	threatened

Biology Table 6.
BLM Sensitive Plant Species in the Bakersfield Field Office

Family	genus	species	ssp/ var	sub taxon name	Common Name
Alismataceae	Sagittaria	sanfordii			Sanford's arrowhead
Apiaceae	Cymopterus	deserticola			desert cymopterus
Apiaceae	Eryngium	aristulatum	var.	hooveri	Hoover's button-celery
Apiaceae	Eryngium	spinosepalum			spiny-sepaled button-celery
Apiaceae	Lomatium	shevockii			Owens Peak lomatium
Apiaceae	Sanicula	maritima			Adobe Sanicle
Asteraceae	Baccharis	plummerae	ssp.	glabrata	San Simeon baccharis
Asteraceae	Calycadenia	hooveri			Hoover's calycadenia
Asteraceae	Centromadia	parryi	ssp.	congdonii	Congdon's tarplant
Asteraceae	Centromadia	parryi	ssp.	australis	southern tarplant
Asteraceae	Cirsium	crassicaule			slough thistle
Asteraceae	Cirsium	occidentale	var.	compactum	compact cobwebby thistle
Asteraceae	Cirsium	rhothophilum			surf thistle
Asteraceae	Deinandra	arida			Red Rock tarplant
Asteraceae	Deinandra	halliana			Hall's tarplant
Asteraceae	Deinandra	increscens	ssp.	villosa	Gaviota tarplant
Asteraceae	Deinandra	minthornii			Santa Susana tarplant
Asteraceae	Ericameria	gilmanii			Gilman's goldenbush
Asteraceae	Erigeron	aequifolius			Hall's daisy
Asteraceae	Erigeron	blochmaniae			Blochman's leafy daisy
Asteraceae	Erigeron	inornatus	var.	keilii	Keil's daisy
Asteraceae	Erigeron	multiceps			Kern River daisy
Asteraceae	Eriophyllum	lanatum	var.	hallii	Fort Tejon woolly sunflower
Asteraceae	Grindelia	hirsutula	var.	maritima	San Francisco gumplant
Asteraceae	Heterotheca	shevockii			Shevock's golden-aster
Asteraceae	Lasthenia	conjugens			Contra Costa goldfields
Asteraceae	Lasthenia	glabrata	ssp.	coulteri	coulter's goldfields
Asteraceae	Layia	carnosa			beach layia
Asteraceae	Layia	heterotricha			pale-yellow layia
Asteraceae	Layia	jonesii			Jones' layia
Asteraceae	Layia	leucopappa			Comanche Point layia
Asteraceae	Layia	munzii			Munz' tidy tips
Asteraceae	Madia	radiata			Showy madia
Asteraceae	Malacothrix	saxatilis	var.	arachnoidea	Carmel Valley malacothrix
Asteraceae	Pentachaeta	lyonii			Lyon's pentachaeta
Asteraceae	Pseudobahia	bahiiafolia			Hartwig’s golden sunburst
Asteraceae	Stylocline	citroleum			Oil neststraw
Asteraceae	Stylocline	masonii			Mason neststraw
Boraginaceae	Plagiobothrys	uncinatus			Hooked popcorn-flower

Family	genus	species	ssp/ var	sub taxon name	Common Name
Brassicaceae	Caulanthus	amplexicaulis	var.	barbarae	Santa Barbara Jewelflower
Brassicaceae	Caulanthus	coulteri	var.	lemmonii	Lemmon's jewelflower
Brassicaceae	Dithyrea	maritima			Beach spectaclepod
Brassicaceae	Lepidium	jaredii	ssp.	album	Panchoe pepper-grass
Brassicaceae	Lepidium	jaredii	ssp.	jaredii	Jared's peppergrass
Brassicaceae	Lepidium	virginicum	var.	robinsonii	Robinson's pepper-grass
Brassicaceae	Rorippa	gambelii			Gambel's water cress
Brassicaceae	Streptanthus	cordatus	var.	piutensis	Piute Mtns. Jewel flower
Brassicaceae	Twisselmannia	californica			Kings gold
Campanulaceae	Nemacladus	twisselmannii			Twisselmann's nemacladus
Caryophyllaceae	Arenaria	paludicola			marsh sandwort
Chenopodiaceae	Aphanisma	blitoides			Aphanisma
Chenopodiaceae	Atriplex	cordulata			heartscale
Chenopodiaceae	Atriplex	coulteri			Coulter's saltbrush
Chenopodiaceae	Atriplex	depressa			brittlescale
Chenopodiaceae	Atriplex	erecticaulis			Earlimart orache
Chenopodiaceae	Atriplex	joaquiniana			San Joaquin spearscale
Chenopodiaceae	Atriplex	minuscula			lesser saltscale
Chenopodiaceae	Atriplex	pacifica			South Coast saltscale
Chenopodiaceae	Atriplex	serenana	var.	davidsonii	Davidson's saltscale
Chenopodiaceae	Atriplex	subtilis			subtle orache
Chenopodiaceae	Atriplex	tularensis			Bakersfield smallscale
Chenopodiaceae	Atriplex	vallicola			Lost Hills saltbush
Chenopodiaceae	Suaeda	californica			California seablite
Convolvulaceae	Calystegia	subacaulis	ssp.	episcopalis	Cambria morning-glory
Crassulaceae	Dudleya	abramsii	ssp.	bettinae	San Luis Obispo serpentine dudleya
Crassulaceae	Dudleya	abramsii	ssp.	murina	San Luis Obispo dudleya
Crassulaceae	Dudleya	blochmaniae	ssp.	blochmaniae	Blochman's dudleya
Crassulaceae	Dudleya	cymosa	ssp.	marcescens	marcescent dudleya
Crassulaceae	Dudleya	cymosa	ssp.	costafolia	Pierpoint Springs dudleya
Crassulaceae	Dudleya	parva			Conejo dudleya
Crassulaceae	Dudleya	verityi			Verity's dudleya
Cupressaceae	Cupressus	arizonica	ssp.	nevadensis	Arizona Cypress
Cyperaceae	Carex	obispoensis			San Luis Obispo Sedge
Ericaceae	Arctostaphylos	luciana			Santa Lucia manzanita
Ericaceae	Arctostaphylos	osoensis			Oso manzanita
Ericaceae	Arctostaphylos	pechoensis			Pecho manzanita
Ericaceae	Arctostaphylos	pilosula			Santa Margarita manzanita
Ericaceae	Arctostaphylos	purissima			La Purisima manzanita
Ericaceae	Arctostaphylos	refugioensis			Refugio manzanita
Ericaceae	Arctostaphylos	rudis			Sand mesa manzanita
Ericaceae	Arctostaphylos	tomentosa	ssp.	daciticola	dacite manzanita
Ericaceae	Arctostaphylos	tomentosa	ssp.	eastwoodiana	Eastwood's manzanita

