CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

December 7, 2009

DOCKET
09-AFC-7
DATE DEC 7 2009
RECD DEC 7 2009

Gavin Berg, Senior Project Manager
Solar Millennium LLC
1625 Shattuck Avenue, Suite 270
Berkeley, CA 94709

RE: PALEN SOLAR POWER PLANT (09-AFC-7), DATA REQUESTS SET 1 (#1-280)

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 (#1-280) is being made in the areas of Air Quality (#'s 1-32), Alternatives (#'s 33-50), Biological Resources (#'s 51-103), Cultural Resources (#'s 104-168), Geological Hazards (# 169-171), Public Health (#172-179), Reliability (# 180), Soil & Water Resources (#181-253), Transmission System Design (# 254), Visual Resources (# 255-278), and Waste Management (#279-280). Written responses to the enclosed data requests are due to the Energy Commission staff on or before January 6, 2010 or at such later date as may be mutually agreeable.

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) 653-8236 or email me at asolomon@energy.state.ca.us.

Sincerely,

Alan Solomon
Project Manager

cc: Docket (09-AFC-7)
Proof of Service List

PROOF OF SERVICE (REVISED 11/18/09) FILED WITH
ORIGINAL MAILED FROM SACRAMENTO ON 12/7/09
HA

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 site 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: SURFACE SOILS SILT CONTENT, FUGITIVE DUST EMISSION CALCULATIONS AND PARTICULATE AIR DISPERSION MODELING ANALYSIS

The Application for Certification (AFC) does not provide the information regarding the surface soils silt content for the fugitive dust control calculations. This may be provided later by the Geotechnical Report that has not yet been submitted.

DATA REQUESTS

3. Please provide data to enable 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.
4. Please update the construction and operations fugitive dust emissions calculations as appropriate based on the site specific surface silt content estimate.
5. Please update the construction and operations particulate modeling analysis, as necessary, based on the revised fugitive dust emission calculations.

BACKGROUND: CONSTRUCTION EMISSIONS CALCULATIONS

The emission calculations use assumptions that require additional information to be confirmed by staff. The electronic version of Appendix E-2 was only provided as a .pdf file. Staff needs the original spreadsheet file, with embedded calculations, to complete its review.

DATA REQUESTS

6. Please provide the spreadsheet version of the Appendix E-2 Construction Emission Worksheets with the embedded calculations intact.
7. Please identify whether all of the offroad equipment emission factors are based on Tier 3 engines, or if Tier 3 engines are only assumed for the engines listed with Tier 3 in the equipment name column.
8. Please provide the input assumptions to obtain the OFFROAD Model raw engine emission factors, the assumptions used to derive the equipment specific emission factors, and please provide the spreadsheets used to create the emission factors shown in Appendix E-2.

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 a defensible rationale for the location 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 area source locations that would correspond to annual construction.

DATA REQUESTS

9. Please provide a defensible rationale as to why the locations for the area source emission inputs did not change from short-term to annual modeling, or please provide annual construction modeling that matches the extent of annual construction activities.

10. Please provide a defensible rationale why the modeling analysis focuses on Unit 2 construction and not Unit 1 construction.

11. Please provide an analysis that indicates whether the meteorological data shows that this would be a conservative modeling assumption for predicting worst-case fence line impacts.

BACKGROUND: CONSTRUCTION EMISSIONS MODELING - NO_2 IMPACTS

The results of the applicant's construction emissions modeling analysis, as shown in Table 5.2-33, indicate that the project would cause exceedances of the California 1-hour NO_2 standard. Staff has reviewed the applicant's modeling inputs and suggests a revision to the modeling procedures used by the applicant. Staff requests that the applicant revise the 1-hour construction NO2 modeling analysis to include a NOx_OLM (ozone limiting method) source group so that the ozone concentration is not added repeatedly to the results for each emission source. This modeling revision must use the corrected version of the AERMOD program, correcting issues with the NOx_OLM source group option, expected to be available by the end of October. Additionally, the use of both hourly ozone and hourly NO_2 background data, rather than using the worst-case hourly maximum NO_2 concentration as the background concentration, would reduce the conservatism of the modeling results. Therefore, staff needs the applicant to revise the modeling analysis to use the NOx_OLM modeling option with the NOx_OLM source group option, and if necessary revise the analysis using actual hourly background NO_2 data to determine the maximum NO_2 impacts from construction. Additionally, staff believes that the applicant's suggested mitigation measure to limit construction activities to daylight hours is likely infeasible and unenforceable considering the very long construction period and remoteness of this project. Please note that hourly ozone and NO_2 data, if used in a revised modeling analysis, should be from the same monitoring station as close to the site and to the meteorological data source as possible and should use the same years as the meteorological data.

DATA REQUEST

12. Please provide a revised construction emissions NO_2 modeling analysis that uses the NOx_OLM option with an OLM source group, and if necessary or desired, that uses actual hourly background NO_2 data.

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 cancelled 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

13. Please revise the emissions calculations for the onsite dedicated vehicle exhaust emissions assuming only new model year vehicles are used.

14. 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, including 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: OPERATING EMISSIONS – MIRROR WASHING MAINTENANCE VEHICLE MILES TRAVELED

Estimations and assumptions seem unclear for vehicle travel related to solar mirror washing. AFC section 2.5.5.3, page 2-16 estimates that mirror washing will take place twice a week for half of the year from mid-spring to mid-fall and once a week for the other half of the year from mid-fall to mid-spring, accounting for 78 washes annually. Table E.3-7a however, estimates that mirror washing will occur 2 times per month for 6 months a year and once per month for the other 6 months per year, a total of 18 times per year.

The total mirror washing vehicle miles traveled (VMT) calculation in Table E.3-7a assumes that a complete mirror washing event would require the same travel distance as the number of miles of parabolic trough piping. Staff is concerned that the mirror washing vehicles would need to travel to and from the washing areas daily and also return to the maintenance complex to refill the water tank periodically. Additionally, the truck routes will go around the troughs increasing their distance in relation to the total piping length. Therefore, staff believes that the total mirror washing truck mileage, unless there are other mirror washing factors such as washing two troughs at a time, would be at least two times the parabolic trough pipe distance for each washing event cycle. Staff needs additional information from the applicant to support their miles per washing event estimate.

DATA REQUESTS

15. Please clarify the estimations and assumptions used in determining the number of mirror washing events per year.

16. Please provide a clear and defensible explanation of why the amount of parabolic trough pipe length is equivalent to the mirror washing vehicle mileage for each washing cycle event, or revise this estimate as necessary to obtain a more reasonable total vehicle mileage estimate for mirror washing.

BACKGROUND: GREENHOUSE GAS ANALYSIS

Sulfur hexafluoride (SF_6) is one of the most potent greenhouse gases (GHG). SF_6 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_6. 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_6 would be used. Staff needs to understand if SF_6 is a potential GHG emission from this project and the emission inventory of SF_6.

DATA REQUEST

17. Please provide an estimate of the SF_6 onsite inventory and leakage emissions both in operation and construction phases to complete the GHG emission estimates.

BACKGROUND: GREENHOUSE GAS ESTIMATES – CONSTRUCTION

GHG estimates are necessary for all phases of the project in order to complete the GHG analysis for the project.

DATA REQUEST

18. Please provide GHG emission estimates for the entire construction period.

BACKGROUND: GASOLINE AND DIESEL STORAGE

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

DATA REQUESTS

19. Please confirm that there will be no gasoline or diesel vehicle refueling storage at the site and that either fuel/lube trucks will be used for onsite refueling or the onsite dedicated vehicles will have to drive to the nearest gasoline station, which is about 25 miles round trip from the site, to refuel. If gasoline or diesel storage is used at the site, provide information for any proposed onsite gasoline or diesel storage and refueling facilities including throughput information and permitting requirements.

20. Please indicate if the additional vehicle mileage required for offsite refueling of the dedicated onsite vehicles or fuel/lube truck mileage is considered in the total vehicle miles estimates and emissions estimates, or please correct the estimates accordingly.

BACKGROUND: EMERGENCY GENERATOR ENGINE

The AFC proposes that one 300-hp diesel fired fire water pump and one 300-hp diesel-fired emergency generator engine will be used. Other proposed solar facilities have much larger emergency generator engines, so staff would like to confirm its size and purpose.

DATA REQUEST

21. Please provide a description explaining the purpose of the emergency generator engine including why the applicant believes the selected size is appropriate for the solar facility.

BACKGROUND: AUXILIARY BOILER AND HEATER UTILITY AND PURPOSE

Other recent solar trough projects have proposed a single auxiliary boiler for startup support and heat transfer fluid (HTF) freeze protection, while this project has proposed a separate auxiliary boiler and heater. Staff would like to confirm that 500 hours is adequate for HTF freeze protection and would like to also confirm the purpose of the auxiliary heater. Staff would also like to confirm the purpose of the auxiliary boiler. Additionally, the Application for Certification (AFC) is unclear on the equivalent MWh generated or enabled by the auxiliary boilers. This information will be necessary for the GHG analysis discussion.

DATA REQUESTS

22. Please confirm that 500 hours of operation is sufficient for HTF freeze protection.
23. Please confirm that the sole purpose of the auxiliary heaters is for HTF freeze protection and that they will not be used directly for power generation or for rapid start support.
24. Please confirm that the use of the auxiliary boilers is strictly for rapid start support through overnight low load (25 percent) operation and early morning full load operation and that they will not be used directly for power generation or for HTF freeze protection.
25. Please identify the equivalent MWh generated or enabled by the rapid start support use of these boilers.

BACKGROUND: CUMULATIVE IMPACTS ANALYSIS

The AFC notes that the Cumulative Evaluation Approach identified 18 projects (19 including the PSPP itself), within a 50 mile radius of the project site with which PSPP may have cumulative impacts. Staff needs a cumulative modeling analysis, or additional justification why an air quality cumulative modeling analysis is not needed for this project, to complete the staff analysis for cumulative air quality impacts.

DATA REQUESTS

26. Please provide a list from the SCAQMD of large stationary source projects with permitted emissions, for projects with greater than 5 tons of permitted emissions of any single criteria pollutant. Include projects located within six miles of the project site that have been recently permitted, but did not start operation prior to 2009, or are in the process of being permitted.

27. Please provide a cumulative impacts modeling analysis in consultation with Energy Commission staff, if necessary, based on the project list provided by SCAQMD.

BACKGROUND: METEOROLOGICAL DATA

Staff is requesting more information on the acceptance of the use of the Blythe meteorological data from the SCAQMD. Has the meteorological data been formally accepted? Do they not require an ambient air quality impact analysis?

DATA REQUESTS

28. Please identify if SCAQMD requires an ambient air quality analysis for this project.

29. Please provide formal communication from the SCAQMD to show that either they have formally approved the use of the Blythe meteorological data for this project site or would allow its use.

BACKGROUND: AIR QUALITY PERMIT APPLICATION PROCESS

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

Additionally, Staff is aware that SCAQMD will be permitting this project as two separate facilities, one owned by Solar Millennium, LLC and one owned by Chevron Energy Solutions. Staff has additional questions to understand the project ownership separation and operations responsibilities.

DATA REQUESTS

30. Please provide copies of any official submittals and correspondence to or from the SCAQMD within 5 days of their submittal to or their receipt from the SCAQMD.

31. Please indicate which ownership party would have primary responsibility for each of the shared infrastructures and operating functions, such as any shared water wells, the shared maintenance and warehouse buildings, the shared HTF land farming contaminated soil remediation site, responsibility for maintenance vehicle procurement and maintenance, etc.

32. Please indicate which unit (Unit #1 and Unit #2) will be owned and permitted through SCAQMD by which ownership entity.

Technical Area: Alternatives
Author: Susan Lee (CEC)

BACKGROUND

In Section 4.0 Alternatives of the Application for Certification (AFC), page 4-7, Section 4.3.2, Project Site Alternatives, four alternative sites are identified. The sites are described as follows:

- Palen Pass – BLM property located adjacent to Route 177 (Rice Road), north of Desert Center, adjacent to double circuit 230-kV transmission lines.
- Desert Center – BLM property located due west of Desert Center, immediately adjacent to the possible site of the planned SCE Red Bluff substation.
- Palo Verde Mesa - BLM and private property in general area west of Blythe, California, located within three miles of the possible site of the planned SCE Colorado River substation.
- Cibola - BLM and private property in general area south of Blythe, California, located within 10 miles of the possible site of the planned SCE Colorado river substation.

These very general location descriptions do not allow staff to confirm the size of site, land ownership, location of existing and projected transmission lines, and environmental suitability, among other attributes (see Data Request below).

DATA REQUEST

33. In order to facilitate preparation of the SA/DEIS document and allow further analysis of the project site with alternative sites, please provide the precise locations of the four alternative sites (Township/Range/Section and/or parcel numbers) and GIS data if available.
34. Please identify the size (total acreage) and dimensions of each alternative site.
35. For private property sites, please indicate the number of individual landowners comprising ownership of the alternative site, the assessor's parcel numbers, and the acreage of each separate parcel and landowner.
36. For sites located on BLM-administered land, please indicate if the BLM has received a right-of-way application for use of any of the alternative site land and the status of the application, if available.

BACKGROUND

In AFC Section 4.0 Alternatives, page 4-7, Section 4.3.2, Project Site Alternatives, four alternative sites are identified. Criteria used to compare the alternative sites include: site suitability (grade, land use), site control, transmission, environmental sensitivity, and solar resource. The discussion of environmental sensitivity is very limited with an emphasis on one site that is located in a DWMA and in desert tortoise critical habitat.

The environmental suitability of a site encompasses many more attributes. Several environmental organizations (Audubon California, California Native Plant Society, California Wilderness Coalition, Center for Biological Diversity, Defenders of Wildlife,

Desert Protective Council, Mojave Desert Land Trust, National Parks Conservation Association, Natural Resources Defense Council, Sierra Club, The Nature Conservancy, The Wilderness Society, and The Wildlands Conservancy) 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 staff compare potentially significant impacts at the proposed project site and the alternative site locations identified in Section 4.3.2.

DATA REQUEST

37. Please fill in Table 1 on the last page of this Alternatives Data Request section to compare the Cibola alternative site with the proposed project. Please also include any information previously gathered for the Palen Pass, Desert Center, and Palo Verde Mesa alternative sites.

BACKGROUND

In AFC Section 4.0 Alternatives, Table 4-2, the four alternative sites are compared to the proposed site. The Cibola alternative is classified "good" for environmental sensitivity and potentially includes some disturbed land. The proposed project site is rated "medium" for environmental sensitivity, with 3 percent of the site located on Desert Tortoise critical habitat. In order to compare the biological attributes of the Cibola alternative with the proposed project, additional information is needed.

DATA REQUEST

38. One of the site selection criteria for the proposed Palen SPP site was environmental sensitivity. Please provide the results of a CNDDB search for the Cibola alternative site.
39. Please provide an Information Center search (Class I) for recorded sites identified within the Cibola alternative site.

BACKGROUND

In order to define alternative sites that would be potentially viable, Staff has reviewed scoping comments (for the PEIS for solar development on BLM-administered land) and met with Energy Commission and BLM staff and identified other potentially viable sites. We have identified a potential additional site called the North of Desert Center alternative. A GIS file of the North of Desert Center alternative will be provided along with this data request. A map in PDF format is attached (see Data Request Figure 1).

DATA REQUEST

40. One of the site selection criteria for the proposed Palen SPP site was environmental sensitivity. Please provide the results of a CNDDB search for the North of Desert Center alternative site.

41. Please provide an Information Center search (Class I) for recorded sites identified within the North of Desert Center alternative site.

BACKGROUND

In AFC Section 4.0 Alternatives, Table 4-2, the four alternative sites are compared to the proposed site. The Cibola alternative is rated poor in terms of site control. Section 4.3.2.3 of the AFC further states that it is not clear for either site that the private land could be bought under the needed lease or purchase option. These same concerns may be present for the potential North of Desert Center alternative.

DATA REQUEST

42. To determine the feasibility of obtaining site control, please explain how many separate owners would result in an unacceptable probability of obtaining site control. Consider the Renewable Energy Transmission Initiative (RETI) Phase 2A Report's statement that: "At the recommendation of solar generators and other stakeholders, proxy solar projects in areas having more than 20 different owners per two-square mile area were deemed unlikely to be developed."

BACKGROUND

AFC Section 2.6, Transmission System, states that the "PSPP will be connected to the SCE transmission system by constructing a double-circuit three-phase 230 kV transmission line that would interconnect at a new substation planned by SCE at a location that has not been finalized but is expected to be to the west of the Project site." AFC Section 2.6 further states "As noted previously, the substation location has not yet been finalized but is expected to be to the west of the site. A possible 11.5-mile gen-tie line route to a possible substation location is illustrated in Figure 2-1" and that SCE would own and operate the substation, which is being planned to serve a variety of generating stations expected in the region. AFC Figure 2-1 shows a possible transmission line route and a possible location for the SCE Red Bluff Substation. Figure 5.3-9 shows both the proposed transmission route and central switch yard as located within occupied Mojave Fringe-Toed Lizard (MFTL) habitat and near a number of individual lizard observations.

DATA REQUEST

43. 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 routes of all of the transmission line alternatives and potential substation locations that were considered.

44. As stated above, the linear routes, as shown on Figure 5.3-9 would be located in MFTL habitat. Please provide an alternative route for the transmission line and an alternative switchyard location that would avoid MFTL habitat.

BACKGROUND

AFC Section 4.4, Alternative Site Layout, states that the proposed configuration is a result of geographic, cultural resources, and design and operating limitations. The limitations include geographical constraints such as the I-10 to the south, private property to the north, east, and west, and the Palen dry lake dunes to the north of the

site. AFC Section 2.5.3, Energy Conversion Facilities Description, states that the solar fields are a modular, distributed system of solar collector assemblies (SCAs). The section also states that each collector loop consists of two adjacent rows of SCAs, about 1,300 feet long.

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 portions 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

45. Please describe in detail the engineering constraints, if any, to the development of a revised configuration of each 250 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.

    a. Please define whether there is a specific minimum or maximum length that each individual solar collector loop assembly must be, and if it is necessary that the solar collector loops be identical in length. Please define both engineering and economic constraints to having variable collector loop lengths.

    b. Please describe in detail whether there is flexibility in the lengths of the supply and return header piping or if these are specific to the solar collector assemblies, and if so, what is the flexibility.

    c. 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 extending it would reduce the economic or engineering feasibility of the project.

    d. Please describe if there is a minimum number of rows of solar collector loops that would make up a unit or if there is flexibility in the number of units that could be arranged to create a 500 MW power plant.

    e. Please describe if it is possible to have multiple and smaller power blocks (e.g., 50 or 100 MW) and describe how this would increase the flexibility of the solar field arrangement.

    f. Please explain the difference between the crossover pipe, HTF loops, and Heat Collection Elements. If a reconfigured solar array were developed, discuss whether these components would traverse undeveloped desert washes to reach the power blocks.

46. Please provide detailed information regarding any alternative configurations/engineering considered but rejected by the applicant. Please include details regarding the engineering constraints to each alternative configuration.

47. Please see **Alternatives Data Request-Figure 2**, which illustrates areas within the project boundaries that are occupied by the most sensitive biological resources -- desert washes (shown in green) and Mojave Fringe Toed Lizard habitat (shown in yellow crosshatch). The areas outlined in blue dashes, and red or white lines identify potential revised configurations that would reduce these effects. In addition, the yellow line illustrates the approximate boundary of the Chuckwalla DWMA. In order for the Energy Commission and BLM to evaluate a potential alternative that avoids effects on these sensitive areas without reducing generation output, surveys must be completed within the portions of these areas that are outside of the current project footprint. Please complete biological and cultural resources surveys (as defined in Title 20, Section 1704, and Division 2, Chapter 5, Appendix B of the CCR for the 12 month process) for the areas outlined in red and not included in the DWMA. Alternatively, complete biological and cultural resources surveys for other areas within the project ROW application boundaries (but outside of the current project footprint) that minimize effects on biological resources to the same degree as the areas identified on Figure 2.

