

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX

75 Hawthorne Street  
San Francisco, CA 94105

March 12, 2010

Mr. John Dalton  
BLM California Desert District Office  
22835 Calle San Juan de Los Lagos  
Moreno Valley, CA 92553-9046

Subject: Notice of Intent to Prepare an Environmental Impact Statement for the Proposed West Chocolate Mountains Renewable Energy Evaluation Area, Imperial County, CA

Dear Mr. Dalton:

The U.S. Environmental Protection Agency (EPA) has reviewed the February 10, 2010 Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the Proposed West Chocolate Mountains Renewable Energy Evaluation Area (REEA) in Imperial County, California. Our review was conducted pursuant to Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR Parts 1500-1508).

The Bureau of Land Management (BLM) intends to prepare an Environmental Impact Statement (EIS) for the proposed West Chocolate Mountains REEA. The focus of the EIS is to assess whether 21,300 acres within the West Chocolate Mountains REEA should be made available for geothermal, solar, and wind development. To assist in the scoping process, we have identified several issues for your attention in the preparation of the EIS. These issues are described in the detailed comments section and are subdivided into two main categories as follows: 1) recommendations on the overall scope and content of the West Chocolate Mountains REEA EIS; and 2) recommendations pertaining to NEPA/renewable energy projects.

We appreciate the opportunity to review this NOI and are available to discuss our comments. When the Draft EIS is released for public review, please send two hard copies and one cd to the address above (mail code: CED-2). If you have any questions, please contact me at (415) 972-3545 or [mcpherson.ann@epa.gov](mailto:mcpherson.ann@epa.gov).

Sincerely,

/s/

Ann McPherson  
Environmental Review Office

Enclosures: Detailed Comments

**US EPA DETAILED COMMENTS ON THE SCOPING NOTICE FOR THE PROPOSED WEST CHOCOLATE MOUNTAINS RENEWABLE ENERGY EVALUATION AREA, IMPERIAL COUNTY, CALIFORNIA, MARCH 12, 2010**

Project Description

The Bureau of Land Management (BLM) intends to prepare an Environmental Impact Statement (EIS) for the proposed West Chocolate Mountains Renewable Energy Evaluation Area (WCM REEA). The focus of the EIS is to assess whether 21,300 acres of BLM-administered lands within the WCM REEA should be made available for geothermal, solar, and wind development. The EIS will consider an amendment to the California Desert Conservation Area (CDCA) Plan to identify whether lands within the WCM REEA should be made available for renewable energy development.

**I. Recommendations on the Overall Scope and Content of the WCM REEA EIS**

*A. Environmental Analysis*

*Recommendation: Identification of Premium Geothermal, Solar, and Wind Resource Development Areas*

The EIS should identify the premium geothermal, solar, and wind resource areas in the WCM REEA. The EIS should describe and summarize the key studies and information used to identify these areas. The BLM should coordinate with local, state, and federal agencies to compile this information.

*Recommendation: Identification of Sensitive Resources*

When identifying premium geothermal, solar, and wind resource areas, the EIS should also identify environmentally sensitive areas as well as areas with potential use conflict including:

- 1) areas that contain species that are threatened or endangered;
- 2) migratory bird flyways;
- 3) aquatic resources, including wetlands and other Waters of the U.S. (WOUS);
- 4) bodies of water listed on the Clean Water Act (CWA) 303(d) list;
- 5) ambient air conditions and criteria pollutant nonattainment areas;
- 6) sole source aquifers;
- 7) areas that are affiliated with Native American tribes;
- 8) historic properties, Native American sacred sites or sensitive areas, and cultural resources;
- 9) paleontological resources;
- 10) large residential areas in close proximity;
- 11) environmental justice communities;
- 12) military bases or areas with air and ground traffic; and
- 13) recreational use areas.

Measures should then be taken to either exclude these areas from development or identify appropriate stipulations to protect the resources. The EIS should disclose the potential

impacts to the greatest extent possible, while setting up structures to protect sensitive resources.

*Recommendation: Development of Landscape Level Analysis*

The EIS should utilize existing sources of information to develop a general, landscape-level analysis that identifies environmentally sensitive areas and areas with potential use conflicts. The BLM should develop an analysis approach that identifies low, medium, and high sensitivity areas for these resource areas and describe this process in detail in the EIS. The BLM should coordinate with local, state, and federal agencies to compile this information.

*B. Associated Infrastructure*

*Recommendation: Transmissions Lines Needs Analysis*

When identifying premium geothermal, solar, and wind resource areas, the EIS should also identify:

- 1) areas with established transmissions lines;
- 2) areas where there is a lack of available transmission capacity;
- 3) areas where new transmission lines have been proposed in conjunction with other projects; and
- 4) areas that should be designated as transmission corridors in scenic areas.

*Recommendation: Impacts due to Associated Infrastructure*

The EIS should address at a general, landscape level the potential impacts due to the associated infrastructure required for the development of renewable energy projects. Activities that may cause direct and indirect impacts include installing and maintaining solar collector arrays, wind turbines, or geothermal wells; building access roads; constructing transmission lines; and pumping groundwater. The indirect and cumulative effects of these infrastructure changes should be identified. The EIS is the appropriate stage to identify landscape-level mitigation measures to minimize unacceptable impacts to sensitive resources in the surrounding landscape. The EIS should also address how impacts will be assessed and mitigated at the project-level.