Family	genus	species	ssp/ var	sub taxon name	Common Name
Ericaceae	Arctostaphylos	wellsii			Wells' manzanita
Euphorbiaceae	Chamaesyce	hooveri			Hoover's spurge
Fabaceae	Astragalus	brauntonii			Braunton's milk-vetch
Fabaceae	Astragalus	ertterae			Walker Pass milkvetch
Fabaceae	Astragalus	pycnostachyus	var.	lanosissimus	Ventura marsh milk vetch
Fabaceae	Astragalus	shevockii			Shevock's milk-vetch
Fabaceae	Lupinus	citrinus	var.	citrinus	Orange lupine
Fabaceae	Lupinus	ludovicianus			San Luis Obispo County Lupine
Fabaceae	Lupinus	padre-crowleyi			Father Crowley's lupine
Fabaceae	Trifolium	macilentum	var.	dedeckerae	DeDecker's clover
Fagaceae	Quercus	dumosa			Nuttall's scrub oak
Grossulariaceae	Ribes	tularense			Sequoia gooseberry
Hydrophyllaceae	Phacelia	nashiana			Charlotte's phacelia
Hydrophyllaceae	Phacelia	novenmillensis			Nine-mile canyon phacelia
Iridaceae	Iris	munzii			Munz's iris
Lamiaceae	Monardella	crispa			Crisp monardella
Lamiaceae	Monardella	frutescens			San Luis Obispo monardella
Lamiaceae	Monardella	linoides	ssp.	oblonga	flax-like monardella
Liliaceae	Allium	hickmanii			Hickman's onion
Liliaceae	Allium	howellii	var.	clokeyi	Mt. Pinos onion
Liliaceae	Allium	shevockii			Spanish Needle onion
Liliaceae	Bloomeria	humilis			dwarf goldenstar
Liliaceae	Brodiaea	insignis			Kaweah brodiaea
Liliaceae	Calochortus	clavatus	ssp.	recurvifolius	Arroyo De La Cruz Mariposa Lily
Liliaceae	Calochortus	obispoensis			San Luis mariposa lily
Liliaceae	Calochortus	palmeri	var.	palmeri	Palmer's mariposa lily
Liliaceae	Calochortus	plummerae			Plummer's mariposa lily
Liliaceae	Calochortus	simulans			San Luis Obispo mariposa lily
Liliaceae	Calochortus	striatus			alkali mariposa lily
Liliaceae	Calochortus	weedii	var.	vestus	late-flowered mariposa lily
Liliaceae	Calochortus	westonii			Shirley Meadows star-tulip
Liliaceae	Chlorogalum	pomeridianum	var.	minus	Dwarf soaproot
Liliaceae	Chlorogalum	pomeridianum	var.	reductum	Camatta Canyon amole
Liliaceae	Fritillaria	brandegeei			Greenhorn fritillary
Liliaceae	Fritillaria	ojaiensis			Ojai fritillary
Liliaceae	Fritillaria	striata			striped adobe-lily
Liliaceae	Fritillaria	viridea			San Benito fritillary
Malvaceae	Malacothamnus	davidsonii			Davidson's bush mallow
Malvaceae	Malacothamnus	palmeri	var.	involucratus	Carmel Valley bushmallow
Malvaceae	Sidalcea	hickmanii	ssp.	anomala	Cuesta Pass Checkerbloom
Malvaceae	Sidalcea	keckii			Keck's checkerbloom
Onagraceae	Camissonia	hardhamiae			Hardham's evening primrose
Onagraceae	Camissonia	integrifolia			Kern River evening primrose

