

## CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET  
SACRAMENTO, CA 95814-5512

November 13, 2009

<b>DOCKET</b>	
<b>09-AFC-8</b>	

DATE	<u>11/13/09</u>
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RECD.	<u>11/13/09</u>
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Scott Busa, Director  
NextEra Energy Resources, LLC  
700 Universe Blvd.  
Juno Beach, FL 33408

**RE: GENESIS SOLAR ENERGY PROJECT (09-AFC-8), DATA REQUESTS  
SET 1A (#1-227)**

Mr. Busa:

Pursuant to Title 20, California Code of Regulations, Section 1716, the California Energy Commission staff seeks the information specified in the enclosed data requests. The information requested is necessary to: 1) more fully understand the project, 2) assess whether the facility will be constructed and operated in compliance with applicable regulations, 3) assess whether the project will result in significant environmental impacts, 4) assess whether the facilities will be constructed and operated in a safe, efficient and reliable manner, and 5) assess potential mitigation measures.

This set of data requests (#1-227) is being made in the areas of Air Quality (#'s 1-38), Alternatives (#'s 39-52), Biological Resources (#'s 53-121), Geology and Paleontology (#122-123), Land Use (#124-136), Public Health (#137-142), Soil & Water Resources (#143-214), Waste Management (#215-225), and Worker Safety and Fire Protection (#226-227). Written responses to the enclosed data requests are due to the Energy Commission staff on or before December 14, 2009, or at such later date as may be mutually agreeable. A subsequent set of Data Requests (Set 1B) containing Cultural Resources and Visual Resources will be submitted shortly.

If you are unable to provide the information requested, need additional time, or object to providing the requested information, you must send a written notice to both the Committee and me within 20 days of receipt of this notice. The notification must contain the reasons for not providing the information, the need for additional time, and the grounds for any objections (see Title 20, California Code of Regulations, Sec.1716 (f)). If you have any questions, please call me at (916) 654-4894 or email me at [mike.monasmith@energy.state.ca.us](mailto:mike.monasmith@energy.state.ca.us).

Sincerely,

Mike Monasmith  
Project Manager

cc: Docket (09-AFC-8)  
Proof of Service List

PROOF OF SERVICE (REVISED 11/4/09) FILED WITH  
ORIGINAL MAILED FROM SACRAMENTO ON 11/13/09

MS

**Technical Area: Air Quality**

**Author:** Joseph Hughes & William Walters

**BACKGROUND: BASELINE SITE CONDITIONS**

In order to evaluate the air quality impacts from this project the baseline conditions of the project need to be understood.

**DATA REQUESTS**

1. Please describe the types of activities that emit combustion and fugitive dust emissions on the site currently and the quantities of those emissions that occur from those activities.
2. Please describe whether those activities will be permanently discontinued when the project is completed and estimate the reductions from the current onsite baseline emissions.

**BACKGROUND: CONSTRUCTION EMISSIONS ESTIMATE**

Staff has found apparent errors with the construction emission estimate that need correction. For example in Table B.5-5 the total construction period emissions with respect to criteria pollutants and greenhouse gases (GHG), appear to erroneously assume that all the different construction actions (main site, access road, etc.) require the total 37 month construction period when that is clearly not the case.

**DATA REQUEST**

3. Please review and correct the emission calculations to provide corrected worst case daily, annual and total construction period criteria pollutant and GHG emissions.

**BACKGROUND: FUGITIVE DUST EMISSIONS ESTIMATION – MRI CALCULATION PROCEDURE**

The Application for Certification (AFC) uses a simplified construction fugitive dust emission calculation procedure from a study that is not supported for use by the agency (South Coast Air Quality Management District, or SCAQMD) that funded the study. Staff prefers a fugitive dust calculation that estimates emissions based on the site specific construction activities, and other site specific factors such as actual soil silt content, at the site. The MRI study that is used as a reference provides several methods, or levels, for calculating emissions based on the extent of available construction detail. Staff needs the applicant to defend the specific emission factor approach, or MRI level, selected in order to ensure that this calculation basis does not significantly underestimate or significantly overestimate the fugitive dust emission potential during construction.

**DATA REQUEST**

4. Please defend the MRI level 2 fugitive dust emissions calculation approach and provide information that clearly shows that this emission estimation method does not significantly underestimate or overestimate emissions in comparison with a more detailed activity by activity based fugitive dust emission calculation approach.

## **BACKGROUND: FUGITIVE DUST EMISSIONS ESTIMATION – EMISSIONS FROM WIND EROSION**

The AFC does not appear to provide wind erosion fugitive dust emissions from the large amount of disturbed land during operation. Staff believes that this emission source, if greater than background site conditions, needs to be included in the operation emissions estimate and be included in the operations dispersion modeling impact analysis.

### **DATA REQUEST**

5. Please identify the increase or decrease in non-stabilized disturbed land within the project site during operation and estimate the corresponding increase in wind erosion fugitive dust emissions at the site.

## **BACKGROUND: FUGITIVE DUST UNPAVED ROAD EMISSIONS CALCULATIONS**

The emission calculations in Appendix B assume very low silt content (silt content value of 5.3 percent) during construction and operation without an explanation of how this will be ensured considering that the geotechnical report has not yet been provided and no site specific sieve data is available. Staff needs additional information that supports the use of the low silt content used in the calculations, or needs the construction and operation fugitive dust emission calculations to be revised, as appropriate, to incorporate defensible site specific soil silt content values and expected fugitive dust control requirements.

### **DATA REQUESTS**

6. Please provide data to obtain an estimate of the actual surface silt content at the site, which can be from the geotechnical report not submitted as part of the AFC.
7. Please identify if the applicant is willing to stipulate to graveling the onsite unpaved roads during construction before they are sealed to reduce the silt loading, or provide surface soils sieve data that shows that the 5.3 percent silt content assumption is representative of the site.
8. Please update the construction fugitive dust emissions calculations as appropriate based on the site specific surface silt content estimate.
9. Please revise the operations fugitive dust emission calculations based on the site specific surface silt content estimate and to reflect the Energy Commission staff recommended operations mitigation measure of stabilizing the onsite unpaved roads using durable non-toxic soil binders.

## **BACKGROUND: CONSTRUCTION – OFF-ROAD VEHICLE USE AND EMISSION CALCULATION ASSUMPTIONS**

Staff has questions regarding the emission calculation assumptions used for the off-road vehicles used during construction. Some of the assumptions used and units provided in the Appendix C.5 tables are unclear. Additionally, the worst-case daily emissions for the off-road equipment appear to be very low in comparison with other large solar projects. Staff needs additional information to assess the applicant's construction emission calculations and resulting dispersion modeling impact assessment.

## **DATA REQUESTS**

10. Please provide the electronic versions of the emission spreadsheets with the embedded calculations.
11. Please identify the units for the values provided in the "Monthly Number" columns in Table C.5-6, page 2. Please note that using the apparent meaning of the column, staff cannot match the total horsepower hours calculated for each equipment type.
12. Please provide the original equipment estimates provided by the applicant to the applicant's air quality consultant.
13. Please re-evaluate the off-road equipment schedule to provide a corrected worst-case, not average case, daily onsite emissions estimate.

## **BACKGROUND: CONSTRUCTION EMISSIONS - VEHICLE USE ASSUMPTIONS**

Staff has questions regarding the validity of the vehicle use assumptions used in the construction emission estimate. The information provided by the applicant in the AFC is not adequate to complete an assumption validity review. Staff needs more information regarding the categorized trip and emission estimates for different types of vehicles, including heavy duty delivery trucks, light service and delivery trucks, personal vehicles and buses, etc. For example there are very large number of cement truck trips, assumed to mean concrete truck trips, that seem unreasonably high, while there are no trips clearly identified for the vast amount of structural steel and other Solar Collector Array (SCA) structural components.

The AFC does not provide backup on the methods used to estimate the paved and unpaved road trip distances used in the emission calculations. The assumed trip length values are critical to the PM10 and PM2.5 emission estimates for construction. In addition, the fugitive dust emissions calculations only include the calculations of 0.9 mile of paved road travel for the construction access road. Staff needs the emission estimates for the entire roundtrips including unpaved road travel necessary for site construction. Finally, the construction traffic assumptions indicate all traffic emanates out of Blythe whereas construction workers could plausibly be coming from areas west of the site, also. Staff needs more information to confirm that the assumptions used do not underestimate or overestimate the paved and unpaved travel required for construction and the corresponding fugitive dust emissions estimates.

## **DATA REQUESTS**

14. Please describe how the trip distance assumptions for construction were determined for each vehicle type/use. Please note that staff believes the trip lengths for the delivery vehicles and construction employee vehicles/buses to be underestimated as it seems unlikely that Blythe would be the origination point for major equipment items (SCAs, structural steel, etc.). It seems unlikely that Blythe has the population base to staff the hundreds of construction employees necessary to complete construction on this remote project site.

15. For each of the construction materials delivery/waste removal truck trip types, please provide the following information:
  - a. The types and quantities of construction materials delivered to the site and wastes hauled from the site,
  - b. The types of delivery trucks that will be used to deliver these materials,
  - c. The number of delivery trucks on a daily basis for each of these materials, and
  - d. The number of miles traveled roundtrip daily for each vehicle for each of these materials.
16. Please indicate if construction employee busing will be proposed, and if so include the personal vehicle trip mileage, necessary for construction employees to get to the assumed “park and ride” locations in the construction emission estimate.
17. Please estimate:
  - a. on-site whole roundtrip travel including unpaved road travel and corresponding emissions for all on-road construction vehicles, including heavy duty delivery trucks, light service and delivery trucks, personal vehicles and buses, etc. necessary to complete the construction activities throughout the project site. I
  - b. if the unpaved road travel increases the overall on-road vehicle travel lengths then also please estimate the additional on-site tailpipe emissions from these vehicles.
18. Based on any revisions in the calculations of vehicle types, number of vehicles and vehicle miles traveled for the above data requests, please provide the revised criteria pollutant and GHG emissions associated with these vehicle emissions.

### **BACKGROUND: CONSTRUCTION EMISSIONS DISPERSION MODELING**

The applicant’s construction emissions dispersion modeling uses the same small area sources for both short-term and long-term modeling. However, construction over a year should include emissions over a much larger area of the site than is modeled. Therefore staff needs the applicant to either provide defensible rationale for the location of the volume sources and extent of the area sources used in the annual impact modeling for construction, or provide a revised analysis that includes a more reasonable and conservative set of volume and area source locations that would correspond to annual construction.

### **DATA REQUEST**

19. Please provide rationale why the locations for the volume and area source emission inputs do not change from short-term to annual modeling, or please provide annual construction modeling that matches the extent of annual construction activities.

### **BACKGROUND: OPERATING EMISSIONS – ON-SITE VEHICLE USE ASSUMPTIONS**

Staff cannot determine how the number of on-site operating vehicles and their daily use, as presented in Appendix B.1 Table B.1-7 were derived. Staff needs to understand these variables to ensure that the operating emissions are adequately determined.

## **DATA REQUESTS**

20. Please describe the assumptions used to determine the number of operating maintenance vehicles, maintenance schedule and their daily paved and unpaved vehicle miles traveled.
21. Please describe in detail the specific design of the diesel-fueled SCA cleaning trucks that will be used to clean the SCAs. Describe whether water will be towed behind the vehicle or whether the trucks will carry the water and the cleaning apparatus equipment will be attached to the water tanks on the vehicles.
22. Please describe the SCA washing requirements including:
  - a. How the SCAs are washed, both for normal and mechanical washes;
  - b. Time of day for washing;
  - c. How long it takes each SCA row, or other specified length of SCA, to be washed;
  - d. The amount of SCAs that can be washed per hour or shift for each mirror washing tanker truck crew;
  - e. The size of each wash crew; and
  - f. The assumed frequency for SCA washing and the basis for this frequency.

## **BACKGROUND: OPERATING EMISSIONS - VEHICLE EXHAUST EMISSIONS AND MITIGATION MEASURES**

Staff is concerned that the criteria pollutant air quality benefit of the proposed project's solar energy production is being partially offset by the unmitigated maintenance vehicle emissions. Additionally, the emission factors assumed in the applicant's emission calculations appear to be overly conservative as staff will recommend a condition requiring that all site dedicated vehicles be new model year vehicles, which meet model year California emission standards, at their time of purchase/lease/etc. Staff also needs to understand what additional dedicated onsite vehicle mitigation the applicant would be willing to stipulate to, assuming such mitigation is available and cost effective.

## **DATA REQUESTS**

23. Please revise the emissions calculations for the onsite dedicated vehicle exhaust emissions assuming only new model year vehicles are used.
24. Please identify if the applicant would be willing to stipulate to a condition of certification that would require a review of available alternative low-emission vehicle technologies. This condition would include electric and hydrogen fueled vehicles, and use of those technologies to replace the proposed diesel and gasoline fueled vehicles used for operations maintenance if lower emission alternative technology vehicles are both available and not cost prohibitive.

## **BACKGROUND: OPERATIONS EMISSIONS – OFFSITE VEHICLES**

The applicant has not provided an emission estimate that includes the offsite vehicle use, such as heavy duty delivery and waste haul trucks, light service and delivery

trucks, and personal vehicles, etc. Staff needs the applicant to estimate the offsite trips and provide corresponding emission estimates.

### **DATA REQUESTS**

25. Please estimate the whole roundtrip travel including any onsite unpaved road travel and corresponding criteria pollutant and GHG emissions for all offsite operational vehicle trips, including heavy duty delivery and waste haul trucks, light service and delivery trucks, and employee personal vehicles.
26. Please provide rationale for the round trip distances selected for each trip type.

### **BACKGROUND: OPERATIONS EMISSIONS DISPERSION MODELING**

The applicant's operations emission dispersion modeling only includes modeling of the stationary emission components of the project. The on-site project emissions also include ongoing maintenance activities that will last the life of the project. Staff requires that the applicant model these emissions to determine the total operation impacts from the proposed project.

### **DATA REQUEST**

27. Please provide a revised operations modeling analysis, which includes all on-site operations emission sources including the facility operations maintenance emissions and fugitive dust emissions. When providing this response, please account for any revisions to the onsite operation emissions determined through the response to the other air quality data requests.

### **BACKGROUND: PROJECT LOCATION**

The Genesis Solar Energy Project site is split between the SCAQMD and the Mojave Desert Air Quality Management District (MDAQMD). It is necessary for staff to have an understanding of the type and intended use of equipment that will be located on the western most side of the project site that is within SCAQMD jurisdiction.

### **DATA REQUESTS**

28. Please provide a description of all activities that will take place on the portion of the project site located within SCAQMD jurisdiction.
29. Provide a list of SCAQMD rules and regulations that may apply to the project due to the activities proposed within SCAQMD jurisdiction.
30. Please clarify if any equipment during construction or operation would require SCAQMD permits.

### **BACKGROUND: AUXILIARY BOILER AND HEATER UTILITY AND PURPOSE**

Other recent solar trough projects have proposed many more hours of operation for boiler use where the boilers are used for both startup support and heat transfer fluid (HTF) freeze protection than proposed for this project.

## **DATA REQUESTS**

31. Please confirm that:

- a. 1,000 hours of operation is sufficient for both startup support and HTF freeze protection.
- b. Alternatively, note whether the actual operation will be more than 1,000 hours, such as operating more hours at reduced loads so the total boiler use would be equivalent to 1,000 hours at full load.
- c. Confirm that emissions will be limited to the equivalent emissions for 1,000 hours at full load.

## **BACKGROUND: HTF VOC EMISSION CONTROLS AND EMISSIONS ESTIMATE**

The heat transfer fluid Therminol® venting emissions for this project appear very high in comparison with other proposed solar trough projects using Therminol® (Beacon, Blythe, Palen, and Ridgecrest), primarily due to the fact that this project, unlike the other four projects, is not proposing add-on controls to reduce the HTF vent emissions. Staff believes that HTF vent controls, similar to those included in the project design of the other four proposed solar trough projects, are reasonable and need to be added to control the HTF expansion system Volatile Organic Compound (VOC) emissions for this project. Additionally, the HTF VOC emissions estimate does not include fugitive VOC emissions from piping components (valves, pumps, flanges, etc.).

## **DATA REQUESTS**

32. Please identify whether the applicant is willing to stipulate to the incorporation of a carbon adsorption, or other VOC control system, to control VOC emissions from the HTF expansion system venting by at least 98 percent.
33. Please estimate the HTF fugitive VOC emissions, including providing a piping component count.

## **BACKGROUND: GREENHOUSE GAS ANALYSIS**

Sulfur hexafluoride (SF<sub>6</sub>) is one of the most potent GHGs. SF<sub>6</sub> is often used for insulating and cooling of electrical equipment such as transformers and switchgear. The project is identified to have a significant number of electrical equipment that could use SF<sub>6</sub>. While some of the electrical equipment is noted to be air cooled, the AFC GHG analysis does not include comprehensive information for all electrical equipment regarding if or how much SF<sub>6</sub> would be used. Staff needs to understand if SF<sub>6</sub> is a potential GHG emission from this project and the emission inventory of SF<sub>6</sub>.

## **DATA REQUEST**

34. Please provide an estimate of the SF<sub>6</sub> onsite inventory and leakage emissions both in operation and construction phases to complete the GHG emission estimates.

## **BACKGROUND: GASOLINE STORAGE**

The AFC does not show any gasoline storage for operations, but the AFC shows that a number of dedicated site vehicles will be gasoline fueled. Staff would like to confirm that the applicant does not plan to store gasoline at this relatively remote site.

## **DATA REQUESTS**

35. Please confirm that:
  - a. there will be no gasoline storage at the site and that vehicles will have to drive to the nearest gasoline station, which is about 20 miles round trip from the site, to refuel.
  - b. Alternatively, provide information for any proposed onsite gasoline storage including throughput information and permitting requirements.
36. Please indicate if the additional gasoline vehicle mileage required for refueling is considered in the total vehicle miles estimates and emissions estimates, or please correct the estimates accordingly.

## **BACKGROUND: CUMULATIVE IMPACTS ANALYSIS**

Cumulative impacts analysis was not proposed or completed. Staff needs the cumulative modeling analysis to complete the staff analysis for cumulative air quality impacts.

## **DATA REQUEST**

37. Please provide a cumulative air quality impacts analysis or information from the MDAQMD and SCAQMD that indicates that there are no other proposed projects within six miles of the proposed project site which have received construction permits but are not yet operational, or are in the permitting process.

## **BACKGROUND: AIR QUALITY PERMIT APPLICATION PROCESS**

A Determination of Compliance (DOC) analysis from the local air district(s) will be needed for staff's analysis. Staff will need to coordinate with the applicant and local air district(s) to keep apprised of any air quality issues determined by the local air district(s) during their permit review.

## **DATA REQUEST**

38. Please provide copies of any official submittals and correspondence to or from the local air district(s) within 5 days of their submittal to or their receipt from the local air district(s).

## **Technical Area: Alternatives**

**Author:** Susan Lee (CEC)

### **BACKGROUND**

In Section 3.10 Alternatives of the Application for Certification (AFC), page 3-36, Section 3.10.2, Alternative Plant Sites, the applicant states “in 2007 the Applicant submitted five requests for ROW (SF-299 forms) to the Palm Springs BLM field office, requesting ROW for solar development in five areas: Desert Center 1, Desert Center 2, McCoy, Mule Mountain, and Black Hill. After additional examination of environmental concerns, road access, conflicting uses, and transmission options, Desert Center 1, Mule Mountain, and Black Hill were withdrawn.”