48. Please provide detailed information regarding the economic and engineering feasibility of a reduced acreage alternative that would avoid the most sensitive biological resources. See Data Request - Figure 3 as example of a reduced acreage alternative based on avoiding desert washes (shown in green), Mojave Fringe Toed Lizard habitat (shown in yellow crosshatch), and the Chuckwalla DWMA (yellow line). The entire reduced acreage alternative would be located within the project footprint.

BACKGROUND

AFC Section 4.6, Freeze Protection and Auxiliary Boiler Heater Alternatives, states that a natural gas pipeline was rejected because of difficulties in arranging natural gas distribution services in the remote Project area. The applicant states that the chosen alternative, use of propane as fuel for generating energy freeze protection of the heat transfer fluid (HTF) and quick start for the auxiliary boiler during the early morning hours, would be the most economical but would involve a slight impact from truck traffic and air emissions from the traffic increase.

DATA REQUEST

49. In order to determine the feasibility of a natural gas pipeline as an alternative to the propane delivery and storage option, please define in detail where the nearest existing gas pipeline is located.

50. Please define the relative costs of the natural gas pipeline alternative and the propane alternative over the life of the project.

Alternatives Data Request – Table 1

Environmental Criteria	Proposed Project Site	Cibola	Palen Pass	Desert Center	Palo Verde Mesa
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	Cibola	Palen Pass	Desert Center	Palo Verde Mesa
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?					

Environmental Criteria	Proposed Project Site	Cibola	Palen Pass	Desert Center	Palo Verde Mesa
Is the site within Proposed Wilderness Area, proposed National Monuments, and Citizens' Wilderness Inventory Areas					
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 (CEC)
Mark Massar (BLM)

BACKGROUND

Desert Tortoise. Appendix F, the Biological Resources Technical Report, describes desert tortoise habitat quality within the disturbance area as low, and noted that slightly higher quality habitat was associated with the desert wash dry woodlands in the central and southeastern areas. The spring 2009 surveys resulted in detection of one adult desert tortoise approximately 0.5 mile south of the project area, and two active burrows with tortoise tracks were observed within the disturbance area. According to the October 26, 2009 Data Adequacy Supplement, desert tortoise habitat is much better south of Interstate 10, along the transmission line/substation survey area. Staff would like additional information on the quality of the desert tortoise habitat north and south if I-10 to analyze project impacts in a regional context, and requests below a figure depicting the habitat using the Nussear et al. (2009) model. To conduct a GIS analysis staff also needs the shapefiles or an Excel spreadsheet of Attachment 4 from the Desert Tortoise Technical Report.

The southwest corner of the project site overlaps with 183 acres of the Chuckwalla Desert Tortoise Critical Habitat Unit, and according to the October 26, 2009 Data Adequacy Supplement, another 48.6 acres of critical habitat will be affected by transmission line and substation construction south of Interstate 10. Staff appreciates the detailed analysis of project impacts to primary constituent elements for the 183 acres of critical habitat within the project footprint north of Interstate 10 (described on pages 87 to 92 of the Biological Resources Technical Report). Staff needs a similar analysis for project impacts to primary constituent elements of critical habitat along the proposed transmission line corridor and substation south of Interstate 10.

To fully assess project impacts to desert tortoise and to develop mitigation measures, staff also 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). In addition, staff needs to review the Incidental Take Permit application that should be submitted to the California Department of Fish and Game as soon as possible.

DATA REQUESTS

51. <u>USGS Desert Tortoise Habitat Model</u>. 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).

52. <u>Attachment 4 Shapefile/Excel Spreadsheet</u>. Please provide Attachment 4: Spreadsheet of Data Collected during Focused Desert Tortoise Surveys

from the Desert Tortoise Technical Report as a shapefile or as an Excel spreadsheet.

53. Desert Tortoise Critical Habitat. Please provide a discussion of the effects of construction and operation of the project, including the proposed transmission line and substation, on primary constituent elements of desert tortoise critical habitat south of Interstate 10.

54. Table of Critical Habitat Impacts. Please provide a table with the acreage of critical habitat that would be directly and indirectly impacted by project construction and operation, including the proposed transmission line and substation, 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. A description of the survey methods that will be used for 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 Plan. Mitigation measure BIO-57 consists of a brief description of BMPs that will be employed to minimize project related increases in raven numbers, but the SA/FEIS will need to include a considerably more 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 subsides 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

Mojave Fringe-Toed Lizards/Sand Transport. Surveyors recorded a total of 141 incidental observations of Mojave fringe-toed lizard, a California species of special concern and a BLM sensitive species, within the project disturbance area during the spring 2009 surveys. Mojave fringe-toed lizards, a species that requires wind-blown sand, occur on the Palen project area on habitats that are not mapped as sand dunes according to Figure 5.3-4, the Vegetation Communities figure. Figure 5.3-9 depicts approximately half the project area as occupied by this species and estimates the area at 1,735 acres. The area shown in Figure 5.3-9 as occupied Mojave fringe-toed lizard habitat corresponds approximately to the Rositas-Dune land-Carsitas soil unit shown on Figure 5.12-1 in the Data Adequacy Supplement.

Staff needs information about the extent of potential habitat for Mojave fringe-toed lizard outside of the project boundaries that might be indirectly affected by the proposed project. Staff also needs to know how the boundaries were established on Figure 5.3-9 that depicted the potentially occupied Mojave fringe-toed lizard habitat. Staff is surmising that habitat potentially occupied by this species in coincident with Rositas-Dune land-Carsitas soil units, but the AFC does not include a map depicting the extent of this soil unit beyond the project right of way (ROW). Staff is particularly concerned about the effects of the project northeast of the footprint because the project creates a narrow choke point between the Palen Mountains. Species like Mojave fringe-toed lizard, which are dependent on fine, wind-blown sand, could eventually be eliminated from this narrow corridor if the natural pattern of sand transport is altered through this narrow isthmus of habitat, possibly fragmenting populations.

Page 2-22 of the AFC states that: "*Thirty-foot tall wind fencing, comprised of A-frames and wire mesh, will be installed along the east and west sides of each solar field*."

Page 5.3-44 of the AFC states that: "*The installation of wind fencing is likely to disrupt source sand, wind transport, or sand transport corridors that are important to MFTL habitat in the dune ecosystem, resulting in an indirect impact to this species. In addition, the potential degradation or loss of habitat resulting from indirect impacts to this species would be significant because similar or higher quality habitat is not common in the vicinity of the Project site. These indirect impacts would potentially significantly impact offsite MFTL breeding habitat or burrows and adjacent foraging habitat if left unmitigated*."

The mitigation proposed in BIO-45, page 5.3-60, states: "*Limit wind barriers/wind fencing to the maximum extent possible in order to limit the impacts to the dynamics of the Aeolian sand ecosystem such that sand sources, sand corridors, and dune areas may maintain sand movement*." On page 5.3-61, mitigation measure BIO-46 states: "*Rerouted washes should not block upstream sand sediment that can be transported to dunes via wind once they are on the other side of the facility*."

Staff cannot determine how these mitigation measures might be implemented, or if avoidance of indirect impacts to sand and sediment transport as described in BIO-45 and BIO-46 is possible. The AFC does not provide a qualitative or quantitative description of the existing pattern of wind and water transport of sand and sediment or an analysis of how the project might affect this transport.

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 supports 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.

DATA REQUESTS

58. Boundaries of Occupied Habitat on Figure 5.3-9. Please describe how the boundaries of "*Occupied MFTL Habitat within Surveyed Facility Footprint*" were established on Figure 5.3-9 in the Biological Resources Technical Report.

59. Occupied Habitat beyond ROW. Please provide a revised figure, similar to Figure 5.3-9, that shows potentially occupied Mojave fringe-toed lizard habitat between the project ROW boundary and the Palen Mountains.

60. 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, partially stabilized sand dunes, and any other habitats potentially occupied by Mojave fringe-toed lizard in the vicinity of the project area.

61. 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, partially stabilized sand dunes and nay other habitats potentially occupied by Mojave fringe-toed lizard.

62. Mitigation Plan for Impacts to Sand Dune Ecosystem. Please provide a detailed mitigation plan for avoidance and minimization of direct impacts to Mojave fringe-toed lizard 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.

BACKGROUND

Western Burrowing Owl Surveys. Staff needs additional information about the Phase III survey efforts for western burrowing owls. Attachment J, the Burrowing Owl Technical Report, from Appendix F, indicates that Phase III surveys were conducted from April 15 through June 14, 2009, consisting of a minimum of four site visits, and notes that: "*The disturbance area and 492-foot buffer (150-meter) were surveyed three additional times during the breeding season to determine burrowing owl presence, focusing on burrows and burrow complexes with burrowing owl sign*" (page 6 of Attachment J). Staff needs additional information to evaluate if surveys were conducted at the appropriate time of day (around sunrise and sunset) and to determine the total time spent surveying the project area. Staff requests this information to support an assessment of whether the burrowing owl surveys were adequate to provide a relatively accurate estimate of the number of burrowing owls inhabiting the site.

Mitigation measures BIO-on page 59 of the AFC recommends passive relocation of burrowing owls to exclude them from their burrows to avoid construction

impacts. Staff is concerned that passive relocation may be an inappropriate method for avoiding impacts to burrowing owls on very large acreage projects because owls excluded from burrows are likely to move to the next available burrow within the project impact area, and will once again need to be excluded. A more active translocation effort may be required to avoid and minimize impacts to burrowing owls, as well as a detailed, comprehensive Burrowing Owl Translocation and Management Plan (Plan). The goals of the translocation plan component of the Plan should include:

- Translocating all burrowing owls within the project impact area to nearby areas that would provide suitable nesting and foraging habitat;
- Minimizing impacts to resident burrowing owls and other sensitive species within the translocation site;
- Minimizing stress, disturbance, and injuries to translocated owls; and
- Assessing the success of the translocation effort through monitoring.

DATA REQUEST

63. Burrowing Owl Field Data.

    a. Please provide a table summarizing the field survey effort 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 each of the surveys.

    b. Please clarify if Figure 5.3-8 depicts the total number of burrows that were visited during the Phase III surveys, and confirm that all burrows were visited for which there was any evidence of occupancy by burrowing owls. If Figure 5.3-8 does not show all the burrows visited during the Phase III surveys, please provide a figure that does.

    c. Please provide a modified shapefile with a separate column in the attribute table for presence of owl sign with the following values: burrows with sign, burrows without sign, occupied burrows, owl location, and no data available.

    d. Please indicate the type of sign, if any, for all burrows (if no data are available please indicate).

    e. Please update all the maps in the report depicting burrowing owl locations with the following values: burrows with sign, burrows without sign, occupied burrows, owl location, and no data available.

    f. Please provide the data forms for the Phase III surveys.

BACKGROUND

Revisions to Delineation of Desert Washes. Energy Commission and CDFG staff met with the Applicant's biological consultants on November 3, 2009 at the

project site to verify the delineation of state waters. Based on a discussion of field methodology during this site visit, and on a review of the methods section in the *Jurisdictional Delineation Report*, staff understands that the delineation of ephemeral drainages was based on the presence of field indicators of Ordinary High Water Mark (OHWM), which in this case consisted of defined bed and bank morphology and the presence of wash-dependent vegetation, principally woody riparian species such as ironwood. During the site visit CDFG and Energy Commission staff noted that several distributary alluvial fan features that were apparent on aerial photos were not delineated, apparently because these features lacked a well-defined bed and bank and woody riparian trees. In addition, staff noted that the delineation did not encompass the full width of the active floodplain or affected areas in these compound features because the smaller channels intermittently lacked a defined bed and bank.

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), where 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 *A Field Guide to the Identification of the Ordinary High Water mark (OHWM) in the Arid West Region of the United States* (Lichvar & McColley 2008), page 33 states: "*The OHW zone in low-gradient, alluvial ephemeral/intermittent channel forms in the Arid West is the active floodplain. The dynamics of arid channel forms and the transitory nature of traditional OHWM indicators in arid environments render the limit of the active floodplain the only reliable and repeatable feature in terms of OHW delineation. In arid channel systems, the active floodplain functions in the same manner as the bankfull channel within a perennial channel form, in that most of the hydrological and fluvial dynamics produced by repeating effective discharges is confined within its boundaries. Also, the extent of flood model outputs for effective discharges—5-t0 10-year events in arid channels—aligns well with the boundaries of the active floodplain, and the characteristic vegetative behavior and sediment texture associated with the active floodplain/low terrace transition are readily observable in aerial photographs and in the field (Lichvar et al. 2006).*"

Staff also noted during the site visit that wash-dependent vegetation is not restricted to ironwood, palo verde, and other woody trees; for example, big galleta grass (*Pleuraphis rigida*) is strongly associated with the ephemeral washes. The composition of riparian vegetation along desert streams varies widely. Many of the smaller drainages lack woody vegetation, but support a strong association of galleta grass, one of two wash-dependent herbs noted in the delineation report (pg 7).

CDFG and Energy Commission staffs have concluded that these smaller features should be included as state waters, despite the absence of woody

riparian trees. These smaller washes provide vegetative cover for wildlife in the form of galleta grass and other shrubs and herbs, and seasonal availability of flowing water or moisture. These washes are distinctly different from the surrounding drier uplands of sparse creosote or desert pavement, and are significantly more valuable to wildlife because they provide cover, breeding and nesting sites, shade, movement corridors, and food sources.

To ensure that the delineation of state waters is not under-represented, staff and CDFG requests below that the delineation of state waters be revised. The revised delineations should include substation has recently been identified by SCE and the new transmission line route described in the Data Adequacy Supplement, as well as any new road construction (including spur roads) or improvements to existing roads associated with transmission line construction.

DATA REQUESTS

64. Revise Delineation of Waters. Please provide figures at a scale of 1:4800 (1" = 400 feet) that depict a revised delineation of ephemeral drainages within the project footprint and along project linear features, including the transmission line and substation. The revised delineation should include:

    a. drainage features that lack a continuous component of woody riparian trees but which support a well-defined herb-dominant riparian flora of galleta grass and/or other wash-dependent herbs and shrubs;

    b. drainage features which are apparent on aerial photos but which periodically lack strong OHWM field indicators due to normal seasonal or annual variability, and

    c. the full width of the active floodplain for these compound features, as described in Lichvar & McColley (2008, page 33).

65. Please provide a table of revised acreages and lineal feet of waters delineated according to the guidelines described above.

BACKGROUND

Delineation of Channels Downslope and Upslope of Project Boundaries. The delineation of ephemeral drainages described in the Jurisdictional Delineation Report terminates at the project footprint boundary, but staff needs information about drainages downslope of the project. The drainages between the project footprint and Palen Dry Lake could be affected by the project by diversion of floodwaters into manmade channels and by other indirect impacts. Diversions would significantly alter the hydrology and dependent wash vegetation of any features that may occur downstream of the project area, an effect that is quite apparent below I-10 at the Corn Springs exit (just outside the project boundary) where expanses of desert wash trees have died in response to the diversion of smaller channels into collector ditches for I-10.

If the applicant intends to minimize this effect by "t*erminating all three channels in a manner that approximates existing drainage patterns to the north and east of the site*" [AFC, page 5.3-39), then staff requests that the drainage patterns,

washes and dependent vegetation downstream of the project be delineated and reflected in both the delineation report and the drainage and erosion control plans. Staff is also concerned about the potential effect of diversion on water-dependent vegetation around the margins of Palen Dry Lake. The delineation of downslope drainages should extend to the Palen Dry Lake, and should include drainages and any other areas which support water-dependent communities such as mesquite stands, washes of galleta grass, and succulent chenopod scrubs dominated by Mosquin's seepweed or other facultative wetland plants. It is also reasonable to expect changes in hydrology and other effects at the discharge points of the rerouted channels, potential effects that were not analyzed in the AFC.

Staff also needs information about the drainages upslope of the project area. The channels along the north and west sides of the property will intercept flow from the upstream watershed. Depending on the design of the intercept and the hydrology of the inflow to the intercept, staff believes that this structure could produce channel headcutting and lateral bank erosion in upstream drainages. Erosion in these upstream channels could adversely affect their functions and values for vegetation and wildlife, and could also necessitate bank protection measures that would also diminish the biological resource values of these features.

DATA REQUESTS

66. Delineate Drainages Downslope and Upslope of Project Footprint. Please provide figures at a scale of 1:4800 (1" = 400 feet) that depict a delineation of ephemeral drainages downslope and upslope from the project boundaries. Delineation of drainages upslope to the project boundaries should extend at least 150 feet, or as far upstream as any project effects such as lateral erosion and headcutting might occur, whichever is greater. The revised delineation should include the same components described above in Data Request #14 a, b and c. The downslope delineation should extend to Palen Dry Lake and should include any drainage that could potentially be indirectly impacted by the project.

67. Acreages of Drainages Upslope and Downslope of Project Boundaries. Please provide a table of acreages and lineal feet of delineated drainages.

68. Modifications to Upslope Drainages. Please provide a discussion of potential project impacts to ephemeral washes upstream of the project boundaries, including proposed bank protection, and an estimate of acreage and lineal feet of drainages that might be impacted by erosion and/or bank protection measures.

BACKGROUND

Avoiding Impacts to Desert Washes. The delineation of project area waters in the AFC (pending a revision based on the guidance above) describes a total area of all waters of the State within the project footprint of approximately 257 acres comprised of 133 acres of desert dry wash woodland and 124 acres of

unvegetated ephemeral dry wash (Table 5.3-5, page 5.3-19). 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. Staff also needs more detailed information about the functions and values of all the ephemeral washes on the site, including small drainage features and those lacking woody vegetation.

DATA REQUESTS

69. Alternatives to Impacting Desert Washes. Please provide a detailed discussion, with supporting quantitative analysis, of alternatives in the project design or layout that were considered that would avoid significant impacts to some or all of the project area ephemeral washes. If an alternative was rejected because it was considered to be economically infeasible, please provide a detailed justification for that assessment.

70. Functions and Values of Project Area Washes. Please provide a description of the beneficial functions and values (for example, hydrologic, geomorphic, plant and wildlife support) provided by the ephemeral washes and wash-dependent vegetation on the project site.

71. Effect of Project on Functions and Values of Washes. Please discuss how the proposed project would affect the functions and values of washes within and near the project area.

BACKGROUND

Revegetation Plan/Maintenance Program. The Conceptual Drainage Study described on pages 5.17-34 – 5.17-34 discusses a plan to reroute existing washes that flow in a northeasterly direction through three box culverts under Interstate 10 into three trapezoidal channels (West Side, East Side, and Central Channels). These channels would intercept the flows prior to their entry to the project site and convey them to approximately the same locations where they currently exit the proposed project boundaries. The rerouted channels would vary in width from a minimum bottom width of 300 feet for the West Side Channel, 150

feet for the Central Channel, and 100 feet for the East Side Channel. All three channels would be "*revegetated with native vegetation to minimize habitat disturbance*" (pages 5.17-34).

Page 22 of the Conceptual Drainage Plan notes that channels would have a 4:1 slope, would be constructed with native material, and would include scour protection in stress areas (junctions, transitions, and curves). The extent of bank protection would be at least a distance equal to ten times the design water depth and would be extended into the channel bottom in straight sections. No further details are provided on proposed bank protection except to note that "*further guidance for riprap protection of transitions in size or shape will be provided by the EM 1110-2-16901 and the Hydraulic Design Criteria (HDC) 712-1. HDC 712-1 provided guidance for the selection of rock sizes using the Isbash Theory*."

The bank protection selected for the rerouted channels is a source of concern to staff because riprap composed of large, angular boulders could pose an entrapment hazard for desert tortoise, particularly for juveniles. The extent of erosion protection on the channel bottom is also of interest to staff because the unarmored portions of the channel bottom provide the only opportunity for native species to revegetate and for natural geomorphic processes to occur.

Staff also needs more information about how sand and sediment deposited in the channels will be managed. Aeolian deflation and deposition (winds' ability to erode, transport, and deposit materials) could result in significant accumulations of sand within the low-lying diversion channels. Major storm events could also result in deposition of large amounts of sediment, and could damage bank protection or grade control structures. Accumulations of sediment or damage to the channel could pose an entrapment hazard or impediment to wildlife movement. The AFC provides no details as to the frequency of sand and sediment removal or proposed inspection and maintenance of the channels, and no information as to the potential impact of maintenance activities on revegetation efforts and wildlife habitat.