Family	genus	species	ssp/ var	sub taxon name	Common Name
Onagraceae	Clarkia	australis			Small southern clarkia
Onagraceae	Clarkia	speciosa	ssp.	immaculata	Pismo clarkia
Onagraceae	Clarkia	tembloriensis	ssp.	calientensis	Caliente clarkia
Onagraceae	Clarkia	xantiana	ssp.	parviflora	Kern Canyon clarkia
Papaveraceae	Eschscholzia	lemmonii	ssp.	kernensis	Tejon Poppy
Papaveraceae	Eschscholzia	rhombipetala			diamond-petaled California poppy
Philadelphaceae	Carpenteria	californica			Tree anemone
Pinaceae	Pinus	radiata			Monteret pine
Poaceae	Agrostis	hooveri			Hoover's bent grass
Poaceae	Orcuttia	inaequalis			San Joaquin Valley orcutt grass
Poaceae	Tuctoria	greenei			Greene's tuctoria
Polemoniaceae	Eriastrum	luteum			Yellow-Flowered eriastrum
Polemoniaceae	Leptosiphon	serrulatus			Madera linanthus
Polemoniaceae	Navarretia	nigelliformis	ssp.	radians	shining navarretia
Polemoniaceae	Navarretia	peninsularis			Baja navarretia
Polemoniaceae	Navarretia	setiloba			Piute Mtns. Navaretia
Polygonaceae	Aristocapsa	insignis			Indian Valley spineflower
Polygonaceae	Chorizanthe	breweri			Brewer's spineflower
Polygonaceae	Chorizanthe	pungens	var.	pungens	Monterey spineflower
Polygonaceae	Chorizanthe	rectispina			Straight-awned spineflower
Polygonaceae	Eriogonum	breedlovei	var.	breedlovei	Breedlove's buckwheat
Polygonaceae	Eriogonum	crocatum			Conejo buckwheat
Polygonaceae	Eriogonum	kennedyi	var.	pinicola	Cache Peak buckwheat
Polygonaceae	Eriogonum	nudum	var.	murinum	Mouse Buckwheat
Polygonaceae	Eriogonum	temblorense			Temblor Buckwheat
Portulacaceae	Lewisia	disepala			Yosemite lewisia
Pottiaceae	Tortula	californica			California tortula moss
Ranunculaceae	Delphinium	inopinum			Unexpected larkspur
Ranunculaceae	Delphinium	parryi	ssp.	blochmaniae	Dune larkspur
Ranunculaceae	Delphinium	purpusii			Kern County larkspur
Ranunculaceae	Delphinium	recurvatum			Valley Larkspur
Ranunculaceae	Delphinium	umbraculorum			Umbrella larkspur
Rhamnaceae	Ceanothus	hearstiorum			Hearst's ceanothus
Rhamnaceae	Ceanothus	maritimus			Maritime ceanothus
Rosaceae	Horkelia	cuneata	ssp.	sericea	Kellogg's horkelia
Rosaceae	Horkelia	tularensis			Kern Plateau horkelia
Rubiaceae	Galium	angustifolium	ssp.	onycense	Onyx peak bedstraw
Rubiaceae	Galium	hardhamiae			Hardham's bedstraw
Scrophulariaceae	Castilleja	densiflora	ssp.	obispoensis	Obispo indian paintbrush
Scrophulariaceae	Cordylanthus	maritimus	ssp.	maritimus	salt marsh bird's-beak
Scrophulariaceae	Cordylanthus	mollis	ssp.	hispidus	hispid bird's beak
Scrophulariaceae	Cordylanthus	rigidus	ssp.	littoralis	Seaside Bird's-beak
Scrophulariaceae	Gratiola	heterosepala			Bogg's lake hedge-hyssop

Family	genus	species	ssp/ var	sub taxon name	Common Name
Scrophulariaceae	Mimulus	gracilipes			slender-stalked monkeyflower
Scrophulariaceae	Mimulus	norrisii			Kaweah monkeyflower
Scrophulariaceae	Mimulus	pictus			Calico monkeyflower
Scrophulariaceae	Mimulus	shevockii			Kelso Creek monkeyflower
Scrophulariaceae	Pedicularis	dudleyi			Dudley's lousewort
Scrophulariaceae	Scrophularia	atrata			Black Flowered figwort

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Appendix C
Oil and Gas Management Guidelines

Oil and Gas Leasing Availability Categories

The Caliente Resource Management Plan describes the various categories of land availability for leasing for oil and gas. A determination has been made that the lands covered by this EA are open to leasing for oil and gas. In addition, the plan identifies the appropriate stipulations to be associated with each new lease.

Public lands that are closed to leasing separate into two groups. Tracts that have been closed by previous legislation or secretarial policy form one group of lands and are known as *non-discretionary closure*s. The second group of closed lands, consisting of those that would possibly be proposed for closure under this plan, is called *proposed discretionary closures*.

Lands open to oil and gas leasing separate into the following groups: open to leasing under standard lease terms and conditions; open to leasing under a no surface use stipulation; and open to leasing under a limited surface use stipulation. The standard oil and gas lease form includes those preprinted lease terms and conditions that apply to all leases. Other stipulations developed in this plan are applied in lease areas with special resource concerns, and supersede any inconsistent provisions of the standard lease form. The special stipulations proposed in this plan address limited surface use for areas with resource protection needs slightly different from the standard lease stipulation. The Limited Surface Use (LSU) stipulation provides additional protection for Federally Proposed and Listed Species; Proposed and Designated Critical Threatened and Endangered Species Habitat; and Federal Candidate, State Listed and Bureau Sensitive Species. Three additional special stipulations were contained in the Caliente RMP that are not applicable to any of the land in the subject parcels. Those special stipulations are: No surface use for areas where very unique resources exist, LSU – Department of Defense lands, and LSU – Coast (for management of Coast Area ACEC's/SMA's).

Lands Open to Oil and Gas Leasing

All public land and Federally reserved mineral estate within the area covered under this EA are open for oil and gas leasing activities.

The process of nominating a federal parcel for this lease sale was initiated when a letter of interest in oil and gas leasing was submitted to the Sacramento Office of the Bureau of Land Management. The RMP was used to determine the applicability of lease stipulations attached to the parcels in this sale. There are three categories of lease stipulations, described in detail below, and they are:

1. Offer for lease with a Standard Lease stipulation
2. Offer for lease with a No Surface Use stipulation
3. Offer for lease with a Limited Surface Use stipulation

All new leases covered by this EA would be offered with Limited Surface Use Stipulation(s) (LSU). If new leases expire or terminate and the lands are re-leased, they will also be leased with Limited Surface Use Stipulation(s).