*C. Coordinated Planning & Processing of Subsequent Renewable Energy Project Applications*

*Recommendation: Environmental Review Process*

The EIS should describe: 1) how and if the EIS will serve as a “tiering” document for subsequent, site-specific NEPA analysis prepared for specific project applications; 2) the factors used to determine when a subsequent EIS is required; and 3) the factors used to determine when an Environmental Assessment (EA) is required. The environmental review process should be explained in detail. This will ensure that the appropriate environmental review, permitting, or compliance measures will be identified, defined, and implemented during each phase of the project.

*Recommendation: Applicable Federal Laws/Permits*

The EIS should describe the permitting requirements from a national perspective in terms of compliance with federal regulations such as the Clean Air Act (CAA), Clean Water Act (CWA), Endangered Species Act (ESA), Migratory Bird Treaty Act, National Historic Preservation Act, and NEPA. The process should be clearly defined and include all permits and approvals that may be required, their sequence, and the interrelationships between them.

*Recommendation: State Requirements/Plans*

The EIS should provide comprehensive information on state regulatory requirements and permits necessary to develop geothermal, solar, and wind resources within California including:

- 1) a comprehensive summary of applicable regulations, including local laws;
- 2) a list of permits that may be required; and
- 3) flow-charts illustrating the steps required to obtain the necessary permits to comply with environmental regulations within each of the states.

*Recommendation: Procedures to Amend or Revise Land Use Management Plans*

The EIS should contain references and descriptions of land use plans and resource management plans associated with areas that have been identified as premium geothermal, solar, or wind resource areas. The EIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal, or local land use plans, policies and controls in the selected areas. The term “land use plans” includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed if they have been formally proposed by the appropriate government body in written form (CEQ’s Forty Questions, #23b). The EIS should describe the procedures necessary to amend or revise these plans, as necessary to allow for solar, geothermal, or wind resource development.

*Recommendation: Categorical Exclusions*

The EIS should describe categorical exclusions that might be applicable to particular resource areas, if any.

*Recommendation: Potential Use Conflicts*

The EIS should outline special procedures used to evaluate potential conflicts of use in areas that are located in close proximity to National Parks, National Monuments, or in areas with high recreational use. The EIS should provide direction on how to balance competing demands for uses.

*D. Regulatory Context*

*Recommendation: Renewable Energy Policy and Energy Legislation*

The EIS should summarize current and past legislation regarding the development of renewable resources in the United States, including the Energy Policy Act of 2005,

Executive Order 13212, and the American Recovery and Reinvestment Act (ARRA) of 2009. The provisions in the Energy Policy Act of 2005 and the ARRA of 2009 that are designed to promote the development of renewable resources should be summarized.

*Recommendation: Renewable Portfolio Standards*

The EIS should summarize the Renewable Portfolio Standards (RPS) program goals for California and any other state(s) where the electricity may be sold. An RPS is a state policy that either mandates or encourages electricity retailers to provide a specific amount of electricity from renewable energy sources, which may include solar resources.

*Recommendation: Power Sales Agreements*

Any signed power sales agreements that are associated with federal, state, or private lands that are located in the vicinity of an identified geothermal, solar, or wind development area should be disclosed in the EIS as part of the cumulative impacts analysis.

E. *Right-of-Way (ROW) Stipulations*

*Recommendation: Retain Flexibility to Provide Additional Resource Protection*

Standard ROW authorizations should contain appropriate stipulations relating to all aspects of project development, including, but not limited to road construction and maintenance, vegetation removal, natural, cultural and biological resources mitigation and monitoring, and site reclamation. Standard ROW stipulations may not provide adequate resource protection, especially in areas where little resource data currently exist. In the instance that important resources are discovered, EPA recommends that BLM retain the flexibility to require appropriate mitigation measures to adequately protect resources.

*Recommendation: Proposed Activities Subject to NEPA*

EPA recommends the EIS provide detailed information on ROW authorizations and that ROW grants acknowledge that any proposed activity is subject to NEPA.

*Recommendation: Spill Prevention, Planning, and Cleanup*

EPA recommends that the EIS address the issue of spill prevention, planning, and clean up. This topic could be incorporated in ROW authorization stipulations that would apply to all lands subject to development. This stipulation would name the grantee as the responsible party for any discharge of hazardous substances that may occur during operations and would commit the grantee to specified spill prevention techniques to be outlined by the BLM.

F. *Siting of Renewable Energy on Disturbed or Contaminated Land*

EPA has worked closely with the Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) to develop maps<sup>1</sup> showing contaminated lands and mining sites with

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<sup>1</sup> To develop the maps, EPA and NREL collected renewable energy resource information and merged it with EPA

renewable energy generation potential. These maps were developed in conjunction with the *RE-Powering America's Land: Renewable Energy on Contaminated Land and Mining Sites* program,<sup>2</sup> which was launched by the EPA Office of Solid Waste and Emergency Response (OSWER) in September 2008. Under this initiative, EPA is taking a multi-pronged approach<sup>3</sup> to encouraging reuse of EPA tracked lands<sup>4</sup> into clean and renewable energy production facilities. EPA has developed a Renewable Energy Interactive Mapping Tool<sup>5</sup> that utilizes Google Earth to display these sites. We estimate that there are approximately 480,000 disturbed and contaminated sites and almost 15 million acres of potentially contaminated properties across the United States. Many of the contaminated properties are suitable for renewable energy development and have existing transmission capacity and infrastructure in place, as well as adequate zoning.