Staff need details on proposed revegetation within the engineered drainages to assess whether the new channels could replace or recreate natural soil characteristics (biological soil crust, permeability), microtopography (microcatchments for moisture, seeds), hydrology, geomorphology, and vegetation and wildlife functions and values. In addition to a revegetation plan staff also needs more detail than that provided by the Conceptual Drainage Plan on the proposed design of the rerouted channels. The plan needs to provide information about the area available for revegetation within the channel (extent of unarmored banks and channel bottom), whether or not grade control structures are needed to prevent erosion and sedimentation of downstream waters and habitat, 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 needs detailed information about how the proposed diversion channels would be designed, revegetated, maintained, and decommissioned. As described in Soil & Water Data Requests, staff will need detailed design drawings prior to publication of the staff assessment. 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 complete the SA.

DATA REQUEST

72. Revegetation Plan for Re-Routed Channels. Please provide a draft Revegetation Plan for the re-routed channels that include at least the following elements[1]:

    a. 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.

    b. 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).

    c. Reference Reach. Select one or several reference reach (es) of the existing channels that would provide a target for mitigation design and success criteria, 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).

[1] 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.*

d. 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.

e. 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.

f. 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.

g. 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.

h. 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.

i. 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.

j. 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

k. Irrigation. Revegetation projects should be hydrologically self-sustaining, and may need irrigation only in the early years of a project 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.

l. Implementation Schedule. Provide a schedule showing intended timing (by month) of site preparation, any seed/topsoil storage, seed/topsoil application, and plantings.

m. 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.

n. 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.

o. 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.

p. 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.

73. 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 and 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, or in perpetuity if the channels are to remain in place after operation of the project ceases.

74. 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:

    i. *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).

    ii. *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.

    iii. *Reporting*. Provide a monitoring and reporting schedule and an outline for annual reports to be submitted to the Compliance Project Manager.

BACKGROUND

Decommissioning of Re-Created Channels. Section 3.2 of the AFC, Closure, does not specify whether the three engineered channels would be removed at the end of the project operating life or if they would be 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

75. 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

Wildlife Movement through Washes and Culverts. The discussion of the effect of the project on wildlife movement on page 5.3-47 of the Application for Certification (AFC) states: "*The central channel will provide an opportunity for species to move through the site, but some species may avoid the central drainage within the disturbance area in response to human presence which could potentially force them to go completely around the site*." This paragraph goes on to conclude that this potential impediment is not likely to impact movement or population dispersal because species such as bighorn sheep, desert kit fox and American badger could move around the site.

Staff needs to determine if opportunities exist to improve the central channel as a wildlife corridor. Based on the discussion in the Conceptual Drainage Plan staff understands that the channel design was dictated by hydraulic considerations, with channel bottom widths established to promote relatively shallow flows to minimize erosive forces. However, channel width and other design features have considerable bearing on the capacity of the channel to support native vegetation and on its value as wildlife habitat and a movement corridor. Staff needs to know if other channel designs and configurations (for example, a wider channel) were considered to provide a more functional wildlife corridor.

As described in the discussion of biology-related design elements in the Biological Resources Technical Report, section 4.1.2, page 107: "*The west and*

east channels would be located entirely outside of the proposed perimeter fencing. The center channel inlets and outlets would be located outside the perimeter fencing. The remainder of the center channel would be located within the perimeter fence." The Biological Resources Technical Report, section 3.6., page 92, also states: "*Behavioral avoidance of man-made structures and associated edges can decrease wildlife movement and deter connectivity. In addition, edge effects can be detrimental to species susceptible to increased predation or parasitism along edges*."

Staff also needs clarification about the perimeter fencing in relation to the channels, and how the fences might affect wildlife use within the channels. Staff is concerned that eight-foot high fences in close proximity to the channel bank would provide perching opportunities for ravens, which could prey on desert tortoise and other wildlife within the channels, particularly in the early years of project operation when vegetation would be sparse in the channels and would provide little cover.

To assess the impact of the project on wildlife movement, staff needs more information about which species of wildlife currently move through the site and under the freeway through box culverts, and whether these species might use the Central Channel as a dispersal and/or movement corridor. Page 92 of the AFC states: "*There are several large culverts under I-10 that allow for the flow of water within washes. These culverts are large enough (approximately 197 feet wide and 295 [sic] feet high) to provide dispersal areas suitable for most species, including mountain lions, coyotes, badgers, mule deer, and bighorn sheep (Bissonette 2007*)." However, there is no observational or survey data documenting use of these culverts by these or any other wildlife. On an October 27, 2009 visit to the site staff detected deer tracks under one of the box culverts, but otherwise staff has no site-specific information about which species would be likely to use these culverts.

DATA REQUESTS

76. Wildlife Use of Washes. Please provide information about which species of wildlife are likely to currently be using the project area washes as dispersal and movement corridors, and which species might use the Central Channel to move through the site.

77. Width of Channels. Please provide a discussion of wider channel designs, particularly for the Central Channel, that would enhance the utility of the rerouted channels as a movement corridor for wildlife and which would minimize the potential for human disturbance to wildlife using the channel. If alternative designs and wider widths are rejected because of economic infeasible, please provide a detailed justification for that assessment.

78. Fencing. Please provide a figure depicting the location of the perimeter fencing in relation to the rerouted channels, and an assessment of the potential for these fences to provide perching sites for ravens

79. Wildlife Use of Washes and Culverts. Please provide information about which species of wildlife move through the washes and three box culverts under Interstate 10, and an assessment as to the significance of these culverts as a movement and dispersal corridor for wildlife in the region.

80. Project Impacts to Wildlife Use of Washes and Culverts. Please provide an assessment as to how the proposed project is likely to affect wildlife movement through the washes and Interstate 10 culverts.

BACKGROUND

Impacts to Downslope Plant Communities and Palen Lake. Each of the three rerouted channels will end in diffusers to return flood flows to approximate location and depth that occur in the existing condition. According to the Conceptual Drainage Plan, the diffusers have been designed to spread the flows out from an approximate depth of 12 - 18 inches and non erosive velocities. Staff needs more detail on how the diffusers would preserve the hydrologic and ecologic functions and values of the desert washes, wash-dependent vegetation, and sheet flow between the project site and Palen Dry Lake. Staff needs more information on the plan for the design and configuration of the discharges below the project footprint to ensure that "*downstream drainage conditions are restored to their approximate existing patterns.*"

DATA REQUESTS

81. Impacts to Palen Dry Lake and Water-Dependent Plant Communities. Please provide an assessment, supported by hydrologic modeling and analyses under 100-year and ordinary flood events, of the effects to Palen Dry Lake (and its water-dependent communities at the lake margins) of diverting the three major drainages and all smaller washes and discharging at three points between the footprint and lake bed. Changes in hydrology, erosion/sedimentation, impacts to water-dependent vegetation, and the introduction or spread of noxious weeds should be considered.

82. Effects of Diffusers. Please provide a detailed description of how the diffusers will preserve or replace the existing functions and values of ephemeral drainages and water-dependent plant communities and sensitive species (for example, Harwood's milk-vetch) between the project boundaries and Palen Lake.

BACKGROUND

Groundwater Pumping Impacts to Biological Resources. The Water Resources section of the AFC (pg 5.17-39) concludes that the pumping would produce a drawdown of area wells no greater than five vertical feet between 240 and 730 feet from the well, and that no significant impacts related to area wells, drainage, water quality, or storm runoff are expected. However, staff has insufficient information to conclude that the pumping would have no effect or an insignificant effect on any sensitive biological resources as a result of a pumping. To ensure that impacts to any water-dependent vegetation, seeps and springs,

and associated wildlife are adequately assessed, staff needs additional information on these resources in the area of potential effect. Plant communities and features that may be dependent on groundwater include ironwood forests, mesquite bosques, succulent chenopod scrubs, seeps and springs. Staff needs additional information on these water-dependent vegetation, including maps depicting vegetation communities in the affected areas described in the AFC, and the effect of the drawdown on vegetation, seeps, springs, and (if applicable) playas.

DATA REQUESTS

83. Groundwater Dependent Communities. Please provide a map and description of the vegetation (including dominant species, any facultative or obligate wetland plants or riparian species present, physiographic setting, habitat function and values, special-status species associates) that occur within all areas potentially affected by project groundwater pumping. 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). Please include acreage of each plant community type within this mapped area.

84. Springs and Seeps. Please provide a figure depicting any seeps, springs or other groundwater discharges that could be potentially affected by project related groundwater pumping. Most features are not depicted on USGS topographic maps and should not be the sole source of information. Evaluation of high resolution aerials with at least some ground-truthing, consultation with BLM district staff, and a review of the data sets available from the Mojave Desert Ecosystem Project (MDEP) is recommended. Please also include a discussion of the wildlife that might be expected to use these resources.

BACKGROUND

Special Community Types: Many plant assemblages, in addition to providing habitat for special-status wildlife, have their own patterns of rarity. The California Department of Fish and Game (2003) has identified "special community types" as plant alliances and associations that "*are either known or believed to be of high priority for inventory in CNDDB. Lead and trustee agencies may request that impacts to these communities be addressed in environmental documents*." (CDFG 2003, pages 2-3). These communities are marked by an asterisk in the *List of California Terrestrial Communities Recognized by CNDDB* (CDFG 2003).

To ensure consistency with CDFG botanical survey guidelines for documenting occurrences of rare natural communities and those impacts to such communities are adequately assessed and minimized, staff needs more information about the occurrence of special community types and unique plant assemblages in and near the project area. These include the galleta grass association, a desert wash type in the project area that staff observed during their November 3rd site visit. Other special community types that were mentioned in the AFC but not adequately discussed include mesquite stands, a desert riparian community, and

succulent chenopod scrubs dominated by Mosquin's seepweed (a facultative wetland species). Staff also needs to know how project area sensitive plant communities described in the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan integrate with the special community types tracked by CNDDB.

DATA REQUESTS

85. Special Community Types. Please provide information on the occurrence within and near the project area of any special community types identified by CNDDB (i.e., those identified by an asterisk in the *List of California Terrestrial Communities Recognized by CNDDB* [CDFG 2003]). Please include any such special community types that occur within the project footprint and along linear facilities, and those which are outside of the project boundaries but that may be indirectly affected by the project (e.g., by water diversions). Include a discussion of their location, physiographic setting, dominant and associated species, and their value to wildlife.

86. Special Community Types Figure. Please provide a figure at a 1:4800 (1 inch = 400 feet) scale showing the approximate location of these special community types within and near the project disturbance area and linear facilities, and provide an estimate of their acreage. Please also include shapefiles.

87. Impacts/Mitigation for Impacts to Special Community Types. Please provide an analysis of the potential direct and indirect impacts to special community types of project construction and operation, and describe any mitigation measures to avoid, minimize or compensate for impacts.

BACKGROUND

Revise Mapping of Playa Lake Bed. In reviewing the AFC staff was concerned that the delineation of state waters did not include the playa lake bed that was depicted in the AFC map of Vegetation Communities (Figure 6 of the Biological Technical Report), where "*Approximately 72 acres of dry lake bed were mapped within the disturbance area*" [pg 45, Biological Technical Report and pg 15 of the Botanical Survey Report]. During the November 3, 2009 site visit with the Applicant's consultants, staff and CDFG verified that no lake bed occurs within the project footprint and that the 72 acres of lake bed within the project footprint depicted in the AFC maps of Vegetation Communities was incorrectly mapped. Rather, the area in question was observed in the field to be inhabited by a chenopod scrub of woody saltbush species (*Atriplex* spp.) on stabilized and partially stabilized dunes. Staff requests below that the mapping of Vegetation Communities be revised to reflect the actual occurrence of saltbush or chenopod scrub on stabilized and partially stabilized dunes.

DATA REQUEST

88. Revise Vegetation Mapping of Dry Lake Bed. Please provide a revised Figure 5.3-4, Vegetation Communities, to reflect the actual occurrence of saltbush or chenopod scrub on stabilized and partially stabilized dunes in the area previously mapped as 72 acres of Dry Lake Bed.

BACKGROUND

Special-Status Plants Observed But Not Discussed in Report. According to the list of plant species observed (Attachment C in Appendix F, Biological Resources Technical Report), one California Native Plant Society (CNPS) List 4 plant species was 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: ribbed cryptantha (*Cryptantha costata*). Other List 4 plants were discussed in the Botanical Survey Report (Appendix F of the Biological Resources Technical Report); consequently, we believe this omission may be an oversight.

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

89. Description and Map of Ribbed Cryptantha. Please provide a discussion of the location of the reported occurrences of 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.

    a. Include an estimate of the number of plants observed and describe their location/distribution in the project area.

    b. Depict the approximate occurrence boundaries on an aerial photo at a scale similar to that submitted in the Data Adequacy Supplement, Figure 5.3-6.

90. Shape Files/Metadata for Special-Status Plant Occurrences. Please provide the GIS shape files and metadata for all special-status plants found during the surveys.

BACKGROUND

Additional Special-status Plant Species to Consider. In the Botanical Survey Report (Attachment F of Appendix F, the Biological Resources Technical Report, pg 18), the target list of special-status plants considered to have potential for occurrence in the project area (upon which survey timing and strategies are

based), omits some special-status plant species that have potential to occur based on known occurrences in the project vicinity, information from regional botanical experts at UC Riverside (UCR), Joshua Tree National Park, and the Sweeney Granite Mountains Desert Research Center, and/or CNDDB (including unprocessed reports. Staff acknowledges that suitable microhabitat may not be present in the project area to support all of the following taxa but there is no discussion of these regional plant species in the AFC or technical reports upon which Staff can base its assessment:

CNPS List 1B Plants:
Harwood's woolly-star (*Eriastrum harwoodii*)
Flat-seeded spurge (*Chamaesyce platysperma*)

CNPS List 2 Plants:
Abram's spurge (*Chamaesyce abramsiana*)
bitter hymenoxys (*Hymenoxys odorata*)
lobed ground cherry (*Physalis lobata*)
small-flowered androstephium (*Androstephium breviflorum*)
Spearleaf (*Matelea parviflora*)
Argus blazing star (*Mentzelia puberula*) (new addition to the CNPS Inventory and new *Jepson Manual, split off from M. oreophila*)
California ayenia (*Ayenia compacta*)

CNPS List 4 Plants:
desert unicorn plant (*Proboscidea althaeifolia*)
pink velvet mallow (*Horsfordia alata*)
desert portulaca (*Portulaca hamiloides*)
bitter snakewood *(Condalia globosa* var. *pubescens)*
winged cryptantha *(Cryptantha holoptera)*

DATA REQUEST

91. CNPS List IB and 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 and micro-habitat 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, 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 and shapefiles 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.

92. Surveys for CNPS List IB and 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 timed to coincide with the identification period for these taxa, and/or under appropriate environmental conditions, 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 for 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 CNDDB field survey forms and GIS shape files and metadata for any found occurrences.

93. CNPS List 4 Plants.

a. Please discuss whether suitable microhabitat for any of the List 4 plants occurs within the project footprint.

b. If suitable general and microhabitat is present and it is likely that the taxon occurs in the project area, please provide a brief discussion of the significance of such an occurrence (if present), e.g., whether it occurs on the periphery of the taxon's range in California.

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 at UCR, Joshua Tree National Park, and the Sweeney Granite Mountains Desert Research Center. 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

94. 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.

95. Map of Suitable Habitat. If suitable habitat is present onsite for these late season rare plants, please provide a map and shapefile 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.

96. Assess Significance of Occurrences.

    a. Please provide an assessment of the eco-geographical significance of an occurrence (if present) relative to its distribution within California.

    b. 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.

    c. Please consult botanical expertise from UC Riverside, Joshua Tree National Park, and the Sweeney Granite Mountains Desert Research Center.

    d. Please also provide a map or discussion of the reported/documented occurrences within the NECO planning area.

97. Rainfall Data. Please provide any available 2008/2009 rainfall data from a source as close as possible to the project site.

BACKGROUND

Impact Assessment and Mitigation for Special Status Plant Species. The analysis of impacts to special-status plants, in Section 5.3 of the AFC (pg 5.3-40), Biological Resources, states that three individuals of Harwood's milk-vetch would be permanently and directly impacted by the project, and that 117 additional plants occur outside the project footprint that could be indirectly affected by the channel diversions (Harwood's milk-vetch occurs on sandy desert washes). The proposed mitigation (BIO-18, pg 5.3-56) states: " *A Designated Biologist shall collect seed from Harwood's milkvetch individuals identified within the disturbance area at the appropriate time during the spring before construction begins. Approximately three individuals were found in spring of 2009, but this number could vary any given year based on rainfall patterns and response of this species. The seed shall be stored and either incorporated into the planting palette for other mitigation on site or redistributed within 500 feet of the population in appropriate habitat to the north of the disturbance area. In addition, as a conservation measure, it is expected that the Project shall provide an herbarium specimen to the San Diego Natural History Museum for long-term documentation of this rare species. In the buffer, measures shall be taken to avoid and minimize impacts to Harwood's milkvetch to the greatest extent possible. This includes avoiding unnecessary or unauthorized trespass by workers and equipment, staging andstorage of equipment and materials, refueling activities, and littering or dumping debris in areas known to contain Harwood's milkvetch that are not within the designated construction footprint.*"

The conclusion that impacts to Harwood's milk-vetch would be less than significant rests on the avoidance measure described in BIO-18 and on a proposal that "*the desert washes will be re-routed and downstream drainage conditions restored to their approximate existing patterns*" (pg 5.3-40). However, the delineation of waters did not include a delineation of washes downstream of the project and there is no detailed plan for the design or configuration of the re-distributed channels downstream of the project footprint. Additionally measure BIO-18 lacks sufficient detail or assurances of mitigation implementation, monitoring, and success or contingency upon which staff can base its assessment. Additional details beyond that provided in BIO-18 are needed on proposed avoidance, minimization and compensation measures to ensure that impacts to special-status plants are adequately minimized and compensated, if significant. 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 REQUEST

98. Special-Status Plant Avoidance/Mitigation Plan. Please prepare a draft Special-Status Plant Avoidance and Mitigation Plan for potential significant indirect impacts to 117 Harwood's milk-vetch that occur on a desert wash downstream of the project footprint from the diversion of the channel upstream of the occurrence. Provide detailed specifications for avoiding/minimizing indirect impacts to this wash-dependent species from channel diversions and to plants occurring in close proximity to the construction footprint. Specifications for avoiding accidental impacts to Harwood's milk-vetch occurring in close proximity to construction 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, or noxious weed 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 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, or to be used in conjunction with the methods described above. Transplanting or replacement planting of most rare plants 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 or lead time is typically required for seed collection, cleaning and testing, storage, and planting, particularly for desert plants in a region of widely variable climatic conditions; viable seed

may not be produced every year. Please provide a detailed transplantation or replacement planting plan that includes, at a minimum: 1) baseline and target conditions; 2) background information on the reproductive ecology and micro-habitat requirements of Harwood's milk-vetch, and any information available on germination requirements; 3) detailed description of pre-construction seed collection, including timing of collection, handling of seeds, storage and propagation; 4) a table of success criteria and quantitative parameters to measure successful achievement of these criteria; 5) implementation and monitoring specifications; 7) management guidelines (noxious weeds and other indirect effects), and 6) triggers for remedial action. If the 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. Include guidelines for implementation and monitoring of any contingency procedures that may be required.

Please also provide a plan for seed collection and delivery to an appropriate organization to preserve the plant's germplasm, and provide evidence of coordination with an appropriate organization to accept the seeds (for example Rancho Santa Ana Botanic Garden Seed Program).

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

99. Creosote Rings. Please provide an analysis (and mapping if present) of high-resolution aerial photos for the presence or absence of creosote rings greater than 10 feet in diameter within the project footprint, including the transmission line route, substation, and access roads to these facilities.

BACKGROUND

Weed Management. Impacts of the project on the introduction and spread of noxious weeds and other invasive non-native plants is discussed as a potential indirect effect to natural communities, Harwood's milk-vetch, desert tortoise and other wildlife. The AFC also indicates that Saharan mustard—a particularly 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.