Leasing with Standard Lease Stipulation

The Standard Lease stipulation includes the terms and conditions that are the national standards printed on Bureau of Land Management lease forms (form 3100-11, February 2003).

Under standard terms, a proposed exploration and development operation can be modified by the operator and Bureau to minimize impacts of the project's operation design. Modifications are limited to moving the proposed operation less than 200 meters and delaying the project less than 60 days in one lease year.

No lands covered by this EA are proposed to have this stipulation.

No Surface Use Stipulation

This lease is within an area that contains unique or significant natural or cultural values, or other uses preclude surface development over the entire leased area. To prevent or reduce disturbance to unique or significant natural or cultural values or other pre-existing uses that preclude surface development, No Surface Use is allowed on the lease.

Additional Information

Application. The No Surface Use stipulation is intended for use when adequate protection of surface resources cannot be provided through mitigation, and there are no suitable sites for development anywhere on the **entire** lease. Mineral development of the lease from an off-site location is recommended. **There are no lands covered by this EA that are proposed to have this stipulation.**

Review Process. If conditions change so that the NSU stipulation becomes necessary for lands to be leased at a future date, **t**he No Surface Use stipulation would be applied at the time of a lease sale. An exception or modification to the stipulation may be approved if it can be demonstrated that operations can be conducted without causing unacceptable impacts to the critical cultural or natural values or to the other pre-existing use. Any decision to grant an exception or modification would be based on field inspection and inventory and the NEPA review process. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year. The stipulation may be waived if a determination is made by the Bureau that the resource or other use no longer exists on the leased lands.

Although there may be specific discrete areas within the parcels under this EA where No Surface Use is allowed due to pre-existing conditions, there are no leases where the entire surface is precluded from development. Consequently, there are no lands within these parcels that are proposed to have this stipulation.

Leasing with the Limited Surface Use Stipulation

Special stipulations may be proposed for use to protect unique resources or values where it may be necessary to modify surface activities beyond authorities contained under the standard lease terms (43 CFR 3103.1-3). The Limited Surface Use Stipulation allows BLM, in consultation with the applicant, to extend modification of development proposals beyond the standard 200 meters and 60-day conditions. By reserving the additional leeway in siting facilities, the BLM and applicant can generally use the combination of increased siting and timing flexibility to

modify development proposals to entirely avoid or significantly minimize surface-disturbing effects associated with lease development. The Limited Surface Use stipulation thus allows BLM to offer for lease parcels known to or suspected to contain unique resources or values and resolve any potential conflicts at the time when the lessee is prepared to design development proposals.

This stipulation also advises prospective lessees that they are considering the purchase of a lease in areas known or suspected to contain unique resources or values and advises them of potential constraints and development options available. Historically, the BLM in cooperation with the lessee has been able to find sufficient flexibility in designing lease development proposals, even in the most sensitive of locations, to facilitate development without adversely affecting either the resource values of concern or the oil and gas lease.

Special conditions that may be attached to new leases issued in the area managed by the Bakersfield Field Office are collectively referred to as the Limited Surface Use stipulation (LSU) and supersede any inconsistent provisions of the standard lease form. The wording of the Limited Surface Use stipulation has been adjusted to address two differing resource concerns (there were six in the Caliente RMP, but four are not currently applicable because the resource values or other pertinent criteria do not exist in the subject parcels). The Limited Surface Use Stipulation would be applied at the lease sale, to parcels located as shown on the RMP map and as described below.

This stipulation has been developed to be utilized over the life of the plan without the need for further plan amendments. The LSU stipulation has been worded to allow for adjusting the geographic locations where they would be applied based on the resource condition at the time of the lease sale offering. The locations identified in this EA address 2007 resource conditions that will be updated and modified on an annual basis. Information on those updates will be available to those interested in potential lease sales.

Limited Surface Use Stipulations

a. Federally Proposed and Listed Species (LSU - Protected Species)
b. Federal Candidate, State Listed and Bureau Sensitive Species (LSU - Sensitive Species)

The following LSU categories from the Caliente RMP are shown for informational purposes only – there are currently no lands in the parcels covered by this EA area subject to these stipulations. However, if a determination is made in the future that one or more of the following stipulations would be appropriate, then the stipulation(s) would be applied according to the criteria in the Caliente RMP.

c. Proposed Critical Habitat and Designated Critical Habitat (LSU - Critical Habitat) N/A for the parcels in this EA

d. Raptor (LSU - Raptor) N/A for the parcels in this EA

e. Department of Defense lands (LSU – Defense) – N/A for the parcels in this EA

f. Coast Management Area (LSU – Coast, for management of Coast Area ACEC's/SMA's) – N/A for the parcels in this EA

Waivers, Modification, Exceptions and Deferral to Other Plans

The Authorized Officer may grant a waiver, modification, or exception to the Limited Surface Use stipulation if the factors leading to the stipulation's inclusion in the lease have changed or if

new information has been made available. If the protection provided by the stipulation is no longer necessary or can be adequately mitigated and the proposed operation on a lease would not cause unacceptable impacts, a waiver would be evaluated (see 43 CFR 3101.1-4).

The Authorized Officer may also defer the addition of the Limited Surface Use stipulation referred to under b, c, and d above to requiring compliance with other existing approved plans. Those plans may include Habitat Conservation Plans, Programmatic Consultations, Conservation Agreements or others that provide for adequate protection and conservation of resources and compliance with all Federal and State laws.