These very general descriptions of these alternative sites considered do not allow staff to evaluate the sites, their size, the location of existing and projected transmission lines, and environmental suitability, among other attributes.

### **DATA REQUESTS**

39. In order to facilitate preparation of the SA/DEIS and allow further comparison of the project site with alternative sites, please provide the precise locations of the three alternative sites (Township/Range/Section and/or parcel numbers) and GIS data if available.
40. Please identify the size (total acreage) and dimensions of each alternative site.
41. Please indicate whether the ROW applications to the BLM for Desert Center 1, Mule Mountain, and Black Hill alternatives have been withdrawn by the Applicant, and if not, please indicate the status of the applications.

### **BACKGROUND**

In AFC Section 3.10 Alternatives, page 3-36, Section 3.10.2, Alternative Plant Sites, four alternative sites are identified. Criteria used to compare the alternative sites in the AFC include: site suitability (grade, land use), site control, transmission, environmental sensitivity, and solar resource. However, the discussion regarding environmental sensitivity is very limited. The applicant states “After additional examination of environmental concerns, road access, conflicting uses, and transmission options, Desert Center 1, Mule Mountain, and Black Hill were withdrawn.”

The environmental suitability of a site encompasses many attributes. Several environmental organizations including the Sierra Club and Center for Biological Diversity, has recently developed renewable siting criteria to provide ecosystem level protection to the California Desert Conservation Area by giving preference to disturbed lands, steering development away from lands with high environmental values, and avoiding the deserts’ undeveloped cores. Understanding how the project site and the alternative sites compare in terms of these criteria will help determine the appropriateness of both the proposed project site and the alternative site locations identified in Section 3.10.2.

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California Desert Conservation Area explanation and criteria discussion:

[http://www.biologicaldiversity.org/programs/public\\_lands/deserts/california\\_desert\\_conservation\\_area/index.html](http://www.biologicaldiversity.org/programs/public_lands/deserts/california_desert_conservation_area/index.html)

## **DATA REQUESTS**

42. Please fill in Table 1 on the last page of this Data Request to compare the McCoy, Desert Center 1, Mule Mountain, and Black Hill alternative sites with the proposed project using the criteria developed by the environmental community.
43. Please provide the results of a California Natural Diversity Database (CNDDDB) search for the McCoy, Desert Center 1, Mule Mountain, and Black Hill alternative sites.

## **BACKGROUND**

AFC Section 3.10.2 states that the applicant used maps that included National Renewable Energy Laboratory (NREL) data and other exclusion criteria to identify “public and private lands that had the potential to meet the remaining site suitability and feasibility criteria.” AFC Section 3.10.2 then states that as a result of this screening, “the Applicant submitted five requests for ROW (SF-299 forms) to the Palm Springs BLM field office...”

## **DATA REQUESTS**

44. Please provide the precise locations (Township/Range/Section and/or parcel numbers) and GIS shapefiles defining boundaries, if available, of any private parcels that were identified that would meet the exclusion criteria.
45. Please identify any private parcels that include disturbed lands (e.g., previously used for agriculture) that met the applicant’s criteria.
46. Please indicate the number of individual landowners for the private land parcels identified, and provide the acreage of each separate parcel and landowner.

## **BACKGROUND**

In AFC Section 3.10, Alternatives, page 3-37, Section 3.10.3, Alternative Linear Corridor Routes, the applicant states “Numerous alternative routes were considered for the utilities and infrastructure that would be included in the linear corridor (electric transmission, gas, and an access road). The first consideration was to run a corridor directly south from the Project site through Ford Dry Lake. Although this would be the shortest and most economical route, this alternative was discarded due to the potentially high number of cultural sites existing in the lakebed, some sand dunes, and the presence of some private parcels.

Several other linear corridors were studied that would traverse south and southeast of the Project. Ultimately, after assessing the biological and cultural surveys conducted in the spring of 2009, a route was identified that avoided cultural sites. The proposed linear route that is shown in this AFC will utilize a portion of an existing access road, an area that has already been disturbed.”

These very general descriptions of the transmission line routes considered do not allow staff to confirm the location of existing and projected transmission lines, and environmental suitability, among other attributes.

## **DATA REQUEST**

47. Please provide:

- a. In order to facilitate preparation of the PSA/DEIS and allow further analysis of the transmission and linear facilities please provide a detailed map illustrating the route of the proposed transmission line, based on the Applicant's discussion with BLM, and a map of the alternative transmission line routes described in the AFC.
  
- b. As stated above, the linear routes (transmission, gas and access roads) were designed primarily to avoid cultural resources. However, the linear routes, as shown on Figure 5.3-1 would cross Sand Dunes, which provide valuable habitat for protected species, immediately east of the project site and Desert Wash habitat where it parallels the I-10. Please provide an alternative route for these linear facilities that would avoid both the Sand Dune habitat and the Desert Wash habitat in these regions.

## **BACKGROUND**

Numerous scoping comments on the DOE/BLM Solar Energy Development Programmatic EIS requested that alternatives focus on previously disturbed lands and on lands excluding all sensitive areas. AFC Attachment B: Biological Resources of the Data Adequacy Supplement Figures 5.3-2, and Figures 5.3-6 through 5.3-10 give an overview of the field survey results for special status plant and animal species and waters evaluation. Alternatives, biological, and cultural resources staff may evaluate a reduced acreage or phased alternative (in which only a portion of the project would initially be permitted, with the potential for the other phase to be constructed after CEC and BLM assessment of the potential impacts and engineering concerns associated with the first phase). In order to consider these options, a clear breakdown of biological and cultural resources impacts of the site is needed.

## **DATA REQUEST**

48. Please provide:

- a. data shown on AFC Figures 5.3-2 and Figures 5.3-6 through 5.3-10 on one map (scale of 1:24,000) illustrating the distribution of all biological resources within the site, and the boundaries of each unit, and also the resources on what the Applicant calls the western portion of the ROW application.
  
- b. Please also provide a tabular list of resources within each unit and on the western portion of the ROW application.

## **BACKGROUND**

AFC Section 3.10.2, Alternative Plant Sites, states that the applicant's original filing with the BLM was for approximately 19,000 acres, and that taking into consideration sensitive cultural sites and discussions with the BLM, the Applicant reduced this original filing to 4,640 acres. The applicant further states that this ROW consists of an eastern portion and a western portion and that at this time only the eastern portion of the ROW is anticipated to be needed for the project.

AFC Section 3.4.4, Energy Conversion Facilities Description, describes the major components of the Project, including the heat collection elements, solar collection

assemblies, heat transfer fluid, mirrors, solar steam generator system and other components. However, this section gives only a cursory explanation of each component and does not give specific details. The analysis by staff resource specialists may identify specific areas within the proposed project boundaries where concentrations of valuable resources exist. In order to protect some areas of valuable resources within the site, it may be necessary to consider eliminating areas of solar troughs in specific areas or rearranging the configuration of the troughs within the western portion of the ROW application. As a result, staff needs a more thorough understanding of the engineering requirements of the project and its technology.

## **DATA REQUEST**

49. Please describe in detail the engineering constraints, if any, to the development of a revised configuration of each 125 MW unit. A revised configuration may result in the rows of troughs not being as long and not configured in a solid rectangular area. As an example, it may be desirable to allow existing washes to pass through an undeveloped portion of the site and to allow troughs to be installed on either side of the wash. Specifically, please answer the following questions:
- a. Please define whether there is a specific minimum or maximum length that each individual solar collector assembly must be, and if it is necessary that the solar collector assemblies be identical in length.
  - b. Please define both engineering and economic constraints to having variable collector assembly lengths.
  - c. Please describe in detail whether there is flexibility in the lengths of the heat collection elements or if these are specific to the solar collector assemblies, and if so, what is the flexibility.
  - d. Please describe whether there is a distance between components of the solar field and the power block that would result in a loss of heat in the heat transfer fluid, such that it would reduce the economic or engineering feasibility of the project?
  - e. Please describe any limitations based on engineering requirements for the supply and return piping and whether this would allow for different lengths of solar collectors.
  - f. Discuss what, if anything, would be the limitations relating to extending the solar collectors onto currently undeveloped portions of the site?

## **BACKGROUND**

AFC Section 3.10.5, Water Supply Alternatives, states that a comprehensive search was conducted to identify possible alternative sources of water for the project and that this search included inquiries to water and wastewater treatment and distribution facilities; agricultural irrigation and drainage districts; commercial and industrial operators; and other potential water supplies. The AFC further states that Genesis Solar, LLC continues to explore options that may utilize local industrial facility treated wastewater. Due to the limited quantity of treated water, this would be pursued in order to supplement the groundwater source. Table 3.10-1 lists the Potential Supply

Alternatives for the Project including advantages and disadvantages. The table lists insufficient supply of recycled/reclaimed water for project demands from the following potential water suppliers: City of Blythe Water Production and Treatment Facility, the Chuckwalla Valley State Prison's wastewater, the Metropolitan Water District of Southern California, Desert Center Plant Wastewater facility. The table does not state the amount of water available from each of these wastewater treatment facilities.

## **DATA REQUESTS**

50. In order to determine the feasibility of using reclaimed water as an alternative to proposed on-site wells, please discuss the amount of water that each of the facilities identified above has available.
51. Please indicate the relative construction and operational costs of a pipeline from Blythe or Desert Center to the proposed site compared with the costs of constructing and operating two onsite wells at the proposed site over the life of the project.

## **BACKGROUND**

AFC Section 3.10.6, Alternative Cooling Technologies, states that the proposed project is configured to use wet cooling from a minimum of two groundwater supply wells and that there would be a total 7.4 percent decrease in total annual net MWh generated with dry cooling compared to wet cooling. AFC Section 3.4.7.3 discusses the water source and quality for the Genesis project and states that the water supply would be in the brackish range (greater than 1,000 milligrams per liter) and that it meets the state water policy requirements (under SWRCB Resolution No. 79-58) for use as a source of power plant cooling water. Because the planned water supply for wet cooling is brackish, it may not be appropriate for other uses and as such, may not drive the need for alternative cooling technologies. However, pending the conclusions of the water analysis and consideration of effects of withdrawal of this water on springs and seeps in the area used by wildlife, information regarding alternative cooling methods is still required.

AFC Section 3.10.6.2 states that the installed cost for the evaluated equipment and systems associated with the wet cooled plant is approximately one percent less than the evaluated equipment and systems associated with the dry cooled plant. In Section 3.10.6.4, the applicant states that based on the calculations stated in the AFC, the use of dry cooling would decrease the project output and render the project economically unsound or noncompetitive. AFCs for two other solar trough power plants in the Blythe regions were received by the Energy Commission in August, 2009. These other projects are both proposing using solar trough technologies with dry cooling. They are located within 15 to 20 miles of the proposed project. One of the projects is also located within the Chuckwalla Valley Groundwater Basin. These projects, and other proposed solar power tower projects also proposing dry cooling, are sited on land with similar atmospheric conditions as the proposed project.

## **DATA REQUEST**

52. Please demonstrate specifically that using a dry cooling technology would not be economically viable over the life of the project. The Preliminary Staff Assessment for the Beacon Power Plant [CEC-700-2009-005-PSA; see Appendix A of the

Alternatives Section] can be used as an example of a feasibility study for a 250 MW solar power plant using dry-cooling technology. This study is available at <http://www.energy.ca.gov/2009publications/CEC-700-2009-005/CEC-700-2009-005-PSA.PDF>

**Alternatives Data Request – Table 1**

<b>Environmental Criteria</b>	<b>Proposed Project Site</b>	<b>Desert Center 1</b>	<b>McCoy</b>	<b>Mule Mountain</b>	<b>Black Hill</b>
Is site mechanically disturbed?					
Is site located adjacent to degraded and impacted private lands?					
Is site a Brownfield?					
Is site located adjacent to urbanized areas (indicate distance)?					
Does site require the building of new roads (indicate length)?					
Could site be served by existing substations (indicate name and distance)?					
Is site located proximate to sources of municipal wastewater (indicate name and distance)?					
Is site located proximate to load centers (indicate name and distance?)					
Is site located adjacent to federally designated corridors with existing transmission lines?					

Environmental Criteria	Proposed Project Site	Desert Center 1	McCoy	Mule Mountain	Black Hill
Does site support sensitive biological resources, including federally designated and proposed critical habitat; significant populations of federal or state threatened and endangered species, significant populations of sensitive, rare and special status species and rare or unique plant communities?					
Is site within an Area of Critical Environmental Concern, Wildlife Habitat Management Area, proposed HCP and NCCP Conservation Reserves?					
Does site contain land purchased for conservation including those conveyed to BLM?					
Does site contain landscape-level biological linkage areas required for the continued functioning of biological and ecological processes?					
Is the site within Proposed Wilderness Area, proposed National Monuments, and Citizens' Wilderness Inventory Areas					

Environmental Criteria	Proposed Project Site	Desert Center 1	McCoy	Mule Mountain	Black Hill
Does the site contain wetlands and riparian areas, including the upland habitat and groundwater resources required to protect the integrity of seeps, springs, streams or wetlands?					
Is the site a National Historic Register eligible site and does it contain other known cultural resources?					
Is the site located directly adjacent to National or State Park units?					

## Technical Area: Biological Resources

**Authors:** Susan Sanders and Carolyn Chainey-Davis (Energy Commission)  
Mark Massar (Bureau of Land Management)

### BACKGROUND: Desert Tortoise

Section 5.3.6.2 of the Application for Certification (AFC) discusses survey results for desert tortoise, noting that: “*The lack of live tortoises and recent tortoise sign detected during surveys, plus the size, older condition, and distribution of the bone fragments, suggest that tortoises do not currently occupy the Project area. The lack of tortoises, scat, and active burrows indicates the current tortoise population within the survey area is very low to zero.*” (pages 5.3-19 –20). The AFC concludes on page 5.3-27 that it is possible tortoises are present upslope to the north and east of the right-of-way (ROW) where higher quality creosote bush scrub and ephemeral washes are present, and that tortoises occupying these adjacent areas could enter the project area. Staff agrees with this assessment, given the presence of tortoise tracks, which are ephemeral and therefore fresh, within the survey area and approximately 0.75 miles from the project boundaries, as well as the findings of a few relatively fresh (less than 10 years old) desert tortoise carcasses or bones. Staff also notes that approximately 1.6 miles of the proposed access road, 2.8 miles of the proposed transmission line route, and 1 mile of the proposed gas line route are within desert tortoise critical habitat. The southern portions of the linear facilities are within a desert tortoise Desert Wildlife Management Area.

Based on this information staff has concluded that the project site does not provide high quality habitat for this desert tortoise, but does consider the project area to be potentially occupied by desert tortoise. Staff needs additional information to analyze project impacts to desert tortoise habitat in a regional context. Staff also needs to determine if the proposed project will adversely modify designated critical habitat, and therefore needs more information regarding the impacts of the project on primary constituent elements within desert tortoise critical habitat. The U.S. Fish and Wildlife Service (USFWS) will require this same information to develop their Biological Opinion for this project. In addition, staff needs to review the desert tortoise relocation/translocation plan that must be included as part of the Staff Assessment/Final Environmental Impact Statement (SA/FEIS) and the Incidental Take Permit application submitted to the California Department of Fish and Game.

### DATA REQUESTS

53. USGS Desert Tortoise Habitat Model. Please provide a figure depicting desert tortoise habitat within the project area based on the recent United States Geological Survey (USGS) model (Nussear et al. 2009). Please provide this figure at a 1:250,000 scale so that this information is depicted in a regional context (eastern Riverside County).
54. Desert Tortoise Critical Habitat. Please provide a discussion of the effects of construction and operation of the project on primary constituent elements of desert tortoise critical habitat as described in *Endangered and Threatened Wildlife and Plants: Determination of Critical Habitat for the Mojave Population of the Desert Tortoise; Final Rule* (USFWS 1994). Please provide a table with the

acreage of critical habitat that would be directly and indirectly impacted by project construction and operation, and a detailed discussion of those potential indirect impacts.

55. Desert Tortoise Relocation/Translocation Plan. Please provide a draft Desert Tortoise Relocation/Translocation Plan that incorporates the most recent guidance from the USFWS and CDFG. A translocation is required when a desert tortoise must be moved more than 1,000 meters to clear it from the project site, while a relocation is required when a desert tortoise can be moved less than 1,000 meters to clear it from the project site. The goals of this relocation/translocation effort should be to:

- Relocate/translocate all desert tortoises from the project site to nearby suitable habitat,
- Minimize impacts on resident desert tortoises outside the project site,
- Minimize stress, disturbance, and injuries to relocated/translocated tortoises, and
- Assess the success of the relocated/translocated effort through monitoring.

Please discuss relocation/translocation procedures and guidance in the plan, including a description of clearance survey protocol and desert tortoise transportation and release procedures, and develop a post-translocation monitoring and reporting plan. All methods discussed in the plan should be consistent with the *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1999) or the most recent handling guidance provided by the U. S. Fish and Wildlife Service.

Generally, the relocation/ translocation plan should include the following information:

- a. Identify potential relocation areas within 1,000 meters of the project site based on the presence of suitable soils, vegetation community, vegetation density and abundance, perennial plant cover, forage species, geomorphology, and slope;
- b. Identify potential translocation sites based on the presence of suitable soils, vegetation community, vegetation density and abundance, perennial plant cover, forage species, geomorphology, and slope;
- c. Surveys of resident populations at translocation sites, including health assessment sampling;
- d. Description of measures that would be implemented to prevent relocated/translocated desert tortoise entering the site or other hazardous areas;
- e. Description of quarantine facilities to provide individual quarantine for all tortoises prior to translocation;
- f. Description of health assessments that would be performed by qualified biologist or veterinarian on each tortoise prior to translocation;
- g. A treatment/disposition plan for each tortoise, including those unfit for translocation;
- h. Description of translocation procedures, including timing (e.g., time of year, time of day);

- i. Description of post-translocation monitoring and adaptive management activities;
- j. Description of methods used to mark relocated/translocated tortoises and fit them with transmitters to so that they can be located and identified during post-relocation/translocation monitoring; and
- k. Description of how data would be compiled, synthesized, and reported to USFWS, CDFG, BLM, and Energy Commission staff.

The translocation site must:

- a. be on Federal or State lands in California within the Eastern Colorado Desert Recovery Unit for the desert tortoise.;
- b. have no proposed rights-of-way or other encumbrances at the time of its establishment; and
- c. be sufficiently distant from major highways (e.g. Interstate 10) to provide a safety buffer for long-distance movements that some desert tortoises are likely to make following translocation.

56. Please submit an Incidental Take Permit application to the California Department of Fish and Game, including measures to avoid and minimize the take of desert tortoise and to fully mitigate the impact of that take.

### **BACKGROUND: Raven Monitoring/Control Program**

The AFC does not adequately address the increased risk of raven predation on juvenile desert tortoise and other native wildlife except for page 5.3-31 of the AFC (BIO-10), which suggests that trash and food be removed from the site to avoid attracting ravens. The SA/FEIS will need to include a detailed Raven Monitoring and Control Plan as part of the conditions of certification.