*Recommendations:*

The EIS should describe the current condition of the WCM REEA, discuss whether any of this land is classified as disturbed, and describe to what extent the land could be used for other purposes.

EPA recommends that BLM utilize the Renewable Energy Interactive Mapping Tool to explore whether there are disturbed sites located in the WCM REEA or within proximity to the WCM REEA that might also be appropriate for renewable energy development. Some types of technology can be subdivided in different areas and the availability of disturbed land nearby, either in combination with areas identified in the WCM REEA or separately, might provide a more attractive option for large-scale development of renewable energy.

EPA encourages BLM and other interested parties to pursue the siting of renewable energy projects on disturbed, degraded, and contaminated sites, before considering large tracts of undisturbed public lands. To that end, we note that the BLM Arizona State Office recently issued a Notice of Intent (NOI)<sup>6</sup> to prepare an EIS for the Arizona Restoration Design Energy Project,<sup>7</sup> funded under the Department of Interior's American Recovery and Reinvestment Act (ARRA) of 2009. Implementation of this initiative will result in the identification of disturbed or previously developed sites within the National System of Public Lands in Arizona that, after remediation or site preparation, can be made available for renewable energy development or generation.

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and state data on contaminated lands and mining sites across the country. The mapping analysis applied basic screening criteria, such as distance to electric transmission lines, distance to roads, renewable energy potential, and site acreage in order to identify EPA tracked lands that might be good candidates for solar, wind, or biomass energy production facilities.

<sup>2</sup> For additional information on EPA's RE-Powering America's Land, please use the following weblink:

<http://www.epa.gov/renewableenergyland/index.htm>

<sup>3</sup> See Internet site: [http://www.epa.gov/renewableenergyland/docs/repower\\_contaminated\\_land\\_factsheet.pdf](http://www.epa.gov/renewableenergyland/docs/repower_contaminated_land_factsheet.pdf)

<sup>4</sup> EPA tracks abandoned mine lands, Brownfields, Resource Conservation and Recovery Act (RCRA) sites, Federal Superfund Sites, and Non-Federal Superfund Sites.

<sup>5</sup> See Internet site: [http://www.epa.gov/renewableenergyland/mapping\\_tool.htm](http://www.epa.gov/renewableenergyland/mapping_tool.htm). Open the Renewable Energy Interactive Map (KMZ) to launch the Renewable Energy Mapping Tool. More detailed information on the EPA tracked sites is available at: [http://epa.gov/renewableenergyland/maps/ocpa\\_renewable\\_energy\\_data.xls](http://epa.gov/renewableenergyland/maps/ocpa_renewable_energy_data.xls).

<sup>6</sup> See Internet site: <http://edocket.access.gpo.gov/2010/pdf/2010-404.pdf>

<sup>7</sup> See Internet site: [http://www.blm.gov/az/st/en/prog/energy/arra\\_solar.html](http://www.blm.gov/az/st/en/prog/energy/arra_solar.html)

## II. Recommendations pertaining to NEPA/Renewable Energy Projects

### Statement of Purpose and Need

The EIS should clearly identify the underlying purpose and need to which BLM is responding in proposing the alternatives (40 CFR 1502.13). The *purpose* of the proposed action is typically the specific objectives of the activity, while the *need* for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity.

#### *Recommendation:*

The purpose and need should be a clear, objective statement of the rationale for the proposed project. The EIS should discuss the proposed project in the context of the larger energy market that this project(s) would serve; identify potential purchasers of the power produced; and discuss how the project will assist the state in meeting its Renewable Portfolio Standards and goals.

### Alternatives Analysis

NEPA requires evaluation of reasonable alternatives, including those that may not be within the jurisdiction of the lead agency (40 CFR Section 1502.14(c)). A robust range of alternatives will include options for avoiding significant environmental impacts. The EIS should provide a clear discussion of the reasons for the elimination of alternatives which are not evaluated in detail. Reasonable alternatives should include, but are not necessarily limited to, alternative sites, capacities, and technologies as well as alternatives that identify environmentally sensitive areas or areas with potential use conflicts. The alternatives analysis should describe the approach used to identify environmentally sensitive areas and describe the process that was used to designate them in terms of sensitivity (low, medium, and high). The alternatives analysis should identify and analyze an environmentally preferable alternative.

The environmental impacts of the proposal and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible (e.g., acres of wetlands impacted, tons per year of emissions produced, etc.).

#### *Recommendations:*

The EIS should describe how each alternative was developed, how it addresses each project objective, and how it will be implemented. The EIS should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27).