As an example, once completed, the Kern County Valley Floor Habitat Conservation Plan and associated BLM Programmatic Section 7 Consultation on oil and gas development activities will provide adequate protection for resources identified in b, c, and d above for lands within CDOG administrative boundaries and for all federally reserved mineral estate in Kern County. Future lease sales covering parcels in those areas would defer the addition of a Limited Use Stipulation to notation that compliance with the above approved programs or plans is required.

a. Limited Surface Use Stipulation - Federally Proposed and Listed Species (LSU - Protected Species)

All or a portion of this lease is within the range of one or more plant or animal species (a list of species would be included with the stipulation for each lease) that are either listed as threatened or endangered, or are proposed for such listing by the U.S. Fish and Wildlife Service.

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys, and consultation or conferencing with the U.S. Fish and Wildlife Service. Notice is also given that surface-disturbing activities may be moved or modified, and that some activities may be prohibited during seasonal time periods. Surface disturbing activities will be prohibited on the lease only where:

1. *the proposed action is likely to jeopardize the continued existence of a listed or proposed species, or*
2. *the proposed action is inconsistent with the recovery needs of a listed species as identified in an approved U.S. Fish and Wildlife Service Recovery Plan.*

Prior to the authorization of any surface disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year.

The BLM may need to initiate consultation or conference with the U.S. Fish and Wildlife Service if the site inspection concludes that a listed or proposed species may be affected by the proposed activity. The lessee should be aware that the U.S. Fish and Wildlife Service has up to 135 days to render their biological opinion, and that there are provisions for an additional 60 day extension. Offsite habitat protection or enhancement for wildlife or vegetation (compensation) may be required by the U.S. Fish and Wildlife Service when habitat is disturbed. The consultation may also result in some restrictions to the lessee's plan of development, including movement or modification of activities, and seasonal restrictions. Surface disturbing activities will be prohibited on the lease if the consultation or conference concludes that either of the conditions identified in 1. or 2. above exists.

Additional Information

Application. The Limited Surface Use - Federally Proposed and Listed Species (LSU - Protected Species) stipulation would be attached, at the time of lease sale, to leases within the range of certain federally listed or proposed species, or to leases containing, or adjacent to, documented locations of certain federally listed or proposed species. (A list of species would be included with the stipulation for each lease.)

See BLM Biology Tables 4 and 6 for the Federally Proposed and Listed Species in the Bakersfield Field Office.

Documented locations for currently proposed species will be used to determine current applicability of the LSU - Protected Species stipulation for proposed species. If additional species become proposed, or new location information becomes available, the species and parcel lists will be modified and all subsequent lease sales will be evaluated against the modified parcel list.

Review Process. Generally, the following process will be used to approve surface disturbing activities on leases with the LSU - Protected Species stipulation. The proposed activity would be reviewed to determine if listed or proposed species would be affected. This review may involve site-specific surveys for plant and animal species, conducted according to established methodologies that may specify certain seasons or other conditions. In some cases, this may mean that a survey cannot be completed until the next growing season for some plant species or after seasonal appearance for some animal species.

If the review determines that listed or proposed species will not be affected, approval of the application will normally be granted within 30 days of the review.

If the review determines that listed or proposed species may be affected, but in a beneficial, insignificant or benign manner, and written concurrence is received from the U.S. Fish and Wildlife Service, approval of the application will normally be granted within 30 days of receiving U.S. Fish and Wildlife Service concurrence.

If it is determined that a listed or proposed species may be adversely affected, the BLM will work with the applicant to modify the proposal to minimize impacts. Modifications may include movement of activities, seasonal restrictions, mitigation and/or compensation. Modified proposals will be developed cooperatively with the applicant to ensure that the modified project still meets the applicant's objective. If the modified project may still adversely affect a listed or proposed species, BLM will initiate formal consultation or conference with the U.S. Fish and Wildlife Service.

Coordination with the U.S. Fish and Wildlife Service on Listed Species. Currently there are two options for meeting the formal consultation requirement. A new consultation may be initiated or a previously completed formal consultation may be utilized.

If a new consultation is initiated, the U.S. Fish and Wildlife Service will issue a document, called the Biological Opinion. The U.S. Fish and Wildlife Service has up to 135 days to complete a Biological Opinion and they may request an additional 60-day extension. Extensions beyond 195 days require the consent of any applicant.

A previously completed formal consultation may also be used to meet the formal consultation requirement. An example of a previously completed consultation that may be used is the **San Joaquin Valley Oil and Gas Programmatic Biological Opinion.**

Upon completion of a new consultation or determination that a previously completed consultation can be used, approval of the application will normally be granted within 30 days. If the new consultation concludes that a listed species may be jeopardized, then surface disturbance will be prohibited on the lease. Surface disturbance will also be prohibited if the consultation concludes that the proposed action is inconsistent with the recovery needs of the listed species as identified in an approved U.S. Fish and Wildlife Service Recovery Plan.

Coordination with the U.S. Fish and Wildlife Service on Proposed Species. Bureau policy requires a conferencing with the U.S. Fish and Wildlife Service on any action that may adversely affect proposed species. Depending on the complexity of the situation, a conference may be completed in a single telephone conversation or may require the time frames of a consultation. Generally, upon completion of the conference, approval of the application will be granted within 30 days. If the conference concludes that a proposed species may be jeopardized, surface-disturbing activities will be prohibited on the lease.

Final Approval. Final approval of applications that will have no effect on listed or proposed species will normally be granted within 30 days of the review.

Final approval for projects that may affect listed or proposed species in a beneficial, insignificant or benign manner will normally be granted within 30 days of receiving U.S. Fish and Wildlife Service written concurrence. The U.S. Fish and Wildlife Service generally responds to requests for concurrence in 30 days.

