



October 22, 2010

DOCKET

08-AFC-13

DATE OCT 22 2010

RECD. OCT 22 2010

Mr. Christopher Meyer
CEC Project Manager
Attn: Docket No. 08-AFC-13
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

RE: Calico Solar (formerly Solar One) Project (08-AFC-13)
Bureau of Land Management Record of Decision – Compiled Appendices

Dear Mr. Meyer:

Tessera Solar hereby provides Appendices 1-4 and 6 from the Bureau of Land Management's (BLM) Record of Decision. Please note, a compilation of emails from Mr. Jim Stobaugh, BLM Project Manager, are included with this submittal which states that there is no Appendix 5 or 7, despite its listing in the ROD table of contents. Additionally, the compiled email chains include previous distribution of ROD appendices to other parties.

I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge.

Sincerely,

Felicia L. Bellows
Vice President of Development

Compilation of Emails



Corinne Lytle/SanDiego/URSCorp

10/22/2010 02:09 PM

To
cc
bcc
Subject

-----Original Message-----

From: Jim_Stobaugh@blm.gov [mailto:Jim_Stobaugh@blm.gov]

Sent: Friday, October 22, 2010 1:17 PM

To: Felicia Bellows

Cc: Cmeyer@energy.state.ca.us

Subject: Fw: Need to place Calico Solar ROD Appendix 2 BO on public ftp site

Felicia,

BNSF received all ROD appendices yesterday. I'll attach Appendix 1 FEIS Comments with Responses here.

(See attached file: Appendix 1 FEIS Comment-Responses.docx)

The BO is 5.77 MB so, like the BNSF, I'll have to give you the ftp site to retrieve that appendix. I can include Christopher Meyer so you may have it today if needed.

I will send the other appendices separately.

Jim Stobaugh

National Project Manager

Bureau of Land Management

Minerals and Realty Management Directorate (W0350) Washington, DC

Stationed at:

BLM Nevada State Office

P.O. Box 12000

1340 Financial Blvd

Reno, NV 89520-0006

775 861 6478

775 857-9768 cell

775 861 6712 fax

----- Forwarded by Jim Stobaugh/NVSO/NV/BLM/DOI on 10/22/2010 01:02 PM

Erin

Dreyfuss/CASO/CA/

BLM/DOI

10/21/2010 03:59

PM

Jim Stobaugh/NVSO/NV/BLM/DOI@BLM
cynthia.burch@kattenlaw.com

To

cc

Subject

Re: Need to place Calico Solar ROD
Appendix 2 BO on public ftp site
(Document link: Jim Stobaugh)

Hi Jim and Cynthia -

I have placed the BO for Calico here: ftp://ftp.blm.gov/blmincoming/CA/

The file is called "Appendix 2 Calico Biological Opinion.pdf".

Please let me know if you have trouble retrieving it.

Thanks so much!

Erin

Erin Dreyfuss
Environmental Protection Specialist
Bureau of Land Management
California State Office
2800 Cottage Way, Suite W-1834
Sacramento, CA 95825
Office: (916) 978-4642
Fax: (916) 978-4657

Jim
Stobaugh/NVSO/NV/
BLM/DOI

10/21/2010 03:55
PM

Erin Dreyfuss/CASO/CA/BLM/DOI

To

cc

cynthia.burch@kattenlaw.com

Subject

Need to place Calico Solar ROD
Appendix 2 BO on public ftp site

Erin,

Can you post the Calico Solar ROD Appendix 2 BO on public ftp site please?
As requested I need to get it to Cynthia Burch, Katten Law firm representing
the BNSF but it's 5.77 MB in size. I've provided the ROD and all appendices
except this one. Can you help?