### **DATA REQUEST**

57. Raven Monitoring & Control Plan. Please provide a draft Raven Monitoring/Control Plan that describes methods to avoid attracting common ravens and/or providing subsidies during all phases of development and use, including construction, operation, and decommissioning. In situations where subsidies such as power lines and structures for perching cannot be eliminated, the plan should require implementation of best management practices such as reduction of available subsidies, raven monitoring and raven nest removal. Potential subsidies to be considered in the plan should include but not be limited to:

- Availability of water from dust abatement activities, equipment cleaning and maintenance, evaporation and retention ponds, drainage areas or landscaping;
- Potential perching, roosting, or nesting sites;
- Food sources from soil disturbance and road kill (e.g., small mammals, insects); and
- Food sources and attractants from human and animal food and waste.

To address the indirect and cumulative effects of the project, participation would also be recommended in a regional raven management plan either through monetary or in-kind contributions coordinated by the Desert Managers Group. The draft Raven

Monitoring and Control Plan should incorporate the most recent guidance from the USFWS and include at least the following elements:

- a. Purpose/objectives of the Plan;
- b. Identification of project design features and other measures to manage potential introduction of subsidies that may attract ravens to the area;
- c. Identification of the area covered by the monitoring and raven control activities;
- d. Description of baseline data documenting the abundance of raven on the project site and out to one mile from the project boundaries;
- e. Establishment of quantitative success criteria for achieving the objectives of the plan;
- f. Documentation of the effectiveness of project design features and BMPs;
- g. Identification of triggers that will prompt implementation of management actions to control ravens, and a description of those management actions (e.g., nest removal, elimination of problem ravens);
- h. Description of a monitoring plan, including a discussion of survey methods and frequency, for establishing baseline data on pre-project raven numbers and activities and assessing post-project changes from this baseline;
- i. Description of adaptive management practices used to ensure effectiveness of accomplishing the purpose of the raven management plan;
- j. Regular reporting to document raven management measures that have been implemented and results of raven abundance and effectiveness monitoring throughout the life of the project; and
- k. Description of worker education, at all phases of development, as it pertains to avoiding and reducing subsidies for ravens and to promoting desert tortoise awareness.

### **BACKGROUND: Fringe-toed Lizards**

Thirty-nine fringe-toed lizards were found during surveys, six of which could be positively identified as Mojave fringe-toed lizard, a California species of special concern and a BLM sensitive species. According to page 5.3-20 of the AFC, other sightings could be of the Colorado Desert fringe-toed lizard, also a California species of concern. As described on page 53 of Appendix C, the lizard occupies the sandy habitats that overlap the proposed linear facility routes, and could be directly impacted by the project. The impact assessment in Appendix C also describes indirect impacts such as avoidance of paved roads by these species resulting in further fragmentation of populations and potential reduction in home range, and an increase in potential predators such as raven and coyote due to project features and activities.

Appendix C and the AFC do not discuss another potentially significant indirect impact, which is project impacts to the sand dune community, which would affect fringe-toed lizards and a number of other special concern species and plant communities. The analysis of impacts to 'Special Vegetation Communities' (pg 5.3-26 of Section 5.3 of the AFC, Biological Resources) states "*One NECO-designated sensitive vegetation community, Stabilized and Partially Stabilized Sand Dunes, was identified within the*

*Project area (Figure 5.3-2, Table 5.3-4). This vegetation community provides habitat for sand-adapted, special status species (e.g., Mojave fringe-toed lizard) and would be avoided to the extent practicable."*

Staff is concerned about direct, indirect, and cumulative effects of the project on Mojave fringe-toed lizards because their distribution, restricted to sand dunes/stabilized sand dunes, is naturally discontinuous and geographically complex (Murphy et al. 2006). Many local populations of this species are quite small with some having perhaps fewer than 500 adults (Murphy et al. 2006) and are therefore vulnerable to local extirpation. Staff needs additional information about the effects of the project on sand dune habitat that support Mojave fringe-toed lizards and other sensitive biological resources. The AFC and supplemental information does not include sufficient detail about the sand transport system that creates and maintains these active and partially stabilized sand dunes to assess potential indirect impacts to this habitat. For example, it is not clear if the dunes are a result of fluvial depositional associated with major flood events in the ephemeral streams, or if the finer fluvial sediments (typically sand size and finer) are mobilized by wind, or both. Without this information it is impossible to assess how the proposed re-routing of drainages, construction of wind fences, and application of dust palliatives might affect maintenance of this habitat.

Staff also notes that the Ford Dry Lake dunes are outside the range of the Colorado Desert fringe-toed lizard, and are well within the established range of the Mojave fringe-toed lizard (Heifetz 1941, Norris 1958). Staff therefore needs clarification as to why some of the observed lizards were considered possible Colorado Desert fringe-toed lizards or hybrids.

## **DATA REQUESTS**

58. Sand Dune Ecosystem Maintenance. Please provide information, including any appropriate modeling and quantitative analysis, describing how wind and water contributes to the creation and maintenance of the sand dunes and partially stabilized sand dunes in the vicinity of the project area.
59. Impacts of Project to Sand Dune Ecosystem. Please provide an analysis, including any appropriate modeling or quantitative assessment, of the potential direct and indirect effects of project construction and operation (for example, alteration of hydrology, dust palliatives, wind fencing) on creation and maintenance of sand dunes and partially stabilized sand dunes.
60. Mitigation Plan for Impacts to Sand Dune Ecosystem. Please provide a detailed mitigation plan for avoidance and minimization of direct impacts to stabilized and partially stabilized dune habitat. The mitigation plan should include measures for minimizing direct impacts to preserved habitat during construction, indirect effects of operation, and a plan for compensatory mitigation.

61. Identification of Colorado Desert/Mojave Fringe-toed Lizards. Please provide a rationale as to why some lizards detected during the surveys were identified as Colorado Desert fringe-toed lizards or hybrids.

**BACKGROUND: Western Burrowing Owl Surveys**

Staff needs additional information about the Phase III survey efforts. Page 26 of Appendix C indicates that Phase III surveys were conducted from 1 hour before sunrise to 2 hours after sunrise on April 11, April 13, May 29, and May 30, 2009, and from 2 hours before sunset to 1 hour after sunset on April 10, April 11, May 28, and May 29, 2009. Survey locations were chosen using the locations of owl sightings and burrow locations identified during Phase I and II surveys. Staff needs additional information to evaluate the total time spent surveying the project area to assess whether the burrowing owl surveys were adequate to cover the area and provide an estimate of the number of owls potentially inhabiting the site.

**DATA REQUEST**

62. Burrowing Owl Phase III Survey Data. Please provide a summary of the field data for the Phase III surveys, including date, start, and stop times of the surveys (not including travel time to reach the survey area), number and location of burrows surveyed during each visit, and the personnel conducting the survey.

**BACKGROUND: Sensitive Plant Communities**

Sensitive plant communities could occur in the areas around Ford Dry Lake and within the Zone of Influence Survey area but would not be detected under a Holland classification system. These include the following rare natural communities (as indicated by an asterisk in the 2003 CNDDDB Natural Communities List: Creosote Bush-Big Galleta association; Creosote Bush-White Rattany-Big Galleta association; Mesquite-dominant and Acacia-Mesquite scrubs; Sweetbush Riparian Scrub; Blue Palo Verde, Ironwood, and Smoke Tree Woodland; Sonoran Dune Scrub; and Desert Bush Seepweed Scrub.

**DATA REQUEST**

63. Sensitive Plant Communities. Please provide information on the presence or absence of the rare natural communities listed above within the proposed project footprint or adjacent to the footprint in areas that could be affected indirectly by construction or operation. If present, include a discussion of their distribution and extent and a map showing their location. If any such rare communities occur, please provide an analysis of the project direct and indirect impacts to these communities and any proposed mitigation measures to reduce the level of any significant impacts.

**BACKGROUND: Groundwater Pumping**

Results of the analytical modeling for groundwater drawdown presented in Table 5.4-11 of the AFC (Water Resources, pages 5.4-14 to 5.4-17) indicate a potential vertical drawdown in Palen Mountains, McCoy Spring, and Palen Dry Lake. These tables and figures based on these tables indicate a possible drawdown of 5.6/1.4 feet in Year 1 and 9.4/2.4 feet in Year 33 at Palen Mountains; 4.0/1.0 feet in Year 1 and 7.9/2.0 feet in Year 33 at McCoy Spring, and 3.0/0.8 feet in Year 1 and 6.8/1.7 feet in Year 33 at Palen Dry Lake.

The report concludes that project-related water table drawdown would be unlikely to adversely affect Palen Dry Lake or McCoy Springs. However, neither the Water Resources report nor the Biological Resources report provides sufficient information about project effects on plant communities, wildlife, and sensitive species dependent on shallow groundwater in the vicinity of springs and dry lakes. Staff needs additional information on water-dependent vegetation, including maps depicting vegetation communities in the vicinity of these resources, and the effect of reduced groundwater discharge on this vegetation. Figure 5.3-2 in the AFC indicates the presence of desert chenopod scrub, a sensitive plant community, at Ford Dry Lake. Staff needs information about the effects of groundwater drawdown on this rare plant community and any other plant communities potentially affected by groundwater extraction associated with the project.

Staff also needs more information about the potential impacts of groundwater drawdown on the ironwood forest in the Palen-McCoy Wilderness (in the Palen Wash between the Palen and McCoy mountains). This area was identified in BLM's California Desert Conservation Area Plan as an Unusual Plant Assemblage because of the size of the individual ironwood trees and the extent of the woodland, which is considered to be the largest concentration of ironwoods in the California Desert. Staff needs to assess the impact, if any, of lowering of the water table on this valuable woodland community.

#### **DATA REQUESTS**

64. Dry Lakes - Groundwater Dependent Communities. Please provide a map and description of the vegetation (including dominant species, physiographic setting, habitat function and values, special-status species associates) that occurs around the margin of Ford Dry Lake. The mapping should be on an aerial photo at a form and scale similar to that submitted in the Data Adequacy Supplement (e.g., Figure 5.3-7B). The mapping should extend out from the lake margin to a distance encompassing any plant communities that include facultative wetland plants as dominants, co-dominants, or important associates. Please include acreage of each plant community type within this mapped area. Please provide an assessment of the potential impact of water table drawdown on Ford and Palen Dry Lake groundwater dependent plant communities, including the desert chenopod scrub community mapped at Ford Dry Lake.
  
65. Springs and Seeps – Groundwater Dependent Communities. Please provide a vegetation map, description, and acreage table for any shallow groundwater-dependent vegetation potentially associated with McCoy Spring as well as any other seeps and springs within the potential area of influence of groundwater pumping. In determining which seeps and springs to include in this mapping effort please consult the Northern and Eastern Colorado Desert Coordinated Management Plan (Map 3-1, Existing Water Sources), USGS topographic maps, the information data portal of the Mojave Desert Ecosystem Project (MDEP), Joshua Tree National Park biologists, and other local experts that may have knowledge regarding the location of active seeps, springs, and wetlands within the area potentially influenced by groundwater pumping. Please provide an assessment of the potential impact of water table drawdown on vegetation and wildlife dependent on seeps and springs.

66. Ironwood Forest: Please provide an assessment of the potential impact of water table drawdown on the ironwood forest in the Palen-McCoy Wilderness.

**BACKGROUND: Delineation of State Waters**

***Use of OHWM for Delineation/Inconsistency with Hydrological Data.*** Based on a discussion of field methodology at staff's site visit on October 27, 2009 and a review of the methods section in Appendix C, the *Survey for Jurisdictional Waters and Wetlands*, staff understands that the delineation of ephemeral drainages was based on the presence or absence of field indicators of the ordinary high water mark (OHWM). The traditional use of OHWM to identify the limits of non-wetland waters is confounded in the arid west by highly variable flow pathways within the channel (Lichvar and McColley 2008). The location of the OHWM indicators is transitory in these environments immediately following a geomorphically effective discharge (typically a 5- to 10-year storm event in arid channels). The OHWM indicators are predominantly concentrated near the margins of the affected area. Subsequent smaller discharge events scatter the OHWM indicators within or below the limits of the last geomorphically effective event (Lichvar and McColley 2008).

In the project area, the outer limit of these distributary alluvial fan features are easily identifiable in the 2005 aerial photos (Figures 5.3-7A – J, Data Adequacy Supplement), particularly when the presence of scattered ironwood and other desert wash tree species are considered. Staff noted that the delineation did not reflect several of these features apparent in the aerial photos. In the field, however, the traditional bed and bank OHWM indicators have been obscured by smaller discharges since the relatively wetter year of 2005 and by the deposition of wind blown sands from the adjacent dunes. The USACE defines "problem areas" as situations where the normal field indicators used to delineate a drainage feature "*may be missing at times due to natural processes*" as "*naturally occurring [features] that periodically lack indicators due to normal seasonal or annual variability*" (USACE 2006, p. 77).

Due to the inherent problems using OHWM indicators for delineating the boundaries of a non-wetland water, Lichvar et al. (2006) proposed using other features associated with the limits of the active floodplain to support the traditional OHWM indicators. "*The impact produced by geomorphically effective events renders the limit of the active floodplain the only repeatable feature that can be reliably used to delineate the non-wetland water's OHWM*"; Lichvar & McColley (2008) recommend a delineation procedure based on aerial photo interpretation, combined with the use of topographic maps, soil and geology maps, and other data. Their recommended field approach is based on data collected along cross-section transects to help identify subtle changes in topography, vegetation, and other indicators.

Staff suggests that an examination of the watershed area of a given feature and comparison with the Conceptual Drainage Study may also be useful. Staff notes that the delineation did not reflect significant hydrological information described in the drainage report. The Master Design Storm Summary provided in Appendix D within Appendix A, the Conceptual Drainage Study, indicates that Basin 1 at the northwestern portion of the site conveys 4070 cfs in a 100-year event. Despite this large volume of floodwater, only one small segment of a channel is depicted in the jurisdictional report for this portion of the project area. Many channels in this area are apparent on the 2005 aerial photo

(Figure 5.3-7A, Data Adequacy Supplement) of this area that were not included in the delineation.

To ensure that the delineation of desert washes are not under-represented and is consistent with hydrological data provided in the Conceptual Drainage Study, staff requests below that the delineation of this problem area be revised and augmented with aerial photo interpretation, topographic and watershed data, and other sources as recommended in Lichvar and McColley (2008) and Lichvar et al (2006).

***Estimating Width and Area of Channels.*** Table 5.3-2, Ephemeral Wash Data, in the Data Adequacy Supplement provided an estimate of width and a calculation of area for each of the 29 drainages described in the Biological Resources report. Staff understands that the width was based on a field estimate (by pacing and visual estimate) taken at several intervals along the drainage. Staff believes that a more accurate representation of width, particularly the width encompassing the associated wash vegetation and interfluves of compound or braided features, would be achieved by an estimate based on aerial photography. Staff requests below that a revised width and area calculation be provided based on a GIS measurement of the width of each drainage from the aerial photo signature, from Figures 5.3-7A – J, Data Adequacy Supplement.

***Delineation of Channels Downslope of Project Boundaries.*** The delineation of ephemeral drainages described in the Biological Resources Report terminates at the project footprint boundary, but staff needs information about drainages downslope of the project because they could be indirectly affected by the project. Diversion of floodwaters into manmade channels would significantly alter the hydrology and dependent wash vegetation downstream of the project area, an effect that is quite apparent below I-10 (near the project) where expanses of desert wash trees have died in response to the diversion of smaller channels.

***Distinguishing Temporary v. Permanent Impacts to Ephemeral Drainages.*** Table 5.3-2 does not distinguish temporary versus permanent impacts to ephemeral drainages. Staff needs additional information to determine the extent of impacts to drainages that occur within solar fields and other permanent installations and the impacts resulting from temporary utility crossings.

***Desert Dry Wash Woodland.*** The delineation of state waters in the AFC did not include mapping the associated riparian vegetation, which in addition to the channel bed and bank is also regulated under the California Fish and Game Code. Desert Dry Wash Woodland (“Microphyllous Woodland”) is classified as a riparian type even though the associated washes may not contain flowing water for extended periods. In the project area, ironwood and palo verde trees occur both as linear features associated with the larger or even moderate-sized ephemeral desert washes, and also as broader, less well-defined woodlands of widely scattered trees along even the smallest ephemeral washes, such as the area shown in the general vegetation map (Figure 5.3-2 of the AFC). However, this feature is not included in the delineation of potential state waters, nor are the more prominent linear features associated with the larger washes in the project area. The delineation does include a total number of trees observed on the delineated channels, as deducted from a review of the aerial photos, but does not delineate their distribution in the project area or provide an area calculation. Staff is concerned that the mapping and acreage calculations of this sensitive and regulated

plant community may under-represent this sensitive and regulated community type within the project footprint that would be permanently and directly affected.

## **DATA REQUESTS**

67. Revise Delineation of Drainages. Please revise the delineation of ephemeral drainages to include all the drainage features with a well-defined channel and/or drainages that support dry desert wash woodland as depicted in the 2005 aerial photos (Figures 5.3-7A – J, Data Adequacy Supplement). Smaller features with no surface connection to Ford Dry Lake or to another larger feature may be omitted. Please also include drainages downslope of the project boundary that connect to Ford Dry Lake and/or which have dry desert wash vegetation. Please provide revised delineations on an aerial photo at a scale and level of detail similar to that submitted in the Data Adequacy Supplement, Figure 5.3-6.
68. Temporary and Permanent Impacts to Drainages. Please provide a table with acreage estimates of temporary and permanent impacts to ephemeral drainages based on the revised delineation requested in the above data request.
69. Revise Width and Area of Drainages. Please revise the width and area columns on Table 5.3-2 to reflect calculations based on a GIS measurement of the drainages width from the aerial photo signature that encompasses the width of the associated wash vegetation and interfluves of compound or braided features. Please add to Table 5.3-2 any new drainages delineated on the data request described above.
70. Revise Delineations to Include Desert Dry Wash Woodland. Please revise the delineation to include mapping the wash- or stream-associated microphyllous or desert dry wash woodland.
71. Tree Count Survey Methods. Please provide an explanation of the methodology for establishing tree quantities shown in Table C-1 of the delineation report.
72. Describe Desert Dry Wash Woodland. Please provide a brief narrative description of the desert dry wash woodland on the channels, e.g., dominant and sub-dominant species in each stratum, percent cover (absolute cover), observed or expected wildlife use of the habitat, and other physical and biological characteristics of the habitat that would be useful in establishing its biological values and functions. Please provide a table that summarizes the acreage of desert dry wash woodland in the survey area, and the acreage of this habitat type that could be directly and indirectly impacted by the project.

## **BACKGROUND: Desert Washes**

The delineation of project area waters in the AFC (pending a revision based on the guidance described above) includes at least 28 ephemeral drainages totaling approximately 23 acres which will be eliminated or directly affected by the proposed project. Ephemeral washes such as those occurring on the project site provide many important functions and values, including: landscape hydrologic connections; stream energy dissipation during high-water flows that reduces erosion and improves water quality; water supply and water-quality filtering; groundwater recharge; sediment

transport, storage, and deposition aiding in floodplain maintenance and development; nutrient cycling; wildlife habitat and movement/migration corridors; and support for vegetation communities that help stabilize stream banks and provide wildlife habitat (Levick et al. 2008).

California Wetlands Conservation Policy (EO W-59-93) provides for “no overall net loss” of jurisdictional areas and achieving a “long-term net gain in the quantity, quality, and permanence of [jurisdictional areas] acreage and values in California.” The first priority in meeting this no-net loss standard is to avoid impacts to state waters where possible. Staff needs more information than is currently provided in the AFC to determine if an adequate assessment was made as to the feasibility of avoiding or minimizing impacts to the project area ephemeral washes.