The alternatives analysis should include a discussion of alternative sites, capacities, and generating technologies relevant to the development of geothermal, solar and wind



resources in the WCM REEA. The EIS should describe the benefits and disadvantages associated with each of the proposed technologies.

EPA recommends that BLM establish a wide range of alternatives, including the consideration of an environmentally preferred alternative.

### Biological Resources and Habitat

The EIS should identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. The document should identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative and mitigate impacts to these species. Emphasis should be placed on the protection and recovery of species due to their status or potential status under the Endangered Species Act (ESA). We recommend that BLM consult with the U.S. Fish and Wildlife Service and prepare a Biological Opinion under Section 7 of the ESA if there are threatened or endangered species present. The EIS should provide a recent status update of this report if this action has been or will be undertaken. Analysis of impacts and mitigation on covered species should include:

- Baseline conditions of habitats and populations of the covered species;
- A clear description of how avoidance, mitigation and conservation measures will protect and encourage the recovery of the covered species and their habitats in the project area;
- Monitoring, reporting and adaptive management efforts to ensure species and habitat conservation effectiveness.

EPA is also concerned about the potential impact of construction, installation, operation, and maintenance activities (deep trenching, grading, filling, and fencing) on habitat. The EIS should describe the extent of these activities and the associated impacts on habitat and threatened and endangered species. We encourage habitat conservation alternatives that avoid and protect high value habitat and create or preserve linkages between habitat areas to better conserve the covered species. EPA is also concerned about the potential for adverse impacts to native vegetation and/or animal species due to increased shade from solar collectors (heliostats, photovoltaic systems, parabolic troughs) after installation is complete.

#### *Recommendations:*

The EIS should indicate what measures will be taken to protect important wildlife habitat areas from potential adverse effects of proposed covered activities and to ensure that desert areas are minimally impacted. We encourage BLM to maximize options to protect habitat and minimize habitat loss and habitat fragmentation.

The BLM should discuss the impacts associated with constructing fences around the project site(s), and consider whether there are options that could facilitate better protection of covered species.

The EIS should discuss the impacts associated with an increase of shade in the desert environment on vegetation and/or species.

The EIS should discuss the potential impacts on avian species due to collisions with wind turbines, power tower and/or heliostats and whether there is potential for the concentrating solar rays to burn avian species in flight.

If the project includes evaporation and/or storm water ponds, potential hazards and impacts to humans and wildlife, especially birds, should be discussed.

*Recommendation:*

Explain whether any ponded water or bioremediation area associated with the project has the potential to attract wildlife, particularly migratory waterfowl. If there is potential for exposure of wildlife to contaminants in these waters, identify mitigation measures to avoid such impacts.

## Water Resources

### *Water Supply and Water Quality*

The EIS should estimate the quantity of water the project(s) will require and describe the source of this water and potential effects on other water users and natural resources in the project's area of influence. The EIS should clearly describe existing groundwater conditions, potential cumulative impacts to groundwater quantity and quality, and avoidance measures to prevent impacts. The EIS should clearly depict reasonably foreseeable direct, indirect, and cumulative impacts to groundwater and surface water resources, including depletion of these resources. For groundwater, the potentially-affected groundwater basin should be identified and any potential for subsidence and impacts to springs or other open water bodies and biologic resources should be analyzed. The EIS should include:

- A discussion of the amount of water needed for the development of geothermal, solar, and wind resources, where this water will be obtained, and the amount and source of power that would be needed to move the water to and through the facility;
- A discussion of availability of groundwater within the basin and annual recharge rates;
- A description of the water rights permitting process and the status of water rights within that basin, including an analysis of whether water rights have been over-allocated;
- A description of any water right permits that contain special conditions; measures to mitigate direct, indirect, and cumulative impacts; and provisions for monitoring and adaptive management;
- A detailed discussion of cumulative impacts to groundwater supply within the hydrographic basin(s) that would support the alternatives, including impacts from other geothermal or large-scale solar installations that have also been proposed;
- An analysis of different types of technology that can be used to minimize water use for the geothermal or solar power plant;

- A discussion of whether it would be feasible to use other sources of water, including wastewater or deep-aquifer water, as cooling water for the proposed geothermal or solar thermal power plant;
- A discussion of whether it is possible to recycle the water that would be sent to the evaporation pond (if wet cooling is utilized) and re-inject or reuse this water; and
- An analysis of the potential for alternatives to cause adverse aquatic impacts such as impacts to water quality and aquatic habitats.

Large-scale solar installations that utilize wet-cooling may require significant water resources. Solar installations that utilize dry-cooling require much less water—up to 90 percent less. We recognize that wet cooling technology has performance advantages over dry cooling, especially in arid regions, and may be less expensive; however, due to the general scarcity of water in the region, the large number of solar project applications submitted to BLM, and the ever-increasing demand for this commodity, EPA is concerned about the depletion of this resource, particularly in desert regions.

*Recommendation:*

EPA recommends that the EIS discuss the water demands of various solar technologies, including wet cooling and dry cooling systems. We also recommend that BLM consider utilization of technologies that will minimize water use and the implementation of conservation measures that will reduce water demands.