Thanks,

Jim Stobaugh
National Project Manager
Bureau of Land Management

Minerals and Realty Management Directorate (W0350) Washington, DC

Stationed at:
BLM Nevada State Office
P.O. Box 12000
1340 Financial Blvd
Reno, NV 89520-0006
775 861 6478
775 857-9768 cell
775 861 6712 fax



Appendix 1 FEIS Comment-Responses.docx Felicia L Bellows.vcf

-----Original Message-----

From: Jim_Stobaugh@blm.gov [mailto:Jim_Stobaugh@blm.gov]
Sent: Friday, October 22, 2010 1:25 PM
To: Felicia Bellows
Subject: RE: Calico Solar ROD and follow-up

Jim Stobaugh
(See attached file: Appendix 6 DNA.docx)(See attached file: Appendix 4
Environmental Construction Compliance Monitoring Plan.docx)

That's all. There is no Appendix 5.



Appendix 6 DNA.docx Appendix 4 Environmental Construction Compliance Monitoring Plan.docx Felicia L Bellows.vcf

----- Forwarded by Corinne Lytle/SanDiego/URSCorp on 10/22/2010 02:09 PM -----

-----Original Message-----

From: Jim_Stobaugh@blm.gov [mailto:Jim_Stobaugh@blm.gov]
Sent: Friday, October 22, 2010 1:19 PM
To: Felicia Bellows
Subject: RE: Calico Solar ROD appendices

(See attached file: Appendix 3 Complete Programmatic Agreement Signature Page
Calico.PDF)(See attached file: Appendix 3 Calico Solar Programmatic Agreement
for Signature)

Jim Stobaugh
National Project Manager
Bureau of Land Management
Minerals and Realty Management Directorate (W0350) Washington, DC

Stationed at:
BLM Nevada State Office
P.O. Box 12000
1340 Financial Blvd
Reno, NV 89520-0006
775 861 6478
775 857-9768 cell
775 861 6712 fax



Appendix 3 Complete Programmatic Agreement Signature Page Calico.PDF



Appendix 3 Calico Solar Programmatic Agreement for Signature Felicia L. Bellows.vcf

Appendix 1
Response to Comments on the Final
Environmental Impact Statement

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1.1 Introduction

The Bureau of Land Management's *Final Environmental Impact Statement [FEIS] and Proposed Amendment to the California Desert Conservation Area [CDCA] Plan for the Calico Solar (formerly SES Solar One) Project, San Bernardino, California* was published on August 6, 2010 and accompanied by a Notice of Availability (NOA) from the Environmental Protection Agency (EPA) (75 FR 47591) and from the BLM (75 FR 47620) in the *Federal Register (FR)*. By regulation, the NOA publication by the EPA began a 30-day CDCA Plan protest period and FEIS comment period that ended on September 7, 2010. The FEIS comments received are organized into topic categories to facilitate technical review, development of responses, and, where needed, incorporation into the Record of Decision (ROD). The land use plan (LUP) amendment protest response summary is attached as Appendix 2 to the ROD.

1.2 Index of Comments Received

Table 1-1 is an index list of the agencies, organizations, and individuals who submitted substantive and timely comments on the FEIS during the 30-day comment period. Each comment is assigned a unique code with each comment individually numbered. For example, EPA-1 refers to the first substantive comment in the comment letter submitted by the EPA.

Table 1-1 Summary of Comments Received on the Calico Solar Project Final Environmental Impact Statement

Comment Code	Agency/Person	Document Type and Date
Comments from Federal Agencies		
EPA-1 through EPA-27	United States Environmental Protection Agency	Letter, September 7, 2010
Comments from State or Local Agencies		
NAHC-1 through NAHC-7	Native American Heritage Commission	August 11, 2010
Comments from Organizations		
BNSF-1 through BNSF-18	Burlington Northern Santa Fe Railway (BNSF)	Letter, September 3, 2010
BRW-1 through BRW-13	Basin and Range Watch (BRW)	Letter, September 7, 2010
Calico-1 through Calico-32	Calico Solar, LLC (Calico)	Letter, September 7, 2010

CURE-1 through CURE-76	California Unions for Reliable Energy (CURE) and William Perez (as submitted by Adams Broadwell Joseph and Cardozo)	Letter, September 7, 2010
DEF-1 through DEF-21	Defenders of Wildlife (Defenders), Natural Resources Defense Council (NRDC), Center for Biological Diversity (CBD) and The Wilderness Society (TWS)	Letter, September 3, 2010
SC-1 through SC-24	Sierra Club (SC)	Letter, September 7, 2010
WWP-1 through WWP-25	Western Watersheds Project (WWP)	Letter, September 7, 2010
Comments from Members of the General Public		
Jackson-1 through Jackson-22	Patrick C. Jackson	Letter, August 31, 2010

