Project File

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

April 30, 2007

John Dalton
Bureau of Land Management
California Desert District Office
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553

Subject: Draft Environmental Impact Statement (EIS) for the Truckhaven Geothermal Leasing Area, Imperial County, California (CEQ #20070042)

Dear Mr. Dalton:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA Review authority under Section 309 of the Clean Air Act (CAA).

The Bureau of Land Management (BLM) is considering leasing 14,731 acres of federally owned land in the area known as the Truckhaven Geothermal Leasing Area (GLA) (40,320 acres). The decisions made under this environmental analysis will not result directly in ground-disturbing activities. Ground-disturbing activities, such as exploration, drilling, and field development, would require further environmental analysis under NEPA. Currently, BLM has five noncompetitive geothermal lease applications pending on approximately 7,051 acres within the Truckhaven GLA. BLM is considering offering competitive leases on an additional 7,680 acres. Approximately 83 percent of the Truckhaven GLA is located within the Ocotillo Wells State Vehicular Recreation Area (OWSVRA), where off-highway vehicle (OHV) use is permitted.

Based on our review, we have rated the Draft EIS as Environmental Concerns – Insufficient Information (EC-2) (see enclosed "*Summary of Rating Definitions*"). EPA is concerned that the proposed project could impact air quality, water resources, habitat, and recreational use within the OWSVRA; that these impacts are not fully analyzed; and that appropriate mitigation is not identified. EPA is concerned that the Reasonably Foreseeable Development (RFD) Scenario may underestimate geothermal capacity in the Truckhaven GLA, and that the cumulative impacts associated with multiple geothermal projects, on both public and private land, have not been analyzed.

The Draft EIS does not discuss the potential impacts of the proposed project on air quality, or identify measures to minimize air pollutant emissions from project activities. The source and amount of water required for potential operations has not been identified, nor have the potential impacts on groundwater or nearby water resources, such as the Salton Sea, been

evaluated. Additional information regarding lease stipulations is needed to ensure that resources and resource users would be protected.

EPA recommends that the Final EIS provide specific information on impacts to air quality, recreational users, and water resources and identify and commit to appropriate mitigation measures. The Final EIS should commit to protective lease stipulations for sensitive resources, as appropriate. In addition, the cumulative impacts analysis should include all reasonably foreseeable projects, including geothermal development on private land within and proximate to the Truckhaven GLA. Please see the enclosed Detailed Comments for a description of these concerns and our recommendations.

We appreciate the opportunity to review this Draft EIS. When the Final EIS is released for public review, please send one (1) hard copy to the address above (mailcode: CED-2). If you have any questions, please contact me at (415) 947-3846 or Ann McPherson, the lead reviewer for this project. Ann can be reached at (415) 972-3545 or mcpherson.ann@epa.gov.

Sincerely,

Nova Blazej, Manager
Environmental Review Office

Enclosures: Summary of EPA Rating Definitions
Detailed Comments

US EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE TRUCKHAVEN GEOTHERMAL LEASING AREA (GLA), IMPERIAL COUNTY, CALIFORNIA - APRIL 30, 2007

1. Impacts on Air Quality

The Draft EIS provides a detailed discussion of ambient air conditions, National Ambient Air Quality Standards (NAAQS), and criteria pollutant nonattainment areas (pgs. 3-2 to 3-6). Imperial County is designated as a serious nonattainment area for particulates less than 10 microns in diameter (PM_{10}), unclassified for particulates equal to or less than 2.5 microns in diameter ($PM_{2.5}$), and marginal nonattainment for ozone (O_3). The Draft EIS does not analyze the potential impacts to air quality from the proposed project, particularly during construction and installation of the wells.

To support 50 megawatts (MW) geothermal generation, 50 wells would need to be drilled initially, and it is anticipated that up to two power plants would be built. The Draft EIS states each well is anticipated to be 3,000 to 6,000 feet deep and would require 60 to 120 days to drill (pg. 2-10; pg. 2-11). The Draft EIS also states that up to three drilling rigs could be in operation simultaneously (pg. 2-11). If three drilling rigs operated simultaneously and wells required 120 days to drill, it would take about four years to drill 48 wells. High noise levels and emissions would be generated by the diesel engines powering the drilling rigs and air compressors/mud pumps (pg. 2-11). The Draft EIS does not specify emission sources or quantify emissions. Such an evaluation is necessary to assure compliance with State and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality.