EPA encourages BLM to include in the EIS a description of all water conservation measures that will be implemented to reduce water demands. Project designs should maximize conservation measures such as appropriate use of recycled water for landscaping and industry, xeric landscaping, and water conservation education. Water saving strategies can be found in the EPA's publications *Protecting Water Resources with Smart Growth* at [www.epa.gov/piedpage/pdf/waterresources\\_with\\_sg.pdf](http://www.epa.gov/piedpage/pdf/waterresources_with_sg.pdf), and *USEPA Water Conservation Guidelines* at [www.epa.gov/watersense/docs/app\\_a508.pdf](http://www.epa.gov/watersense/docs/app_a508.pdf).

In addition, the EIS should describe water reliability for the proposed project and clarify how existing and/or proposed sources will be affected by climate change. At a minimum, EPA expects a qualitative discussion of impacts of climate change to water supply, and the adaptability of the project to these changes.

*Disposal of Discharges*

The EIS should address the potential effects of project discharges, if any, on surface and groundwater quality. Discharges may include, but are not limited to, thermal changes, suspended solids, toxicity, metals, oil and grease, chlorine, salinity, and pH. At the project level, the specific discharges should be identified and potential effects of discharges on designated beneficial uses of affected waters should be analyzed. The EIS should note that a National Pollutant Discharge Elimination System (NPDES) permit would be required for discharges to waters of the United States. The disposal of wastewater or other fluids into the subsurface is subject to the requirements of the Underground Injection Control Program, pursuant to the Safe

Drinking Water Act. Permits may or may not be required, depending on project specifications and federal and/or state requirements. In addition, BLM and state well construction requirements are required to ensure that groundwater is protected. The subsequent EISs/EAs should address how the proposed project would be designed and operated to ensure that the facility meets federal and state water quality standards that provide for the protection and maintenance of beneficial uses downstream from the facility.

If the facility is a zero discharge facility, the EIS should disclose the amount of process water that would be disposed of onsite and explain methods of onsite containment. If evaporation ponds will be used for disposal of geothermal effluents, condensate or other process water, identify chemical characteristics of the pond water and how seepage into groundwater will be prevented. Identify the storm design containment capacity of ponds, explain how overflow in larger storm events will be managed, and discuss potential environmental impacts (drainage channels affected, water quality, biological resources) in the event of overflow.

#### *Clean Water Act Section 404*

The project applicant should coordinate with the U.S. Army Corps of Engineers (Corps) to determine if the proposed project requires a Section 404 permit under the Clean Water Act (CWA). Section 404 regulates the discharge of dredged or fill material into waters of the United States (WOUS), including wetlands and other *special aquatic sites*. The EIS should describe all WOUS that could be affected by the project alternatives, and include maps that clearly identify all waters within the project area. The discussion should include acreages and channel lengths, habitat types, values, and functions of these waters. In addition, EPA suggests that BLM include a jurisdictional delineation for all WOUS, including ephemeral drainages, in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* and the December 2006 *Arid West Region Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. A jurisdictional delineation will confirm the presence of WOUS in the project area and help determine impact avoidance or if state and federal permits would be required for activities that affect WOUS.

If a permit is required, EPA will review the project for compliance with *Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials* (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the CWA (“404(b)(1) Guidelines”). Pursuant to 40 CFR 230, any permitted discharge into WOUS must be the least environmentally damaging practicable alternative (LEDPA) available to achieve the project purpose. The EIS should include an evaluation of the project alternatives in this context in order to demonstrate the project’s compliance with the 404(b)(1) Guidelines.

If a discharge to WOUS is anticipated, the EIS should discuss alternatives to avoid these discharges and how potential impacts would be minimized and mitigated. This discussion should include: (a) acreage and habitat type of WOUS that would be created or restored; (b) water sources to maintain the mitigation area; (c) revegetation plans, including the numbers and age of each species to be planted, as well as special techniques that may be necessary for planting; (d) maintenance and monitoring plans, including performance standards to determine

mitigation success; (e) the size and location of mitigation zones; (f) the parties that would be ultimately responsible for the plan's success; and (g) contingency plans that would be enacted if the original plan fails. Mitigation should be implemented in advance of the impacts to avoid habitat losses due to the lag time between the occurrence of the impact and successful mitigation.

The EIS should describe the original (natural) drainage patterns in the project locale, as well as the drainage patterns of the area during project operations, and identify whether any components of the proposed project are within a 50 or 100-year floodplain. We also recommend the EIS include information on the functions and locations of WOUS, as well as ephemeral washes in the project area, because of the important hydrologic and biogeochemical role these washes play in direct relationship to higher-order waters downstream.

#### *Clean Water Act Section 303(d)*

The CWA requires States to develop a list of impaired waters that do not meet water quality standards, establish priority rankings, and develop action plans, called Total Maximum Daily Loads (TMDLs), to improve water quality.

#### *Recommendation:*

The EIS should provide information on CWA Section 303(d) impaired waters in the project area, if any, and efforts to develop and revise TMDLs. The EIS should describe existing restoration and enhancement efforts for those waters, how the proposed project will coordinate with on-going protection efforts, and any mitigation measures that will be implemented to avoid further degradation of impaired waters.