1.3 General Comments

1.3.1 Adequacy of Analysis (20900)

Comment CURE-23: C. Failure to Take a “Hard Look” At Environmental Consequences... NEPA requires that agencies take a “hard look” at the environmental consequences of a proposed action. A hard look is defined as a “reasoned analysis containing quantitative or detailed qualitative information.” The level of detail must be sufficient to support reasoned conclusions by comparing the amount and the degree of the impact caused by the proposed action and the alternatives (p. 22)... As stated in CURE’s comments on the DEIS, BLM failed to take a hard look at the Project’s effects on cultural and biological resources. The FEIS similarly fails to analyze the Project’s effects on these resources. (p. 23).

Comment CURE-41: IV. BLM FAILED TO INTEGRATE ITS NEPA REVIEW WITH STUDIES AND ANALYSES REQUIRED UNDER THE NATIONAL HISTORIC PRESERVATION ACT, THE FEDERAL ENDANGERED SPECIES ACT AND THE BALD AND GOLDEN EAGLE PROTECTION ACT... As detailed in these comments, BLM has made little effort to coordinate its environmental review with the development of the Programmatic Agreement under Section 106 of the NHPA, its consultation with the U.S. Fish and Wildlife Service regarding impacts to desert tortoise under Section 7 of the Endangered Species Act or its need for a permit under the Bald and Golden Eagle Protection Act. This haphazard and segmented environmental review has greatly comprised BLM’s ability to fully evaluate the environmental consequences of the Project and the public’s ability to meaningfully participate in the environmental review process. The BLM should have drafted and circulated a Programmatic Agreement, a meaningful Desert Tortoise Translocation Plan, a Draft Incidental Take Permit, Protocol Golden Eagle Surveys and the take analysis pursuant to the Bald and Golden Eagle Protection Act. (p. 36)

Response: The FEIS does take a “hard look” at the environmental consequences of the proposed action and alternatives. Section 4.0 of the document titled “Environmental Consequences” is solely dedicated to assessing and analyzing the direct, indirect, and cumulative effects to the human and physical/natural environment that could result from the implementation of the proposed action and its alternatives.

All studies or reports that were not available prior to the DEIS that subsequently became available were analyzed in the preparation of the FEIS. Each of the studies and reports clarified or complemented earlier understandings or assumptions; none has caused a substantial change in a proposed action, and none is “significant” for purposes of NEPA. Additional surveys are anticipated to be required or completed as a result of other agencies’ statutory or regulatory obligations, or within specific areas of expertise. For example, the FWS Endangered Species Act Section 7 consultation and the Section 106 Programmatic Agreement are in progress. These processes are independent of and separate from the NEPA process, and are being pursued in accordance with the schedule and procedures established in the relevant regulatory regimes. Studies required or completed in satisfaction of other agencies’ requirements that become available before the ROD is issued will be evaluated by the BLM. The BLM is making every effort to complete these processes in coordination with NEPA, and to finalize these other processes before the issuance of the ROD. Other agencies and the public have the opportunity to review such reports to the full extent of the relevant governing law. (See ROD Appendix 3 – Biological Opinion and Appendix 4 – Programmatic Agreement)

1.3.2 Decision-making Process and Methods (10100)

Comment SC-1: [S]ubsequent to the release of the SA/DEIS, the Applicant submitted a revised application that reduced the footprint of the proposed Project to 6,215 acres while maintaining an expected capacity of 850 MW. Despite this substantial change, BLM did not issue a supplemental EIS (“SEIS”), and instead simply incorporated the Applicant’s altered design as a new alternative in the FEIS. Several other details of the Calico Project continued to change subsequent to the BLM’s release of the FEIS on August 6, 2010, yet the BLM did not issue any supplemental environmental analysis in direct violation of NEPA. (p. 3)