Recommendations:

- *Quantify Emissions* – The Final EIS should describe and estimate emissions from potential construction and drilling activities, as well as proposed mitigation measures to minimize these emissions.

- *Quantify Length of Time for Drilling Operations and Construction* - In Section 2.3, the Draft EIS states that each well is expected to require 60 to 120 days to drill. If three drill rigs operated simultaneously, it could take more than 4 years to complete the drilling operations. In section 4.2, however, the Draft EIS states that drilling operations are estimated to last approximately 6 weeks (pg 4-10).

- *Specify Emission Sources* – Specify the emission sources by pollutant. The Draft EIS should specifically identify emissions by pollutant from mobile sources, stationary sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention.

- *Equipment Emissions Mitigation Plan* – Develop an Equipment Emissions Mitigation Plan to reduce diesel particulate, carbon monoxide, hydrocarbons, and NOx associated with construction and drilling activities. The Equipment Emissions Mitigation Plan should apply to all lands authorized for lease and should require that all drilling/construction-related engines:

- are tuned to the engine manufacturer's specification in accordance with an appropriate time frame;
- do not idle for more than five minutes (unless, in the case of certain drilling engines, it is necessary for the operating scope);
- are not tampered with in order to increase engine horsepower;
- include particulate traps, oxidation catalysts and other suitable control devices on all drilling/construction equipment used at the project site;
- use diesel fuel having a sulfur content of 15 parts per million or less, or other suitable alternative diesel fuel, unless such fuel cannot be reasonably procured in the market area; and
- include control devices to reduce air emissions. The determination of which equipment is suitable for control devices should be made by an independent Licensed Mechanical Engineer. Equipment suitable for control devices may include drilling equipment, work over and service rigs, mud pumps, generators, compressors, graders, bulldozers, and dump trucks.

- *Conformity* – In Section 4.1, the Draft EIS states, "*Since the Truckhaven GLA is located in an area designated as nonattainment for O_3, and PM_{10}, a conformity analysis would likely be required for NOx, Volatile Organic Compound (VOC), and PM_{10} at the implementation stage of the process*" (pg. 4-6). In Section 4.19.3, however, the Draft EIS states the following: "*The Analysis in Section 4.1, however, states that any incremental increase in criteria and other pollutants would be below de minimis levels under the CAA and would not affect the airshed's attainment status under the Act. Given that analysis, the proposed development at Truckhaven would not have a significant cumulative impact on air quality*" (pg. 4-67).

  Comment:
  Clarify the conformity requirements for this project. The statements on pg. 4-67 appear to be incorrect. The analysis in Section 4.1 states that a conformity analysis would likely be required for NOx, VOC, and PM_{10} during the implementation phase. The Draft EIS does not quantify emissions or conclude that any incremental increase in criteria and other pollutants would be below *de minimis* levels, as stated on pg. 4-67.

- *Cumulative Impacts on Air Quality* –The Draft EIS acknowledges that further National Environmental Policy Act (NEPA) documentation will be required for ground-disturbing activities associated with this lease proposal. Given the potential direct air quality impacts projected from these activities, cumulative impacts to air quality will need to be carefully analyzed. EPA strongly recommends that the lease stipulations acknowledge that any proposed activity is subject to NEPA and, specifically, that an air quality cumulative impacts analysis is required for all proposed activities.

2. Impacts on the Ocotillo Wells State Vehicle Recreation Area (OWSVRA)

The Draft EIS states that approximately 33,900 acres (84 percent) of the Truckhaven GLA (40,320 acres) are located within the Ocotillo Wells State Vehicle Recreation Area (OWSVRA). State Vehicle Recreation Areas (SVRAs) are Off-Highway Vehicle (OHV) Parks operated by the Off-Highway Motor Vehicle Recreational Division of the California Department of Parks and Recreation (CDPR) and the California State Lands Commission (CSLC). All of the BLM land (14,731 acres; 23 parcels) under consideration for geothermal leasing is located within the boundaries of the OWSVRA (figs. 3-6 and 1-1), which is one of six SVRAs in California.