For projects that require consultation or conference with the U.S. Fish and Wildlife Service, final approval will normally be granted within 30 days of consultation or conference completion. Conditions of approval will include any conditions specified by the BLM or U.S. Fish and Wildlife Service for minimizing impacts.

b. Limited Surface Use - Federal Candidate, State Listed and Bureau Sensitive Species (LSU - Sensitive Species)

All or a portion of this lease is within the range of one or more plant or animal species (see attached list) that are either Federal candidates for listing as threatened or endangered (Federal Candidate), are listed by the State of California as threatened or endangered (State Listed), or are designated by the Bureau of Land Management as Sensitive (Bureau Sensitive).

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys and coordination with the U.S. Fish and Wildlife Service and California Department of Fish and Game. Notice is also given that surface-disturbing activities may be relocated beyond the standard 200 meters but not more than 1/4 mile and that surface disturbing activities may be prohibited during seasonal time periods.

Prior to the authorization of any surface disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year.

The Bureau of Land Management may need to coordinate with the U.S. Fish and Wildlife Service or the California Department of Fish and Game if the site inspection concludes that a Federal Candidate, State Listed or Bureau Sensitive species may be affected by the proposed activity. Coordination may delay application processing beyond established time frames.

To prevent or reduce disturbance to Federal Candidate, State Listed or Bureau Sensitive species, surface operations may be moved up to 1/4 mile and surface disturbing activities may be prohibited during seasonal time periods.

Additional Information

The Limited Use - Federal Candidate, State Listed and Bureau Sensitive Species (LSU - Sensitive Species) stipulation would be attached to leases that are either within the range of certain species, or that contain or are adjacent to a documented location of a certain species. A list of species would be included with the stipulation for each lease.

See Biology Tables 4, 5, 7 for the Federal Candidate, State Listed and Bureau Sensitive Species within the Bakersfield Field Office.

The current list of parcels or potential geographic area for each species will be maintained in the Bakersfield Field Office. As species are added or removed from special designation, or new location information becomes available, the species list, parcel lists and geographic area lists will be modified. All subsequent lease auctions will be evaluated against the modified species list, parcel list or geographic area list.

Generally the following process will be used to approve surface disturbing activities on leases with the LSU - Sensitive Species stipulation. The proposed activity would be reviewed to determine if special status species would be affected. This review may involve site-specific surveys for plant and animal species, conducted according to established methodologies that may specify certain seasons or other conditions. In some cases this may mean that a survey cannot be completed until the next growing season for some plants or after seasonal appearance for some animal species.

If the review determines that a special status species may be adversely affected, then surface disturbing activities may be relocated up to 1/4 mile and certain surface disturbing activities may be prohibited during seasonal periods. Bureau policy may also require coordination with the U.S. Fish and Wildlife Service or California Department of Fish and Game.

c. **Limited Surface Use Stipulation - Proposed Critical Habitat and Designated Critical Habitat (LSU - Critical Habitat)** – Although there is not currently any Proposed or Designated Critical Habitat within the areas that are identified for lease in this sale, should Proposed or Critical Habitat be designated within these lands in the future, the following stipulation would apply:

All or a portion of this lease lies within an area that is designated as critical habitat, or is proposed for designation as critical habitat (see attached species and parcel list) by the U.S. Fish and Wildlife Service.

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys, and consultation or conferencing with the U.S. Fish and Wildlife Service. Notice is also given that surface disturbing activities may be moved or

modified and that some activities may be prohibited during seasonal time periods. Surface disturbing activities will be prohibited on the lease only where:

> *1. the proposed action is likely to destroy or adversely modify critical habitat or proposed critical habitat, or*
>
> *2. the proposed action is inconsistent with the recovery needs of a listed species as identified in an approved U.S. Fish and Wildlife Service Recovery Plan.*

Prior to the authorization of any surface disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year.

The Bureau of Land Management may need to initiate consultation or conference with the U.S. Fish and Wildlife Service if the site inspection concludes that designated or proposed critical habitat may be affected by the proposed activity. The lessee should be aware that the U.S. Fish and Wildlife Service has up to 135 days to render their biological opinion, and that there are provisions for an additional 60 day extension. Offsite habitat protection or enhancement for wildlife or vegetation (compensation) may be required by the U.S. Fish and Wildlife Service when designated or proposed critical habitat is disturbed. The consultation may also result in some restrictions to the lessee's plan of development, including movement or modification of activities, and seasonal restrictions. Surface disturbing activities will be prohibited on the lease only if the consultation or conference concludes that either of the conditions identified in 1. or 2. above exist.

Additional Information

Application. The Limited Surface Use - Designated and Proposed Critical Habitat (LSU - Critical Habitat) stipulation would be attached to leases within areas that are designated as critical habitat, or proposed for designation as critical habitat for certain species. A list of species and parcels would be included with the stipulation for each lease. Critical habitat is designated or proposed by the U.S. Fish and Wildlife Service according to the regulations found in 50 CFR 424. Critical habitat means (1) the specific areas within geographical area currently occupied by a species, at the time it is listed in accordance with the Endangered Species Act, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary that such areas are essential for conservation of the species (50 CFR 424.02).

There is currently no designated or proposed critical habitat, or else the constituent elements do not exist, within the parcels covered by this EA. Consequently, no critical habitat would be affected by leasing and developing these parcels, and none of the parcels would have this stipulation. If additional areas are designated within these parcels, future permit approvals would be evaluated using those criteria as appropriate

Review Process. Generally, the following process will be used to approve surface disturbing activities on leases with the LSU - Critical Habitat stipulation. The proposed activity would be reviewed to determine if designated or proposed critical habitat would be affected. This review

may involve site specific surveys for plant and animal species, conducted according to established methodologies which may specify certain seasons or other conditions. In some cases this may mean that a survey cannot be completed until the next growing season for some plant species or after seasonal appearance for some animal species.