The mitigation measure BIO-14 in Section 5.3-54 addresses weed management with a single paragraph, but construction and operation of the project will require a more 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 and definitions of the ranks at: http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/winfo_weedratings.htm

DATA REQUEST

100. Weed Management Plan. Please prepare and provide a draft 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 or the approximate distribution of the noxious weeds and other invasive non-native plants described in the AFC. Include the location of 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 (WMA), 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 BLMs 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.

BACKGROUND

Proposed Substation Survey Results: Pages 1 and 2 of the Data Adequacy Supplement note that habitat assessments, vegetation mapping, and jurisdictional delineations were conducted for the assumed location of the Southern California Edison (SCE) Red Bluff substation in early October 2009. The Supplement provides a summary of the survey results and impact analyses from the October 2009 surveys, but more survey data are needed for the projected location of the Red Bluff substation. Survey results for desert tortoise will be submitted in at the end of November, burrowing owl surveys and avian point count surveys by April 2010, and rare plant survey results in June or July 2010. Staff cannot complete their analysis until survey results are submitted, and request below that the remaining surveys be completed as soon as possible.

DATA REQUEST

101. Submit Transmission Line and Substation Survey Results: Please submit surveys results, impact analyses and mitigation recommendations as soon as possible for the following protocol surveys for the proposed Red Bluff substation and transmission line:

    a. Desert Tortoise

    b. Special-Status Plants

    c. Burrowing Owls

    d. Avian Point Counts

BACKGROUND

Sand Dunes in Transmission Line Disturbance Area. Table 1 of the Data Adequacy Supplement shows 0.02 acres of stabilized and partially stabilized desert sand dunes, yet Table 1 in another column indicates that 0.0 acres occurs in the 1,000 foot buffer surrounding the linear and one-mile buffer surrounding the proposed substation. Figure 2 in the Supplement does not show any dune habitat south of Interstate 10. Staff needs clarification as to whether sand dune or partially stabilized sand dune occurs in or near the proposed transmission line and substation because this habitat type could support special-status species, including the Coachella Valley milk-vetch and Mojave fringe-toed lizard.

DATA REQUEST

102. Sand Dune Habitat along Transmission Line Route. Please clarify whether sand dune or partially stabilized sand dune occurs within in the transmission line disturbance area or within 1000 feet of the proposed alignment. If any such habitat is present within the transmission line disturbance area or within 1000 feet of the proposed alignment, please provide a figure at a scale of 1:4800 (1 inch = 400 feet) depicting the location of the sand dune or partially stabilized sand dune habitat in relation to proposed project features.

BACKGROUND

Spring 2010 Special-Status Plant Surveys: According to the Data Adequacy Supplement, the proposed transmission line route extends south approximately 1.2 miles from the boundary of the Project Disturbance Area across Interstate-10. The proposed substation will be constructed in a 34.7-acre area immediately west of the southern end of the transmission line. Focused plant surveys have not yet occurred for the substation site and associated portion of the 1-mile buffer where reconnaissance surveys occurred in fall 2009, but are proposed for Spring 2010.

Page A-12 of the Supplement notes that Harwood's milk-vetch was previously detected to the north of the project area, and that this species would have high potential to occur in the transmission line disturbance area based on the close proximity to previous locations. The Supplement (page A-12) describes the potential for other special-status plant species, including fairyduster and Coves' cassia, as having: "*moderate potential to occur in the Transmission Line Disturbance Area on account of the sandy washes that are present*." The Supplement also describes Coachella Valley milk-vetch as having "*moderate potential to occur in the Transmission Line Disturbance Area due to the lack of dune habitat, which is required for this species*."

Coachella Valley milk-vetch is a federal-listed plant species that occurs on "*dunes and sandy flats, along the disturbed margins of sandy washes, and in sandy soils along roadsides, in areas formerly occupied by undisturbed sand dunes. Within the sand dunes and sand fields, this milk-vetch tends to occur in the coarser sands at the margins of dunes, not in the most active blowsand areas. As this species is strongly affiliated with sandy substrates, it may occur in localized pockets where sand has been deposited by wind or by active washes. It may also occur in sandy substrates in creosote bush scrub, not directly associated with sand dune habitats*", according to the Coachella Valley Multiple Species Habitat Conservation Plan (CVAG 2007, page 9-27). The presence of sandy washes in the transmission line disturbance area suggests that there may be suitable habitat for Coachella Valley milk-vetch in this area.

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 milk-vetch in the Chuckwalla Valley area. UC Riverside has three correctly identified collections of Coachella Valley milk-vetch 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/. However, there are also vouchered specimens for the common taxon (*A. l. variabilis*) in the Chuckwalla Valley. Another variety of *Astragalus lentiginosus*—Borrego milk-vetch (a CNPS watch list plant)—is also documented from the region, along the Colorado River. *Astragalus lentiginosus* in the Riverside Co range of *A. l. coachellae* have been interpreted as either *A. l. borreganus* or *A. l. coachellae*, mainly on the degree of pod inflation and inflorescence elongation

The distribution of Coachella Valley milk-vetch is primarily restricted to the Coachella Valley in Riverside County, between Cabazon and Indio, with the exception of six outlying occurrences within a 5-mile area along the Rice Road in the Chuckwalla Valley north of Desert Center (CVAG 2007.). These Desert Center "outliers" were most recently observed in March 1998. In good years, 100's to 1000's of individuals have been described in a population, but often reports are of less than 20 plants. Specific data on population size and dynamics are not available for Coachella Valley milk-vetch. It blooms from February to May, producing pink to deep magenta-colored flowers. It is distinguished in part from other milk-vetches by its strongly inflated, two-chambered, mottled pods. However, distinguishing *Astragalus lentiginosus* varieties is challenging and would require verification by an expert on this genus for a confirmed identification.

Although the proposed substation is separated from the easternmost documented occurrences by Interstate-10 and a distance of 30 miles, the substation is located within the same landform and dune system of Chuckwalla Valley. Additionally this region is not well surveyed, relative to other areas within the taxon's range. For all the reasons described above, the potential for this federal-listed plant to occur within the substation and transmission line project area cannot be ruled out. Surveys will be required at the appropriate time of year (February through May), and identification of any *Astragalus lentiginosus* variety detected during the surveys would need to be confirmed with experts on Coachella Valley milk-vetch.

Until the spring surveys for Coachella Valley milk-vetch (and other special status plants) have been conducted, staff has insufficient information to complete an analysis of impacts to rare plants or assess alternatives that would avoid potential habitat. However, staff can make progress on the analysis prior to receiving survey results with more detailed information about the suitability of the habitat to support Coachella Valley milk-vetch and other special-status plants. Because time is short for planning and conducting spring surveys and habitat mapping, staff also seeks to work with the Applicant's biological consultants in

developing and implementing a survey plan for Coachella Valley milk-vetch and other special-status plants, as described in the data request below.

DATA REQUEST

103. Survey Plan for Coachella Valley Milk-vetch and Other Special-Status Plants. Please submit a Special-Status Plant Survey Plan for the spring 2010 floristic surveys along the proposed transmission line route and substation, and include the following components:

    a. Habitat Mapping. Please provide a description of a detailed mapping effort to delineate habitat along the substation and transmission line route that could potentially support Coachella Valley milk-vetch and other special-status plant species. The mapping will need to be based on ground-based surveys and professional grade GPS. Habitats may be ranked according to its quality or potential to support Coachella Valley milk-vetch, based on criteria developed by recognized expert on this species. An area calculation for suitable habitat within the project area will also be needed, and the map should depict 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 (1 inch = 2000 feet).

    b. Survey Plan. Develop a study plan for the field survey that is consistent with all guidelines contained in *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 2000). Include one or more visits to the Desert Center Rice reference population or other known population of Coachella Valley milk-vetch to obtain a visual image and to accurately time the spring surveys to coincide with the identification period. Please include the names and qualifications of personnel who will be conducting the surveys.

    c. Expert Consultation/Voucher Collections. Consult with recognized experts on Coachella Valley milk-vetch to assess the suitability of the habitat on site to support this plant, and its potential to occur in the project area. Review the vouchered collections from the Desert Center area (Dice 980324-2; Dice 980324-3; and Sears 1173), review the collection data (http://ucjeps.berkeley.edu/consortium/), and

    d. Schedule. Provide a schedule for accomplishing the tasks listed above and for submitting a report describing the results of the habitat mapping and surveys.

REFERENCES:

Desert Tortoise Council. 1994 (Revised 1999). Guidelines for Handling Desert Tortoises During Construction Projects. Edward L. LaRue, Jr., editor. Wrightwood, California.

CDFG. 2003. California Department of Fish and Game. List of Natural Communities Recognized by the California Natural Diversity Database. California Department of Fish and Game, Wildlife Habitat Analysis Branch. *www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcom**list**.pdf*

Flora of North America Editorial Committee. 2003. Flora of North America North of Mexico. 14+ vols. New York and Oxford. *Cylindropuntia echinocarpa*. Vol. 4 Page 94, 95, 102, 103.

Heifetz, W. 1941. A review of the Lizards of the Genus *Uma*. Copeia. 1941: 99-111.

Lichvar, R.W., D. Finnegan, M. Ericsson, and W. Ochs. 2006. Distribution of Ordinary High Water Mark (OHWM) indicators and their reliability in identifying the limits of "Waters of the United States" in arid southwestern channels. ERDC/CRREL TR-06-5. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. (http://www.crrel.usace.army.mil/techpub/CRREL_Reports/reports/TR06-5.pdf).

Lichvar, R. W. & S. M. McColley. 2008. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual. U.S. Army Corps of Engineers, Engineers Research and Development Center, Hanover NH Cold Regions Research And Engineering Lab. August 2008.

Newton, G. A. and V. P. Claassen. 2003. Rehabilitation of Disturbed Lands in California: A Manual for Decision-Making. California Department of Conservation, California Geological Survey. 228 p.

Norris, K.S., 1958. The evolution and systematics of the iguanid genus *Uma* and its relation to the evolution of other North American desert reptiles. Bulletin of the American Museum of Natural History 114, 247–326.

Nussear, K.E., T.C. Esque, R.D. Inman, L. Gass, K. A. Thomas, C.S.A. Wallace, J.B. Blainey, D.M. Miller, and R.H. Webb. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona: U.S. Geological Survey Open-File Report 2009-1102.

Sawyer, J. O., and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society. Sacramento, California.

USACE 2006. United States Army Corps of Engineers Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. U.S. Army Engineer Research and Development Center, Vicksburg, MS. December 2006.

Western Regional Climate Center. 2008. Blythe CAA Airport, California (040927), Period of Record Monthly Climate Summary. Available at http://www.wrcc.dri.edu/cgibin/cliMAIN.pl?ca0927. Accessed on June 24, 2009, October23, 2009.

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: Cultural Resources
Author: Kim Tremaine (CEC) and Christopher Dalu (BLM)

The Energy Commission cultural resources data requests are organized to show which requests would be pertinent to which cultural resources review approach (approaches 1, 2, or 3) the applicant chooses, as outlined in the November 30, 2009 letter to the applicant from Alan Solomon, Energy Commission Siting Project Manager.

Approach 1

If the applicant chooses cultural resources review approach 1, all of the data requests below would need to be answered except for # 116. (For approaches 2 and 3 go to the end of the cultural resources data requests.)

Note: all requests from the BLM archaeologist for revisions to the final cultural resources class III survey report must be answered under all three approaches, but can be answered within the final technical report submitted to the BLM. The applicant does not need to answer them separately in the data responses to the Energy Commission, but must provide a copy of the final cultural resources class III survey report to the Energy Commission under confidential cover.

BACKGROUND

To assess the proposed project's potential impact on buried archaeological resources and on potentially historic built-environment resources, staff needs information on the dimensions of ground disturbance associated with the installation of various project components and on the potential effect on the integrity of setting of various project structures.

BACKGROUND

Staff's review of AFC Cultural Resources section 5.4, the Preliminary Draft Cultural Resources Technical Report, and the Historic Architecture Field Survey Report found that the applicant did not explicitly define or depict on any map the project's surface Area of Potential Effects (APE) for either the archaeological or the built-environment resources. Discussions in the Preliminary Draft Cultural Resources Technical Report and in the Historic Architecture Field Survey Report seem to equate the surface APE with the entire area surveyed but that equivalence is not explicitly stated.

DATA REQUESTS

104. Please provide a definition of the archaeological surface APE and the built-environment APE for the proposed project, identifying the areas included in them.

105. Please provide a map at a scale of 1:24,000 depicting the final and definitive archaeological surface and built-environment APEs for the proposed project.

BACKGROUND

AFC Figure 2-4 is inadequately detailed for the analysis of the proposed project's potential impacts to cultural resources. A number of project components that should be displayed are not depicted or not discernible. To facilitate its analysis, staff needs detailed maps.

DATA REQUEST

106. Please provide a figure/figures that includes the following additional project components:

- on-site transmission lines
- off-site transmission lines, including any re-routings and any alternative routes
- on-site fiber optic system, overhead and/or underground, on- and off-site
- on-site steam lines
- on-site wells and water pipelines
- on-site firewater system pipeline
- septic tanks and leach fields
- drainage diversion channels
- all project-constructed roads, on- and off-site
- culverts
- wells
- oil and chemical containment features , above and/or underground
- land treatment unit

BACKGROUND

To assess the project's potential impact on buried archaeological resources, staff needs additional information on the extent of ground disturbance, both on- and off-site.

DATA REQUESTS

107. Please provide the lengths, widths, and depths of the channels for storm water runoff diversion.

108. Please provide plans for the horizontal and vertical extent of grading, including the maximum elevation range and the finished grade elevation.

109. Please provide the depth planned for the detention basins.

110. Please provide the depths of the planned underground pipeline for well water distribution.

111. Please provide a description of foundation designs, including dimensions, for the steam turbine generator and any other pieces of equipment with deep foundations.

112. Please provide plans for the horizontal and vertical extent of the septic tanks and leach fields.

113. Please provide the planned depth of the holes for the foundations of the transmission line monopoles.

BACKGROUND

The AFC discusses re-routing a Southern California Edison 161-kV power line (Eagle Mountain-Blythe) that presently runs in a northwesterly direction across the southwest portion of the proposed project site (p. 2-28). The applicant hopes to accommodate both the solar facilities and the SCE line within the BLM ROW, but that was not established at the time of the submission of the AFC to the Energy Commission. To assess the proposed project's potential impact on known or buried cultural resources, staff needs information on the extent of archaeological survey coverage of the possible re-location area and on the extent of ground disturbance associated with the possible removal of the supports for the SCE Eagle Mountain-Blythe 230-kV line.

DATA REQUESTS

114. Please provide a discussion of the dimensions and depth of ground disturbance that would result from removal of the supports for the SCE Eagle Mountain-Blythe 230-kV line.

115. If the area into which the two SCE lines would be re-located has not previously been surveyed for cultural resources:

    - Please have a qualified archaeologist survey these sites and record on Department of Parks and Recreation (DPR) 523 forms any cultural resources that are identified; and
    - Please submit to staff, under confidential cover, a report on the methods and results of these surveys, with recommendations for the treatment of any cultural resources identified in the surveys.

BACKGROUND

In lieu of clarifying and detailing the exact number, character, and extent of ground disturbing activities that would result from the construction of the proposed project and then determining which significant cultural resources would be impacted by which activities, staff may conduct its analysis of the project's physical impacts on cultural resources at a coarser level of data resolution. Staff has developed an alternate concept of the area in which cultural resources would be impacted by the project—an alternate concept of the project area of analysis—as one large, three-dimensional spatial block, entailing the full extent of the project's below-grade impacts (inclusive of all foundations and trenches) and above-grade impacts (inclusive of all above-ground facilities), and delimiting both the project's physical impacts to surficial and buried cultural resources and perceptual impacts to the settings of built-environment resources and traditional cultural properties. Staff's analysis would entail assuming that all cultural resources located within that block would be significantly impacted by the project and that these impacts would require mitigation. For this approach, staff needs the applicant to determine the boundaries, in three dimensions, of an "impact block" for the plant site (with septic tank and leach field), for the Land Treatment Units, and for each of the linear facilities, including the storm water diversion and detention system, gas pipeline boring pits, and stub roads, and any alternative facility corridors and alternative site locations. Staff suggests the following steps as the simplest way to accomplish this:

a. Use the footprint to provide the preliminary horizontal dimensions;

b. Expand the footprint horizontally in all appropriate directions to accommodate the view shed of any built environment resources and/or traditional cultural properties;

This expanded footprint is the plan of the impact block.

c. Generalize the greatest vertical dimension, both into the ground and into the air, of the planned facilities to the rest of the impact block.

This is the profile of the impact block, which is a coarser resolution variant of the project area of analysis.

DATA REQUEST

116. Please provide to staff a series of scaled and dimensioned plan-and-profile views of the proposed project's (and alternative locations) impact blocks.

BACKGROUND

The applicant did not survey for cultural resources within the entire area of the Bureau of Land Management (BLM)-authorized Right-of-Way (ROW) and also did not make recommendations of eligibility for those cultural resources identified during surveys in the 200-foot buffer zone around the proposed project footprint. Because several of the project Alternatives that staff will analyze are

reconfigurations of the proposed project's components within the BLM-authorized ROW, staff needs survey data and resource evaluations for the cultural resources located within the entire ROW.

DATA REQUESTS

117. If the previous CHRIS search(es) did not cover the area out 1.0 mile from the entire ROW, please request an additional search and provide to staff copies of all records for known cultural resources in the additional area.

118. Please conduct a Bureau of Land Management (BLM) class III pedestrian archaeological survey and a built-environment survey of the entire BLM-authorized ROW.

119. Please complete DPR 523 forms for additional identified sites and make a recommendation on the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) eligibility of each additional site.

120. Please provide to staff a survey report for the additionally surveyed area and copies of the additional DPR 523 forms.

BACKGROUND

Energy Commission and BLM cultural resources staff must conduct both California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) analyses of the proposed project. The latter requires a robust analysis of project Alternatives, so a reasonable range of alternative project sites, configurations, or technologies must be identified and analyzed.

Cultural resources data on alternatives was not included in the AFC or AFC Data Adequacy Supplement. Staff needs these data to conduct the required NEPA alternatives analysis comparing the proposed project's impacts to cultural resources with those of the alternatives.

DATA REQUESTS

121. Pursuant to achieving a BLM class III inventory for all alternative project site location(s), please provide to staff, under confidential cover, the following:

    a. Copies of DPR 523 site forms for all previously known cultural resources from California Historical Resources Information System (CHRIS) record searches, and from BLM records (if pertinent), for the alternative locations, out to 1.0 mile beyond the sites' and linear facility corridors' boundaries;

    b. Copies of CHRIS reports of previous archaeological excavations and architectural surveys conducted within the boundaries of the alternative sites and their linear facility corridors;

c. A copy of the results of the Native American Heritage Commission's (NAHC) sacred lands database search for each alternative location;

d. Copies of all letters sent to and received from Native Americans identified by the NAHC as interested in development at each alternative location;

e. A pedestrian archaeological survey of 100 percent of the acreage of the alternative location, including a visit to all previously recorded archaeological sites to verify location and to update content and condition;

f. An examination of historic maps to identify former and extant buildings and structures, including trails, roads, and other infrastructure, aged 45 years or older, for each alternative location;

g. A windshield built-environment survey of all of the trails, roads, and historic-period use areas in each alternative location, identified from the examination of historic maps; and a visit to all previously recorded built-environment sites to verify location and to update content and condition;

h. Copies of DPR 523 site forms (with as precise dates as possible) for all cultural resources newly identified or updated through the applicant's additional pedestrian archaeological surveys and windshield built-environment surveys for each alternative location;

i. A map at a scale of 1:24,000 depicting the locations of all previously known and newly identified cultural resources for each alternative location; and

j. A discussion of the comparative advantages and disadvantages of the proposed project and each alternative location, with respect to cultural resources.

122. If the applicant has analyzed other alternatives, unique to the proposed project, please provide to staff the above requested information for each additional alternative that entails use of land beyond the BLM-authorized ROW.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report makes reference to several historic maps. Staff did not find copies of these maps in the materials the applicant provided. Staff needs to review copies of these maps for its analysis of potentially CRHR-eligible built environment resources. Historic aerial photographs and other historic photographs are also needed for similar reasons. Additionally, the AFC stated that the proposed project site was mapped using Light Detection and Ranging (LIDAR) (p. 2-4). Staff needs to review the LIDAR data for more precise imaging of the site topography in relation to known and identified cultural resources.