#### Indirect and Cumulative Impacts

The cumulative impacts analysis should provide the context for understanding the magnitude of the impacts of the alternatives by analyzing the impacts of other past, present, and reasonably foreseeable projects or actions and then considering those cumulative impacts in their entirety (CEQ's Forty Questions, #18). The EIS should clearly identify the resources that may be cumulatively impacted, the time over which impacts are going to occur, and the geographic area that will be impacted by the proposed project. The EIS should focus on resources of concern – those resources that are “at risk” and/or are significantly impacted by the proposed project, before mitigation. In the introduction to the *Cumulative Impacts Section*, identify which resources are analyzed, which ones are not, and why. For each resource analyzed, the EIS should:

- Identify the current condition of the resource as a measure of past impacts. For example, the percentage of species habitat lost to date.
- Identify the trend in the condition of the resource as a measure of present impacts. For example, the health of the resource is improving, declining, or in stasis.
- Identify all on-going, planned, and reasonably foreseeable projects in the study area that may contribute to cumulative impacts.
- Identify the future condition of the resource based on an analysis of impacts from reasonably

- foreseeable projects or actions added to existing conditions and current trends.
- Assess the cumulative impacts contribution of the proposed alternatives to the long-term health of the resource, and provide a specific measure for the projected impact from the proposed alternatives.
  - Disclose the parties that would be responsible for avoiding, minimizing, and mitigating those adverse impacts.
  - Identify opportunities to avoid and minimize impacts, including working with other entities.

A *Reasonably Foreseeable Development (RFD) Scenario* has been used as the basis for analyzing environmental impacts resulting from future leasing and development of federal geothermal resources within specific areas. 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 usually not intended to be a “maximum development” scenario; however, it is frequently biased towards the higher end of expected development. At this stage, it is not known whether the EIS will utilize the RFD Scenario to describe the development potential within the identified areas. EPA is concerned that the RFD scenario, if utilized, could underestimate the geothermal generation capacity and development potential within specific areas; consequently, the environmental impacts associated with the future development of the geothermal resources may be minimized within the EIS or subsequent EIS/EA.

*Recommendations:*

If the RFD Scenario is used as a basis for analyzing environmental impacts, the EIS should describe the actions that BLM will take should the RFD scenario underestimate the geothermal capacity within a specific area. The EIS should describe how BLM will quantify and evaluate environmental impacts if this occurs.

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.

EPA recommends that BLM examine the Cumulative Impact Guidance ([http://www.dot.ca.gov/ser/cumulative\\_guidance/purpose.htm](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.

The BLM has received more than 300 applications for solar and wind projects in the desert southwest. The BLM and DOE are preparing a Programmatic EIS to explain how they will address existing and future solar energy development applications on BLM-administered lands in six Western states. EPA is concerned about the cumulative impacts associated with the development of multiple large-scale solar projects in the desert region.

*Recommendations:*

The EIS should identify whether the proposed project is located within one of the solar energy study areas or in close proximity to one.

The EIS should consider the cumulative impacts associated with multiple large-scale solar projects proposed in the desert southwest and the potential impacts on various resources including: water supply, endangered species, and habitat.

As an indirect result of providing additional power, it can be anticipated that this project will allow for development and population growth to occur in those areas that receive the generated electricity.

*Recommendations:*

The EIS should describe the reasonably foreseeable future land use and associated impacts that will result from the additional power supply. The document should provide an estimate of the amount of growth, likely location, and the biological and environmental resources at risk.

The EIS should consider the direct and indirect effects of the inter-connecting transmission line for the proposed project, as well as the cumulative effects associated with the transmission needs of other reasonably foreseeable projects.

Implementation of Adaptive Management Techniques for Mitigation Measures

Adaptive management is an iterative process that requires selecting and implementing management actions, monitoring, comparing results with management and project objectives, and using feedback to make future management decisions. The process recognizes the importance of continually improving management techniques through flexibility and adaptation instead of adhering rigidly to a standard set of management actions. Although adaptive management is not a new concept, it may be relatively new in its application to specific projects. The effectiveness of adaptive management monitoring depends on a variety of factors including:

- a) The ability to establish clear monitoring objectives;
- b) Agreement on the impact thresholds being monitored;
- c) The existence of a baseline or the ability to develop a baseline for the resources being monitored;
- d) The ability to see the effects within an appropriate time frame after the action is taken;
- e) The technical capabilities of the procedures and equipment used to identify and measure changes in the affected resources and the ability to analyze the changes;
- f) The resources needed to perform the monitoring and respond to the results.

*Recommendation:*

EPA recommends that BLM consider adopting a formal adaptive management plan to evaluate and monitor impacted resources and ensure the successful implementation of

mitigation measures. EPA recommends that BLM review the specific discussion on Adaptive Management in the NEPA Task Force Report to the Council on Environmental Quality (CEQ) on *Modernizing NEPA*.

### Invasive Species

Executive Order 13112, *Invasive Species* (February 3, 1999), mandates that federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. Executive Order 13112 also calls for the restoration of native plants and tree species. If the proposed project will entail new landscaping, the EIS should describe how the project will meet the requirements of Executive Order 13112.

#### *Recommendation:*

The EIS should include an invasive plant management plan to monitor and control noxious weeds.