### **DATA REQUESTS**

73. Functions and Values of Project Area Washes. Please provide a description of the beneficial functions and values provided by the ephemeral washes on the project site, and discuss how the proposed project would affect these functions and values within the project footprint and downslope of the project boundaries.
74. Low Impact Development Approach. Please provide a detailed discussion, with supporting quantitative analysis, of implementation of a low impact development approach to managing stormwater flows. Please include in this assessment the feasibility of reconfiguring the project footprint to retain some or all of the project area ephemeral drainages with setbacks from the banks of the drainages to accommodate a buffer for protection of water quality and to provide a wildlife movement corridor. This assessment needs to be supported by quantitative results of models and analyses describing on-site depths and velocities of stormwater flows and potential impacts to project features if some or all of the natural drainages were left intact, and an analysis of how this flooding might affect project features and operations under 10-, 2-, 1-, and 0.2-percent annual chance flood events within the watershed.

### **BACKGROUND: State Waters/Channel Design**

No mitigation is identified for loss of the project area ephemeral washes, except for a brief mention on page 5.3-26 that impacts to these washes would be off-set by adhering to the terms and conditions of the Streambed Alteration Agreement.

The data request above describes staff’s request for a quantitative assessment and analysis of the feasibility of retaining some or all of the project area desert washes within the reconfigured project site. If this analysis demonstrates that retention of some or all of the existing drainage features on the project site is infeasible, possible mitigation might include re-creation of the desert washes hydrologic, geomorphic, and ecological functions and values. Staff needs an assessment of whether the engineered drainages created on site to determine whether these channels could eventually replicate the functions and values of a natural desert wash. This analysis should include a discussion of how the new channel could recreate natural soil characteristics (biological soil crust, permeability), microtopography (microcatchments for moisture, seeds), hydrology, geomorphology, and vegetation and wildlife functions and values. At a minimum, the diversion channels must maintain the hydrologic and ecologic functions

and values of the desert washes and sheet flow between the project site and Ford Dry Lake. If the diversion channels cannot replicate the lost function and values of the channels on site, replacement must be addressed through a separate Habitat Mitigation Plan that may be accomplished onsite or offsite and within the Chuckwalla Valley area or watershed.

In addition to a Habitat Mitigation Plan considerably more detail is needed than that provided by the Conceptual Drainage Plan on the proposed design of those channels. The plan needs to address the potential for head-cutting on the channels above the site, assess the area available for revegetation within the channel (extent of unarmored banks and channel bottom), whether or not grade control structures are needed, how wildlife would move throughout the channel if grade control structures were present, how sediment and flood flows will move through the rerouted channels under different storm water conditions, and whether the channel design would support natural geomorphic and hydrological processes.

To fulfill requirements that, but for the Energy Commission's exclusive permitting authority under the Warren-Alquist Act, would have been satisfied by the CDFG Streambed Alteration Agreement, staff is requesting detailed information about how the proposed diversion channels would be designed, revegetated, maintained, and decommissioned. As described in the Soil & Water Data Requests, staff is requesting design drawings for the re-created channel based on appropriate geotechnical and hydraulic analysis. In addition to detailed design, creation of new channels to carry floodwaters around and through the site would need to be accompanied by creation of a Maintenance District to maintain those channels for the life of the project. Before the project is constructed a firm commitment would be needed from a Maintenance District to undertake a Channel Maintenance Program for the life of the project. The Data Requests below outline the information that will be needed on the re-routed channels before staff can prepare the SA.

## **DATA REQUESTS**

75. Maintenance District. Please identify and provide evidence of coordination with a suitable public entity that could serve as the Maintenance District. The Maintenance District would maintain the re-routed channels, manage utility crossings of the rerouted new channels, and to undertake all activities needed to preserve the integrity, design, and design discharge capacity of the channels. Please describe a funding mechanism that would serve to support activities of the Maintenance District for the life of the project.
76. Channel Maintenance Program. Please provide a draft Channel Maintenance Program that would eventually be adopted by the Maintenance District as the guidelines for routine maintenance activities, as well as Capital Improvement Projects and emergency repairs. The Channel Maintenance Program should include at least the following elements:
  - a. Purpose and Objectives. Include a discussion of the main goals of the Channel Maintenance Program (for example, maintenance of the diversion channel to meet its original design to provide flood protection, support mitigation, protect

wildlife habitat and provide a wildlife movement corridor, and maintain groundwater recharge).

- b. Guidelines for Maintenance. Define standards for acceptable conditions and action triggers for: sediment removal, vegetation/weed management, debris collection, blockage removal, fence repairs, and access road maintenance. Discuss bank protection and grade control structure repairs that might be needed to repair eroding banks, incising toes, scoured channel beds, as well as preventative erosion protection. At a minimum the District would need to implement instream repairs or management actions when the problem (1) causes or could cause significant damage to the project, adjacent property, or the structural elements of the diversion channel, (2) is a public safety concern, (3) negatively affects groundwater recharge, or (4) negatively affects adjacent plant communities or poses a hazard to wildlife. Include a discussion of Routine Channel Maintenance - trash removal and associated debris to maintain channel design capacity; repair and installation of fences, weed management, gates and signs; grading and other repairs to restore the original contour of access roads and levees (if applicable); and removal of flow obstructions at BSEP storm drain outfalls. Describe how capital improvement projects and emergency repairs would be funded and implemented.
  - c. Reporting. Provide a monitoring and reporting schedule and an outline for annual reports to be submitted to the Compliance Project Manager.
77. Revegetation Plan for Re-Routed Channels. If revegetation of the channels is proposed as mitigation for impacts to the project area's vegetated ephemeral drainages, please provide a draft Revegetation Plan for the re-routed channels that include at least the following elements<sup>1</sup>:
  78. Overall Goal: Explicitly state the overarching goal of the revegetation plan, which should include at least replicating the hydrological and biological functions and values of the impacted desert washes.
  79. Existing Functions and Values. Describe the existing functions and values of the drainages that are being replaced by the engineered channels. Include a discussion of the characteristic soils (biological soil crust, permeability), sediment transport and other geomorphic processes, microtopography (microcatchments for moisture, seeds), vegetation (zonation, composition, cover density, dominants in each stratum, rare or uncommon species or communities, non-native component), and wildlife habitat and values (connectivity and corridors, rare species, habitat elements).
  80. Reference Reach. Select one or several reference reach(es) of the existing channels that would provide a target for mitigation design and success criteria,

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<sup>1</sup> Refer to the California Department of Conservation's *Rehabilitation of Disturbed Lands in California: A Manual for Decision-Making* (Newton & Claasen 2003) @ <http://www.consrv.ca.gov/omr/reclamation/Pages/index.aspx> for additional guidance on development of a revegetation plan.

and provide photos and a hard-copy and GIS [shape files & metadata] map of the reference reach(es). Provide a detailed description of the reference reach and how the features of the reach(es) relate to the success criteria for the mitigation design and goals. Include a rationale for selection for the reference reach(es).

81. Proposed Mitigation Design. Describe the mitigation goals and target functions/values (hydrologic, geomorphic, water quality, habitat function/value) of the revegetation plan and a rationale for these goals and targets. Include a discussion of compensation ratios, indicating the ratio(s) of acreage of impacted vegetated wash to the recreated acreage, long-term goal(s) for target habitat to be created at the site 10, 20, and 30 years following implementation.
82. Success Criteria. Provide a table of success criteria and quantitative parameters to measure successful achievement of these criteria. The criteria should address each major aspect of the project, including replication of natural hydrological and geomorphological processes and establishment of appropriate vegetation and wildlife habitat values.
83. Monitoring Methods. Describe proposed methodology for measuring progress toward success criteria and a rationale as to each method has been chosen to evaluate progress in relation to each success criterion. Describe sampling methods used and include size of sample units and number of samples.
84. Monitoring Schedule. Monitoring should be tied to the appropriate spring growing season, with the “first year” of monitoring occurring one full growing season following completion of installation. Given the slow pace of revegetation in desert ecosystems, a monitoring period of 10-years is appropriate. In addition to quantitative methods, ground and/or aerial photos can be used to illustrate year-to-year progress of the overall project.
85. Implementation Plan. Describe equipment, procedures, access paths, and any measures used to avoid sensitive areas outside of the grading plan during revegetation. Of particular important is topsoil storage and disposition. The implementation plan should include a description of how the top layer (top 1 inch) of soil will be salvaged from the existing washes, stockpiled and maintained to sustain viability, and how these soils will be applied during revegetation efforts. Indicate storage location of topsoil, area required for storage, duration of intended storage, and ultimate disposition of topsoil material in the engineered channels. Discuss how the area available for revegetation in the channel bottom would integrate with the channel slope protection and erosion control and any opportunities for bioengineering.
86. Weed Control. Describe method(s) to be used to remove noxious plants from the mitigation site during the course of revegetation and monitoring, and specific triggers for when weed control is required.
87. Planting/Seeding. Provide a table of species to be planted and indicate geographic source of plants (of local origin), type of propagules to be used, and season in which seeding/planting/transplanting is to be done. Include size and

quantity of propagules and/or intended spacing. For transplant propagules describe method, location of harvest site, and duration of storage, if applicable

88. Irrigation. Revegetation projects should be hydrologically self-sustaining, and may need irrigation only in the early years of a project is to give new vegetation a head start at becoming established. If irrigation is proposed, describe recommended irrigation methods, including estimated frequency, and indicate month(s) in which it is to occur. Also indicate water source(s) for irrigation.
89. Implementation Schedule. Provide a schedule showing intended timing (by month) of site preparation, any seed/topsoil storage, seed/topsoil application, and plantings.
90. Maintenance and Monitoring. Describe planned maintenance activities (e.g. inspection of irrigation system, inspection of water structure(s), erosion control, weeding, etc.). Identify any pest species (plant and/or animal) that might cause problems on the site, and provide a control plan for these species if appropriate. Indicate the critical threshold of disturbance that will trigger the implementation of control methods. Provide a table showing proposed schedule of frequency of maintenance inspections over the life of the project.
91. Monitoring Reports. Monitoring reports to the Compliance Project Manager are typically due January 31st of each year. Describe the overall content and purpose of the annual reports.
92. Contingency Measures. If an annual performance goal is not met for all or any portion of the mitigation project in any year, or if the final success criteria are not met, describe how the failure will be remedied. Include a process for analysis of the cause(s) of failure and propose remedial action for CPM and agency approval. Remedial actions might include replanting, weed or herbivore control. Provide a funding mechanism to pay for planning, implementation, and monitoring of any contingency procedures that may be required and present all necessary assurances that the funds will remain available until success criteria have been achieved.
93. Long-Term Management. Integrate long-term management (weed/vegetation management, preventing wildlife entrapment hazards) with the Channel Maintenance Program described above so that when revegetation success criteria are fulfilled the responsibility for channel and vegetation maintenance will be transferred to the Maintenance District.

### **BACKGROUND: Evaporation Ponds**

The proposed project includes evaporation ponds that would collect blowdown water from the cooling towers. The evaporation ponds would make up a total combined area of 24 acres for each 125 MW unit (48 acres of pond for both 125 MW units). Page 5.3-28 of the AFC notes that evaporation ponds can contain high levels of trace elements such as selenium or arsenic that can cause death and deformity in birds. Staff is also concerned about hypersaline conditions at the ponds and potential harm to resident or migratory birds that rest, drink or forage there. In addition, creation of a new water

source to an area where water is scarce could attract ravens to the project area, potentially increasing predation rates on juvenile desert tortoise and fringe-toed lizards in adjacent habitat. The mitigation proposed in BIO-27 of the AFC calls for annually and semi-annually monitoring of the ponds for elements such as selenium, and notes that if harmful constituents appear in toxic levels, a mitigation and monitoring plan may be implemented.

Staff needs more details on the proposed monitoring and mitigation to determine if this mitigation measure will adequately address potential impacts to migratory birds. Staff also needs to understand if other technologies are available for power plant cooling that would avoid the need for evaporation ponds, and if so why these technologies were not included as possible alternatives.

## **DATA REQUESTS**

94. Mitigation and Monitoring Plan for Evaporation Ponds. Please provide a more detailed mitigation and monitoring plan for the evaporation ponds, including a discussion of the frequency and nature of the monitoring, the elements that will be monitored (e.g., sodium, selenium), resident and migratory species that could be at risk, remedial actions that could be taken if the ponds became a hazard for wildlife, and the events that might trigger implementation of those remedial actions.
95. Design of Evaporation Ponds. Please discuss how the evaporation ponds could be designed, built and operated to discourage wildlife use.
96. Alternatives to Evaporation Ponds. Please provide a detailed discussion of all available alternative technologies that could provide power plant cooling without the creation of evaporation ponds, and why these technologies were not included as part of the proposed project.

## **BACKGROUND: Decommissioning of Rerouted Channels**

Section 3.9 of the AFC, Facility Closure, does not specify whether the three engineered channels would be removed or maintained in perpetuity. Staff needs information regarding the eventual fate of these channels to develop appropriate conditions of certification. If the channels will be removed or filled during decommissioning of the facility, the site would need to be restored to preexisting hydrology. Filling these re-created drainages at the end of the project could have significant impacts to sensitive biological resources, possibly including impacts to listed species. Furthermore, restoring the original topography of the existing desert washes is only the first step in restoring the functions and values of those drainages. A substantial revegetation effort would need to be implemented and sustained for five to ten years to ensure recruitment of native vegetation in the newly graded channels and to prevent dominance by noxious weeds. Staff needs more information about plans for decommissioning of the washes and creation of new channels to provide an impact assessment and develop appropriate conditions of certification and establish a funding mechanism to implement those conditions at the end of the project.

## DATA REQUEST

97. Conceptual Restoration Plan After Decommissioning. Please provide a conceptual decommissioning plan that addresses the fate of the engineered channels. If these channels will be filled, please provide a conceptual plan for filling the re-created channels and restoring drainages on the project site, including a description of a revegetation plan for restoring the function and values of the ephemeral drainages. Please include a cost estimate, adjusted for inflation, for implementing the closure, including the revegetation component of the closure activities for the drainages, and provide a conceptual plan and funding mechanism for monitoring and maintenance of the ephemeral drainages until existing functions are reestablished.

### BACKGROUND: Special-Status Plants

According to the list of plant species observed (Appendix A, Biological Resources Technical Report), two California Native Plant Society (CNPS) List 4 plants were observed in the project area but are not addressed in the report text or depicted in the figures of special-status plants detected in the project area: **Utah cynanchum** (*Cynanchum utahense*) and **ribbed cryptantha** (*Cryptantha costata*). Another CNPS List 4 plant was found in the project area and is both discussed in the narrative and depicted on the maps of sensitive plants observed. Consequently, we believe this omission may be an oversight. In the case of the *Cynanchum utahense*, an occurrence in the project area would represent a range extension for the species (it is a Mojavean species not currently known from the Sonoran Desert region). The *Cynanchum* could easily be confused with the common Asclepiadaceae: climbing milkweed (*Sarcostemma cynanchoides*), which also has a twining habit.

Additionally, the Appendix A species list includes an unidentified *Mentzelia* (*Mentzelia* sp.). **Argus blazing star** (*Mentzelia puberula*) is a new addition to the CNPS Inventory (as a List 2.2) and to the new *Jepson Manual* ([ucjeps.berkeley.edu/new\\_era.html](http://ucjeps.berkeley.edu/new_era.html)). The new taxon was split off from *M. oreophila*; southeastern morphs of *M. oreophila* going to *M. puberula* in the new *Jepson Manual*. *M. puberula* also extends into western Arizona, and blooms March to May.

Impacts to CNPS List 4 (Watch List) plants may be considered significant under CEQA if they occur at the periphery of a species' range, exhibit any unusual morphology, or occur in atypical habitats or substrates. Staff therefore needs this information about the CNPS List 4 plant species detected during the surveys. Staff also needs the GIS and shape files and metadata for all special-status plant species detected during the surveys.

### DATA REQUESTS

98. Identification of Utah Cynanchum and Ribbed Cryptantha. Please confirm the identification of the reported occurrence of Utah Cynanchum, and describe the characteristics of Utah Cynanchum and Ribbed Cryptantha in the project area.
99. Description and Map of Utah Cynanchum and Ribbed Cryptantha. Please provide a discussion of the location of the reported occurrences of Utah Cynanchum and Ribbed Cryptantha in relation to the range of this species, whether individuals

within these occurrences exhibit any unusual morphology, or if they occur in atypical habitats or substrates.

- d. Include an estimate of the number of plants observed and describe their location/distribution in the project area.
  - e. Depict the approximate occurrence boundaries on an aerial photo at a scale and level of detail similar to that submitted in the Data Adequacy Supplement, Figure 5.3-6.
100. Characteristics of *Mentzelia*. Please describe the characteristics of the unidentified *Mentzelia* and its location in the project area, and discuss whether it exhibited any of the morphological features of *M. puberula* or *M. oreophila*.
- a. If the unidentified *Mentzelia* does resemble the new rare taxon, discuss the location of these occurrences in relation to the range of this species.
  - b. Include an assessment of project impacts to this taxon in an eco-geographical context.
101. Shape Files/Metadata for Special-Status Plant Occurrences. Please provide the GIS shape files and metadata for special-status plants found in the project area.

### **BACKGROUND: Additional Special-Status Plant Species**

Table 2 of the Biological Resources Technical Report, the target list of special-status plants upon which surveys were based, omits some special-status plant species. The following species staff considers might potentially occur in the project area based on information by regional botanical experts at UC Riverside, Joshua Tree National Park, and the Sweeney Granite Mountains Desert Research Center, and/or CNDDDB (including unprocessed reports):

#### CNPS List 2 Plants:

**angel trumpets** (*Acleisanthes longiflora*), extremely rare species in California;

**bitter hymenoxys** (*Hymenoxys odorata*)

**lobed ground cherry** (*Physalis lobata*)

**small-flowered androstephium** (*Androstephium breviflorum*)

**Argus blazing star** (*Mentzelia puberula*) (new addition to the CNPS Inventory and new *Jepson Manual*, split off from *M. oreophila*)

#### CNPS List 4 Plants:

**pink velvet mallow** (*Horsfordia alata*)

**desert portulaca** (*Portulaca hamiloides*) (*Condalia globosa* var. *pubescens*) (*Cryptantha holoptera*)

### **DATA REQUESTS**

102. CNPS List 2 Species.
- a. Please provide a detailed discussion of the potential of these CNPS List 2 species to occur in the project area, based on the presence or absence of

general conditions required by these species and provide information on the location and status of the nearest known occurrences from the sources listed above (UC Riverside (UCR), Joshua Tree National Park, and the Sweeney Granite Mountains Desert Research Center), as well as CNPS and the Consortium of California Herbaria.

- b. Provide a map showing the location of suitable habitat (if present in the project area) on an aerial photo at a scale similar to that submitted in the Data Adequacy Supplement, Figure 5.3-6.

103. Surveys for CNPS List 2 Species.

- a. If potentially suitable habitat is present to support the rare plant taxa listed above, please re-survey areas within the project footprint focusing on suitable habitat under appropriate environmental conditions (following a rainfall event of 12- to 18-mm rain or more) or provide an explanation as to why these surveys could not be conducted.
- b. These species should also be included on the list of species targeted during surveys of the transmission line spur roads and any other areas not surveyed during the spring 2009 surveys.
- c. If found, provide a description of the survey results, including the CNDDDB field survey forms and GIS shape files and metadata for any found occurrences.