DATA REQUESTS

123. Please provide copies of the following:
    a. 1942 Map of Desert Training Center;
    b. 1943 Army Topographic Relief Map of the Desert Training Center Desert Floor (cited in Lyneis 1973);
    c. Any pertinent Mining District Map(s); and
    d. LIDAR data for as much of the proposed project area as is available.
124. Please provide copies of any historic aerials and photographs of the Desert Training Center vicinity.

BACKGROUND

The Native American Heritage Commission response to the applicant's request for a search of the Sacred Lands Data Base mentions a site nearby. To have complete information on the cultural resources that could be impacted by the proposed project, staff needs additional information on this resource.

DATA REQUEST

125. Please provide information on the nature of the Sacred Lands site and its location in relation to the project area.

BACKGROUND

The BLM manages an "Area of Critical Environmental Concern"(ACEC) for a portion of Palen Dry Lake directly adjacent to the project area. This area is archaeologically sensitive, so staff needs information on this ACEC to provide additional context for evaluating archaeological sites located within the proposed project's plant site.

DATA REQUESTS

126. Please provide a map of BLM's "Area of Critical Environmental Concern" for Palen Dry Lake.
127. Please identify the nature of the areas of archaeological concern and provide a discussion of any special land use management measures prescribed for this area and what implications they have for the proposed project.

BACKGROUND

The applicant's project lies within the former Desert Training Center (DTC) California-Arizona Maneuver area. The Preliminary Draft Cultural Resources Technical Report indicates that the DTC was nominated for listing in the NRHP in 1980. Although the nomination did not adequately justify the DTC's eligibility,

staff assumes the nomination contains information necessary to staff's evaluation of this potentially CRHR-eligible resource.

DATA REQUEST

128. Please provide copies of the National Register nomination of the Desert Training Center and any supporting documentation (e.g., Brown 1980, and Becker 1980).

BACKGROUND

In a September 14, 2009 letter, the National Trust for Historic Preservation commented on BLM's Solar Energy Programmatic Environmental Impact Statement. In providing scoping comments on the Riverside East Solar Energy Study Area (encompassing the Solar Millennium Project), the Trust noted that a portion of the DTC/California-Arizona Maneuver area (Camp Rice) has been recommended as eligible for the NRHP. The Trust expressed concern that other intra-DTC sites may be individually eligible for the NRHP or may be contributors to an interconnected eligible landscape of WWII sites, significant for their association with General George S. Patton and for their contributions to our understanding of how American soldiers were trained during WWII. To evaluate this potentially CRHR-eligible resource, staff needs historical information on DTC activities in the proposed project's plant site and additionally needs clarification on the applicant's analyses and evaluation of DTC-related sites.

DATA REQUESTS

129. Please provide additional historical information regarding the DTC and the specific uses of the APE and Camp Desert Center by the U. S. Army.

130. Please update the Department of Parks and Recreation (DPR) 523 forms for newly identified historic-period archaeological sites attributed to military activities within the project APE to better justify classifying these resources as "military" rather than as common civilian roadside debris. Please include specific information on the associated artifacts (e. g., types of ammunition, types of canned foods typical of WWII rations, types of oil cans, etc.), and the activities represented (e. g., maneuver areas, artillery ranges, supply depots, temporary tents, munitions dumps, etc.). Please provide copies of the updated forms to staff.

131. Please provide the rationale for recommending military sites as ineligible for the NRHP or CRHR, either as individual places or properties, or as elements contributing to a possible historic district/cultural landscape.

BACKGROUND

Staff knows that the region in which the proposed project is located has areas the use of which continue to contribute to the maintenance of cultural cohesion in known groups of Native Americans. Staff surmises that such areas played a

similar role for Native Americans prior to a catastrophic disruption of traditional practices, such as the profound degradation of oral history that occurred in the early historic period among many Native American groups. To complete its analysis of the potential impacts of the proposed project on cultural resources, staff needs information on the possible presence of traditional use areas in or adjacent to the APE.

DATA REQUESTS

132. Please provide a discussion of the efficacy of modeling the potential archaeological characteristics and spatial distribution of at-this-time unknown Native American traditional use areas on the basis of available ethnographic information and theoretical principles of ethnogeography, citing appropriate authorities.

133. If reasonably practicable, please develop such a model and submit for staff review and approval a research plan for the field verification in the APE of the model's predictions and recordation of identified traditional use areas.

134. Please implement the staff-approved plan and provide to staff a report on the results and a comprehensive discussion of the traditional use areas in and adjacent to the project APE that may be subject to the *visual* impact of the construction, operation, and maintenance of the proposed project (e. g., landforms in sight of the APE on which sacred or other traditional activities took place). Please include any additional DPR 523 site forms in an appendix.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report notes the presence of patinated desert pavement in the southern portion of the survey area (p. 16) and associates particular archaeological site types with this geomorphic feature in the Colorado Desert including prehistoric trails, cleared circles, rock rings, and geoglyphs (pp. 48–50). In the applicant's record search, two trails were noted near the project area (Riv-893t and Riv-53t), one of which may actually be located in the project area. In addition, BLM archaeologist, Chris Dalu, suggests that trails may be indicated on aerial photographs. These photographs also show cleared areas that are probably related to WWII military activities. Staff needs more information on potential trails that may be in desert pavement areas and those that aerial photographs may show.

DATA REQUESTS

135. Please revisit the southern portion of the project area where "desert pavement" exists to verify the adequacy of the extant site survey for identification of prehistoric trails.

136. Please ensure that any other cleared areas shown on aerial photographs, be field-examined.

137. If any new trails are identified by the above, please record them on DPR 523 forms (as linear resources) and provide copies of the forms to staff.

BACKGROUND

In the Preliminary Draft Cultural Resources Technical Report, the applicant classified prehistoric site types in the "Methods" section and in table 5-9. Division of the cultural resources inventory into objective resource subsets is critical to the comprehension of the nature of the inventory, to the analysis of the potential impacts of the proposed project on the resources, and the development of appropriate mitigations for any such impacts. Consequently, staff needs to make an independent interpretation of site types and therefore, in addition to the provided classification, needs clear and complete descriptions of the archaeological sites the applicant identified.

DATA REQUESTS

138. Please update the DPR 523 forms for all newly identified prehistoric archaeological sites, using different criteria to classify them into site types. Please avoiding terms that imply *function* (e.g., hearth) in favor of *descriptors* (fire-affected rock scatter), and avoid broad labels such as *camp* in favor of multiple individual constituents that more precisely articulate the archaeology of the resources. As examples, surface deposits of chipped stone and ground stone artifacts and ceramic sherds would type out, simply enough, as a "chipped and ground stone artifact and ceramic scatter." A deposit that includes one or more intact hearths and ceramic sherds would type out as "fire-affected rock and ceramic scatter." Similarly, develop objective criteria to classify historic-period site types and themes.

139. Please further update the DPR 523 forms for the prehistoric sites by dividing site types into preliminary chronological groups where possible. Groupings of prehistoric and historical archaeological deposits need to make the greatest possible use of the available sources of chronological data. For prehistoric archaeological sites, the chronological groups should reflect the cultural chronology of the "Project Setting" section of the Preliminary Draft Cultural Resources Technical Report. The chronological assignments should be made, where feasible, based on sources of relative chronological data, such as the most recent projectile point, ceramic, and "unique artifact" typologies. For historical archaeological sites, the chronological groupings similarly should be made relative to the most recent ceramic, bottle and bottle glass, and tin can typologies, and, where applicable, the typologies for less frequent artifact classes such as nails, ammunition, and buttons, reflecting, at a minimum, the broad historic periods set out in the "Project Setting" section, if not narrower time ranges within those periods.

140. Please provide copies of the updated the DPR 523 forms to staff.

BACKGROUND

Neither the AFC Cultural Resources section 5.4, nor the Preliminary Draft Cultural Resources Technical Report, nor the Supplemental Cultural Resources Class III Report No. 1 provided geoarchaeological information about the location of the proposed project. To assess the proposed project's potential impacts on buried archaeological resources, staff needs more detailed information on the landforms in the project's APE.

DATA REQUESTS

141. Please obtain the services of a professional in geoarchaeology: a person who, at a minimum, meets the U.S. Secretary of the Interior's Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and has completed graduate-level coursework in geoarchaeology, physical geography, geomorphology, or Quaternary science, or who has education and experience acceptable to staff. Please submit the resume of the proposed geoarchaeologist for staff review and approval.

142. Please have the approved geoarchaeologist provide a discussion, based on the available Quaternary science and geoarchaeological literature, of the historical geomorphology of the proposed project's APE, including:

    a. A description of the development of the landforms, with dates, focused on the character of the depositional regime of each landform from the Late Pleistocene epoch to the present;

    b. Data on the geomorphology, sedimentology, pedology, hydrology, and stratigraphy of the APE, and the near vicinity; and

    c. The relationship of landform development to the potential in the APE for buried archaeological deposits.

143. Please have the approved geoarchaeologist produce a map or maps of the landforms present in the project area at a scale of not less than 1:24,000; the data sources for the maps may be any combination of published maps and/or satellite or aerial imagery that has been subject to field verification, and/or the result of field mapping efforts; the maps should overlay the project APE on the landform data. Please also provide the metadata for each overlay used.

144. Absent sufficient technical literature pertinent to the reconstruction of the historical geomorphology of the project APE, and absent sufficient field data to elucidate landform relationships, please have the approved geoarchaeologist design a primary geoarchaeological field study of the project APE, submit a research plan for staff approval, and conduct the approved research. The purpose of the study is to facilitate staff's assessment of the likelihood of the presence of subsurface components

for previously known or found surface archaeological deposits and of buried archaeological deposits in the project's APE. The primary study should, at a minimum, include the following elements:

a. Use any natural exposures that reveal aspects of the stratigraphy of the portions of the landforms in the project APE;

b. A subsurface sampling strategy to document the landform stratigraphy not revealed in natural exposures;

c. Data collection necessary for determinations of the physical character, the ages, and the depositional rates of the various sedimentary deposits and paleosols that may be beneath the surface of the landforms in the project APE, to the proposed maximum depth of ground disturbance. Data collection at each sampling locale should include a measured profile drawing and a profile photograph (with a metric scale), and the screening of a small sample (three 5-gallon buckets) of sediment from the major sedimentary units in each profile through ¼- inch hardware cloth. Data collection should also include the collection and assaying of enough soil humate or other organic samples to reliably radiocarbon date a master stratigraphic column for each sampled landform; and

d. An analysis of the collected field data and an assessment, based on those data, of the likelihood of the presence of subsurface components for previously known or found surface archaeological deposits and of buried archaeological deposits in the project APE, and, to the extent possible, the likely age and character of such deposits.

145. Please have the approved geoarchaeologist prepare a report of the primary field study and submit it to staff under confidential cover.

BACKGROUND

Among the newly identified resources reported in the Preliminary Draft Cultural Resources Technical Report are 12 prehistoric sites, similar to *loci* within site Riv-1515, located in BLM's ACEC. Staff must consider the possibility that the 12 sites might more appropriately be understood as parts of a larger prehistoric site like Riv-1515, or possibly as contributors to an archaeological district. Staff needs additional data on this potential archaeological district and a recommendation on its NRHP and CRHR eligibility.

DATA REQUESTS

146. Please provide the rationale for recording sites Riv-1015, Riv-1016, Riv-1017, Riv-1018, Riv-1019a, Riv-1019b, Riv-2013a, Riv-2013b, Riv-2014, Riv-2015, Riv-2018, and Riv-2023 as separate sites instead of as clusters

of loci. Also, given the larger context of the ACEC, please provide a discussion of a possible archaeological district evidencing the repetitive visits by Native Americans to this area and their associated subsistence activities.

147. Please propose and submit for staff approval a research plan (including methods that do not entail significant impacts to the sites), a proposed schedule, and personnel resumes, to provide data supporting or discounting the existence of an archaeological district.

148. Please implement the staff-approved research plan and, under confidential cover, provide staff with a report, presenting all the collected data, describing and dating the potential archaeological district, and making a recommendation on its NRHP and CRHR-eligibility, supported by the collected data.

Data Requests from Christopher Dalu, Archaeologist, Bureau of Land Management

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report incorrectly and/or inconsistently reports various acreages surveyed. These do not match the acreage shown on survey map. BLM requires the correction of inaccurate information in the final technical report.

DATA REQUESTS

149. Please provide the APE maps in the final technical report.

150. Please accurately note the number of acres in the final technical report.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report does not provide a legal description of the project location or the approximate miles from surrounding communities and points of interest in the region. BLM requires these data in the final technical report.

DATA REQUEST

151. Please provide in the final technical report a legal description of the project location (township, range, sections) as well as show the Desert Center on the regional map (Figure 1, page 2).

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report does not provide a map of previously surveyed areas or resources recorded within the records search area. BLM requires this map in the final technical report.

DATA REQUEST

152. Please provide in the final technical report a map of the previously surveyed areas and recorded resources within the records search area.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report does not provide a landscape-level map of the APE identifying the areas of deposition, deflation, and stabilization relative to landform. BLM needs this information for predicting where sites might be located, as well as helping assess potential for subsurface deposits on various landforms, and for determining archaeological monitoring requirements.

DATA REQUEST

153. Please provide in the final technical report a map of the local landscape.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report does not include a discussion of possible lithologic units in the vicinity that might serve as important toolstone sources or point to possible quarry locations. BLM requires this information in the final technical report.

DATA REQUESTS

154. Please provide in the final technical report information on the lithology of the local geology.

155. Please differentiate in the final technical report between the various types of toolstone observed in the lithic scatters identified within the site and attempt to account for their possible origins.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report provides a discussion of Colorado River fish, (not particularly relevant for this project) but insufficient information about the lake itself. The site record for Ca-Riv-1515, directly adjacent the project area bordering Palen Dry Lake, reported the presence at this site of fish bone and fish hooks, so clearly the lake was a source of food for Native Americans in the past. BLM requires more information on the lake in the final technical report.

DATA REQUESTS

156. Please provide in the final technical report additional information on Palen Lake, including:

    - The periods in history it was wet;

- When it most recently dried up;
- What was the quality of the water (e.g., fresh, saline);
- What was the duration of the wet periods (e.g., 10years, 150 years);
- What were the elevations of various lake highstands; and
- What food resources (e.g., types of fish, shellfish, turtles, waterfowl) were associated with the lake.

157. Please provide in the final technical report a discussion of the Western Pluvial Lakes tradition present in California from 11,000 years ago into the early Altithermal climate period and how Palen Lake might relate to this tradition.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report provides insufficient information to judge the adequacy of the survey. BLM requires this information in the final technical report.

DATA REQUEST

158. Please provide in the final technical report a description of the field conditions experienced by the survey teams for the archaeological surveys of both the proposed plant site and the later transmission route, including ground visibility, temperatures, terrain, etc.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report section on Ethnographic Background is underdeveloped. Because this information is vital to placing cultural resources identified within the APE into context and to determining their significance at the local, regional, and national level, BLM requires this information in the final technical report.

DATA REQUESTS

159. Please extend outreach to local Native Americans and other cultural groups that may have knowledge of the regional trail system and traditional land use within this portion of the Chuckwalla Valley.

160. Please provide in the final technical report an overview map showing only the prehistoric cultural resources within the project APE and vicinity to show the landscape-wide network of cultural/aesthetic expression (e.g., petroglyphs, geoglyphs, trails, quarries, camps).

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report section on Historic Background is underdeveloped. Because this information is vital to placing

cultural resources identified within the APE into context and to determining their significance at the local, regional, and national level, BLM requires this information in the final technical report.

DATA REQUESTS

161. Please provide in the final technical report information that clearly identifies the important events/developments, themes, people, and periods of significance within the historic period relevant to Desert Center and the Chuckwalla Valley, Eastern Riverside County.

162. Please provide in the final technical report additional information regarding earliest historic roads, wells, gas stations, airports, recreational use areas, and mining in the Chuckwalla Valley.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report and DPR 523 records assume cans opened using the P-38 can opener can be attributed to military activities. This assumption is not adequately justified in the report or on the forms. BLM requires this information in the final technical report.

DATA REQUESTS

163. Please provide in the final technical report the following additional information on the P-38:

    - When it was invented and manufactured;
    - When it would have been available for shipment to soldiers at the DTC;
    - Whether there is any field or archival evidence that they were used at the DTC; and
    - What distinguishes a P-38-opened can from cans that were opened with other can opener technologies of the time.

164. Please attempt to distinguish military-issued ration cans and marketed cans by size or estimated capacities (e.g., ounces) and provide a discussions in the final technical report.

165. Please, for all historical archaeological sites attributed to DTC activities, provide percentages of cans determined as definitely military-issued vs. non-military-issued for the following: beverage, meat, oil, fruit, vegetables, milk, coffee, tobacco, and miscellaneous, and provide the figures and a discussion in the final technical report.

166. Please provide in the final technical report an overview map showing only the DTC-related cultural resources (e.g., refuse, tank tracks, roads, munitions) at the landscape level relative to the project APE. Please also provide a map showing the surrounding DTC divisional camps and roads relative to the project APE.

BACKGROUND

The Preliminary Draft Cultural Resources Technical Report provides very brief descriptions of the newly discovered archaeological sites within or near the proposed project's surface APE (Tables 11 and 12), and recommends evaluative testing on three of them that could be NRHP-eligible, if project impacts to these sites cannot be avoided.

Because staff needs to evaluate all of the sites that would be impacted by the project and therefore needs data from evaluative testing on all of those sites, staff concurs in the applicant's recommendation of archaeological testing.

The applicant also recommends that an additional three lithic scatter sites (Preliminary Draft Cultural Resources Technical Report, Table 14: 3 sites) qualify for the programmatic treatment offered by the California Office of Historic Preservation and known as CARIDAP (California Archaeological Resource Identification and Data Acquisition Program) (p.131). Staff concurs in this recommendation also.

DATA REQUESTS

167. For all archaeological sites for which project impacts cannot be avoided, please submit for staff approval, a plan, including a research design and methods that do not entail significant impacts to the sites listed in Tables 13 and 14, for using test excavations or the CARIDAP protocol to determine if any subsurface deposits are present and to acquire sufficient data to make recommendations of NRHP and CRHR eligibility for these sites, with the potential of the recovered data evaluated according to its applicability to the research questions posed in the research design. The testing plan should include the following analyses:

    - Dating all or a sample of datable materials recovered from tested sites, including obsidian, charcoal, bone, and shell;
    - Detailed lithic analysis of debitage addressing manufacturing techniques and sourcing of toolstone materials, including, if locally derived, an estimated collection radius; and
    - Site-specific and landscape- or APE-based strategies for ceramic analysis to generate such attributions as source, age, mineral content, and paste characteristics that are consistent with J. Schaefer's ongoing research efforts.

168. Please provide to staff a report on the testing and results at these sites, presenting an analysis of the recovered data and recommendations regarding the eligibility of the sites.

Other Review Approaches (Data Request Subsets)

Note: all requests from the BLM archaeologist for revisions to the final cultural resources class III survey report (#s 149–168) must be answered under all three approaches, but can be answered within the final technical report submitted to the BLM. The applicant does not need to answer these requests separately in the data responses prepared for the Energy Commission, but must provide a copy of the final cultural resources class III survey report to the Energy Commission under confidential cover.

Approach 2

If the applicant chooses cultural resources review approach 2, all of the above data requests would need to be answered except for # 116. Additionally, data request # 121 would be modified to reduce the required phase I archaeological survey to a BLM class II level and reduce the survey coverage from 100% to 25%. Required part "e" would therefore read as follows:

> A pedestrian archaeological survey of a 25% stratified random sample of the acreage of the alternative location, where the subject sample is developed using project area landforms and known cultural parameters as stratification criteria (One layer of the sample would reflect the known landforms in the project area, a second layer would reflect known prehistoric settlement pattern parameters such as proximity to past or present water ways or stands of economic plant species, and a third layer would reflect historic period cultural parameters such as proximity to known historic transportation and utility corridors, mining districts or areas, and townsites.); a visit to all previously recorded archaeological sites to verify location and to update content and condition;

Approach 3

If the applicant chooses cultural resources review approach 3, the above data requests that would need to be *answered* would be limited to:

- #s 104–105;
- #s 116–125;
- #s 132–137 and
- #s 141–145.