If the review determines that listed or proposed critical habitat will not be affected, approval of the application will normally be granted within 30 days of the review.

If the review determines that listed or proposed critical habitat may be affected, but in a beneficial, insignificant or benign manner, and written concurrence is received from the U.S. Fish and Wildlife Service, approval of the application will normally be granted within 30 days of receiving U.S. Fish and Wildlife Service concurrence.

If it is determined that a listed or proposed critical habitat may be adversely affected, the BLM will work with the applicant to modify the proposal to minimize impacts. Modifications may include movement of activities, seasonal restrictions, mitigation and compensation. Modified proposals will be developed cooperatively with the applicant to ensure that the modified project still meets the applicant's objective. If the modified project may still adversely affect designated or proposed critical habitat, BLM will initiate formal consultation or conference with the U.S. Fish and Wildlife Service.

Coordination with the U.S. Fish and Wildlife Service on Designated Critical Habitat. The BLM is required to initiate formal consultation with the U.S. Fish and Wildlife Service for any action that may adversely affect designated critical habitat. As a result of the consultation, the U.S. Fish and Wildlife Service issues a document, called the Biological Opinion. The U.S. Fish and Wildlife Service has up to 135 days to complete a Biological Opinion and they may request an additional 60 day extension. Extensions beyond 195 days require the consent of any applicant.

As part of the Biological Opinion, the U.S. Fish and Wildlife Service will determine if the proposed action is likely to destroy or adversely modify critical habitat. Destruction or adverse modification of critical habitat means a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical (50 CFR 402.02).

If consultation concludes that critical habitat will be destroyed or adversely modified, then surface disturbance will be prohibited on the affected portion of the lease. Surface disturbance will also be prohibited if the consultation concludes that the proposed action is inconsistent with the recovery needs of the listed species as identified in an approved U.S. Fish and Wildlife Service Recovery Plan.

Coordination with the U.S. Fish and Wildlife Service on Proposed Critical Habitat. Bureau policy requires conferencing with the U.S. Fish and Wildlife Service on any action that may adversely affect proposed critical habitat. Depending on the complexity of the situation, a conference may be completed in a single telephone conversation or may require the time frames of a consultation. Generally, upon completion of the conference, approval of the application will be granted within 30 days. If the conference concludes that proposed critical habitat will be destroyed or adversely modified, then surface disturbance will be prohibited on the affected portion of the lease.

Final Approval. Final approval of applications that will have no effect on designated or proposed critical habitat will normally be granted within 30 days of the review.

Final approval for projects that may affect designated or proposed critical habitat in a beneficial, insignificant or benign manner will normally be granted within 30 days of receiving U.S. Fish and Wildlife Service written concurrence. The U.S. Fish and Wildlife Service generally responds to requests for concurrence in 30 days.

For projects that require consultation or conference with the U.S. Fish and Wildlife Service, final approval will normally be granted within 30 days of consultation or conference completion. Conditions of approval will include any conditions specified by the BLM or U.S. Fish and Wildlife Service for minimizing impacts.

d. Limited Surface Use - Raptor (LSU - Raptor) – N/A

e. Department of Defense lands (LSU – Defense) – N/A

f. Coast Management Area (LSU – Coast, for management of Coast Area ACEC's/SMA's) – N/A

Standard Engineering Practices

Recognized engineering practices for the routine operation of oil and gas exploration and development are known as Conditions of Approval or COAs. These standard procedures are described in the Federal Onshore Orders and further clarified in the Code of Federal Regulations (CFR 43, October, 2005).

Standard regulations may be supplemented with additional COAs. The additional COAs address sensitive issues within the Area managed by the Bakersfield Field Office. Critical issues underlying the federal regulations and supplemental COAs are the protection of usable aquifers, mineral zones including hydrocarbons, surface environmental issues, site safety and well control, and site reclamation.

Bureau inspection and monitoring of oil field activity on public lands is discussed within the phases of oil and gas development:

a. Drilling a New Well
b. Temporary Abandonment of a Producing Well (Idle Well)
c. Plugging and Abandonment of a Well
d. Surface Reclamation

No special COAs are normally added for routine producing operations.

Drilling a New Well

After an Application for Permit to Drill (APD) has been received by the Bakersfield Office of the Bureau of Land Management, a review of engineering design as well as potential effects to sensitive resources is 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 Bureau of Land Management. Modified proposals would be developed cooperatively with the applicant to ensure that the modified project still meets the applicant's objective. Any special conditions would be attached

to the APD by the Bureau and the applicant would be informed within seven days of receipt of the APD. In addition to Bureau-wide regulations, the Bakersfield Field Office has developed procedures - these may include but are not limited to:

Steam Injectors. All steam injection wells within a 300' radius of a new location must be shut-in a minimum of 3 days prior to the spudding of a new well.

Conductor Pipe. A minimum of 50' of conductor pipe is to be set and cemented to surface. The conductor pipe must be equivalent to or exceed the properties of A-25 grade line pipe.

Diverter. Prior to spud, a diverter system will be installed on the conductor pipe and function tested. The test will be recorded in the drilling log. The diverter system, at a minimum, will consist of an annular type preventer (minimum working pressure 1000 psi), 2" (minimum ID) kill line, and 6" (minimum ID) diverter line with no internal restrictions or turns. A full opening hydraulically-controlled valve will be installed in the diverter line which will automatically open when the annular preventer is closed. The accumulator system will have sufficient capacity to close the annular preventer and open the hydraulically-controlled valve.