### Seismic Risk

Geothermal development and production and injection operations can cause increased seismicity (earthquake activity) in tectonically active zones. Usually the magnitude of the increased activity is low, ranging from 1 - 3 on the Richter Scale.

#### *Recommendation:*

The EIS should discuss the potential for seismic risk and discuss how this risk will be evaluated, monitored, and managed.

### Climate Change

Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Global warming is caused by emissions of carbon dioxide and other heat-trapping gases. Global warming can affect weather patterns, sea level, ocean acidification, chemical reaction rates, and precipitation rates, resulting in climate change. Reports also indicate that deserts may store as much carbon as temperate forests.

#### *Recommendations:*

The EIS should consider how climate change could potentially influence the proposed project, specifically within sensitive areas, and assess how the projected impacts could be exacerbated by climate change.

The EIS should consider the cumulative impacts associated with multiple large-scale geothermal, solar, and wind projects proposed in the desert southwest and clarify how existing and/or proposed resources will be affected by climate change.



The EIS should quantify and disclose the anticipated climate change *benefits* of geothermal, solar, and wind energy. We suggest quantifying greenhouse gas emissions from different types of generating facilities including solar, geothermal, natural gas, coal-burning, and nuclear and compiling and comparing these values.

The EIS should discuss whether the trenching, grading, and filling associated with the construction of renewable energy projects will affect the deserts ability to store carbon, and to what degree this may occur.

### Air Quality

The EIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS), criteria pollutant nonattainment areas, and potential air quality impacts of the proposed project (including cumulative and indirect impacts). 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.

The EIS should describe and estimate air emissions from the proposed power plant, including potential construction and maintenance activities, as well as proposed mitigation measures to minimize those emissions. EPA recommends an evaluation of the following measures to reduce emissions of criteria air pollutants and hazardous air pollutants (air toxics).

#### *Recommendations:*

- *Existing Conditions* – The EIS should provide a detailed discussion of ambient air conditions, NAAQS, and criteria pollutant nonattainment areas in all areas considered for renewable energy development. The EIS should identify relevant local and state requirements and ensure all sources meet these requirements.
- *Quantify Emissions* – The EIS should estimate emissions of criteria pollutants from the proposed project and discuss the timeframe for release of these emissions over the lifespan of the project. The EIS should describe and estimate emissions from potential construction activities, as well as proposed mitigation measures to minimize these emissions.
- *Specify Emission Sources* – The EIS should specify the emission sources 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 (EEMP)* – The EIS should identify the need for an EEMP. An EEMP will identify actions to reduce diesel particulate, carbon monoxide, hydrocarbons, and NO<sub>x</sub> associated with construction activities. We recommend that the EEMP require that all 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);
  - include all available mitigation measures to reduce greenhouse gas emissions;
  - are not tampered with in order to increase engine horsepower;
  - include diesel particulate filters, oxidation catalysts and other suitable control devices on all construction equipment used at the project site;
  - use diesel fuel having a sulfur content of 15 parts per million or less, or other 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, generators, compressors, graders, bulldozers, and dump trucks.
- *Fugitive Dust Control Plan* - The EIS should identify the need for *Fugitive Dust Control Plan*. We recommend that it include these general recommendations:
    - Stabilize open storage piles and by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
    - Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and
    - When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

#### *General Conformity*

The EIS should address the applicability of CAA Section 176 and EPA's general conformity regulations at 40 CFR Parts 51 and 93. Federal agencies need to ensure that their actions, including construction emissions subject to state jurisdiction, conform to an approved implementation plan. Emissions authorized by a CAA permit issued by the State or the local air pollution control district would not be assessed under general conformity but through the permitting process.

#### *Recommendation:*

Cumulative impacts to air quality should be analyzed given the potential air quality impacts from construction activities.

### *New Source Review (NSR) Construction Permit Program*

New major stationary sources of air pollution and major modifications to existing sources are required by the CAA to obtain an air pollution permit before commencing construction. This process is called new source review (NSR) and is required whether the major source or modification is planned for an area where the NAAQS are exceeded (nonattainment areas) or an area where air quality is acceptable (attainment and unclassifiable areas). Permits for sources in attainment areas are referred to as Prevention of Significant Deterioration (PSD) permits, while permits for sources located in nonattainment areas are referred to as nonattainment (NAA) NSR permits. The entire program, including both PSD and NAA permitting, is referred to as the NSR program and is established in Parts C and D of Title I of the CAA. Based upon an area's attainment/nonattainment designations and a proposed project's anticipated criteria pollutant emission rates, a project may require both a PSD and NAA permit.

#### *Recommendation:*

The EIS should discuss if NSR program permits will be required for any geothermal, solar, or wind power plants that may be constructed. If so, the EIS should describe the permitting process and the information that must be addressed in the permits.

### Coordination with Tribal Governments

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 Indian tribes.

#### *Recommendation:*

The EIS should describe the process and outcome of government-to-government consultation between 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.