Technical Area: Geological Hazards and Resources
Author: Patrick Pilling, Ph.D., P.E., G.E., D.GE.

BACKGROUND

Site-specific subsurface information is essential to completely evaluate a site with respect to potential geological hazards and how the existing geological materials may impact design, construction, and operation of the facility. The information is also useful in establishing the geological profile with respect to potential paleontological resources. The AFC notes that geotechnical investigations are being performed for the project site, but no data was included in the AFC.

DATA REQUEST

169. Please provide copies of any geotechnical data/documents that have been completed for the project site.

BACKGROUND

Seismic ground shaking can have a significant effect on the operation of the proposed facility, and development of this project must include an analysis of seismic shaking. Such an analysis typically includes a listing and description of significant seismic sources that could affect the site. This information was not presented in the AFC.

DATA REQUEST

170. Please provide a listing and description of all significant seismic sources within a 100-mile radius that could affect the site. The information should include the fault name, a description of the fault, fault type, fault class, slip rate, maximum magnitude, approximate site-to-source distance, and estimated peak ground acceleration at the plant site due to the maximum credible earthquake occurring along the fault.

BACKGROUND

Development of this project must be assessed for its potential to impact geological resources of recreational, commercial, or scientific value. Such resources could include aggregate and mineralogical resources. The AFC does not specifically address these potential resources.

DATA REQUEST

171. Please provide information with respect to the potential presence of such resources, the techniques used to identify and evaluate these resources, and the project's potential to impact such resources.

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. Tables 5.2-17 and 5.2-18 of the AFC provide modeling results for combustion sources during construction activities for criteria pollutants, including PM10 and PM2.5, but not DPM. 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

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

BACKGROUND

DPM emissions from on-site vehicles are presented in Table 5.2-26 of the AFC (including mirror wash trucks, trucks that apply soil stabilizer, trucks used for weed abatement activities, water trucks and other maintenance vehicles). In determining risks due to operational activities at the proposed project, the AFC did not include diesel emissions from these vehicles used on-site for maintenance activities. 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

173. 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.

174. Please conduct a health risk assessment for diesel emissions from vehicles involved in on-site solar field and equipment maintenance activities during plant operations.

175. Please provide a cumulative PM2.5 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 PM2.5.

BACKGROUND

The AFC indicates that 87% of the total cancer risk estimated at the maximally exposed individual resident is due to benzene emitted from two heat transfer fluid (HTF) expansion/ulllage tank vents. The AFC states that VOC emission rates used are estimated based on data provided by the existing Kramer Junction Solar Energy Generation facility, however this information is not provided in the AFC.

DATA REQUEST

176. Please provide the Kramer Junction Solar Energy Generation facility data used in the AFC, specifically emission rates of benzene and other HTF thermal degradation products emitted.

177. Please provide any other information obtained specific to thermal degradation of HTF, biphenyl and diphenyl ether, and the source of that information.

BACKGROUND

In addition to dry cooling towers used for the primary steam cycle, the project will use 2 smaller auxiliary wet cooling towers to remove residual heat, utilizing water supplied from onsite groundwater wells. Emissions of chloroform (resulting from the use of sodium hypochlorite as a biocide for cooling tower maintenance) from the auxiliary wet cooling towers are included in the health risk assessment, but the AFC does not evaluate potential toxic metal emissions due to metals present in groundwater.

DATA REQUEST

178. Please provide groundwater concentrations and emission rates for metals present in groundwater from the auxiliary wet cooling towers and conduct a health risk assessment on metals emitted.

BACKGROUND

Risks and hazards are estimated at the location of the nearest known residential receptor. In order to evaluate the potential for a higher risk to occur at another location, it is also important to estimate risk at the point of maximum impact (PMI) predicted in the modeling.

DATA REQUEST

179. Please provide the location(s) of the point of maximum impact predicted in the air dispersion modeling for cancer risk, chronic hazard and acute hazard due to facility operations. Please estimate risk and hazard at the PMI.

Technical Area: Power Plant Reliability
Author: Erin Bright

BACKGROUND

To ensure that a project will operate reliably, a quality control program is often applied to the project to make certain that appropriate quality measures are applied to all systems and components of the project such that desired reliability and availability are achieved.

DATA REQUEST

180. Please describe the quality control program that would be utilized for the project, including examples of appropriate controls that would be applied to each of the stages of project development.

Technical Area: Soil and Water Resources
Author: John Thornton, P.E., Michael Donovan, P.G., C.Hg., Michael Daly, P.E.

BACKGROUND: Cut & Fill

In section 5.12.3.1 of the AFC, the report states: "Grading of the Project site will result in a less than one percent slope downward from the south to the north of the site. Earthwork associated with the Project will include excavation for foundations and underground systems, and the total earth movement that will occur is approximately 4,500,000 cubic yards. Cut and fill will be balanced on the site and there will be no need to either import or export earthen material."

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

DATA REQUEST

181. Please show how much cut and fill will occur at the site.
182. If the cut and fill quantities are not balanced, please show how the balance differences would be resolved.
183. Please provide calculations indicating the stockpile locations are sufficient to support the volume of soil and vegetation expected to be generated.

BACKGROUND - Soils – Erosion Control

In the Mojave Desert, 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 evapotranspirate, flows as surface runoff and at times can result in flash flood conditions. The plants on the property, on that the project is proposed, 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 across and off site. At such a large scale, up to 2,970 acres of vegetation removal and ground disturbance, management of the surface water flows would require extensive engineering to protect against potential impacts from erosion and sedimentation.

DATA REQUEST

184. Please provide plans and maps showing how sheet and channel flow across the project site, over roads, around the mirrors, and off the site would be managed through engineering controls.
185. Please provide erosion and deposition predictions on the up-slope and down-slope sides of the project.

186. Please provide information showing how soils will be maintained to prevent erosion during operation.

187. Please provide maps and plans showing how the site soils will be returned to their original state along with long-term management of the site soils upon decommissioning of the project. (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).

BACKGROUND - Soils – Dust Control

In section 5.12.3.2 of the AFC, the report states: "Dust control will be achieved by a combination of soil stabilizers, water from the collector washing and waste cooling water, and compaction of the driving surface over time. Therefore, operational controls designed to control dust will reduce the overall soil erosion in the area." Staff is concerned that techniques described are inadequate to prevent dust control/wind erosion.

DATA REQUEST

188. Please provide a comprehensive discussion of how dust control would be achieved by mirror washing and compaction. Specifically identify:
    a. How water from mirror washing would be directed to all the disturbed areas.
    b. How equipment traffic will compact the soil and not break up soil crusts and/or create silt.
    c. How would water be applied when mirror washing is not occurring.

BACKGROUND: Climate and Precipitation

The applicant has provided some information on climate but neglected to include information on evapotranspiration.

DATA REQUEST

189. Please provide information on regional and site specific information on evapotranspiration. If citing regional data, a scaled map should be included that depicts the location of the station where the data was collected and the project location.

190. If citing regional data (such as Indio), please provide a comparison between any regional stations and more localized stations to see if the local stations may be more representative of site conditions. The

California Irrigation Management Information System (CIMIS) has stations in Ripley and near Palos Verde that are significantly closer to the site than Indio.

BACKGROUND - Basin Plan Objectives

In section 5.17.2.2 of the AFC, the report states: "The Colorado River Hydrologic Basin Region is subdivided into 28 groundwater basins that cover approximately 20,000 square miles. As a part of the Colorado River Hydrologic Basin Region, the Chuckwalla Valley Groundwater Basin (Chuckwalla Hydrologic Unit) is divided into four hydrologic subareas or units: Ford, Palen (which includes the Project site), Pinto and Pleasant subareas. There are no significant subsurface structural features that restrict groundwater flow within the Chuckwalla Valley Groundwater Basin. The Chuckwalla Valley Groundwater Basin is not listed on the DWR list of adjudicated groundwater basins. It encompasses an area of about 940 square miles or 605,000 acres. In the Chuckwalla Valley, groundwater is the sole source for domestic, industrial and agricultural water supply."

The LORS portion of the document indicated that there are water quality objectives, but did not discuss what those objectives are. Specifically, the Basin Plan indicates for the Hayfield beneficial use area: "Discharges of wastes or wastewater shall not increase the total dissolved solids content of receiving waters, unless it can be demonstrated to the satisfaction of the Regional Board that such an increase in total dissolved solids does not adversely affect beneficial uses of receiving waters." Since the applicant proposes to use Reverse Osmosis (RO) reject water for dust suppression, a discussion of basin plan and water quality objectives is required.

DATA REQUEST

191. Please provide a detailed discussion of the basin plan and water quality objectives for both surface water and groundwater. Be sure to include springs and any other hydrologic features that might be impacted by proposed project.

BACKGROUND: Hydrogeology

The applicant has briefly described the geology however there is no discussion of the structure or formation of the basin which may have a strong influence on groundwater occurrence and flow. Specifically, the applicant states in Section 5.17.2.3 of the AFC that "Regionally, this valley formed as a structural depression or a pull-apart basin and is composed of two broad geologic units, consolidated rocks and unconsolidated alluvium. The consolidated rocks consist of pre-Tertiary age igneous and metamorphic rocks, which form the basement complex, and in some locations, Tertiary-age volcanic rocks that overlie the basement complex. The consolidated rocks are nearly impermeable except for areas where

fracturing or weathering has occurred. It is uncertain the extent that these rocks yield water to the alluvium. Some literature indicates that the fractured bedrock is in communication with the alluvium and there are wells that are completed in the bedrock that yield sufficient quantities of water. The flux of groundwater into and out of the bedrock is unknown." Similar conditions in other adjacent valleys (Hayfield) have suggested faults that may compartmentalize the groundwater system."

The AFC goes on to state: "The water level readings in well 5/15-12N1 suggest the water level, at this well, has recovered to pre-pumping levels. The data presented in the hydrographs suggest that pumping around Desert Center induced a local cone of depression in that area that did not extend eastward into the area of the Project site. The differential response and recovery to pumping in this area would suggest some compartmentalization of the aquifer system that is not unexpected since it is comprised of interconnected and isolated alluvial fan deposits."

In addition, as stated in the Preliminary Geotechnical Investigation Report Solar Millennium Concentrating Solar Power Project Palen, Riverside County, California dated September 16, 2009, "There are no faults underlying the site that are known to be active. Inferred faults that trend northwest-southeast are mapped by several authors through the site. The presence of these faults are based on differences in lithologies in the Palen Mountains to the northeast and the Chuckwalla Mountains to the southwest and on gravity data. These faults are not thought to be active."

Moreover, 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 several miles over the life of the project.

A more comprehensive discussion of the geology and hydrogeology is required as several important elements have been casually mentioned but not fully discussed including "isolated alluvial fan deposits" and compartmentalization of the groundwater system.

DATA REQUEST

192. 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 a geologic map, structural contour map and cross-sections.

193. 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:

- identification and location of known springs, seeps, surface discharges and playas;
- spring type (if known) and discharge quantity (gpm) and whether perennial or ephemeral; and,
- general water quality

BACKGROUND - Groundwater Recharge

In section 5.17.2.5 of the AFC, the report states: "GEI estimated the average volume of recharge to the aquifer from direct precipitation and infiltration to be between 5,540 to 5,600 afy. The recharge volume is based on assuming a 10 percent infiltration rate for rain falling on the tributary watersheds along the mountain front areas."

Staff believes that it is likely that the precipitation that permeates the soil is almost entirely retained in the upper layers of the basin 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."

This suggests the contribution of direct precipitation upon the valley floor of the Chuckwalla Valley Groundwater Basin (CVGB) 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.

In addition, the applicant used the upper value (1,000 afy) for the range from underflow (100-1,000 afy) from Orocopia Valley to the CVGB. Discussion with consultants for the Hayfield studies by Metropolitan Water District of Southern California indicate that the underflow value may be negligible or very small (100 afy).

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.

DATA REQUEST

194. 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.

BACKGROUND – Groundwater Discharge/Outflow

In section 5.17.2.5 of the AFC, the report states: "A comparison of recharge to discharge shows a net increase of about 650 afy to the Chuckwalla Valley Groundwater Basin. This result suggests current unity in recharge and discharge, which seems to be indicated by the stability in the hydrographs and recovery of water levels in the Desert Center area. Adding the operational supply to this would not alter the water balance significantly nor put the groundwater basin into overdraft (Table 5.17-6)."

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. Specifically, the applicant did not address discharges from springs seeps and playa lakes (that are reportedly discharging groundwater).

DATA REQUEST

195. 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 5.17-6) then the applicant should develop an estimate based upon similar

studies/methods used in the area. In the absence of studies, estimates ofoutflow from Palen Lake should be based on pan evaporation rates from a free-water surface.

BACKGROUND - Table 5.17-8 Summary of Aquifer Characteristics

Staff is concerned that the information presented in Table 5.17-8 Summary of Aquifer Characteristics may be inaccurate and/or misleading. The applicant did not try and develop estimates of transmissivity from specific capacity testing from various well logs located in vicinity of the site. Moreover, the AFC stated in section 5.17.2.7 "As part of the current Project water resources field investigation, a pumping test will be performed in well 5/17-33N1 to better develop an understanding of site hydrogeologic conditions and aquifer properties. Two observation wells will be installed in support of the proposed pumping test program. Data from the pumping will be used to improve the site conceptual model and refinement of the groundwater model that was employed to assess the radius of influence from the proposed project pumping." The AFC also stated: "The data will be analyzed both by hand and using AQTESOLVTM to determine well efficiency, yield, aquifer characteristics, and the influence on adjacent pumping wells."

DATA REQUEST

196. Please provide a conservative estimate of aquifer parameters for the alluvium, the Bouse Formation, and fanglomerate based on site specific conditions i.e. if uncertain of the parameters or there is a wide range in parameters, use the parameter that will produce the maximum impact. The site specific conditions from the aquifer test study should be the value used. 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.
197. 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 – Reverse Osmosis Reject Water

The applicant proposes to utilize Reverse Osmosis (RO) to treat the groundwater produced for water needs. The RO system will generate reject water or concentrate with a concentration of approximately 13,000 mg/L of total dissolved solids. The amount of reject water generated on a daily basis was not provided. The RO reject water is directed to a 0.6 million gallon storage tank that is used for dust suppression across the site. Documentation of the potential impacts from discharge of the reject water to the ground surface for dust control was evaluated

in the AFC Supplement Vol.3. Staff is concerned that insufficient information has been supplied to evaluate the use of reject water for dust control and the submission of draft WDR. Using the RO reject water for dust suppression may constitute a waste discharge.

In addition, the applicant provided an analysis of potential water quality impacts associated with use of the RO reject water in the AFC Supplement Volume 3 submittal. Staff is concerned that the applicant did not:

- Conduct an analysis of the longest period that could occur where salts would accumulate on site;
- address all potential constituents that may be present and could be detrimental to flora and fauna; and
- Identify alternatives for disposal of the RO reject water.

DATA REQUEST

198. Please conduct a statistical analysis of the longest period that could occur with no runoff (i.e. the highest salt loading to soils on the site) based on historic rainfall data and estimate of the threshold precipitation rate where runoff (offsite) would occur.
199. Please provide a discussion of potential salt loading using the longest period salt loading factor developed from the previous request. The discussion must include the impacts associated with other parameters including pH, boron, metals, radionuclides and any other constituents that may be present in the runoff water and are detrimental to flora and fauna on and adjacent to the project site.
200. Please identify alternatives for disposal of the RO reject water including offsite disposal.
201. Please identify whether, except for the exclusive permitting authority of the Energy Commission, the applicant would need a permit from the Regional Water Quality Control Board (RWQCB) for the discharge of high saline groundwater to land.
202. Please provide all information necessary to file a Report of Waste Discharge with the RWQCB.
203. Please provide all information necessary to file a Report of Waste Discharge to the RWQCB and include the appropriate application fee.

BACKGROUND – Water Supply

In section 2.5.5.2 of the AFC, the report states “The Project’s various water uses include water for solar collector mirror washing, makeup for the SSG feedwater, dust control, water for cooling plant auxiliary equipment, potable water and fire

protection water. The estimated operational water requirements for the power plant are annual water usage is estimated to be about 300 acre feet per year (afy), which corresponds to an average flow rate of about 188 gallons per minute (gpm). Usage rates will vary during the year and would be higher in the summer months when the peak maximum flow rate could be as much as about 50 percent higher (about 275 gpm)."

The report goes on to state: "The Project water needs will be met by use of groundwater pumped from one of two wells on the plant site. Water for domestic uses by Project employees also will be provided by onsite groundwater treated to potable water standards. As discussed in Section 5.17, Water Resources, a well testing program is underway, using an existing onsite well, to allow determination of the optimum groundwater pumping program to provide the needed volumes of water with minimum impact to other groundwater users and the groundwater basin. The results of this well testing program will be made available to regulatory agencies and other stakeholders when the testing program is completed.

It is expected that two new water supply wells in the power blocks of the Project site will adequately serve the Project on a rotating basis. The second well will provide redundancy, an inherent backup water supply in the event of outages or maintenance of the first well."

The AFC did not provide information on specific depths the wells would be completed and if they would draw water from the alluvium, the Bouse formation or Fanglomerate.

DATA REQUEST

204. Please provide details on the depth of the proposed wells and the aquifer(s) the wells would be targeting for production.

BACKGROUND – Numerical Groundwater Modeling

In section 5.17.3 of the AFC, the report states: "An existing numerical groundwater model was selected to provide some of the evaluation of Project impacts. A regional model developed by the USGS incorporation with the USBR for evaluation of the potential for depletion of the Colorado River from pumping in sub-adjacent groundwater basins was selected for the Project. The regional model is a two-dimensional superposition model developed using MODFLOW code for the Parker-Palo Verde-Cibola area, which includes the Chuckwalla Valley Groundwater Basin. The model is a simple two-dimensional model, employing a simple vertical geometry and a large grid spacing to evaluate the impacts from groundwater pumping on recharge to the Colorado River. The model uses a constant value for storativity (0.20) and varies transmissivity developed from a statistical analysis of published aquifer test data. The transmissivity values are varied from a low value (6,300 ft2/d) to an average

value of 26,000 ft2/d. The model grid uses a spacing of 1,320 feet throughout the domain which includes the Chuckwalla Valley and Palo Verde Mesa and Cibola area of Arizona."

Staff is concerned that the numerical groundwater model used aquifer characteristics that may not be representative of site conditions. Specifically,

- The estimates of transmissivity were from regional wells and not from site specific wells;
- The model assumes an initial uniform saturated thickness of 500 feet. This assumption must be verified using available borehole data to ensure the model accurately represents the vertical geometry of saturated sediments in the vicinity of project pumping wells
- Because the model was not calibrated to observed water levels and water level trends, results from the superposition model must be interpreted with caution when used to assess potential groundwater impacts.
- Multiple model runs are needed to test the sensitivity of simulated impacts to uncertainty in the magnitude and distribution of aquifer parameters as indicated by aquifer test results.

The AFC provided information concerning local information (in Chuckwalla Valley) on transmissivity and storativity. In addition, the cited well testing program will presumably provide more site specific information on transmissivity and storativity for the site. It is presumed that the groundwater modeling will be updated to reflect the local conditions determined for the site.

Actual project well locations and pumping depths have not been determined. The USGS model represents only the water table aquifer within the saturated alluvium. However, water supply wells in the basin can also extract water from the underlying Bouse Formation and possibly deeper Fanglomerate (Metzgeret al., 1973). The two-dimensional model is limited to simulating potential impacts due to pumping alluvial wells, and if deeper wells are utilized for the project water supply the model grid will need to be extended vertically to represent the deeper water bearing zones.

In addition, the numerical model used by the applicant assumes an initial uniform saturated thickness of 500 feet. This assumption must be assessed and verified; if possible, using available borehole data to ensure the model accurately represents the vertical geometry of saturated sediments in the vicinity of project pumping wells.

DATA REQUEST

205. Please provide a conceptual model of what was used in the numerical model that is consistent with site specific conditions.