The Draft EIS states that geothermal development would restrict or reduce the opportunities for OHV vehicles to access certain areas of the OWSVRA during construction and operation of geothermal wells proposed for the project (pg. 4-49). The selection of Alternative 2 or 3 could initially restrict public access to small portions of the 14,731 acres, and that ultimately maximum ground disturbance would be 85 and 152 acres, respectively. An alternative requesting 1:1 compensation for impacted recreation lands was considered but eliminated, because it was not feasible and would be cost prohibitive (pg. 2-3). The Draft EIS states that impacts would be mitigated by placement of facilities to: 1) avoid crossing or blocking routes; or 2) be buried under routes if avoidance is not possible. If facilities cannot avoid or be buried to prevent impacts to routes, the lessee would be required, with public participation and agency approval, to construct: 1) the re-routing of any impacted route(s); or 2) additional routes/recreational opportunities of a similar or higher quality (pg. 2-4; pg. 4-50; pg. 4-52).

Recommendation:
EPA recommends that there be full disclosure of the impacts to recreational users in the OWSVRA. Quantifying the impact on recreational users strictly in terms of the acreage that is permanently removed from recreational use does not convey the full impact to users. Should the construction of the wells be consolidated in one area, that might be a realistic approach; however, because exploration will likely be dispersed, impacts to OHV users will similarly be dispersed. Construction, drilling, operations, and maintenance will likely impact recreational users to a greater degree than is disclosed in the Draft EIS.

Recommendation:
EPA recommends that the BLM provide additional information about: 1) the alternative requesting 1:1 compensation; 2) evaluation of the costs associated with this compensatory measure; and 3) elimination of the option from further consideration.

The Draft EIS states that OWSVRA is divided into several access classifications: 85 percent of the unit is open to all types of OHV recreational uses, and about 15 percent of the unit is Trail-Use only. In the same paragraph, the Draft EIS also states that most of the BLM parcels in the Truckhaven GLA limit OHV use to designated trails; however, four parcels in the southwest portion are open to cross-country travel (pg. 3-48).

Comment:
The two statements cited above (pg. 3-48) are contradictory and potentially misleading. Based on EPA conversations with OWSVRA personnel, they have stated that OHV use is generally not confined to trails but tends to be unrestricted throughout the entire area; routes are not clearly designated; nor are there sufficient personnel available to enforce access designations.

Recommendation:
EPA recommends that the BLM fully evaluate current and projected recreational use within the OWSVRA. An accurate and complete route inventory is necessary to complete this evaluation. We understand that the OWSVRA is in the process of creating up-to-date maps showing current OHV routes; these maps should be referenced and included in the Final EIS. As part of the evaluation, the BLM should describe and estimate emissions from OHV usage in the OWSVRA, specifically within the Truckhaven GLA, as well as any mitigation measures proposed by the OWSVRA to minimize these emissions. Emissions from OHV use in the Truckhaven GLA can be considered as cumulative impacts on air quality.

The Draft EIS states that BLM is entrusted with the multiple-use management of natural resources on public land, and that public land must be managed for outdoor recreation and natural, scenic, scientific, and historical values (pg. 3-46).

Recommendation:
EPA recommends that the Final EIS describe BLM's overall guidance for addressing OHV management in the OWSVRA and, specifically, how that guidance will be modified, should geothermal leasing be approved in the Truckhaven GLA.

The Draft EIS states that all pipelines outside of a power plant site or other fenced areas would be elevated at least 12 inches above the ground surface to allow wildlife mobility and prevent interference with natural drainage (pg. 4-27). The Draft EIS also states that pipelines would be buried if avoidance is not possible.

Recommendation:
The Final EIS should clarify what measures will be incorporated to ensure that OHV users are not injured due to hazards associated with the exposed piping. It would be reasonable to assume that OHV users don't always stay on designated trails or may not know which trails are in fact designated. Some precautions regarding safety should be implemented.

The Draft EIS states that annual attendance at the OWSVRA is estimated at about 1 million visitors (pg. 3-53) and averages over 15,000 vehicle visits per year (pg. 3-48).

Recommendation:
These numbers are not referenced adequately in the Draft EIS and cannot be verified. Attendance is estimated by OWSVRA to be as high as 1.9 million visitors per year. The Final EIS should resolve this discrepancy and accurately identify the reference source.