**BACKGROUND: Late Season Plant Surveys**

The project area occurs in a region known for a bi-modal pattern of precipitation. "On average, August receives the most rainfall, although rainfall is also received in the winter months of December, January, and February (WRCC 2008)". Correspondingly, this region supports ephemeral annuals and perennials including rare taxa that have evolved in response and may only be detected within a month or two following these summer-fall rain events; the standard spring survey alone may not be adequate for detecting such rare plants, according to local and regional botanical experts (A. Sanders and J. Andre, pers. comm.). These experts have concluded that significant findings may be missed if surveys are only conducted within the mid-March through mid-April window, and that a full inventory at multiple temporal windows when conditions are appropriate (e.g., after a minimum 12- to 18-mm rain event) needs to be conducted for a complete floristic survey. This guidance is consistent with directions in the Energy Commission's Recommended Biological Resources Field Survey Guidelines for Large Solar Projects (2008) which specifies that botanical surveys be conducted in accordance with CDFG and CNPS guidelines. CDFG (2000) guidelines for botanical surveys specify that surveys should be conducted at the proper time of year when rare, threatened, or endangered species are both evident and identifiable. Botanical survey guidelines from USFWS (2000) add that, "Multiple site visits during a field season may be necessary to make observations during the appropriate phenological stage of all target species."

A number of summer and fall-flowering rare plants are known to occur in this region, and many more have potential to be present. Rare plant taxa with potential to occur in the project area but may not be detected during a spring survey (according to regional botanical experts consulted) include:

- Adam's spurge (*Chamaesyce abramsiana*)
- Glandular ditaxis (*Ditaxis claryana*)
- Angel trumpets (*Acleisanthes longiflora*): Aug-Oct is the optimum survey time for this extremely rare species in California
- Pink velvet mallow (*Horsfordia alata*)
- Lobed ground cherry (*Physalis lobata*)
- Desert portulaca (*Portulaca hamiloides*)
- Flat-seeded spurge (*Chamaesyce platysperma*)

## DATA REQUESTS

104. Assess Habitat Potential for Late Season Rare Plants. Please provide a detailed discussion of the potential of these species to occur in the project area, based on the presence or absence of general and micro-habitat conditions required by these species
105. Map of Suitable Habitat. If suitable habitat is present onsite for these late season sensitive plants, please provide a map showing the location of suitable habitat in the project area on an aerial photo at a scale and level of detail similar to that submitted in the Data Adequacy Supplement, Figure 5.3-6.
106. Assess Significance of Occurrences. Please provide an assessment of the ecological significance of an occurrence (if present) relative to its distribution within California.
107. Include a table that itemizes the area of suitable habitat within the project area and provide an analysis of the extent and distribution of suitable general habitat and microhabitat within the cumulative effects study area, taking into account ownership and management of the habitat as well as all reasonably foreseeable projects that could eliminate the plants and/or their habitat.
108. Provide a map or discussion of the reported/documented occurrences within the NECO planning area.
109. Rainfall Data. Please provide any available 2008/2009 rainfall data from a source as close as possible to the project site.

## BACKGROUND: Coachella Valley Milkvetch

This federal endangered and BLM sensitive species, Coachella Valley milkvetch, is mentioned only briefly in Table 5.3-1 with the notation that its presence was "*Highly unlikely; no known nearby populations (population in Chuckwalla Valley misidentified)/ Not Observed.*" The discussion of botanical survey methods on page 20 of Appendix C describes visits to local reference populations for the target special status plant species so that surveyors can become familiar with the species and microhabitat preferences and to establish a search image, and states that: "*Reference populations were verified*

for the following plant species: *California ditaxis* (*Ditaxis serrata* var. *californicus*), desert unicorn plant (*Proboscidea althaeifolia*, seed pod only), foxtail cactus (*Coryphantha alversonii*), and Harwood's milkvetch (*Astragalus insularis* var. *harwoodii*). A known population of dwarf germander (*Teucrium cubense depressum*) was sought, but no plants could be found. These visits also assisted in determining if the species had germinated and would be present at the time of surveys." No mention is made of a reference site visit for Coachella Valley milkvetch.

Staff's research, including consultation with regional botanists (A. Sanders, J. Andre, T. LaDoux, D. Silverman pers. comm.), indicate that there are valid vouchered specimens of Coachella Valley milkvetch in the the Chuckwalla Valley area, however, vouchered specimens are available in that area for both the common taxon (*A. l. variabilis*) and the federal listed taxon (*A. l. coachellae*). One specimen collected by a consultant made a preliminary identification of the listed taxon but later determined it to be the common *A. l. variabilis*; however, UCR also has three correctly identified collections of Coachella Valley milkvetch from the Desert Center area (Dice 980324-2; Dice 980324-3; and Sears 1173). Full data for these collections can be viewed on the Consortium of California Herbaria database: <http://ucjeps.berkeley.edu/consortium/>.

Staff does not find sufficient information in the AFC or in Appendix C to support the conclusion that Coachella Valley milkvetch is highly unlikely to occur in the vicinity of the project, and needs more details on the conduct of the botanical surveys to assess whether an adequate effort was made to find this species.

## DATA REQUESTS

110. Description of Surveys for Coachella Valley Milkvetch. Please provide information about the level of survey effort directed toward finding Coachella Valley milkvetch and other special-status plant species, including dates and person-hours spent conducting special-status plant surveys.
111. Survey Effort/Microhabitat for Coachella Valley Milkvetch. Please address whether suitable microhabitat is present onsite to support Coachella Valley milkvetch.
112. Provide a map depicting the approximate boundaries of the habitat on an aerial photo at a scale and level of detail similar to that submitted in the Data Adequacy Supplement. Please provide additional information about the level of survey effort (number of person hours for surveys) applied to detecting this species, and describe the results of a reference site visit for Coachella Valley milkvetch.

## BACKGROUND: Wiggins' Cholla

A number of Wiggins' cholla were observed and mapped within the proposed solar fields. The AFC states that the Wiggins cholla could not be positively identified, and that the taxon is believed to be a hybrid between two common species: pencil cholla and silver cholla. The occurrences are depicted in figure 5.3-6 of the AFC as "*Wiggins cholla [possible]*".

The treatment of Wiggins' cholla in the Flora of North America (Flora of North America Editorial Committee 2003) states: "*A dwarf form, with narrow terminal stem segments*

*bearing few spines per areole, and one spine longer than the others, occurs on the very arid flats along the lower Colorado River in California and Arizona and has been recognized as *Opuntia wigginsii* L. D. Benson; however, numerous intermediate to more robust forms make recognition of the dwarf form untenable. Although exceptions occur, plants to the north and west in the range tend to be more spiny and to bear yellow to yellow-green flowers.”*

In a consultation with UC Riverside botanist Andrew Sanders, staff understood that the Wiggins’ cholla are very scarce hybrids between those two parent species and that there are no reproducing populations. If many were believed to have been found in the project area, it is likely that one of the two parent species were mapped as the rare hybrid. It is unclear whether the plants identified in the project area exhibited any clear morphological distinction from the common taxa in the area, or were intermediate in form, or whether the surveyors simply mapped a minor variant of one of the two parent species in the project area as “[possible] Wiggins cholla”.

To adequately assess the significance of impacts to Wiggins’ cholla and whether mitigation may or may not be warranted, staff needs additional information about the characteristics of the plants mapped in the project area as “Wiggins Cholla [possible]”, e.g., whether or not they exhibited any morphology distinct from the common species in the area or if all *Cylindropuntia* were mapped without any attempt at separation.

## **DATA REQUEST**

### 113. Wiggins’ Cholla Identification.

- a. Please provide a vouchered specimen or photographs of the plants mapped in the area as Wiggins’ cholla to UC Riverside botanist Andrew Sanders and to the author of the Cactaceae treatment in the new Jepson Manual (or other recognized cactus expert) for determination.
- b. Provide documentation of the results of the investigation, including a record of conversations.

## **BACKGROUND: Impact Assessment/Mitigation, Special-Status Plants**

The analysis of impacts to special-status plants, in Section 5.3 of the AFC, Biological Resources (page 5.3-26) states “*Permanent impacts to Wiggins’ cholla and Harwood’s milkvetch would result from the development of the solar facility; and permanent impacts to Harwood’s milkvetch and desert unicorn plant would result from development of the linear facilities (Figure 5.3-6). Where Harwood’s milkvetch and desert unicorn plant overlap the natural gas pipeline, impacts to individual plants would be direct and permanent, although these areas would be backfilled and allowed to re-vegetate after construction. With the implementation of the avoidance and mitigation measures (e.g., BIO-14) outlined in Section 5.3.8, permanent effects to these species would not result in significant effects.*”

The mitigation measure BIO-14 of the AFC (pg 5.3-33) states: “*All temporary and permanent impact areas will be surveyed for sensitive species within 30 days prior to commencement of construction activities in the survey area. Rare plant species and special status wildlife species habitat will be identified and flagged for avoidance.*”

The conclusion that impacts to special-status plant species would be less than significant rests on the avoidance measure described in BIO-14, yet many of the impacts to these plants are apparently unavoidable because they occur within the footprint of the solar fields. Figure 5.3-6 of the AFC, the map of special-status plants observed during field surveys, indicates that Wiggins' cholla occur throughout the western half of the project area, Harwood's milkvetch are generally confined to a small area along the proposed access road, and desert unicorn occur sporadically along the road alignment and solar field. While staff recognizes the intent of BIO-14 to avoid rare plants, there appears to be an inconsistency between the statement about permanent direct impacts in the impact section, and a mitigation measure for avoidance in the mitigation section.

Staff needs more information about the impacts of the project to special-status plants, with a clear description of which plant occurrences would be unavoidably directly impacted by the project, which would be potentially indirectly impacted, and which could be protected during construction. More information is needed about project impacts to Wiggins' cholla, Harwood's milkvetch and desert unicorn plant in relation to the known range and distribution of these species so that staff can assess the potential significance of the impacts. Additional detail beyond that provided in BIO-14 are needed on proposed avoidance, minimization and compensation measures to adequately avoid, minimize and compensate for impacts to these special-status plants. The proposed mitigation needs to be consistent with the management and mitigation prescriptions for special status species described in the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan, as described in the NECO Record of Decision and NECO plan pages 2-18 through 56 and Appendix D.

## **DATA REQUESTS**

114. Please identify the number and location of occurrences for each special-status plant species that could be directly and indirectly impacted by the project.
115. Please provide a discussion of the significance of the project occurrences relative to their distribution within California and address the potential cumulative effects of other past, present, and foreseeable future projects on the species or taxon in the NECO planning area.
116. Please also indicate whether the special-status plants found occur on an atypical substrate or habitat or exhibit any unusual morphology. The sources of information should include records from the California Natural Diversity Database (CNDDDB), NatureServe, CNPS, and the Consortium of California Herbaria data.
117. Indirect Impacts to Special-Status Plant Species. Please provide a more detailed and species-specific discussion of potential indirect impacts to special-status plant occurrences, including an analysis of effects from potential project related impacts such as spread of noxious weeds, herbicide or soil-stabilizer drift, changes in vegetation management practices (for example, vegetation clearing for fuel reduction or weed control), sedimentation, fire, and alterations of the site hydrology.

118. Special-Status Plant Avoidance/Mitigation Plan. Please prepare a draft Special-Status Plant Avoidance and Mitigation Plan for species potentially impacted by the project that includes a description of impact avoidance and minimization measures. Please provide detailed specifications for avoiding/minimizing construction and operations impacts to preserved plants within 250 feet of project linear facilities and site boundaries. These specifications might include: designating Environmentally Sensitive Areas (ESAs) during construction; management guidelines to prevent the spread of noxious weeds; protecting preserved plants from herbicide or soil-stabilizer drift, construction and operation dust, sedimentation, fire, and alteration of the site hydrology; and ensuring permanence through fencing where necessary to protect from accidental harm and signage. For any potentially significant impacts to special-status plants that cannot be avoided or minimized by the measures described above, please also describe and quantify the remaining impacts and investigate opportunities for off-site mitigation through any of the following, listed in order of priority:
- a. Off-site Compensation through Restoration. Provide an assessment of restoring degraded special-status plant populations on or off-site (for example, by controlling unauthorized vehicle use, noxious management).
  - b. Off-site Compensation through Acquisition/Protection. Provide an assessment of the feasibility of compensating for unavoidable impacts through acquisition and protection of other populations and watershed lands important to the ecological health of populations of these special-status plants. To provide adequate compensatory mitigation the ratio of acquisition to loss would likely need to exceed 1:1 and would also need to include deed restrictions and a management plan to ensure the long-term viability of the population.
  - c. Off-site Compensation through Transplanting or Propagating and Planting. These measures are choices of last resort if mitigation methods listed above are infeasible or insufficient to reduce impacts to less-than-significant levels. Transplanting or replacement planting are untested and generally unsuccessful, and thus cannot be used as a substitute for avoidance and minimization measures to reduce the project impacts to a level less than significant. Considerable advance planning is typically required for transplantation or replacement plants; a minimum 9-12 months lead time is often needed for seed collection/salvage before the start of construction. If there is evidence that transplantation or replacement plantings might be a successful mitigation method, please provide a detailed transplantation or replacement planting plan.

#### **BACKGROUND: Mitigation, Cacti and Native Trees**

The analysis of impacts to 'Cacti and Trees' (page 5.3-26 of Section 5.3 of the AFC, Biological Resources) states "*Two cacti species (beavertail cholla and Wiggins' cholla) and three tree species (palo verde, cat-claw acacia, and ironwood) were identified within the Project area. Higher concentrations of ironwood were observed in the northern portion of the Project area. With the implementation of the avoidance and*

*mitigation measures outlined in Section 5.3.8 (e.g., BIO-3), permanent effects to these cactus and tree species would be reduced to a level of insignificance.”*

Figure 5.3-6 of the AFC, the map of special-status plants observed during field surveys, indicates that Wiggins’ cholla (CNPS List 3) occurs throughout the western half of the project area, but other cacti and tree species identified in the California Desert Native Plants Act were not specifically mapped but were sampled to provide an estimate of quantities and densities (Figure 6 of the Biological Technical Resources Report).

The mitigation measure BIO-3 of the AFC (page 5.3-30) states: “*Construction crews and contractors will be responsible for working around all shrubs and trees within the construction zone to the extent feasible. Shrubs and trees will be flagged during pre-construction surveys to indicate priority for avoidance*”.

The conclusion that impacts to cacti and trees would be less than significant rests on the avoidance measure described in BIO-3, yet many of the impacts to shrubs and trees are unavoidable because they occur within the footprint of the solar fields. Furthermore, BIO-3 lacks sufficient detail for reasonable assurance of implementation or enforcement. For example, the priorities for avoidance are unclear, and no process is proposed for making decisions on protection.

#### **DATA REQUEST**

119. Cacti/Tree Avoidance. Please provide a detailed cacti and tree avoidance plan that clarifies the issues described above, including identifying which species are priorities for avoidance, and any areas that could be sustainably avoided during the life of the project.

#### **BACKGROUND: Creosote Rings**

Certain common California desert plants are protected under the California Desert Native Plants Act and include certain cacti, succulents, and any creosote bush rings (“creosote rings”) greater than 10-feet in diameter. Staff understands that the site has a high level of historic disturbance but finds no discussion of creosote rings in the AFC or appendices, and needs to know if surveys were conducted for these features or at least an analysis made from high resolution aerial photography.

#### **DATA REQUEST**

120. Creosote Rings. Please discuss whether surveys were conducted or remote imagery analysis (of high resolution aeriels) or review for possible creosote bush rings in the project survey area, and if so, the results of the surveys including a map depicting the locations of creosote rings. If no such analysis was made, please explain why.

#### **BACKGROUND: Weed Management**

Weed management is only briefly addressed in the impact and mitigation section of the AFC, on page 5.3-51, in BIO-12, as an issue to be addressed in BIO-1, the proposed mitigation monitoring plan. Invasive species richness and diversity is strongly correlated with disturbance and roads, as increased fire risk is also correlated to roads. Page 5.3-16 of the AFC describes Saharan mustard—a troubling and highly invasive species

targeted by many weed management agencies and public-private coalitions, and a species that directly degrades habitat for listed species—as occurring throughout the project area; and thus the potential for spread into adjacent uninfested areas during construction and operation is high.

Staff needs considerably more detail than the one-paragraph discussion in the survey results section (page 5.3-16) and deferral of the mitigation as an issue to be included in the project's proposed mitigation monitoring plan. Construction and operation of the project will require a detailed Weed Management Plan to minimize the risk of introduction and spread of noxious weeds associated with ground-disturbing activities and activities that alter vegetation. The plan should be consistent with the BLM's (Manual 9015) Integrated Weed Management (1992), available on the BLM website: <http://www.blm.gov/ca/st/en/prog/weeds/9015.html> and with the guidelines described below. The Weed Management Plan should address California Department of Food and Agricultural (CDFA) "A" and "B" rated weeds, BLM "A" and "B" ranked weeds, and Californian Invasive Plan Council (Cal-IPC) "High" and "Moderate" ranked weeds (CDFA weeds sorted by pest ratings is available at: [http://www.cdfa.ca.gov/phpps/ipc/weedinfo/winfo\\_list-pestrating.htm](http://www.cdfa.ca.gov/phpps/ipc/weedinfo/winfo_list-pestrating.htm) and definitions of the ranks at: [http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/winfo\\_weedratings.htm](http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/winfo_weedratings.htm)

## DATA REQUESTS

121. Weed Management Plan. Please prepare and provide a Weed Management Plan that includes at least the following elements:

a. Plan Goals and Objectives. Define the goals of the Weed Management Plan. At a minimum, the Weed Management Plan should include a goal that the plan will protect the biological resources surrounding the project from the harmful effects of weeds and potential unintended harm from weed management techniques, and will be consistent with all applicable LORS. Identify specific weed management objectives (eradication, suppression, or containment) for each non-native plant species that could potentially threaten the areas affected by the project.

b. Noxious Weed Inventory/Baseline Conditions. Please describe the baseline conditions (weeds found, vectors, population densities, etc.) and provide a map showing concentrations of the noxious weeds and other invasive non-native plants described in the AFC, as well as all project features, areas where soil disturbance will occur, and roads used by the project during construction, operation, and closure. For weeds too widespread to map, depict their approximate distribution and include specifications for a detailed baseline mapping at a future date as part of the Plan implementation.

c. Define and Map the Weed Management Area. – Identify the areas that will be included as part of the Weed Management Area, which should include at least project facilities, linear facilities and a buffer area 100 feet out from the boundary of these features; and access roads and a buffer 25 feet out from both sides of the roads. A GIS-based map of the project area should be included to clearly define these buffer zones and facilities as part of the Weed Management Area.

d. Weed Risk Assessment. – Consistent with BLM guidelines for weed management, conduct a weed risk assessment for each component of the Project construction, operation, and closure that involves soil disturbing activities or altering vegetation; the stepwise risk assessment is available online at: <http://www.blm.gov/ca/st/en/prog/weeds/9015.html>.

e. Monitoring and Survey Methods. Describe survey and monitoring methods that will be used during construction and operation to ensure timely detection and prompt eradication of weed infestations. Describe how locations of noxious weed occurrences and other data (detection date, growth stage, infestation extent, treatments implemented, results of treatment, and current status) will be mapped and maintained during the construction and operation phases.

f. Weed Management. Describe measures that will be employed during construction, operations, and site closure to prevent the establishment of new weed species, eliminate small, rapidly-growing infestations, prevent large infestations from expanding, and reduce or eliminate large infestations. Include implementation schedules, monitoring reporting requirements, budgets, and responsible parties. Include the following elements: Prevention & Exclusion; Early Detection & Rapid Response; Eradication & Management; Restoration (of treated sites); Employee Education & Training; Funding & Resources; Enforcement & Compliance. Please refer to BLM's Weed Prevention and Management Guidelines online: <http://www.blm.gov/ca/st/en/prog/weeds/weedprevent.html>

g. Reporting Requirements. Describe the proposed content of construction-phase monitoring reports and longer term weed control progress reports. Reporting during construction should include weekly summary reports describing observations and activities relevant to noxious weeds management, and a compilation and analysis of this information into quarterly reports. Upon completion of construction a report should be prepared describing the overall results of noxious weed management and current weed status at the project site. Thereafter annual monitoring reports should be produced for the duration of the monitoring period. The annual reports should include information on noxious weed surveys and management activities for the year, a discussion of whether the weed management goals for the year were met, and recommendations for weed management activities in the upcoming year.

h. Attachments/Other Information. If the following elements were not included in the body of the report they could be included as attachments to the Weed Management Plan: detailed maps (see map guidelines, above); herbicide use protocols and sample record forms; sample monitoring data forms; Cal-IPC and CDFG rankings and ratings and details on management strategy and control methods for each observed and potentially occurring noxious weed on the project site; species -specific goals and objectives (measurable, with time frame); and methods for evaluation of success in achieving weed control goals.