Comment SC-2: Given the massive number of recent changes in agency analyses for the Project, the FEIS is an entirely new document from that which BLM circulated on March 30, 2010. BLM’s issuance of the FEIS therefore violated NEPA’s requirement that, “environmental impact statements shall be prepared in two stages and may be supplemented.” Thus, rather than issuing an FEIS, NEPA required BLM to prepare a supplemental EIS (“SEIS”) to address the substantial changes made in the document. BLM must prepare a supplemental NEPA document and circulate it for public review and comment. (p. 4)

Comment SC-3: It is impossible for the public or other reviewing agencies to meaningfully compare the two documents because they offer completely different assessments of the proposed Project. (p. 4)

Comment SC-4: BLM acknowledged that CEQ regulations require an EIS "...to identify the agency's preferred alternative...in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such preference." Despite this clear requirement to identify and analyze the preferred agency alternative at the draft stage, BLM simply crafted a new alternative that it described and analyzed for the first time in the FEIS. This was a clear violation of NEPA. (p. 5)

Comment SC-5: NEPA requires BLM to issue a supplemental EIS to disclose and analyze the myriad of alleged environmental benefits related to Alternative 1a. Without such a supplement, the public will not have an opportunity to comment on the adequacy of BLM's determination that the benefits were legitimate or that they adequately addressed the overall impacts of the Project. (p. 6)

Comment SC-24: NEPA requires BLM to withdraw the FEIS and produce an SEIS for public review and comment. The SEIS must address and remedy both the deficiencies in BLM's impacts analysis as well as the significant and cumulative environmental impacts that would result from the Translocation Plan. Therefore, Sierra Club respectfully requests that BLM draft and circulate a SEIS consistent with these comments, or in the alternative reject the ROW application. (p. 20)

Response: Subsequent to publication of the SA/DEIS, and based on discussions with USFWS and CDFG, among other agencies, the Applicant proposed to reduce the footprint of the project site from 8,230 acres to 6,215 acres to reduce impacts to biological and cultural resources. As described in Section 1.4 (page 1-9) in the FEIS, the BLM chose to use a Determination of NEPA Adequacy (DNA), (Appendix C in the FEIS), as an internal administrative tool to determine whether a supplemental to the Draft EIS was required as a result of the applicant proposed modifications. The BLM determined that no supplement was required because the applicant-proposed modifications were similar to features of previously analyzed alternatives, resulted in an alternative within the range of the alternatives analyzed previously in the SA/DEIS and FEIS, did not substantially change the previous analysis, and had effects that were similar to or less than those analyzed for the Calico project and the other build alternatives, per the direction of the BLM NEPA Handbook H-1790-1. The potential effects of these modifications were presented in the analysis provided in the Final EIS and the DNA. The public review period for the Final EIS began on April 2, 2010 and was completed on July 1, 2010, thus allowing the public to review and comment on the FEIS (in compliance with 40 CFR 1506.6).

1.3.3 Public Comment Process Comments (11500)

Comment BNSF-2: The FEIS does not address the comments previously submitted by BNSF on July 1 and 29, 2010. Nor does it address the concerns expressed by BNSF in its Post-Hearing Brief. Consistent with the May 5th Notice of Availability, the FEIS does not incorporate by reference or otherwise adopt the study, analysis and concomitant findings of the CEC in relation to the CEC's supplemental staff assessments. (p. 4)

Comment CURE-13: B. BLM Failed to Adequately Respond to Public Comments (p. 14)... BLM failed to provide a good faith, reasoned analysis in response to public comments. These omissions violate NEPA. (p. 15)

Comment DEF-1: The Center submitted comments on the Calico Draft Environmental Impact Statement ("DEIS") on July 1, 2010 and provided a CD with references to the BLM. Those comments are incorporated herein by reference as well.