### *National Historic Preservation Act and Executive Order 13007*

Consultation for tribal cultural resources is required under Section 106 of the National Historic Preservation Act (NHPA). Historic properties under the National Historic Preservation Act (NHPA) are properties that are included in the National Register of Historic Places (NRHP) or that meet the criteria for the National Register. Section 106 of the NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, consult with the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO). Under NEPA, any impacts to tribal, cultural, or other treaty resources must be discussed and mitigated. Section 106 of the NHPA requires that Federal agencies consider the effects of their actions on cultural resources, following regulation in 36 CFR 800.

Executive Order 13007, *Indian Sacred Sites* (May 24, 1996), requires federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian Religious practitioners, and to avoid adversely affecting the physical integrity, accessibility, or use of sacred sites. It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site.

*Recommendation:*

The EIS should address the existence of Indian sacred sites in the project areas. It should address Executive Order 13007, distinguish it from Section 106 of the NHPA, and discuss how BLM will avoid adversely affecting the physical integrity, accessibility, or use of sacred sites, if they exist. The EIS should provide a summary of all coordination with Tribes and with the SHPO/THPO, including identification of NRHP eligible sites, and development of a Cultural Resource Management Plan.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. Guidance<sup>8</sup> by CEQ clarifies the terms low-income and minority population (which includes American Indians) and describes the factors to consider when evaluating disproportionately high and adverse human health effects.

*Recommendation:*

The EIS should include an evaluation of environmental justice populations within the geographic scope of the project. If such populations exist, the EIS should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation by these populations. Assessment of the project's impact on minority and low-income populations should reflect coordination with those affected populations.

Hazardous Materials/Hazardous Waste/Solid Waste

The EIS should address potential direct, indirect and cumulative impacts of hazardous waste from construction and operation of the proposed project. The document should identify projected hazardous waste types and volumes, and expected storage, disposal, and management plans. It should address the applicability of state and federal hazardous waste requirements. Appropriate mitigation should be evaluated, including measures to minimize the generation of hazardous waste (i.e., hazardous waste minimization). Alternate industrial processes using less

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<sup>8</sup>Environmental Justice Guidance under the National Environmental Policy Act, Appendix A (Guidance for Federal Agencies on Key Terms in Executive Order 12898), CEQ, December 10, 1997.

toxic materials should be evaluated as mitigation. This potentially reduces the volume or toxicity of hazardous materials requiring management and disposal as hazardous waste.

#### *Formerly Used Defense Sites*

If there are any inactive Formerly Used Defense Sites (FUDS) located on the federal lands that have been earmarked for geothermal, solar, or wind development, these sites should be identified. Inactive FUDS could present a public danger from unexploded ordnance and this could affect parties involved with construction or recreation. The EIS should identify which agency is responsible for ensuring that these hazards have been evaluated and eliminated and describe what measures BLM will implement to ensure that FUDS no longer represent a public danger to anyone accessing these lands.

#### *Evaporation Ponds*

Should the proposed project utilize evaporation ponds, the EIS should describe the concentrated, dewatered solid waste associated with the evaporation pond(s) and describe whether this waste product will be transported off site for disposal.

#### *Life Cycle Analysis/Recycling*

Production can and should address the full product life cycle, from raw material sourcing through end of life collection and reuse or recycling. Companies can minimize their environmental impacts during raw material extraction, and facilitate future material recovery for reuse or recycling. Solar, wind, and geothermal companies can facilitate collection and recycling through buy-back programs or collection and recycling guarantees.

##### *Recommendation:*

EPA recommends that the proponent strive to address the full product life cycle by sourcing power tower components from a company that: 1) minimizes environmental impacts during raw material extraction; 2) manufactures components in a zero waste facility; and 3) provides future component disassembly for material recovery for reuse and recycling.

#### Impacts on Off-Highway Vehicles and Recreational Use

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. The development of solar resources could restrict or reduce the opportunities for recreational use, including off-highway vehicles (OHV) that may access areas that may have been designated as open for recreational use. Alternatives requesting compensation for impacted recreation lands may or may not be considered because of feasibility and cost. In many cases, OHV use is generally not confined to trails, but tends to be unrestricted.

*Recommendations:*

EPA recommends that the EIS describe BLM's overall guidance for addressing OHV management in the areas identified for renewable energy development and specifically how that guidance will be modified, should geothermal, solar or wind projects be approved.

The EIS should outline procedures used to evaluate conflicts of use in areas with high recreational use. The EIS should provide direction on how to balance competing uses.

EPA recommends that BLM fully evaluate current and projected recreational use within the lands identified for geothermal, solar, or wind development. An accurate and complete route inventory will be necessary to complete this evaluation. Emissions from OHV use can be considered as cumulative impacts on air quality; consequently, the subsequent EIS/EA should describe and estimate emissions from OHV, as well as any mitigation measures to minimize these emissions.

EPA recommends that there be full disclosure of the impacts to recreational users in the lands identified for renewable energy development. Construction, operations, and maintenance will likely impact recreational users. We recommend that BLM provide information about costs associated with compensatory measures.

The EIS should clarify what general measures will be incorporated to ensure that OHV and other users are not injured due to hazards associated with exposed collectors, piping, and transmission lines. It would be reasonable to assume that OHV users do not always stay on designated trails or may not know which trails are in fact designated. Some precautions regarding safety should be implemented.