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**Personal Communications:**

**Andre, Jim.** Granite Mountain Research Center. Phone and electronic communications with Carolyn Chainey-Davis, Energy Commission, September and October 2009.

**LaDoux, Tasha.** Botanist, Joshua Tree National Park. Electronic communications with Carolyn Chainey-Davis, Energy Commission, October 2009.

**Sanders, Andrew.** University of California, Riverside. Phone and electronic communications with Carolyn Chainey-Davis, Energy Commission, September and October 2009.

**Silverman, David.** Botanist, Xeric Specialties Consulting, Ridgecrest, CA. Electronic communications and field review with Carolyn Chainey-Davis, Energy Commission, October 2009.

**Technical Area: Geology and Paleontology**  
**Author: Michael S. Lindholm, P.G.**

## **BACKGROUND**

Section 5.17, Paleontological Resources, of the AFC, states that “a Stratigraphic inventory and paleontological resource inventory were completed to develop a baseline paleontological resource inventory of the Project [Genesis Solar Energy Project] site and surrounding area by rock unit, and assess the potential paleontological productivity of each rock unit”. These investigations include literature and records searches by applicable museums and field surveys of the project site and surrounding area. The reports provide an independent assessment of paleontological sensitivity of geological units and the potential for impacting any paleontological resources on the proposed plant site, project linears, and surrounding area. The reports are commonly included as supporting documentation in the appendix of the AFC, or made available as a confidential report when fossils have been recovered from the project site area.

## **DATA REQUEST**

122. Please provide a copy of the stratigraphic and paleontological resource inventory report that is referenced in Section 5.17, Paleontological Resources, of the AFC.

## **BACKGROUND**

Section 5.17, Paleontological Resources, of the AFC, states that several paleontological archival records searches were conducted for Genesis Solar Energy Project by the San Bernardino County Museum, the Los Angeles County Natural History Museum, the University of California Museum of Paleontology (at Berkeley), the Geology Museum at the University of California at Riverside, and the Anza Borego Museum. These reports provide an inventory of paleontological resources in the museum’s collection from the proposed plant site and project linears, as well as from geological units in the surrounding area that are present on the site. The reports commonly give independent assessments of the paleontological sensitivity of the site and geological units on the site, as well as recommended guidelines for monitoring and recovery of fossils during site construction.

## **DATA REQUEST**

123. Please provide a copy of the archival records search reports prepared by the San Bernardino County Museum, the Los Angeles County Natural History Museum, the University of California Museum of Paleontology (at Berkeley), the Geology Museum at the University of California at Riverside, and the Anza Borego Museum.

**Technical Area: Land Use**  
**Author: Negar Vahidi**

## **INTRODUCTION**

The Genesis Solar Energy Project (Project) is a solar electric generating facility (and associated linear facilities) proposed to be located on approximately 4,640 acres wholly within federally-owned lands administered by the U.S. Bureau of Land Management (BLM), and subject to the BLM's California Desert Conservation Area (CDCA) Plan.

## **BACKGROUND**

The AFC Executive Summary (Section 1.0) states (on pg. 1-3),

*...the ROW [right-of-way] application with BLM consists of 4,640 acres, with an eastern and western portion. Once constructed, the Project would permanently occupy approximately 1,800 acres within the eastern portion (the Project footprint), plus approximately 90 acres of linear facilities. The remainder of the acreage in the ROW application is not anticipated to be needed for the Project.*

## **DATA REQUEST**

124. If the Project would only occupy 1,890 acres (once constructed), please describe in detail the reasons why the applicant needs the BLM ROW Grant to include 4,460 acres.
125. Please discuss the future activities, if any, that are intended or anticipated for the western portion of the ROW grant area?

## **BACKGROUND**

AFC Section 5.7.1.1 (page 5.7-1), states,

*Aerial photographs and BLM mining claim records indicate an iron mining operation was once in operation at the northern end of the road, but the claim has since been closed and the BLM is not aware of any current activity of any type at that location (BLM, 2009a).*

## **DATA REQUEST**

126. Please clarify the name and location of the road being referred to in the statement above.

## **BACKGROUND**

AFC Section 5.7.2 (page 5.7-4), states,

*Approximately 1,800 acres of land would be converted to industrial use for the duration of the Project life. Supporting infrastructure, such as wells, roads, and support buildings, would be installed or constructed, and the land area covered with*

*solar energy collection troughs. As a result, land occupied by the Project would no longer be available for activities such as mining, other energy development facilities, or wildlife conservation. Current BLM land use policy has reduced or prohibited recreation and grazing activities within the area covered by the facility footprint...*

127. Please cite the “BLM land use policy” referred to in the statement above and the BLM planning document or policy directive document that contains this policy.

## **BACKGROUND**

Table 3.2-2 on pages 3-2 and 3-3 in Section 3.2 (Location of Facilities and Acres Disturbed), provides information on the amount of temporary disturbance for the access road and gas line rights-of-way (ROW) and the corresponding ROW widths (i.e., 50 feet). However, Table 3.2-2 and Section 3.0 do not provide information on the ROW width needed for transmission line construction, and the ROW width needed for maintenance of the proposed 230 kV “gen-tie” during Project operation.

Figure 5.7-4 illustrates the linear corridor land ownership. Based on this Figure, the proposed access road and transmission line are proposed to be wholly located within federally owned lands administered by the BLM. However, given the scale of the map and because the exact ROW width for transmission line maintenance is unclear, there is a potential for the transmission line ROW to encroach upon private parcels (given the relative proximity of the transmission line to private parcel boundaries), particularly the following parcels as shown on Figure 5.7-4:

- Parcel 818112005 (HOOD);
- Parcel 818102005 (CHEN);
- Parcel 818102004 (NELSON); and
- Parcel 818111008 (HOOD).

128. Please provide the exact ROW width needed for transmission line construction activities.

129. Please provide the exact ROW width needed for maintenance of the 230 kV “gen-tie” proposed as part of the Project.

130. Please discuss whether the constructed ROW needed for maintenance of the proposed Project transmission line (i.e., during Project operation) would be located wholly within federally owned lands administered by the BLM and outside of privately-owned parcels.

## **BACKGROUND**

In addition, according to Figure 5.7-4, the proposed Access Road traverses into what appears to be a privately-owned parcel (i.e., Parcel 818111008 (HOOD)) for approximately 0.5 mile. However, Figures 5.7-1 and 5.7-2 show the proposed Access Road would be located on BLM lands under the BLM's "Controlled" multiple use classification. There is no information provided regarding this parcel in the AFC Land Use Section (5.7).

131. Please provide the current status of Parcel 818111008 (HOOD).
132. Discuss whether this parcel is currently privately owned? If so, discuss whether the applicant intends to acquire this privately-owned parcel for purposes of the proposed Access Road.
133. Describe why the Access Road would need to be located on this parcel.
134. If the parcel is currently privately-owned, discuss the Riverside County General Plan Land Use and Zoning designations for the lands within the parcel and affected by the proposed Access Road.
135. Discuss the current on-site land use at this parcel.
136. Discuss the total ROW width of the Access Road proposed to be located on this parcel, once the project is constructed.

**Technical Area: Public Health**  
**Author: Dr. Alvin Greenberg**

## **BACKGROUND**

The AFC did not provide diesel particulate matter (DPM) emission factors for equipment and vehicles that will be used during construction activities nor was a health risk assessment prepared for diesel emissions from construction activities. While staff understands that project construction emissions are short-term and may indeed pose an insignificant risk to public health as the AFC states, staff needs to verify this by reviewing the DPM emission factors and health risk assessment for construction activities.

## **DATA REQUEST**

137. Please provide DPM emission factors from construction activities and a health risk assessment for diesel construction equipment emissions.

## **BACKGROUND**

In determining risks due to operational activities at the proposed project, the AFC did not include diesel emissions from vehicles used on-site for maintenance activities (including mirror wash trucks, trucks that apply soil stabilizer, trucks used for weed abatement activities, water trucks and other maintenance vehicles). In order to properly assess the risk posed to workers at the site and to the off-site public, this source of DPM emissions should be included in the health risk assessment.

## **DATA REQUESTS**

138. Please provide DPM emission factors for on-site solar field and equipment maintenance activities in pounds per day and tons per year. This value can be submitted as a single number estimate of total emissions from all vehicular sources used on-site.
139. Please conduct a health risk assessment for diesel emissions from vehicles involved in on-site solar field and equipment maintenance activities during plant operations.
140. Please provide a cumulative PM<sub>2.5</sub> emissions estimate on a daily and yearly basis when fugitive dust emissions are added to the DPM emissions from the above stationary and mobile sources, assuming that all DPM from diesel engines are PM<sub>2.5</sub>. As this type of emission information was also requested for Air Quality, a cross-reference response is acceptable.

## **BACKGROUND**

The potential emission of toxic thermal degradation products from the heat transfer fluid (HTF) expansion tank vents is not evaluated in the AFC. This issue has been addressed in the AFC documents submitted for three other proposed solar facilities (Solar Millennium Blythe, Palen and Ridgecrest, 09-AFC-06, 09-AFC-07 and 09-AFC-09, respectively). Benzene was identified as a thermal degradation product of HTF and

determined to account for 69-87% of total operations risks.

#### **DATA REQUESTS**

141. Please provide information specific to thermal degradation of HTF, biphenyl and diphenyl ether, and the source of that information.
142. Please provide emission factors and a health risk assessment on the emissions of toxic thermal degradation products of HTF.

**Technical Area: Soil and Water Resources**

**Author:** John Thornton, P.E., Michael Donovan, P.G., C.Hg., Michael Daly, P.E.

**BACKGROUND: Section 5.4.1.1 Climate and Precipitation**

In section 5.4.1.1 of the AFC, the report states: "Based on 60 years of data from Blythe Airport, the mean maximum temperatures in June to September exceed 100°F. Winter months are more moderate with mean maximum temperatures of high 60's to low 70's °F and minimum temperatures in the low to mid 40's °F. Although there are no average minimal temperatures below freezing point (32°F) the temperature has historically dropped below freezing point between November and March. Table 5.4-1 presents a Climate and Precipitation Summary, based on information from meteorological stations at Blythe Airport and Indio Fire Station." Staff is concerned that the information presented may not be representative of site conditions.

**DATA REQUESTS**

143. Please present a figure that indicates the position of the stations where the climate data was collected in relation to the project site.
144. The California Irrigation Management Information System (CIMIS) has stations in Ripley and near Palos Verde that are significantly closer to the site. Please provide a comparison between the Indio station and more localized stations to see if the Ripley, Palos Verde stations and or any other stations may be more representative of site conditions.

**BACKGROUND: Section 5.4.1.3 Ground Water Resources**

This section is supposed to describe the water resources in the Genesis Solar Energy Project (the Project) vicinity and discusses the Project's potential effects on water resources including groundwater. Section 5.4.1.3 is supposed to describe the groundwater resources along with developing a conceptual model of the area. However, the lack of a comprehensive discussion on geology including geologic structure of the area prevents us from reaching conclusions about water resources, as faulting may have a significant influence on groundwater movement. Moreover, information about the basin structure may suggest that faulting and/or folding may be responsible for the deep bowl shaped structure inferred by the geophysical survey conducted at the site.

In addition, the description of groundwater resources failed to identify springs, seeps, surface discharges, and playas in the area (not just the project site). There is a potential for groundwater extraction associated with water supply to impact groundwater levels and correspondingly discharges from springs, seeps, surface discharges, and playas at distances exceeding 10 miles over the life of the project.

## DATA REQUESTS

145. Please include a detailed discussion of the geology including structure, faults, and other features that may have an influence on the occurrence and movement of groundwater. Include geologic map, structural contour map and cross-sections.
146. Please provide a comprehensive assessment of springs, seeps, surface discharges, and playas in the area that may be affected by groundwater extraction at the site. The assessment should include:
  - a. identification and location of known springs, seeps, surface discharges and playas;
  - b. spring type (if known) and discharge quantity (gpm) and whether perennial or ephemeral; and,
  - c. general water quality

### **BACKGROUND: Groundwater Levels and Flow**

In section 5.4.1.3 of the AFC, the report states: "The groundwater gradient is the steepest in the western half of the basin and is nearly flat in the central portion of the basin (DWR, 1963). Near Ford Dry Lake and east of Ford Dry Lake the gradient becomes steeper as groundwater approaches the narrows in the southeast portion of the basin (Steinemann, 1989; DWR 1963)."

"Groundwater levels exceed 500 feet amsl in the western portions of the basin and fall to less than 275 feet amsl near the eastern end of the basin in the narrows between the Mule and McCoy Mountains (Steinemann, 1989). Near Palen Lake, groundwater occurs near the ground surface, resulting in groundwater discharge by evapotranspiration at the land surface. Near Ford Dry Lake, groundwater is reported at depths of 50 feet below ground surface or shallower. No maps or figures detailing contours of the groundwater surface elevation are provided even though the authors have information on depth to groundwater at several locations."

Staff did not observe any groundwater contour maps that would indicate the groundwater flow direction or whether the groundwater flow direction had changed historically based upon historical production in the Chuckwalla Valley Groundwater Basin. In addition, the AFC is unclear whether groundwater flow direction for all of the identified groundwater zones was consistent or varied due to seasonal/historical conditions.

### **DATA REQUEST**

147. Provide groundwater contour maps (scale 1 inch=5 miles) indicating the groundwater surface elevation for all identified groundwater units identified in the area of the project, including the proposed production zone.

### **BACKGROUND: Groundwater Level Trends**

In section 5.4.1.3 of the AFC, the report states: "Precipitation records from the nearest meteorological station for which long-term data were available (located near Blythe, California,) were examined to help determine if fluctuations in groundwater levels were related to climatic trends or other factors. The period of record for this meteorological station extends to 1910. The data were used to calculate the cumulative departure from average precipitation, which was plotted with the well hydrographs. An upward trend in the cumulative departure curve indicates a wetter than normal period; whereas, a downward trend indicates a drier than normal period."

Also in section 5.4.1.3 of the AFC, the report states: "A change in groundwater levels corresponds with a change in groundwater storage. Based on the groundwater level data and changes in pumpage discussed above, groundwater storage in the basin appears to have decreased somewhat in the 1980s and possibly the early 1990s, but has recovered since that time due to the curtailment of most agricultural pumping." The staff did not see an analysis of a change in storage for the basin for the time periods mentioned. This information would be useful in determining whether the changes in storage observed are consistent with the expected inflow/outflow to the basin during the same period.

Moreover, this analysis would have been necessary as part of the development of the numerical model that was reportedly prepared for the site.

### **DATA REQUESTS**

148. Please identify if production had increased or decreased within the basin and whether that could account for changes in water levels. The text should be clarified.
149. Please provide an estimate of the expected groundwater production in the area and correlate that along with precipitation to provide a better description of the ground water level trends for specific wells. The recharge analysis should follow techniques described in Hely & Peck. The computation of change in storage should be done by estimating the volume of water withdrawn from the basin, the anticipated water level decline and the actually observed water level decline during the same period.
150. Please provide calculations of the change in storage associated with the water level changes to see if the changes correlate with the expected production in the basin.

### **BACKGROUND: Groundwater Budget**

In section 5.4.1.3 of the AFC, the report states: "The reported basin hydrologic balance based on available literature and information obtained from the California State Prison Authority is summarized in Table 5.4-4, below. Additional information regarding published historical water budget information is presented in Appendix D." Staff is

concerned that the application relies on work that may be outdated and is not current with respect to more recent regional and site specific studies that may have been done in the area.

## **DATA REQUEST**

151. Provide a comprehensive evaluation of the groundwater budget for the Chuckwalla Basin. The evaluation should include an estimate of average annual precipitation over the entire basin using isohyetal maps developed for the area, recharge from creeks and washes, recharge from return flows, inflow from adjacent basins, approximation of groundwater withdrawal for agricultural, industrial and domestic use, approximation of water loss due to springs, seeps, and playa lakes, evapotranspiration losses, basin underflow, and any other gains and losses that would affect the overall basin budget.

### **BACKGROUND: Groundwater Inflow/Recharge**

In section 5.4.1.3 of the AFC, the report states: "Groundwater recharge is mainly from infiltration of runoff from the slopes of the surrounding mountains and to a lesser extent from infrequent precipitation on the valley floor and subsurface inflow from the Pinto Groundwater Basin on the northwest and from the Cadiz Valley Groundwater Basin on the north. Woodward-Clyde Consultants (WCC) (1986) reported approximately 29,530 acre-ft/yr of precipitation infiltrates into the basin and subsurface inflow from the Pinto Basin amounts to 290 acre-feet per year (acre-ft/yr)."

Staff believes that it is likely that the precipitation that permeates the soil is almost entirely retained in the upper layers of the ground and is lost later by evaporation or evapotranspiration; only a minor amount penetrates to the ground-water body below. Rantz cites Davis and DeWiest (1966) illustrating this fact concerning precipitation on the desert floor with the following example:

"For example, a soil that has a specific retention of 15 percent and is depleted of moisture to a depth of 2 feet during the summer heat will require 3.6 inches of rain merely to make up for the soil-moisture deficiency. If the rain occurs at several different times during the year, intervening periods of dry weather will cause the loss of water from the soils so that amounts much in excess of 3.6 inches will be needed to start (groundwater) recharge."

Therefore, the contribution of direct precipitation upon the valley floor of the Chuckwalla Valley Groundwater Basin would probably be considered to be negligible. It is more likely that the main recharge occurs from water infiltrating through the beds of washes and stream channels. Moreover, recent studies in an adjacent groundwater basin to the north have indicated recharge values of between 2-5% of the total precipitation. Whitt and Jonker (1998) estimated that the annual recharge from precipitation to the Joshua Tree groundwater sub-basin (located to the west) was 975 acre-feet (AF), on the basis of a percentage (2.8 to 5 percent) of the total precipitation falling on the Quail Springs watershed. Staff believes that a thorough analysis of the basin recharge needs to be conducted to understand what overall impact the project will have on the existing groundwater basin. In addition, the calibrated numerical model developed by the

applicant can be used in a steady state condition to assess basin inflows and outflows and determine what reasonable value could be attributed to groundwater recharge from precipitation.