Comment DEF-11: Project modifications intended to reduce impacts to these resources were developed after the DEIS and were disclosed in the FEIS along with the proposed plan amendment, allowing for only a 30 day public review and protest. The significant new information should have been disclosed in a supplemental DEIS along with additional time for public review and comment prior to BLM announcing a proposed decision on the proposed project in the FEIS. Such disclosure and public review would have stimulated greater attention to on and off-site alternatives that would have provided opportunities for more meaningful and effective impact avoidance and minimization strategies. This shortcoming in the NEPA process was driven by the arbitrary date of December 31, 2010 for a final project decision tied to eligibility for obtaining American Recovery and Reinvestment Act funding through the U.S. Department of Energy. (p. 5)

Comment EPA-1: EPA's comments on the DEIS were not included in the Response to Comments. Although some of our concerns were resolved in the FEIS, we request that our comments on the DEIS be considered along with the enclosed comments on the FEIS. (p. 1)

Comment Jackson-1: The following documents were previously submitted to Jim Stobaugh and Richard Rotte, Project Manager, Calico Solar Project, Alan Stein and/or Roxie Trost during the planning process. These documents are hereby incorporated in this Protest (p. 4)... 25. May 1, 2010 Patrick C. Jackson's Comments on the Staff Assessment and Draft Environmental Impact Statement for the Calico Solar Project Application for Certification (08-AFC-13) San Bernardino County, Part 1...27. May 27, 2010 Patrick C. Jackson's Comments on the Staff Assessment and Draft Environmental Impact Statement for the Calico Solar Project Application for Certification (08-AFC-13) San Bernardino County, Part 2... 28. June 26, 2010 Patrick C. Jackson's Comments on the Draft Environmental Impact Statement For The Calico Solar Project (p. 4)

Response: The FEIS Appendix G contains responses to all comments on the SA/DEIS that were timely received by the BLM.

The comments submitted by BNSF in the July 1, 2010 letter were addressed in Appendix G of the FEIS as BNSF-1 through BNSF-5. The July 29, 2010 comments were received after the close of the SA/DEIS comment period and after the FEIS production and printing process. Subsequent to joint release of the SA/DEIS the CEC and BLM opted to produce independent environmental documents, a SSA and FEIS, respectively, and the scheduling of the production and publication of these environmental documents ran according to independent state and federal processes and regulations. Comments submitted by CURE were addressed in Appendix G of the FEIS.

EPA's comments on the SA/DEIS were received subsequent to the close of the 90-day comment period that expired on July 1, 2010 and were inadvertently not identified in the FEIS. However, the BLM received similar comments during the comment period that were addressed in the FEIS. The comments submitted by Patrick Jackson in the May 1, 2010 letter were addressed in Appendix G of the FEIS as Jackson-1 through Jackson-12; the comments in the May 27, 2010 letter were addressed as Jackson-13 through Jackson-24; the comments in the June 26, 2010 letter were addressed in Appendix G of the FEIS as Jackson-25 through Jackson-29.

The BLM believes that the opportunities for public participation under NEPA were adequate and included opportunities to review the DEIS and FEIS on either the BLM or CEC project websites, and that the additional information provided by the Applicant was readily available on the CEC website. The BLM has documented analysis of the modified project components based on the Applicant-proposed changes in the project description in Chapter 4 of the FEIS, Environmental Consequences, which is also summarized in Appendix C, Determination of NEPA Adequacy (DNA).

A supplemental EIS, as defined by the CEQ regulations 40 CFR 1502.9, is not warranted. According to the BLM's NEPA Handbook, the agency may use a Determination of NEPA Adequacy (DNA) to evaluate new circumstances or information prior to issuance of a decision to determine whether the preparation of supplemental environmental analysis is necessary (BLM NEPA Handbook H-1790-1, at 22). As discussed in Appendix C (Determination of NEPA Adequacy) of the FEIS, the BLM concluded, after analyzing the new information, that the modifications to the Agency Preferred Alternative are not the types of changes requiring analysis through supplementation of the EIS.

The responses to comments on the SA/DEIS address each comment and clarify any project features that have been included in the comments. All comments on the Final EIS are included and are addressed in this appendix of the ROD. In addition, please refer to Appendix G: SA-

DEIS Comments-Responses for additional discussion regarding responses to comments on the Draft EIS.