206. Please update the numerical model with site specific aquifer characteristics as previously mentioned.

207. Please provide transient groundwater model runs (including analysis) of the proposed project from construction through operations for the life of the project. Output should include water level changes within the basin (at end of construction, mid project and project shutdown).

208. Please provide transient groundwater model runs (including analysis) of the proposed project during the life of the project. Output should include water level changes within the basin (at end of construction, mid project and project shutdown).

209. Please provide an electronic copy of the computer files for the numerical model.

210. 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.

211. Please indentify the aquifers the targeted for production and the anticipated water quality of this aquifer. Please revise Table 5.17-9 Summary of Water Quality Data accordingly.

212. 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.

213. Please provide the impacts and thresholds of significance that were used to evaluate the potential impacts to groundwater quality related to potential vertical migration of saline water from the shallow groundwater system to the lower aquifer systems.

214. Please provide 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.

BACKGROUND – Land Treatment Unit

The Applicant has proposed to use a Land Treatment Unit to treat HTF-impacted soils from normal operations at the project site. The two solar fields to be installed at the Project would share the same LTU to bioremediate or land farm soil contaminated from releases of HTF. The bioremediation unit will be designed in accordance with Colorado River Basin RWQCB requirements and is expected to comprise an area of about 800 feet by 200 feet (3.8 acres). The bioremediation facility would utilize indigenous bacteria to metabolize hydrocarbons contained in non-hazardous HTF contaminated soil. A combination of nutrients, water, and aeration facilitates the bacterial activity where microbes restore contaminated soil within two to four months.

The LTU will be constructed with a clay liner at least five feet in thickness as per Title 27 requirements. Unsaturated zone monitoring and/or groundwater monitor will be used to evaluate liner integrity. Nutrients including nitrogen and phosphorus would be added to the contaminated soil to encourage consumption of the HTF by the indigenous bacteria. The soil would remain in the remediation unit until concentrations are reduced to an average concentration of less than 100 mg/kg HTF. Soil contaminated with HTF levels of between 100 and 1,000 mg/kg will be land farmed at the LTU, meaning that the soil will be aerated but no nutrients will be added.

Staff is concerned that there is insufficient information to assess the adequacy of the LTU to treat HTF-impacted soils during the life of the project. In addition, the applicant has not submitted a report of waste discharge (ROWD) to the RWQCB or staff.

DATA REQUEST

215. Please provide details on the sizing of the LTU and how HTF-impacted soils will be treated including information on the presence of indigenous bacteria to breakdown the HTF, breakdown products, time for achieving breakdown from the 10,000 mg/kg maximum to the 100 mg/kg reuse level.
216. Explain what impact the use of RO concentrate on soils for dust suppression will have on the ability of indigenous bacteria to breakdown the HTF?
217. Explain how runoff and/or leachate potentially generated from operation of the LTU will be managed?
218. Explain potential impacts from operation of the LTU on surface and groundwater quality.
219. Please provide a ROWD for discharge to a LTU. Please also provide the ROWD to the RWQCB along with the appropriate fee for their review.

BACKGROUND - Surface Water

A Federal Clean Water Act section 401 certification may be required. If there are potential impacts to surface waters of the State and/or Waters of the United States, such as drainages, streams, washes, ponds, pools, and wetlands, this certification will be required from the RWQCB. These impacts need to be quantified and mitigated. Please refer to:
http://www.waterboards.ca.gov/coloradoriver/water_issues/programs/401_certification/

DATA REQUEST

220. Please discuss in detail whether a 401 certification is required. If required, please discuss compliance with the RWQCB requirements discussed on the following RWQCB webpage: http://www.waterboards.ca.gov/coloradoriver/water_issues/programs/401_certification/

221. Submit a jurisdictional delineation to the USACE, a section 401 water quality certification application to the RWQCB, and a Streambed Alteration Notification package to the CDFG. Provide copies of all these documents to the Energy Commission staff. This response may be prepared in conjunction with the response to related Biological Resources data requests.

BACKGROUND - Environmental Impacts

In section 5.17.3 of the AFC, the report states: "Water supply impacts would be considered significant if the Project resulted in:

222. Substantial depletion of groundwater resources and interference with local wells,

223. Substantial interference with groundwater recharge, or

224. Use of water in a wasteful manner.

Water quality or erosion/flooding-related impacts would be considered significant if the Project resulted in:

- Degradation of groundwater quality,
- Discharge into surface waters resulting in any alteration of surface water quality, or
- Activities that cause or contribute to substantial erosion or flooding off the site."

Staff is concerned that the levels of significance are too vague and that certain thresholds were not considered.

DATA REQUEST

225. Please provide the thresholds or levels of significance that were used to evaluate the potential impacts associated with the water supply impacts. The thresholds must consider any and all regulations, management plans, agreements, court orders, and other policies that may apply to the Chuckwalla Valley groundwater basin including the proposed Colorado River accounting surface.

226. 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 - Mitigation Measures

In section 5.17.4.2 of the AFC, the report states: "**WTR-8** The project owner proposes to provide offsets to the anticipated annual operational water usage through one of the following:

- Fallowing of agricultural land
- Establishing or supporting tamarisk removal program
- Offsetting water supply through a contract with the Colorado River Board of California for the Lower Colorado Water Supply Project.

Staff is concerned that the proposed mitigation measures have not been quantified or even determined if they are available in the basin.

DATA REQUEST

227. Please discuss the specific quantity of water that can be conserved using the proposed mitigation methods.
228. Please provide an assessment of whether the proposed mitigation methods and whether they can achieve the intended savings in the basin.
229. Please describe the progress that has been made on the application to the Colorado River Board on the "Lower Colorado River Water Supply Project Water".

BACKGROUND - Cumulative Impacts

In section 5.17.4.2 of the AFC, the report states: "The PSPP would not have significant impacts on either groundwater or surface water resources. As a dry-cooled facility, the Project will be a modest water user (about 300 acre-feet per year [afy] of groundwater from onsite wells, the equivalent of approximately 50 acres of alfalfa production). As discussed in Section 4.0, Alternatives, there is no feasible water supply option other than groundwater."

In addition, the applicant provided Table 5.17-12 Cumulative Impacts Assessment – Estimate of Basin-wide Water Level Change. In the table the applicant lists various projects and anticipated water use along with the expected cumulative water use and the basin wide change in groundwater levels. The change in water levels was averaged over the entire basin.

Staff is concerned that not all of the potential projects were included and that it is unclear why the numerical model was not used to estimate the overall decline in water levels in the basin and compared to the proposed Colorado River accounting surface.

DATA REQUEST

230. Please provide transient groundwater model runs (including analysis) of the proposed project from construction through operations for the life of the project. Output should include water level changes within the basin (at end of construction, mid project and project shutdown).
231. Please provide transient groundwater model runs (including analysis) of all of the proposed projects. Output should include water level changes within the basin (at beginning, mid overall duration and at the end of all projects).
232. Please provide an electronic copy of the computer files for the numerical model.
233. 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 as well as the proposed Colorado River accounting surface.
234. Please indicate the aquifers the applicants intend to produce water from and the anticipated water quality of this aquifer.
235. 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.
236. 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.
237. Please provide 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.

BACKGROUND – Drainage Report

Section 2 of the Drainage Report provides information related to the methodology and parameters used for the existing conditions peak discharge analysis. The documentation does not provide a specific reference to the watershed soil types, hydrologic soil groups, and how the Curve Numbers used in the analysis were correlated to these soil types.

DATA REQUEST

238. Please provide a map showing the extents of soil types within each watershed as well as information correlating the specific soil types with the designated hydrologic soil groups.

BACKGROUND – Drainage Design

The proposed drainage design as discussed in the AFC and Drainage Report includes the collection and diversion of several significant drainages. This scenario offers numerous complex design challenges which must be addressed in detail for independent assessment to be made on the impacts of these drainage modifications. In addition, the Drainage Report indicates a significant shift in flows between existing watersheds as the diverted offsite flows are released downstream of the project.

DATA REQUEST

239. Please provide a detailed analysis of the depth and extent of the existing and developed 100-year floodplain using an industry accepted methodology such as FLO2D. This analysis should utilize recent detailed topography and should accurately model the transitions from natural floodplain to constructed channel, and back to natural floodplain. The analysis should extend upstream of the project boundaries at least 500', and farther if needed, to allow any model boundary assumptions to establish realistic conditions at the project limits. 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 extents and depths.
240. Please provide the appropriate analysis, mapping and discussion to demonstrate that flows diverted through and around the project reasonably approximate existing downstream conditions with regards to peak discharge values, floodplain depth and extent, and that undisturbed areas downstream of the project will not be cutoff from future flows.
241. Provide a detailed explanation of the data and assumptions used to complete the above referenced analysis as well as all associated data including digital input and output files for all hydraulic models.

BACKGROUND – Drainage Design

The proposed channels on the upstream side of the property will serve to intercept large flows from the upstream drainages as well as more localized flows within the watershed. Failure to properly design and provide the appropriate erosion protection along these channels where flow is intercepted and conveyed can result in severe bank erosion, headcutting, and downcutting of the channel bed.

DATA REQUEST

242. 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. Provide detailed grading plans showing the geometry of the proposed diversion channels and how they will tie into existing grade. Provide profiles for each channel that include existing and proposed grade along 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’.

243. 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.

244. Please provide documentation and analysis for establishing project specific non-erosive channel velocities based on site soils, incoming sediment load, and the calculated 10-year flow.

245. Please utilize the results of the detailed floodplain analysis to ensure that channels are appropriately sized to carry the actual estimated flow within discreet reaches based on the incoming flow distribution. Please show the distribution of incoming flows on the detailed grading plans.

246. Please provide documentation and analysis that demonstrates the proposed diversion channel design will be able to convey the incoming sediment load. Also, please address any issues and impacts of potential sediment deposition at the termination of the diversion channels where flow will be allowed to spread out.

247. If required to reduce channel slope and velocity to acceptable values, provide detailed design plans for grade control structures.

248. The use of channels without bank protection around the periphery and through the project will require it be demonstrated there are not 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 channel reaches where no bank protection is proposed and provide specific and detailed data to demonstrate compliance with the previously stated criteria.

BACKGROUND – Concept Drainage Study

The Concept 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 an incised thalweg (low-flow channel) during the more frequent events depending on channel slope and flow velocity. The formation and migration of an incised thalweg in a wide channel can threaten bank stabilization improvements.

DATA REQUEST

249. Please provide a detailed justification of why the 100-year, 24-hour design storm is critical for the facility given its projected life span.
250. 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 and velocities. Please evaluate the possible use of a compound channel section with a pre-constructed low-flow channel to more efficiently carry flow from the more frequent events and an upper terrace area to convey larger flow events.

BACKGROUND – Drainage Report

The Drainage Report does not appear to consider what could be a significant increase in runoff potential due to compaction and possible chemical stabilization of on-site soils. It is assumed that dust control will be a significant element of site operation that could require both mechanical and chemical soil stabilization.

DATA REQUEST

251. Please identify whether any chemical or mechanical methods will be used for soil stabilization at the site.
252. Please provide a detailed discussion of the potential for increased onsite runoff volumes due to compaction and possible soil stabilization methods to be employed at the facility.

BACKGROUND – Estimated Discharges

Significant flows will be generated within the facility and conveyed via swales to the proposed diversion channels.

DATA REQUEST

253. Please provide detailed information on the estimated discharges at each of the onsite drainage outfall locations where they discharge into the

diversion channels or into natural drainages, as well as detailed plans showing the proposed design at these locations and how it will prevent erosion.

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.

Metzger, D.G., Loeltz, O.J., and Irelan, Burdge, 1973. *Geohydrology of the Parker-Blythe-Cibola area, Arizona and California:* U.S. Geological Survey Professional Paper 486-G, 130 p.)

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: Transmission System Engineering
Authors: Sudath Arachchige

BACKGROUND

The California Environmental Quality Act (CEQA) requires the identification and description of the "Direct and indirect significant effects of the project on the environment." The Application for Certification requires discussion of the "energy resource impacts which may result from the construction or operation of the power plant." For the identification of impacts on the transmission system resources and the indirect or downstream transmission impacts, staff relies on the System Impact and Facilities Studies for insuring the interconnecting grid meets the California Independent System Operator (California ISO) reliability standards. The studies analyze the effect of the proposed project on the ability of the transmission network to meet reliability standards. When the studies determine that the project will cause a violation of reliability standards, the potential mitigation or upgrades required to bring the system into compliance are identified. The mitigation measures often include the construction of downstream transmission facilities. CEQA requires the analysis of any downstream facilities for potential indirect impacts of the proposed project. Without a complete California ISO GIPR Transition Cluster Window, Phase I Interconnection Study, staff is not able to fulfill the CEQA requirement to identify the indirect effects of the proposed project.

DATA REQUEST

254. Provide the complete Phase I Interconnect Study Report-Eastern Bulk System Group Network Analysis (dated July, 2009) including both the written report and all of the appendices. The Study should analyze the system impact with and without the project during peak and off-peak system conditions, which will demonstrate conformance or non-conformance with the utility reliability and planning criteria with the following provisions:

    a. Identify major assumptions in the base cases including imports to the system, major generation and load changes in the system and queue generation.

    b. Analyze system for N-0, important N-1 and critical N-2 contingency conditions and provide a list of criteria violations in a table showing the loadings before and after adding the new generation.

    c. Analyze the SCE system for Short Circuit currents with and without the Palen Solar Power Plant at strategic buses for three-phase and single phase line to ground faults. Provide a summary of results in a table.

    d. Analyze system for Transient Stability and Post-transient voltage conditions under critical N-1 and N-2 contingencies, and provide related plots, switching data and a list for voltage violations in the studies.

    e. Provide a list of contingencies evaluated for each study.

f. List mitigation measures considered (required) and those selected (optional- Data Requests will follow) for all criteria violations.

g. Provide electronic copies of *.sav and *.drw PSLF files.

h. Provide power flow diagrams (**MW, % loading & P. U. voltage**) for base cases with and without the project. Power flow diagrams must also be provided for all N-0, N-1 and N-2 studies where overloads or voltage violations appear.

Technical Area: Visual Resources
Author: Michael Clayton

BACKGROUND

The Project site is visible from a variety of surrounding locations. Although a number of KOPs have been selected for the Project, none of them capture the visual impact that will be experienced from an elevated perspective. Attachment 1 to this Data Request presents a sequence of three photographs of an existing solar project from a slightly elevated vantage point, which illustrates the increase in project visibility that occurs from just a slight increase in KOP elevation. Surrounding KOP elevations will be even greater for the SM Palen Project with even greater project visibility. Therefore, additional KOPs are necessary in order to be able to describe to the readers the visual impact that will be experienced from higher elevation vantage points near the Project site such as the Palen McCoy Wilderness and the Chuckwalla Mountains Wilderness.

DATA REQUEST

255. Please establish a new KOP from the Palen McCoy Wilderness to the northeast of the Project site in the vicinity of coordinates – Latitude: 33° 43' 48.51" N, Longitude: 115° 7' 57.65" W, viewing to the southwest and provide a new KOP analysis and visual simulation (see Attachment 2 for perspective view guidance).

256. Please establish a new KOP from the Chuckwalla Mountains Wilderness to the south of the Project site in the vicinity of coordinates – Latitude: 33° 35' 33.36" N, Longitude: 115° 13' 40.64" W, viewing to the north and provide a new KOP analysis and visual simulation (see Attachment 3 for perspective view guidance).

257. In order to present simulations that more accurately capture the actual viewing experiences from the new Palen McCoy and Chuckwalla Mountains KOPs, please present the existing view photographs and visual simulations as 11" x 17" images at a "life-size scale" when the images are held approximately 18 inches from the eye, so that the landscape and built features in the images match the actual scale of the features in the landscape (when the paper images are viewed at a distance of approximately 18 inches from the eye).

BACKGROUND

The closest KOP to the Project site is locate approximately 0.8 mile southwest of the Project site (KOP 8) and many of the other KOPs are located substantially further away. However, travelers on Interstate 10 (I-10) and nearby BLM access roads (connecting to the Palen Dry Lake and Sand Dunes area) will have close up, foreground views of the Project facilities similar to those illustrated in Attachment 4 (a sequence of three images) for another solar project. Therefore, the existing KOPs are not representative of the more highly effected views from I-

10 and BLM access roads immediately adjacent to the site and additional KOP locations are necessary in order to be able to describe to the readers the visual impact that will be experienced by travelers in the immediate vicinity of the project.

DATA REQUEST

258. Please establish a new KOP on westbound I-10, south of the Project site in the vicinity of coordinates – Latitude: 33° 40' 9.69" N, Longitude: 115° 11' 54.46" W, viewing to the north-northwest and provide a new KOP analysis and visual simulation (see Attachment 5 for perspective view guidance).

259. Please establish a new KOP northbound on the BLM access road (to Palen Dry Lake and Sand Dunes area), near the southwest corner of the Project site in the vicinity of coordinates – Latitude: 33° 41' 11.33" N, Longitude: 115° 14' 28.53" W, viewing to the northwest and provide a new KOP analysis and visual simulation (see Attachment 6 for perspective view guidance). The simulation should include the proposed wind fence.

260. In order to present simulations that more accurately capture the actual viewing experiences from the new Interstate 10 and BLM Access Road KOPs, please present the existing view photographs and visual simulations as 11" x 17" images at a "life-size scale" when the images are held approximately 18 inches from the eye, so that the landscape and built features in the images match the actual scale of the features in the landscape (when the paper images are viewed at a distance of approximately 18 inches from the eye).

BACKGROUND

The AFC states that "thirty-foot tall wind fencing, composed of A-frames and wire mesh, will be installed along the east and west sides of the solar field" (Page 2-22). Given the scale and extent of this proposed fencing, it is important to convey to the readers the extent to which this fencing will be visible from nearby public vantage points such as BLM access roads or I-10. Therefore, an additional KOP location is necessary in order to be able to describe to the readers the visual impact that will be experienced by travelers on nearby roads.

DATA REQUEST

261. Please establish a new KOP on westbound I-10, south of the Project site in the vicinity of coordinates – Latitude: 33° 40' 51.50" N, Longitude: 115° 14' 16.85" W, viewing to the north-northwest and provide a new KOP analysis and visual simulation (see Attachment 7 for perspective view guidance).

262. In order to present a simulation that more accurately captures the actual viewing experience from the new Interstate 10 KOP, please present the

existing view photograph and visual simulation as 11" x 17" images at a "life-size scale" when the image is held approximately 18 inches from the eye, so that the landscape and built features in the images match the actual scale of the features in the landscape (when the paper image is viewed at a distance of approximately 18 inches from the eye).

263. Please provide a detailed description and diagram of the wind fence including the fence color.

BACKGROUND

The transmission line that will connect the Palen facility to the SCE system will be a substantial component of the Project (with 140-foot tall structures). However, there are no KOPs or simulations in the AFC that address the transmission line. Therefore, in order to help the readers understand the visual implications of this major facility an additional KOP will be necessary.

DATA REQUEST

264. Please establish a new KOP on eastbound I-10, southeast of Desert Center in the vicinity of coordinates – Latitude: 33° 42' 37.45" N, Longitude: 115° 22' 41.75" W, viewing to the northwest and provide a new KOP analysis and visual simulation (see Attachment 8 for perspective view guidance).

265. In order to present a simulation that more accurately captures the actual viewing experience from the new transmission line KOP, please present the existing view photograph and visual simulation as 11" x 17" images at a "life-size scale" when the image is held approximately 18 inches from the eye, so that the landscape and built features in the images match the actual scale of the features in the landscape (when the paper image is viewed at a distance of approximately 18 inches from the eye).

BACKGROUND

Given the large scale of the project components, it is important to have a clear understanding of their situation/location on the site so as to better understand which components will be most prominent in the various available views.

DATA REQUEST

266. Please provide a site plan at a scale that clearly identifies the location of the various project components including the wind fences.

BACKGROUND

At the top of Page 5.15-14, the AFC states, "Project equipment other than the solar arrays will have non-reflective surfaces and neutral colors to minimize their visual impacts.

DATA REQUEST

267. Please identify which project components listed in Table 5.15-3 will have non-reflective surface treatments and neutral colors and please specify what those treatments and colors will be.