## **DATA REQUESTS**

152. Please conduct a more thorough analysis of the groundwater recharge that is likely occurring in the Chuckwalla Valley Groundwater basin based on existing studies that have been conducted (see Whitt and Jonker [1998]). Anticipated runoff can be calculated using a procedure described in Hely & Peck (1964). The analysis should use isohyetal maps of average annual precipitation overlaid on the basin boundaries. Several factors (2, 5, & 10%) should be applied to the calculated volume to give a range of anticipated recharge.
153. For the calibrated numerical model in a steady state condition, please report the basin inflows separated by:
  - a. Subsurface Inflow from Pinto Basin
  - b. Subsurface Inflow from Cadiz Basin
  - c. Treated Prison Effluent Return Flow
  - d. Agricultural Irrigation Return Flow
  - e. Infiltration of Precipitation

### **BACKGROUND: Groundwater Outflow/Discharge**

In section 5.4.1.3 of the AFC, the report states: "Groundwater discharge from the basin occurs by evapotranspiration from Palen Lake, by subsurface flow eastward out of the basin to the Palo Verde Mesa Groundwater Basin, and by pumping for prison, domestic and agricultural use (Steinemann, 1989). Palen Lake is a wet playa, where groundwater discharges and evaporates at the lake surface, leaving salt deposits. The volume of water discharged from the basin through evapotranspiration has not been reported, but is likely significant. Engineering Science (1990) reported that approximately 1,162 acre-ft/yr of groundwater underflow discharges annually through the narrows between the McCoy and Mule Mountains into the Palo Verde Mesa Groundwater Basin after the construction of the prison. The most recent estimate of agricultural pumpage in the basin was made by the SWRCB for updates to the California Water Plan."

Staff is concerned that a thorough analysis of Groundwater Outflow/Discharge has not been conducted and is critical in determining the overall basin budget and impacts associated with the project and other projects in the basin.

## **DATA REQUESTS**

154. Please develop a comprehensive evaluation of groundwater outflow/discharge in the basin including calculation of the water lost as a result of evapotranspiration

from all sources including Palen Lake. The comprehensive evaluation must include details of the analysis that each of the references used to calculate the outflow/discharge. If a particular component of a model or study is not available (as listed in Table 5.4-4) then the authors need to develop an estimate based upon similar studies/methods used in the area. In the absence of studies, then estimates for outflow from Palen Lake should be based on pan evaporation rates from a free-water surface.

155. For the calibrated numerical model in a steady state condition, please report the basin outflows separated by:
  - a. Pumpage for Agricultural Irrigation Use
  - b. Pumpage for Domestic Use
  - c. Prison Water Demand
  - d. Subsurface Outflow to Palo Verde Mesa
  - e. Evapotranspiration from All sources including (Palen Lake)
  - f. Please update the estimate of Pumpage for Agricultural Irrigation Use reported by the SWRCB in 2005. Please note that the reference for this report was not included in the list of references for section 5.4.

#### **BACKGROUND: Table 5.4-7 Aquifer Parameters**

Staff is concerned that the information presented in Table 5.4-7 Aquifer Parameters may be inaccurate and/or misleading. Specifically the footnote reads: "Transmissivity from Specific Capacity Tests calculation by multiplying value by 2,000" is incorrect and the footnote needs to be modified or the conversion of units needs to be clarified. For instance for well 33:  $14.8 \times 2000 = 29,600$  and not 3,957. Staff's understanding is that the factor of 2,000 is used for transmissivity reported in gpd/ft.

In addition, the grouping of wells for various parameters may tend to suggest that specific parameters are higher than they actually are. It is unclear why wells were grouped especially with regards to the Bouse Formation. Please substantiate the grouping especially as it relates to geographic location. Well 43 appears to skew the average on the high side and may not be indicative of site specific conditions. Well 43 is located over 10 miles from the proposed well production site and has a hydraulic conductivity value of between 3 to 50 times the other wells used in the analysis.

#### **DATA REQUESTS**

156. For the second footnote in Table 5.4-7 Aquifer Parameters (un-numbered on table), please indicate the correct calculation factor and the source of the factor.
157. Please provide a conservative estimation of aquifer parameters for the Bouse Formation based on site specific conditions. The site specific conditions from the

aquifer test study should be the value used. According to Driscoll (1986), the “empirical equation can be used in the field to calculate the approximate value for the transmissivity of a confined aquifer.” The conservative approach would be that site specific data would be used to define aquifer parameters. In the absence of site specific data, regional data can be used to approximate aquifer parameters. If aquifer parameters vary spatially by more than an order of magnitude, then aquifer parameters need to be characterized spatially.

158. Please include an evaluation of the interconnectivity of the shallower water-bearing zone with the deeper Bouse Formation including what, if any, impedance in the vertical groundwater flow occurs at the site.

### **BACKGROUND: Numerical Modeling Results**

In section 5.4.2 of the AFC, the report states: “To support the evaluation of environmental impacts, the following activities were undertaken and are summarized in the following sections.

A numerical and analytical groundwater modeling study is being undertaken, and the methods and results of the analytical modeling study are included herein as a conservative representation of worst case impacts.”

In section 5.4.2 of the AFC, the report also stated: “Groundwater impacts are evaluated through review of available data, Site-specific evaluation and computer modeling to assess:

- The extent of pumping-induced drawdown and its potential impact on the groundwater basin and existing wells in the site vicinity.
- Changes in the groundwater budget of the Chuckwalla Valley Groundwater Basin.
- Potential impacts to surface water resources such as wet playas and surface water springs.
- Potential solute transport that could be induced by the Project, particularly vertical migration of saline groundwater, and/or lateral migration of saline groundwater from beneath Ford Dry Lake.

The groundwater modeling task for the Project includes development of a numerical groundwater flow and transport model of the Chuckwalla Valley Groundwater Basin. The model is constructed using Groundwater Vistas® software and utilizes an “impact modeling” approach, based on a flat water table datum.”

The report also stated: “The following steps are included in the groundwater modeling approach.

- Development of a conceptual model based on previous studies completed within the basin (e.g., by the US Geological Survey, California Department of Water Resources and for Chuckwalla Valley State Prison), public records regarding well completions in the area, and information gained from the Ford Dry Lake Test Well program (Appendix D.2).

- Construction of an analytical drawdown model following a simplified modeling approach that uses the USGS modeling code, THWELLS (Van der Heijde, P.K.M, 1996). The analytical drawdown model is included with this AFC to present a worst-impact analysis that meets the Energy Commission's Data Adequacy Requirements.
- Construction of a numerical model in Groundwater Vistas, including the appropriate boundary conditions, lithologic layers and aquifer parameters.
- Calibration of the numerical model with the transient aquifer pumping tests at the Site and at Chuckwalla Valley State Prison. Numerical evaluation of the on-site pumping test using the model.
- Addition of a solute transport component to the numerical groundwater model using the code MT3D.
- Performance of a sensitivity analysis.
- Predictive simulations to assess the impacts of pumping on water levels, the basin water budget and solute transport.
- If significant drawdown is predicted near reported bedrock springs at the margins of the basin, separate analytical modeling to assess potential impacts to spring discharge."

However, the applicant did not identify the methods used, did not provide the conceptual model, the calibration results, or any transient model runs that were conducted as part of the impact analysis using the numerical model. In addition, the applicant failed to provide any thresholds that were developed as part of the evaluation approach.

## **DATA REQUESTS**

159. Please provide the detailed analysis associated with the numerical modeling that was performed including: the type of models (both flow and solute transport) used, assumptions used in the model including model boundary conditions, layers, storativity, transmissivity, input and outputs, calibration results, and various groundwater extraction scenarios. In addition, the modeling should include a sensitivity analysis to assess what parameters had the greatest influence on the results of the modeling effort and the uncertainty associated with various key parameters.
160. Please provide an analysis demonstrating the numerical modeling was completed consistent with the techniques/requirements set forth in:
  - a. ASTM D5447 - Application of a Ground-Water Flow Model to a Site-Specific Problem
  - b. ASTM D5490 - Comparing Ground-Water Flow Model Simulations to Site-Specific Information
  - c. ASTM D5609 - Defining Boundary Conditions in Ground-Water Flow Modeling
  - d. ASTM D5610 - Defining Initial Conditions in Ground-Water Flow Modeling

- e. ASTM D5611 - Conducting a Sensitivity Analysis for a Ground-Water Flow Model Application
  - f. ASTM D5981 - Calibrating a Ground-Water Flow Model Application
161. Please provide transient groundwater model runs (including analysis) of the proposed project from construction through operations for the life of the project. The model should use average annual recharge from precipitation (developed earlier) along with expected production in the basin from expected growth. Output should include water level changes within the basin (at end of construction, mid project and project shutdown) and total inflow and outflow volumes in acre-feet by year (at end of construction, mid project and project shutdown).
  162. Please provide transient groundwater model runs (including analysis) of the proposed project during the life of the project. The model should use average annual recharge from precipitation (developed earlier) along with expected domestic, industrial and agricultural production in the basin from expected growth. Output should include water level changes within the basin (at end of construction, mid project and project shutdown) and total inflow and outflow volumes in acre-feet by year (at end of construction, mid project and project shutdown).
  163. Please provide an electronic copy of the computer files for the numerical model.
  164. Please provide the thresholds of significance that were used to evaluate the potential impacts associated with the significant drawdown at the springs, seeps, and playa lakes and at wells used by other groundwater pumpers in the basin.
  165. Please indicate how you intend to limit the production of groundwater from the deeper zones where water quality is reported to be of better quality.
  166. If other aquifers are likely to contribute to the water supply over the short-term and long-term, please revise Table 5.4-13 Predicted Chemistry of Wastewater Stream accordingly.
  167. Please provide the results of numerical, modeling for the potential impacts associated water quality degradation from the horizontal and vertical migration of saline water into areas of lower TDS.
  168. Please provide thresholds of significance that were used to evaluate the potential impacts to groundwater quality such as with vertical migration of saline water from the shallow groundwater system to the lower aquifer systems.

**BACKGROUND: Surface Water Quality**

Section 5.4.2.2 of the AFC states: "Chemicals can potentially contaminate surface waters during heavy storm events, or groundwater through infiltration. A number of mitigation measures are in place to prevent spills of chemicals, as well as to respond to spills should they occur. The DESCP, which includes the SWPPP, will require storm

water BMPs, and temporary erosion control measures including revegetation, dust suppression and construction of berms and ditches, which will prevent accelerated soil erosion or dust generation. Adhering to proper material handling procedures and complying with the SWPPP will ensure that construction-related water quality impacts are less than significant.”

The applicant has not evaluated what impact would occur on salt loading to surface and groundwater from the use of high TDS water (estimated at 5,000 mg/L) on to surface soils at the site for dust suppression and soil compaction during construction activities. The report does not include an evaluation of the addition of high TDS water (estimated at 5,000 mg/L) on to surface soils at the site for dust suppression and soil compaction and what impact may occur from the remobilization of salts to the surface drainages at the site during precipitation events. Staff is also concerned that the use of saline water for dust control may require regulation in accordance with California Code Regulations Title 27 which, except for the exclusive permitting authority of the Energy Commission, would require permitting by the Regional Water Quality Control Board (RWQCB).

## **DATA REQUESTS**

169. Please provide a discussion of potential salt loading as well as impacts associated with pH, boron, metals, radionuclides and any other constituents that may be present in the water and are detrimental to flora and fauna on and adjacent to the project site.
170. Please identify whether, except for the exclusive permitting authority of the Energy Commission, the applicant would need a permit from the RWQCB for the discharge of high saline groundwater to land.
171. If a permit is necessary, please provide a ROWD for discharge of high saline groundwater to land. Please also provide the ROWD to the RWQCB along with the appropriate fee for their review.

## **BACKGROUND: Water Supply Impacts**

In section 5.4.2.3 of the AFC, the report states: “The only water supplies currently available in Chuckwalla Valley are groundwater supplies. The potential impacts of the project on groundwater supplies are discussed in Section 5.4.2.1, and are considered less than significant.”

Staff is concerned that the applicant has not identified and adequately evaluated all potential sources of alternative water supplies including but not limited to:

- Wastewater discharges from the prison;
- Conversion of other facilities in the Chuckwalla Valley to recycled water;
- Importation of recycled water.

In addition, the applicant has not evaluated what impact a single dry year and multiple dry years would have on the impacts to the Chuckwalla Valley groundwater basin from operation of the project.

## DATA REQUESTS

172. Please evaluate the use of alternative water supply such as recycled water, land fallowing, conversion of other facilities in the Chuckwalla groundwater basin to recycled water use
173. Please provide an assessment of groundwater basin impacts that would occur from single dry year and multiple dry year (three consecutive dry years) drought scenarios for the life of the project.

### **BACKGROUND: Wastewater Treatment Impacts – Evaporation Ponds**

In section 3.4.8.2 of the AFC, the report states: “On an annual average, blowdown to the evaporation ponds will be approximately 90,000 gallons per day for each unit, increasing to approximately 140,000 gallons per day for each unit during peak summer conditions.”

In addition, the AFC states in Section 5.4.2.4: “On average, blowdown to the evaporation ponds will be approximately 90,000 gallons per day (182 gpm) for both units, increasing to 162,000 gallons per day (215 gpm) during peak summer conditions. Water balances for peak and annual instantaneous rates are included in Section 3.0, Facility Description and Location.

Multiple ponds are planned to allow plant operations to continue in event that a pond needs to be taken out of service for some reason, *e.g.*, needed maintenance. Each pond will have enough surface area so the evaporation rate exceeds the cooling tower blowdown rate at maximum design conditions and at annual average conditions. The average pond depth is eight feet and residual precipitated solids will be removed approximately every seven years to maintain a solids depth no greater than three feet for operational and safety purposes.”

Staff is concerned about inconsistencies between various sections of the AFC regarding blowdown generation to the evaporation ponds that may impact operations and the potential for upset/release from the ponds.

## DATA REQUESTS

174. Please indicate what the peak summer condition wastewater generation will be and provide calculations demonstrating that the ponds will be able to contain/evaporate all generated water during all months of the year with containment of the 100-year recurrence interval precipitation event. Include the assumption that at least one pond will be temporarily unavailable for discharge due to maintenance.
175. Please provide expected monthly wastewater discharge to the evaporative ponds along with the average annual evaporation data.

**BACKGROUND: Water Quality Impacts - Sanitary Wastes**

In section 5.4.2.4 of the AFC, the report states: "Sanitary wastewater from sinks, toilets, and other sanitary facilities is handled on site by a septic system and leach field that will be permitted under a WDR from the RWQCB."

The applicant has not conducted an evaluation of the potential impacts associated with operation of a septic system and associated leachfield or submitted a report of waste discharge (ROWD) to the RWQCB.

**DATA REQUESTS**

176. Please provide an evaluation of the potential impacts to surface and groundwater quality from the operation of a septic system and leachfield that will be operated at the site.
177. Please identify whether, except for the exclusive permitting authority of the Energy Commission, the applicant would need a permit from the RWQCB for the discharge of sanitary wastewater to leachfields.
178. If a permit is necessary, please provide a ROWD for discharge of sanitary wastewater to leachfields. Please also provide the ROWD to the RWQCB along with the appropriate fee for their review.

**BACKGROUND: Surface Water Quality and Flooding Impacts**

Section 5.4.2.2 of the AFC states, "The Project site slopes from the northeast to the southwest at a grade of less than one percent. As outlined in the Operation section, upstream off-site drainage will be routed around the Project site. The outfalls of the realigned washes will be designed to match the sheet flow conditions of the ephemeral washes in the Colorado Desert." However, the supporting Concept Drainage Study contains no defining existing and developed floodplains.

**DATA REQUESTS**

179. Please provide a detailed analysis of the existing and developed floodplain depths and distribution using an industry accepted methodology for shallow floodplain analysis such as FLO2D. The analysis should extend upstream of the project boundaries at least 500' and farther, if needed, to allow any assumed boundary assumptions to establish realistic conditions at the project boundaries. It should extend at least 1000' downstream of the project and farther if needed to allow for a reasonable tie-in to the existing floodplain.
180. Please provide the appropriate analysis, mapping and discussion to demonstrate that flows diverted through and around the project reasonably approximate existing downstream conditions and that significant undisturbed areas will not be cutoff from future flows.

181. Provide a detailed explanation of the data and assumptions used to complete the floodplain analysis and provide all associated data including any model input and output files.

**BACKGROUND: Conceptual Drainage Study**

Section V.A. of the Conceptual Drainage Study (Appendix A) states, "In the 100 year, 24 hour storm event, 3.51 inches of rainfall shall fall (refer to Appendix B). Based on the Site location, the (NRCS/SCS) Type II rainfall distribution was used when performing calculations." Staff cannot verify that correct values were taken from the map. The applicant needs to provide a map showing the project boundaries.

**DATA REQUEST**

182. Please provide the reference in the text for the rainfall value stated and show the project location on the isopluvial map in Appendix B of the Concept Drainage Study.

**BACKGROUND: Conceptual Drainage Study**

Table 2 Section V.B. of the Conceptual Drainage Study (Appendix A) provides a breakdown of soil type and total acreage of each within the project watershed as well as reference to the soil classifications.

**DATA REQUESTS**

183. Please provide a map showing the extent of each soil type within the project watershed as well as a percentage of each type broken down by sub-basin area.
184. Please provide additional information on the Soil Taxonomy Map in Appendix C of the Concept Drainage Study including labeled section lines and roadways that allows confirmation the project area is properly located within the map.

**BACKGROUND: Conceptual Drainage Study**

It is not clear in Section V.D. of the Conceptual Drainage Study how the contributing watershed areas for the project were determined. The report first states the boundary selected for this study was based on existing information. However, there is no reference to the nature or source of that information. The Study also states that drainage was estimated using USGS quadrangle maps. The topography provided on the watershed maps is not clear and does not contain sufficient information at an appropriate contour interval and scale to allow independent verification of the contributing watershed area.

**DATA REQUEST**

185. Please clarify what data was used to delineate the contributing watersheds and provide a clear and appropriately contoured watershed map to allow independent verification of the watershed boundary.

**BACKGROUND: Conceptual Drainage Study**

The calculations of peak discharges for the project requires several parameters including Curve Number (CN), area, flow length, soils type etc. These parameters are contained in various locations in the Concept Drainage Study and are not provided in the Pond Pack output files.

**DATA REQUEST**

186. Please provide a summary table that contains all the relevant hydrologic parameters for each sub-basin including area, soils type, slope, flow length, Time of Concentration (Tc), and peak discharge. In addition, provide more detailed input and output data from Pond Pack as well a digital copy of the input files to allow verification of the above parameters.

**BACKGROUND: Conceptual Drainage Study**

Section V.E. of the Conceptual Drainage Study discusses the proposed drainage diversion channels and states “all these three main channels will divert flows downstream of the Site following its existing drainage path, causing no impact to the Site.” It does not appear to staff that the diverted flows will follow their existing drainage paths either through or downstream of the project site.

**DATA REQUEST**

187. Please use the results of the previously discussed floodplain analysis to substantiate the statement “all these three main channels will divert flows downstream of the Site following its existing drainage path, causing no impact to the Site.” Please demonstrate the similarity of the flow regimes of the downstream drainages from pre-construction to post-construction with regards to existing flow depths and extents.