3. Reasonably Foreseeable Development (RFD) Scenario - Cumulative Impacts from Multiple Geothermal Development Projects

Section 2.2 summarizes BLM's Reasonably Foreseeable Development (RFD) scenario for development of geothermal energy at the Truckhaven GLA. The RFD scenario was prepared as a basis for analyzing environmental impacts resulting from future leasing and development. The level and type of development anticipated in the RFD scenario is a best professional estimate of what may occur if these areas are leased and is not intended to be a "maximum development" scenario; however, it is biased towards the higher end of expected development (pgs. 2-8; 2-9). The RFD scenario assumed that 50 MW of geothermal generation would ultimately be developed within the 40,320-acre Truckhaven GLA. To support 50 MW of geothermal generation, 50 wells would need to be drilled initially (pg.2-10). It is anticipated that up to two power plants would be built, each capable of generating 25 megawatts (MW) of electricity (pg. 2-11).

EPA is concerned that the RFD scenario may significantly underestimate the geothermal generation capacity and development potential within the Truckhaven GLA; consequently, the environmental impacts associated with the future development of the geothermal resources may be minimized within the Draft EIS. E-mail exchanges and conversations between EPA and BLM confirm that one company has a pending lease application from 2001 covering approximately 1,280 acres of federal land in the Truckhaven GLA. Leasing rights were transferred to another company when a development agreement was signed. That company has signed a power purchase agreement with Pacific Gas & Electric (PG&E) for the first phase (50 MW) of the Truckhaven project. We understand from the company's web site that they plan to install three 50 MW units for the Truckhaven project.

Recommendation:
EPA requests clarification on the RFD scenario and the total amount of geothermal generating capacity anticipated in the Truckhaven GLA. If it is reasonably foreseeable that multiple parties (lessees) may be expecting to develop 50 MW or more of geothermal energy, then that should be disclosed within the Final EIS.

Recommendation:
The Final EIS should describe the precautions that BLM will take to ensure that the RFD scenario is not exceeded by one lessee or by multiple lessees on private and/or public land within the Truckhaven GLA. In the event that the RFD scenario underestimates the geothermal capacity within the Truckhaven GLA, the Final EIS should describe how BLM will address this situation.

Recommendation:
Any signed power sales agreements that are associated with federal lands in the Truckhaven GLA should be disclosed in the Final EIS as a matter of full disclosure.

Recommendation:
Any signed power sales agreements that are associated with private or state lands in the Truckhaven GLA should be disclosed in the Final EIS as part of the cumulative impacts analysis.

Recommendation:
The potential environmental impacts associated with multiple geothermal development projects should be included as part of the cumulative impacts analysis. This is critical not only in terms of potential impacts on the environment, but also in terms of potential impacts on the viability of the geothermal resources.

Recommendation:
EPA recommends that BLM examine the Cumulative Impact Guidance (http://www.dot.ca.gov/ser/cumulative_guidance/purpose.htm) prepared by the California Department of Transportation (Caltrans), the Federal Highway Administration (California Division), and EPA Region 9. Agencies can use the principles and 8-step process described in this document as a systematic way to analyze cumulative impacts for their projects.

4. Bureau of Land Management Standard Lease Terms

The Draft EIS states that the geothermal leases would be subject to the standard stipulations and lease terms (pg. 2-1; pg.2-3; Appendix A). Implementation of certain stipulations would be subject to mitigation measures, such as the best management practices outlined in Section 2.1.5. Site specific measures would be developed as part of future site-specific analysis and permitting conditions at the time of subsequent proposed exploration, development, or utilization activities. EPA is concerned that the Standard Lease Terms will not provide adequate resource protection, especially in areas where little resource data currently exists. In the instance that important resources are discovered, EPA recommends that BLM retain the flexibility to require appropriate mitigation measures of lessees to adequately protect resources.

Recommendation:
Provide detailed information on restrictions on the application of additional mitigation measures under Standard Lease Terms once a lease is let. Where there is any doubt, or lack of data, about the value and attributes of resources on a Standard Lease Term-only parcel, reclassify that parcel and assign it greater resource protection stipulations until better data is available.

Recommendation:
The Final EIS should include more information about restrictions applicable to lessees in the event that: 1) geothermal generating capacity exceeds the RFD scenario of 50 MW; and 2) multiple parties (lessees) decide to develop geothermal resources on private, state, or federal land within the Truckhaven GLA. Restrictions requiring unitization could be placed in the BLM leases; this option should be discussed in the Final EIS.