268. Please provide a color pallet of the anticipated colors.

269. In all new simulations requested above, please be sure to show facilities with the proposed surface treatments including appropriate color and texture.

BACKGROUND

Table 5.15-3 lists equipment dimensions but does not include the length of the transmission line or the cumulative length of the 30-foot tall wind fences.

DATA REQUEST

270. Although the precise route of the transmission line is not yet known, please add the anticipated linear length of the transmission line, as presently shown, to Table 5.15-3.

271. Please add the anticipated linear length of the 30-foot tall wind fence to Table 5.15-3.

BACKGROUND

The discussion under significance criterion 4 on Page 5.15-20 addresses the control measures that would be employed to minimize the amount of time that lights would be on.

DATA REQUEST

272. Please identify the amount of time that lights are expected to be on at the plant site.

BACKGROUND

To independently evaluate visual and glare effects of the solar collector arrays (SCAs), staff requires a better understanding of the physical components.

DATA REQUEST

273. Please provide close-up photographs of SCAs of the type proposed for the SM Palen Project. Please include photographs showing fronts, backs and mounting structures for the SCAs. If SCAs in the photographs differ in detail from those proposed under the SM Palen Project, please describe the differences.

BACKGROUND

Staff is concerned about potential spread reflection visible to viewers on Interstate 10. Attachment 4B (second image within Attachment 4) illustrates glare from parabolic reflectors.

DATA REQUEST

274. Please characterize the maximum potential brightness (luminance) of diffuse and spread reflection from mirrors in candela per square meter.

275. Please describe the hours in which the mirror surface of a trough could be visible to an off-site viewer on the ground, and the proportion of surface visible in the course of the day.

276. Please provide any available anecdotal information on glare effects of the Kramer Junction and existing SEGS projects, including photographs of off-site diffuse or spread glare, and images of the heated HCEs, as seen from public roads/viewpoints.

BACKGROUND

Staff is concerned about the potential for heated Heat Collection Elements (HCEs or annulus/receivers) to be visible to off-site viewers, and to represent a potential source of glare. Staff is also concerned with the potential for direct reflection of the sun from the mirrors by-passing the HCEs due to imperfections in the reflective surfaces (divergence).

DATA REQUEST

277. Please describe whether any portion of the HCEs would be visible to viewers on the ground, either on- or off-site. Please characterize the maximum potential brightness (luminance) of heated HCEs in candela per square meter.

278. Please explain whether any portion of the directly reflected solar radiation could pass by the HCEs (the steel tube annulus) due to the total divergence factor of the reflectors. If so, how much? Is this amount sufficient to cause any potential retinal damage or flash blindness? Are there measures that would prevent such inadvertent off-site reflection (such as shielding of the HCEs, etc.)?

Technical Area: Waste Management
Author: James Thurber, P.G.

BACKGROUND

AFC Section 5.16 and the Phase I Environmental Site Assessment do not acknowledge the historic military activities in the area and the potential for unexploded ordnance (UXO) to be present at the site. It does not appear that any research was completed to determine whether there is the potential presence of UXO. However, UXO is known to be present at other nearby energy projects, including Solar Millennium's Blythe Project. Staff is concerned that appropriate research into potential presence of UXO has not been completed to determine whether there may be risks to public health and safety.

DATA REQUEST

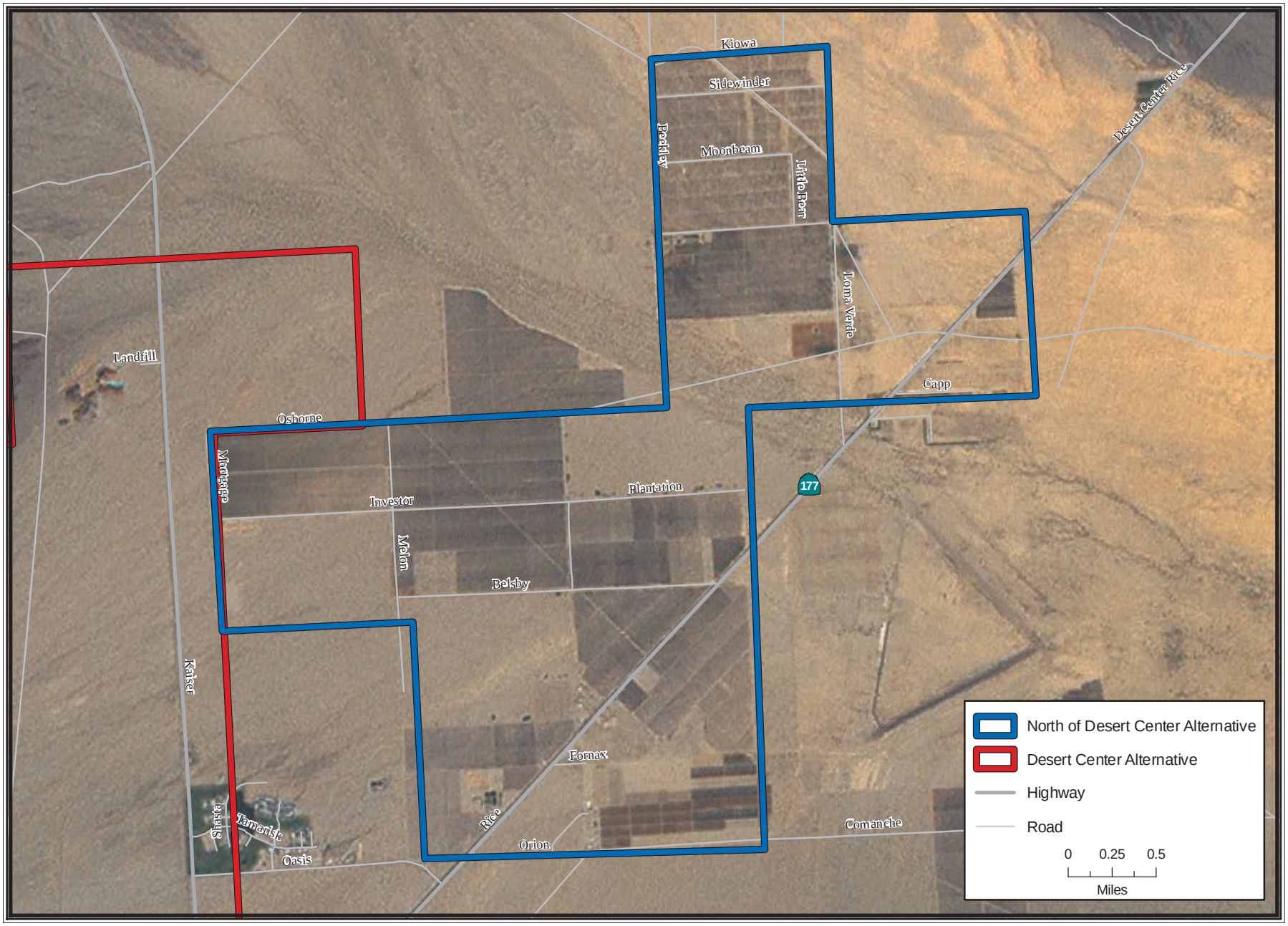
279. Please provide documentation of additional research of historic military use, agency contacts and a discussion of the need for visual surveys and possibly geophysical surveys. If surveys are planned or performed identify the required qualification for UXO technicians and timing for surveys and reporting, as well as ordnance removal and disposal, if necessary.

280. Please provide an outline of the UXO recognition training that may be required for site workers.

ALTERNATIVES ATTACHMENTS

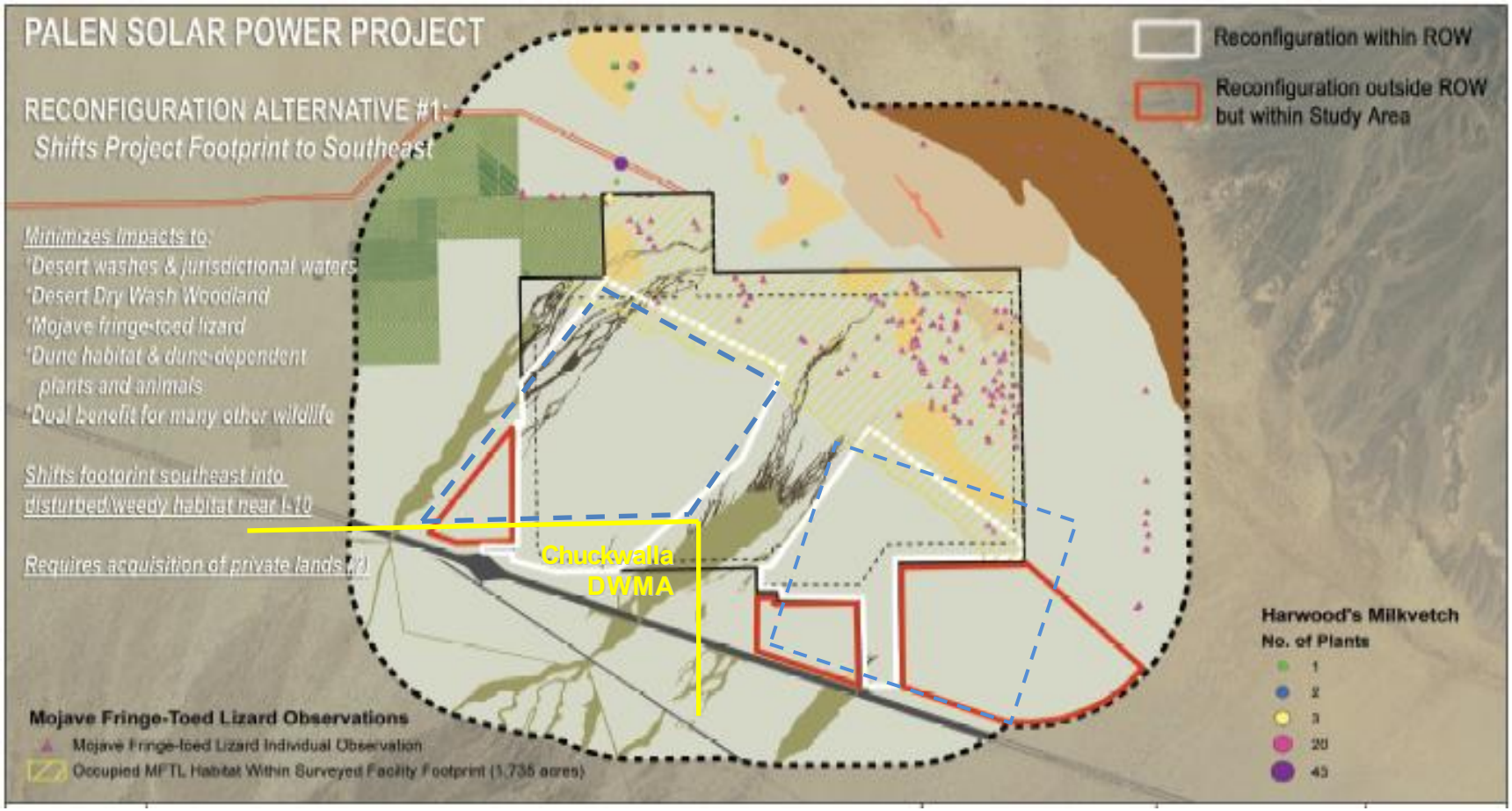
DATA REQUEST - FIGURE 1

Palen Solar Power Plant - North of Desert Center Alternative



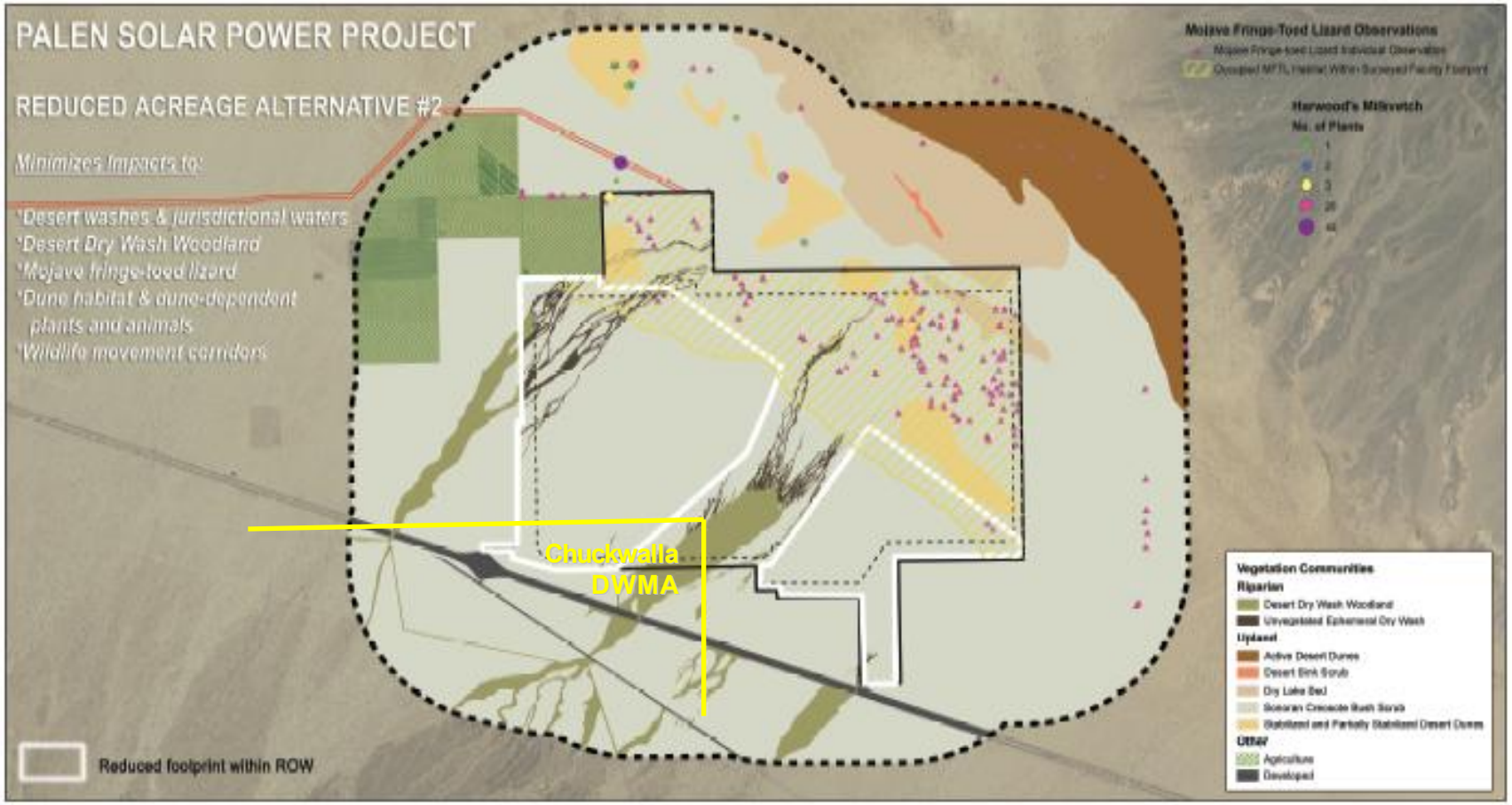
CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION, NOVEMBER 2009

SOURCE: California Energy Commission



Alternatives Data Request Figure 2. Reconfigured Alternative.

Note: The area outlined in white is within the proposed project footprint. The area outlines in red is outside the proposed project footprint but within the ROW request. The boundary of the Chuckwalla DWMA is shown in yellow. A potential reconfigured alternative is shown with a blue dashed line.



Alternatives Data Request Figure 3. Reduced Acreage Alternative

Note: The Reduced Acreage Alternative is outlined in white but must eliminate the portion within the Chuckwalla DWMA. It would be located completely within the proposed project footprint.

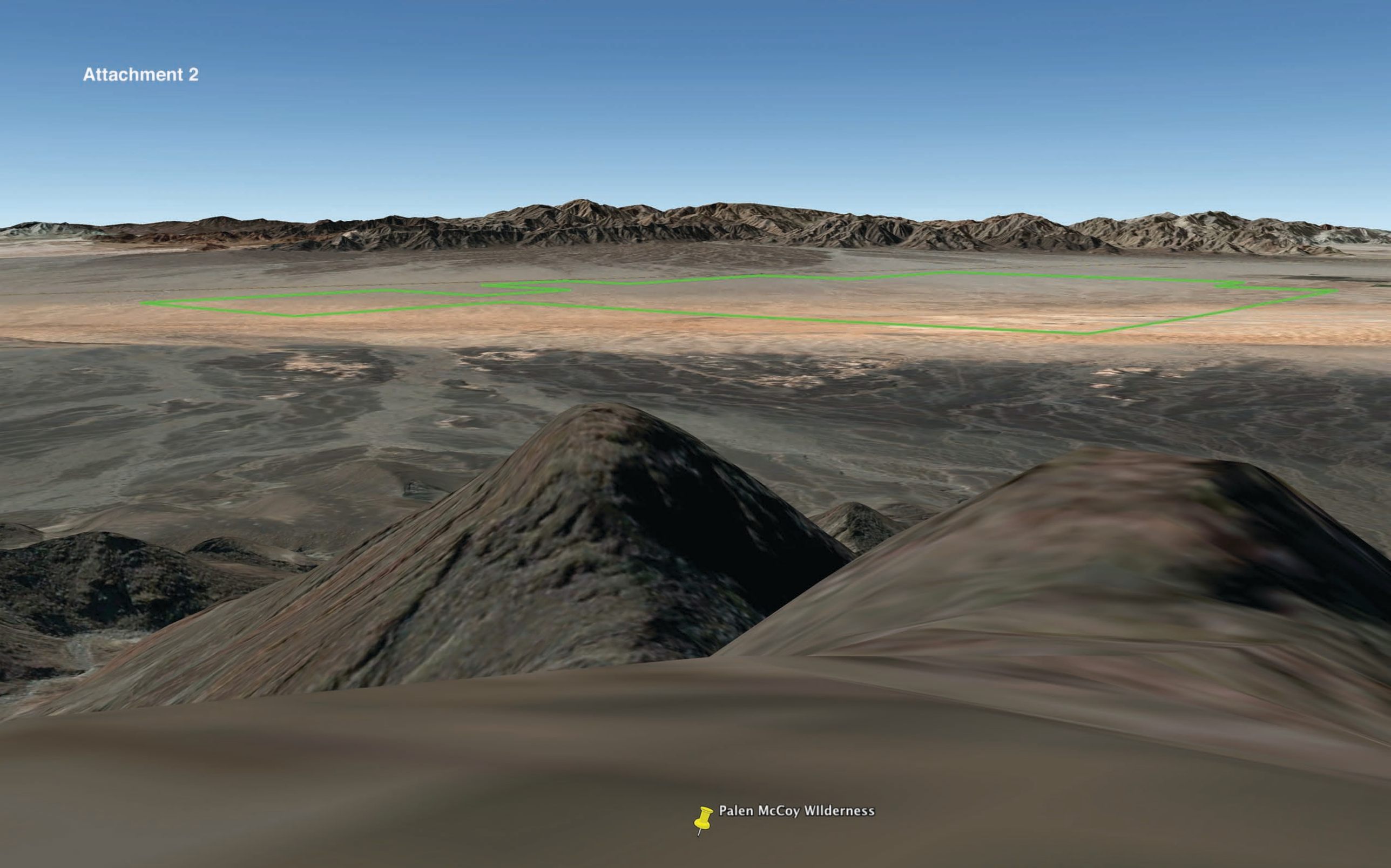
VISUAL RESOURCES ATTACHMENTS

Attachment 1A

Attachment 1B

Attachment 1C

Attachment 2



Attachment 3

Attachment 4A

Attachment 4B

Attachment 4C

Attachment 5

Attachment 6

Attachment 7

Attachment 8

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

APPLICATION FOR CERTIFICATION FOR THE *PALEN SOLAR POWER PLANT PROJECT*

Docket No. 09-AFC-7

PROOF OF SERVICE
(Established 11/18/09)

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DECLARATION OF SERVICE

I, Hilarie Anderson, declare that on December 7, 2009, I served and filed copies of the attached, Data Request, Set 1 (# 1-280). 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/solar_millennium_palen**]

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, California 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-7
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

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

Original Signature in Dockets
Hilarie Anderson