**BACKGROUND: Conceptual Drainage Study**

Section V.E. of the Conceptual Drainage Study discusses increases in imperviousness in the on-site watersheds due to buildings, roads, pads etc. However, this section does not address what could be a significant increase in runoff potential due to compaction and possible chemical stabilization of on-site soils. It is stated that dust control will be a major element of site operation. This will likely require some form of stabilization that will increase runoff potential.

**DATA REQUEST**

188. Please provide a detailed discussion, data, and calculations to document the increased potential for onsite runoff volumes due to compaction and possible soil stabilization methods. Provide a justification for the CN values used in the pre- and post-development models.

**BACKGROUND: Conceptual Drainage Study**

Section VI.B. of the Conceptual Drainage Study indicates the design criteria for the channels to divert offsite flows will be the 100-year, 24-hour event. From a channel hydraulics perspective this may not be the optimal design as channels designed for a large flow event can develop incised thalwegs (low-flow channels) during the more frequent events depending on channel slope and velocity

**DATA REQUESTS**

189. Please provide a detailed justification of why the 100-year, 24-hour design storm is critical for the facility given its projected life span.
190. Provide estimated flow depths across the site for a 25-year event and discuss why such an occurrence would negatively impact the project.
191. Please provide documentation demonstrating that the depth to width ratios in the channels will not likely result in the incision of a low-flow thalweg within the channel given the proposed slopes.
192. Please evaluate the use of a compound section with a pre-constructed low-flow channel to more efficiently carry flow from the more frequent events.

**BACKGROUND: Conceptual Drainage Study**

Section VI.C. of the Conceptual Drainage Study discusses the proposed diversion channel cross-sections and indicates that the width and depth of the channels vary depending on location. It is assumed this means the dimensions vary in the downstream direction as the channel collects additional flow.

**DATA REQUESTS**

193. Please provide hydrologic and hydraulic calculations used to determine the dimensions for all reaches of the diversion channels as well as appropriate typical sections. This effort should utilize the results of the floodplain analysis to determine the extents and distribution of flow being collected by the diversion channels.
194. Please provide a detailed explanation of the data and assumptions used to complete the channel hydraulic analysis and all associated data including any electronic copies of model input and output files. The data should include a map showing the estimated distribution of flow entering the channel, as well as flow depths, velocities, channel slopes, Froude number and a comparison against the allowable site specific channel velocities.

**BACKGROUND: Conceptual Drainage Study**

Section VI.C. of the Conceptual Drainage Study states, "The channels and diversion berms will be sized sufficiently to pass the anticipated flows and entrained sediment volumes, will be armored as necessary for erosion protection using natural gravel

derived during Site grading activities, and will be maintained periodically or after major storm events as needed to sustain their proper function.”

The channels along the north and west sides of the property will intercept flow from the upstream watershed, and as such, will require special design considerations to prevent erosion of the banks and what could be severe headcutting into the upstream floodplain. In addition, the soils at the site appear to be quite erodible and will likely require minimal flow velocities to ensure channel downcutting and lateral bank erosion does not occur in unprotected reaches.

## **DATA REQUESTS**

195. Please provide detailed design plans that show the proposed controls to prevent bank erosion and headcutting due to the interception of flows by the proposed diversion channels.
196. Provide a detailed grading plan showing the geometry of the proposed channels around the periphery of the site and how they will tie into existing grade.
197. Provide profiles for each channel that include existing and proposed grade along both the finished flowline as well as right and left top of banks. These drawings should be at a scale of no smaller than 1"=50'. All bank protection and erosion control measures, including grade control structures, must be traversable (3:1 slope or flatter) and not present an entrapment hazard to wildlife. More specifically, it has been determined the project site is possible Desert Tortoise habitat, and as such, bank protection measures such as dumped riprap, stacked gabions, or gabion mattresses will not be acceptable. Soil cement has been identified as the most probable alternative as it would prevent headcutting due to flow over the channel banks and would provide a traversable and quasi-natural surface. The use of bio-stabilization measures and/or geotextiles are not considered viable alternatives.
198. If required to reduce channel slope, provide detailed design plans for grade control structures.
199. Provide documentation and analysis for establishing project specific non-erosive channel velocities based on site soils, incoming sediment load, and a calculated 10-year flow.
200. The use of channels without bank protection around the periphery of the project will require it be demonstrated there are neither significant side flows entering the channel, and that 10-year flow velocities are within the acceptable range for site specific conditions. Please clearly delineate all peripheral channel sections where no bank protection is proposed and provide specific and detailed data to demonstrate compliance with the previously stated criteria.

**BACKGROUND: Conceptual Drainage Study**

Both the AFC and the Concept Drainage Report briefly discuss the use of detention basins to mitigate increased flows due to site development. A potential issue with utilizing detention basins is the release of sediment deficient flows that can result in increased downstream erosion.

**DATA REQUEST**

201. Please address the issue of potential erosion downstream of the detention basin outlets resulting from the release of potentially sediment deficient water. Provide detailed plans showing the proposed basin outlet structures as well as documentation showing sediment loads out of the basin will approximate existing conditions.

**BACKGROUND: Conceptual Drainage Study**

Section VI.C. of the Conceptual Drainage Study states, "The minimum preliminary volumes required for the detention basins are 66 acre feet for Unit 1 and 49 acre-feet for Unit 2. Further specifics for the detention pond (i.e. outlet design, risers, and spillway structures) shall be undertaken during detailed design, occurring in a later phase of this project."

These values are from the Pond Pack program output for the 100-year event. The Basins should also be analyzed for the more frequent events (2-, 10-, and 25-year) to determine inflow/outflow characteristics. It may be determined that having no detention has less impact than having detention given the infrequency of runoff and the small incremental difference between existing and developed flows for the more frequent events.

**DATA REQUEST**

202. In addition to the 100-year event, please provide existing and developed peak discharges for the 2-, 10-, and 25-year events that include both a "with detention" and "without detention" scenario. Provide detailed plans of the basin outlet structures and their calculated ratings across the spectrum of design flows. Provide a summary table that includes peak flows for all of the scenarios discussed above.

**BACKGROUND: SWPPP**

Section 7.1-7 in the Drainage, Erosion and Sediment Control Plan lists Best Management Practices (BMPs) measures not included within the Stormwater Pollution Prevention Plan (SWPPP) in Appendix A.

**DATA REQUEST**

203. Please indicate where the BMPs can be found and update the SWPPP text and site maps to reflect the aspects mentioned in this section including, but not

limited to gravel berms, stone filters, check dams, protected vegetation throughout the project site, etc.

**BACKGROUND: SWPPP**

Section A.5.a.(2) of the NPDES General Permit No CAS000002 requires that the site map(s) show the construction project in detail. This section also includes the minimum requirements of what must be shown on these site maps.

**DATA REQUEST**

204. Please divide the Water Pollution Control Diagram into multiple maps with a smaller scale to provide greater detail. Please review the minimum requirements and update the Water Pollution Control Diagrams accordingly. Additional features to be shown on the site maps include, but are not limited to, pre and post project topography, drainage patterns across the project, all drainage features (including channels, berms, swales, culverts, basins and outlets), equipment wash out areas, chemical storage areas, material stockpiles, and all BMPs associated with these features.

**BACKGROUND: SWPPP**

Section A.5.b of the NPDES General Permit No CAS000002 requires that additional information be shown on the site maps including, but not limited to, the amount of anticipated stormwater run-on and the appropriateness of the BMPs chosen, drainage patterns into each on-site stormwater inlet, describe all post construction BMPs and show the location of each BMP on the map, etc.

**DATA REQUEST**

205. Please include the anticipated amount of stormwater run-on. Show additional BMPs to dissipate the velocity of the stormwater in the diversion channels around the perimeter of the site. Drainage patterns within the project site should be shown, as well as all the proposed erosion and sediment control BMPs.

**BACKGROUND: SWPPP**

Section A.6. of the NPDES General Permit No CAS000002 lists the additional information to be shown on the site maps regarding “Erosion Control and Soil Stabilization.” Information that needs to be shown on the site maps includes, but is not limited to, outlines of vegetated areas that will be preserved throughout the project, areas of cut/fill that will be stabilized and the BMPs recommended for these areas. Section 5.8.1 “Erosions Control” in the SWPPP states that BMPs will be implemented year-round to meet these requirements, but these areas are not shown on the site maps.

**DATA REQUEST**

206. Please indicate areas to be preserved. The site maps also need to show rough cut/fill areas and the stabilization method used to stabilize these areas (i.e. hydroseed, hydraulic mulch, dust palliatives, etc.)

**BACKGROUND: SWPPP**

Section A.7. of the NPDES General Permit No CAS000002 gives the requirements for Final Stabilization for the purposes of submitting a Notice of Termination (NOT).

**DATA REQUEST**

207. Please include within the SWPPP text the criteria that must be met on-site prior to the Owner/Contractor submitting a NOT.

**BACKGROUND: SWPPP**

Section 3.2 “Unique Site Features” of the Stormwater Pollution Prevention Plan mentions “smaller drainage swales, aligned north to south and located adjacent to plant interior roads.” These drainage swales are shown on the Conceptual Grading Plan within the Conceptual Drainage Study.

**DATA REQUEST**

208. Please show proposed interior drainage swales on the Water Pollution Control Diagrams and the proposed BMPs for velocity dissipation within the swale. Please also include all other relevant on-site drainage features such as berms, detention basins, and culverts, and the recommended BMPs. Examples on the current (but incomplete) plans include the emergency spillways on the sediment basins that discharge into the peripheral drainage channel and the BMPs recommended preventing sediment laden waters from leaving the basin.

**BACKGROUND: Cut & Fill Areas**

In section 5.6.2.1 of the AFC, the report states: “The conceptual grading plan (Worley Parsons, 2009) includes the finished grade elevations and preliminary contour lines across the entire site. The total site earth work quantities for the project site, including the evaporation and retention pond excavations and protective berm fill placement, will result in a balanced cut-and-fill earthwork of approximately 712,000 cubic yards of cut and 1 million cubic yards of fill, based on the preliminary site design and layout (Genesis Solar, LLC, 2009). There will be no fill disposal or fill procurement sites. More exact earthwork quantities will be determined after the detailed aerial and ground survey is completed.”

Staff is concerned that insufficient information is available to evaluate the overall site grading activities.

**DATA REQUESTS**

209. The cut and fill quantities are not balanced, please show the calculations or resolve the balance differences.
210. Please provide calculations supporting that the size of the stockpile locations are sufficient to support the volume of soil and vegetation expected to be generated.
211. Please provide the detailed aerial, topography and ground survey work mentioned above with the refined earthwork quantities and calculations.

### **BACKGROUND: Soils – Erosion Control**

In the area around Blythe, rainfall usually occurs during brief but intense rainstorms. An average of less than four inches per year of rainfall can be expected at the project site. The water that does not infiltrate into the ground or evapotranspire, flows as surface runoff and at times can result in flash flood conditions. The plants on the project property help retain sediment and reduce erosion potential from runoff. Removing all the vegetation to the root system as well as any desert pavement, varnish or armored-soils would dramatically alter the surface runoff pattern that has naturally developed and likely allow transport and deposition of sediment across and off site. At such a large scale, up to 1,900 acres of vegetation removal and ground disturbance, management of the surface water flows will require extensive engineering.

### **DATA REQUESTS**

212. Please provide information on how sheet and channel flow across the project site, over roads, around the mirrors, and off the site would be managed through engineering controls in order to minimize the discharge of sediment into the main drainage channels that ultimately discharge offsite
213. Please provide information on how onsite soils will be maintained to prevent erosion during plant operation.
214. Please describe how the site soils would be returned to their original state upon decommissioning and what the applicant would do to address long-term management of the site soils. (Staff's current understanding is that desert pavement and varnish can take 100s to 1000s of years to form – see USGS Bulletin 1793 - The Response of Vegetation to Disturbance in Death Valley National Monument, California).

### **REFERENCES**

Hely, A.G. and E.L. Peck, 1964. *Precipitation, Runoff and Water Loss in the Lower Colorado River-Salton Sea Area*. Geological Survey Professional Paper 486-B.

Rantz, S.E. and T.E. Eakin. 1971. *A Summary of Methods for the Collection and Analysis of Basic Hydrologic Data for Arid Regions*. USGS. Prepared in Cooperation with DWR.

Webb, R. H., J. W. Steiger, and E. B. Newman, 1988. *The Response of Vegetation to Disturbance in Death Valley National Monument, California*, USGS Bulletin 1793.

Whitt, Allen, and Jonker, Kevin, 1998. *Groundwater survey of the Joshua Tree and Copper Mountain subbasins, Joshua Tree, California*. Western Water Surveys report prepared for the Joshua Basin Water District.

**Technical Area: Waste Management**

**Author:** James Thurber, P.G.

**BACKGROUND**

AFC Section 5.13.1.3 summarizes the findings of the Phase I Environmental Site Assessment and acknowledges the historic military activities in the area and that surveys for unexploded ordinance (UXO) may be performed prior to construction. It does not appear that a thorough study of historic military activities was completed as a part of the phase I ESA. Staff research of the US Army Corps of Engineers Database offered no additional information for the project site

[<https://rsgis.crrel.usace.army.mil/publicfuds/>]. However, since UXO is known to be present at other nearby energy project sites and the site has been used for historic military activities, staff believes additional study of the site is warranted. Although the Phase I ESA includes historic aerial photographs and topographic maps, the level of detail is not useful for evaluating site conditions and potential presence of UXO. Staff recommends additional research, field reconnaissance and geophysical surveys to accurately verify the presence of UXO.

**DATA REQUESTS**

- 215. Please provide a plan to conduct further research (Department of Defense, U S Army Corps of Engineers), a thorough field reconnaissance, surveys, and geophysical surveys. The plan should identify agency discussion and permit requirements. The plan should also identify qualification requirements for UXO technicians and timing for surveys and reporting, as well as ordnance removal and disposal, if necessary.
  
- 216. Please describe the timing and methodology for completing the geophysical surveys.
  
- 217. Please provide the expertise and qualifications of those conducting the geophysical surveys.
  
- 218. Please provide results of the geophysical surveys.

**BACKGROUND**

AFC Section 5.13.2.3 discusses the liquid waste streams anticipated during operation. The waste stream related to groundwater treatment is identified as non-hazardous backwash water sent periodically or continuously to the evaporation ponds in Table 5.13-3 with no off-site disposal required. Discussion on Page 5.13-8 indicates that evaporation pond residue/precipitated solids will be removed approximately every seven years and is anticipated to be non-hazardous (Class II), although the waste will be characterized prior to disposal. The predicted chemistry of the pond residue is provided in Table 7 of AFC Appendix H and is predominantly sodium, chloride, and sulfate, with

no significant levels of heavy metals. No other wastes related to water treatment are identified, including spent filters/filter media or disposition of the estimated 50,000 tons of material to be removed from the evaporation ponds every cleanout cycle.

### **DATA REQUESTS**

219. Please identify all water treatment waste streams, waste management methods, and quantity of waste that will be generated.
  
220. Please identify all Class II waste disposal sites that will be used for disposal of evaporation pond cleanout waste.

### **BACKGROUND**

AFC Section 5.13.2.2 and Table 5.13-3 present estimated quantities of both hazardous and non-hazardous waste streams of Heat Transfer Fluid (HTF) contaminated soil anticipated during operation. However, there is no basis or method used to develop the estimated quantities.

### **DATA REQUESTS**

221. Please provide analysis method or criteria used to estimate quantities of contaminated soil and/or estimated volumes of spills and leaks.
  
222. Please identify volume of HTF contained within pipeline segments separated by isolation valves (max, min, average). Are the isolation valves automatically activated in the event of low pressure (pipeline leak or rupture)?

### **BACKGROUND**

Appendix H Application for Report of Waste Discharge (August 2009) Table 4 and Table 5.4 of AFC Section 5.4 indicates that two water quality samples and laboratory test results are available for the project test well and observation well. The test results indicate differing water quality with depth. Table 4 indicates all calculations for the water balance, including liquid waste streams, are based on the deeper and lower TDS water. It is not clear how the raw water quality will be controlled by restricting pumping to the deeper aquifer, or if the upper aquifer water quality will also be tapped what will be the impact to the quality of the liquid waste streams.

### **DATA REQUESTS**

223. Please clarify how the raw groundwater quality will be limited to the deeper aquifer.

224. If other aquifers are likely to contribute to the water supply, please revise Table 7 Predicted Chemistry of Evaporation Pond Residues accordingly.

### **BACKGROUND**

The Integrated Waste Management Act of 1989 (AB 939) established landfill waste diversion goals of 50 percent by the year 2000 for state and local jurisdictions. To meet the solid waste diversion goals, many local jurisdictions have implemented Construction and Demolition Waste Diversion Programs. The County of Riverside has a Construction and Demolition Waste Diversion Program.

### **DATA REQUEST**

225. Please provide information on how the Genesis Solar Energy Project will meet the requirements of the Riverside County Construction and Demolition Waste Diversion Program.

**Technical Area: Worker Safety/Fire Protection**  
**Author: Dr. Alvin Greenberg**

**BACKGROUND**

The proposed project site is located in an area that, during World War II, was part of General George S. Patton's Desert Training Center (DTC), the largest military facility in the world. As a result of these historic military maneuvers, there is a potential for unexploded ordnance (UXO) to occur at this site. The presence of one 50-caliber cartridge was indicated in the Phase I Environmental Site Assessment (ESA) which recommended that "Prior to construction, it may be a prudent safety measure to conduct a stand-alone UXO screening of the Subject property." The Worker Safety section does not include any precautions regarding unexploded ordnance.

**DATA REQUESTS**

226. Please provide a Phase I ESA that addresses the issue of UXO.
227. If the Phase I ESA documents the presence of UXO, please provide a UXO Detection and Neutralization/Removal Plan for the site areas where UXO were found.



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
COMMISSION OF THE STATE OF CALIFORNIA  
1516 NINTH STREET, SACRAMENTO, CA 95814  
1-800-822-6228 – [WWW.ENERGY.CA.GOV](http://WWW.ENERGY.CA.GOV)

**APPLICATION FOR CERTIFICATION FOR THE  
GENESIS SOLAR ENERGY PROJECT**

**Docket No. 09-AFC-8**

***PROOF OF SERVICE***  
(Est. 11/4/09)

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DECLARATION OF SERVICE

I, Maria Santourdjian, declare that on November 13, 2009, I served and filed copies of the attached Genesis Solar Energy Project (09AFC-8) Data Requests Set 1A (#1-227), dated November 13, 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

[[http://www.energy.ca.gov/sitingcases/genesis\\_solar](http://www.energy.ca.gov/sitingcases/genesis_solar)].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

*(Check all that Apply)*

FOR SERVICE TO ALL OTHER PARTIES:

sent electronically to all email addresses on the Proof of Service list;

by personal delivery or by depositing in the United States mail at Sacramento, CA with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

**AND**

FOR FILING WITH THE ENERGY COMMISSION:

sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (*preferred method*);

**OR**

depositing in the mail an original and 12 paper copies, as follows:

**CALIFORNIA ENERGY COMMISSION**

Attn: Docket No. 09-AFC-8  
1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512  
[docket@energy.state.ca.us](mailto:docket@energy.state.ca.us)

I declare under penalty of perjury that the foregoing is true and correct.

Original Signature in Dockets  
**Maria Santourdjian**