Recommendation:
The Draft EIS acknowledges that further NEPA documentation will be required for ground-disturbing activities associated with this lease proposal. Given the existing nonattainment status of the project area and the potential direct air quality impacts of the proposed action, cumulative impacts to air quality will need to be carefully analyzed. EPA strongly recommends that the lease stipulations acknowledge that any proposed activity is subject to NEPA and, specifically, that an air quality cumulative impacts analysis is required for all proposed activities.

Recommendation:
EPA recommends that the Final EIS and the Record of Decision (ROD) commit to spill prevention and clean up lease stipulations that would apply to all lands authorized for lease. This lease stipulation would name the lessee as the responsible party for any discharge of hazardous substances that may occur during operations under their lease. This lease stipulation would also commit the lessee to specified spill prevention techniques to be outlined by the BLM.

5. Hazards from Explosive Waste

The Draft EIS states that there are two inactive Formerly Used Defense Sites (FUDS) located on BLM lands within the Truckhaven Geothermal Leasing Area. The Winona Bomb Target Site No. 1 (640 acres) was used as a low-level rocket target and declared surplus in 1946. Ordnance was observed at six locations in 1993. The Winona Bomb Target Site No. 2 (640 acres) was used for dive-bombing, strafing exercises, and low-level rocket target and also declared surplus in 1946. The Draft EIS states that neither the extent nor the potential hazard of the ordnance and explosive waste has been determined at Winona Bomb Target Site No. 1 (pg. 3-43) and that Winona Bomb Target Site No. 2 is known or suspected to contain military munitions and explosives of concern and may present an explosive hazard (pg. 3-44).

Recommendation:
These two inactive FUDS could present a public danger from unexploded ordnance. This could affect parties involved with implementing geothermal exploration and production, as well as the public, who will have greater access to the land after development. The Final EIS should identify which agency is responsible for ensuring that these hazards have been evaluated and eliminated. The Final EIS should describe what measures BLM will implement to ensure that the two inactive FUDS no longer represent a public danger to anyone accessing these lands.

6. Water Supply

The Draft EIS states that the source and amount of water required for potential operations of two binary plants has not been defined and the availability and quality of groundwater within the lease area is unknown (pg. 4-19). Typical groundwater usage for a 30 MW water-cooled binary plant is estimated at 1,000 gallons per minute during summer month. The Draft EIS states that the potential for groundwater overdraft conditions cannot be judged and that, due to the expected low quality of nearby groundwater, it is expected that water for drilling and operations would be purchased from a supplier. The Draft EIS states that there would be no impacts to surface-or groundwater resources of Salton Sea.

Recommendation:
The Final EIS should identify the source and amount of water needed for operations.

Recommendation:
EPA is concerned that groundwater overdraft is likely to occur, if the proposed action uses groundwater for all, or a portion, of operation. This is of particular concern in an arid environment like the Truckhaven GLA. The Salton Sea is located approximately two miles from the Truckhaven GLA and could be impacted should there be a lowering of the groundwater table as a result of pumping associated with the geothermal plant, even if a portion of the water is reinjected. The Final EIS should describe the groundwater quality in the Truckhaven GLA and address potential impacts on groundwater level and groundwater quality, and on nearby water resources, such as the Salton Sea.

7. Coordination with Tribal Government

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with tribes. The Draft EIS states that there are at least 15 tribes with a potential interest in the project area. Specifically, the San Pasqual Band of Mission Indians indicates the potential for "significant" cultural effects because the Truckhaven tracts are perceived to be ancestral lands (pg. 3-65). Section 5.2 of the Draft EIS states that BLM initiated consultation with Native American tribes through letters sent out in 2005, and that additional letters were sent out in 2006.

Recommendation:
The Final EIS should describe the process and outcome of government-to-government consultation between the BLM and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternative.

8. Text Corrections

In Section 4.15.4, the Draft EIS states that Alternative 3 would result in all BLM lands within the Truckhaven Geothermal Leasing Area (a total of 14,731 acres) being offered for noncompetitive leasing (pg. 4-51).

Comment:
This is incorrect. Alternative 3 would result in BLM lands being offered for both competitive (7,680 acres) and noncompetitive (7,051 acres) leasing.

In Section 4.13.4, the Draft EIS states that the two inactive FUDS could present a public danger from unexploded ordinance.

Comment:
This should be "ordnance" rather than "ordinance".