Remote controls for the diverter system will be located on the rig floor and readily accessible to the driller. Remote controls will be capable of closing the annular preventer and opening the hydraulically-controlled valve. Master controls will be located at the accumulator and will be capable of closing and opening the annular preventer and opening the hydraulically-controlled valve. The diverter system will be function-tested daily and the test recorded in the drilling log.

General Casing and Cementing. A Subsequent Report (Form 3160-5) detailing the size, weight, and grade of the casing; the amount and type of cement, including additives; and a copy of the service company's materials ticket and job log will be submitted to the BLM within five (5) business days following the cementing of the casing string. Each casing string (except conductor pipe) will be pressure tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1000 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. The casing pressure test will be recorded in the drilling log. The wait-on-cement (WOC) time for each casing string will be adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

Drilling Fluids. Sufficient quantities of drilling fluid (mud and water) will be maintained at the well site, at all times, for the purpose of controlling steam kicks.

Temporary Abandonment of a Producing Well (Idle Well)

Economic conditions often depress the California market for the typical heavy oil produced in the area managed by the Bakersfield Field Office. When the producing market is depressed, an operator may decide to shut-in his uneconomic, producing wells and wait for conditions to improve. The highly viscous nature of most Kern County crude oil, typical low well head pressures, and the relatively low corrosive properties of the fluids (low sulfur crude) make the known dangers of shutting in a well for long periods and then bringing it back on-line less of a mechanical problem here in this Field Office Area than in other producing regions of the country. As a result, by 1990, a large number of wells were remaining idle for longer and longer periods. Monitoring and correction of the problem have been successfully undertaken by the California Division of Oil, Gas, and Geothermal Resources and the local BLM Field Office. The following additional conditions *may* be required as applicable prior to the temporary abandonment (TA) of a producing oil/gas well, service well, or an injection well.

Zone Isolation. The requirement to isolate the producing interval (General Requirement #4) is waived. This waiver is based on the information submitted with the application and the geologic data in Volume # 1 California Oil and Gas Fields, Central California, (Buena Vista Oil field)

which indicates the absence of usable water aquifers above the producing horizon in (section in which well is located).

Mechanical Integrity of Casing. The mechanical integrity of the casing may be determined using the ADA pressure test method.

Fluid Surveys. A fluid level survey will be performed at 2-5 year intervals during the period the well is temporarily abandoned. A copy of the survey will be submitted to the BLM with the TA well request (sundry notice form 3160-5).

Monitoring of Wellhead Pressures and Temperatures. Wellhead pressure and temperature will be continuously monitored throughout the period the well is temporarily abandoned. Any pressure/temperature change will be promptly reported to the BLM.

Isolation of the Producing Interval. The producing interval will be isolated by setting a plug in the casing within 100' above the producing interval if a rising fluid level, an increasing wellhead pressure, or an increasing wellhead temperature is detected. The plug can be either a retrievable or drillable-type bridge plug or a cement plug of at least 100' in length.

Plugging and Abandonment of a Well

No additional conditions are typically attached to the abandonment of a well in California. Onshore Orders describe the plugging procedure. While final abandonment will normally be witnessed by the BLM, no final site marker is currently required by the Bakersfield field office.

Surface Reclamation

Conditions for the recovery of an oil well site are unique to each area's ecosystem and habitat. The following examples of Conditions of Approval have been developed for use within the Area managed by the Bakersfield Field Office. The applicability of any or all of these COAs will be determined based on site-specific conditions.

General. The operator (or holder) will prepare a seedbed by: a) scarifying the disturbed area, (b) distributing topsoil uniformly, or c) disking the topsoil, as directed by the BLM Authorized Officer (use one as appropriate).

The operator will recontour the disturbed area and obliterate all earthwork by removing embankments, backfilling excavations, and grading to re-establish the approximate original contours of the land in the area of operation.

The operator will uniformly spread topsoil over all unoccupied disturbed area (outside the ditch line, fence line, work area). Spreading will not be done when the ground or topsoil is frozen or wet.

The operator will seed all disturbed area, using an agreed upon method suitable for the location. Seeding will be repeated if a satisfactory stand is not obtained as determined by the BLM Authorized Officer upon evaluation after the first growing season.

The operator will arrange to have a biologist available to assist the construction workers in the identification and avoidance of endangered species.

Producing Wells. Site reclamation for producing wells will be accomplished for portions of the site not required for continued operation of the well. The following measures are typical reclamation requirements, and any or all of these may be required on a site by site basis:

Reclamation of drilling fluid pit (mud pit).
Polluting substances, contaminated materials moved offsite or buried.
Site fencing.
Berm removal and site grading.
Cut and fill slope vegetation.

Non-producing Wells. Rehabilitation on the entire site will be required and will commence as soon as practical, dependent upon prevailing weather conditions. Cut and fill slopes will be reduced and graded to blend to the adjacent terrain.

Drilling fluids held within pits may be allowed to dry. Fluids that will not dry must be removed. All polluting substances or contaminated materials such as oil, oil-saturated soils, and gravels will be buried with a minimum of 2 feet of clean soil as cover, or be removed to an approved site.

Drainages will be re-established and temporary measures will be required to prevent erosion to the site until vegetation is established.

After final grading and before replacement of topsoil, the entire surface of the site will be scarified to eliminate slippage surfaces and to promote root penetration. Topsoil will then be spread over the site to achieve an approximate uniform, stable thickness consistent with the established contours.

Permanent Well Abandonment. The surface management agency is responsible for establishing and approving methods for surface rehabilitation and determining when this rehabilitation has been satisfactorily accomplished. At this point, a Subsequent (Final) Report of Abandonment will be proved.