1.3.4 Interagency Coordination (11100)

Comment EPA-26: In light of the decision to separate CEC's and BLM's environmental review processes, the responses to FEIS comments should discuss the resolution procedure that will be employed if BLM's FEIS presents a preferred alternative that differs from what CEC approves through its process. (p. 4)

Comment EPA-27: Clarify, in responses to FEIS comments, how BLM's and CEC's now separated alternative selection processes will be reconciled. (p. 4)

Response: All of the information docketed in the CEC review and approval process will be incorporated into the administrative record for the BLM decision. The BLM has maintained its coordination with the CEC and other agencies throughout the NEPA process. In particular, the BLM will coordinate the implementation of mitigation and the requirements of the Environmental and Construction Compliance Monitoring Program with the Conditions of Certification the CEC adopts in its decision.

1.4 Purpose and Need (20200)

Comment DEF-2: I. The Proposed CDCA Plan Amendment and FEIS Do Not Comply with NEPA... A. The purpose and need statement is too narrow. BLM considers the purpose and need as responding to the applicant's right of way application under Title V of the FLPMA. (FEIS at 1-5). It is focused on meeting the objective of the applicant (FEIS at 1-4) and on amending the CDCA for this project only, thus essentially foreclosing serious consideration of meaningful alternatives during the formulation of the final decision. See *National Parks Conservation Assn. v. BLM*, 586 F.3rd 735 (9th Cir. 2009). The Parties commented on the DEIS in this regard, strongly advocating that BLM comply with NEPA by analyzing a range of alternatives that would contribute to achieving the national and state goals for generation and distribution of electrical energy from renewable sources. In preparing the FEIS, BLM considered a relatively large number of alternatives (i.e., 25) but prematurely dismissed all but three for further analysis. (FEIS at Ch.2) (p. 3)

Comment DEF-5: Furthermore, BLM's purpose and need rationale referred to the needs of the applicant in meeting their obligations under a power purchase agreement with the local utility company, a contractual matter not involving BLM or its management responsibilities under FLPMA. (p. 3)

Response: Your comment has been noted and your concerns have been addressed in Chapters 1 and 2 in the FEIS. Alternatives were considered but eliminated from detailed analysis per criteria provided in the BLM's NEPA Handbook H-1790-1.

1.5 Document Text (21000)

Comment Calico-1: After July 12, 2010...Calico made three additional revisions to Alternative 1a, which have been presented to the CEC, but were not made in time to be included in the FEIS.

First, BNSF requested that the project not use the previously planned temporary construction access across its right-of-way...This change has been analyzed and found to cause no adverse change in the project's impacts. (p. 2)

Comment Calico-2: After July 12, 2010...Calico made three additional revisions to Alternative 1a, which have been presented to the CEC, but were not made in time to be included in the FEIS...Calico proposes to use two diesel generators to provide construction power until the Phase I upgrade to SCE's Pisgah substation is complete...With these generators, the use of a nearby water well rather than water delivery by train and/or truck from Cadiz, and a refinement of offsite vehicle exhaust emission factors to reflect a 50 mph, rather than a 10 mph travel speed, the construction emissions from Alternative 1a will be lower than previously reported. (p. 2)

Comment Calico-4: [T]he FEIS provides photographs of SunCatcher dishes. The photographs depict an older model of the dish; photographs of the current generation of SunCatcher dish are provided in the Plan of Development at page 14 (Figure 8). (p. 3)

Comment Calico-5: The following statement at page 2-8 of the FEIS is incorrect and should be deleted: "Following the completion of the 30 percent engineering drawings in April 2009, the Applicant determined that it would be necessary to place SunCatcher units throughout the site, including in washes, to attain the proposed 850-MW yield." (p. 3)

Comment Calico-6: [I]t has been determined that with both reverse osmosis and chlorination, the water from well 3 will be potable. Accordingly, the last sentence of the third paragraph of FEIS section 2.2.3.2 should be revised along with following lines: "This water would require RO and chlorine treatment on site prior to use for potable purposes." The paragraph headed "Potable Water" on the same page should be deleted. (p. 3)

Comment Calico-7: The detention basin area for the 8,230-acre Proposed Action was 600 acres, but the detention basin area for the 6,215-acre Agency Preferred Alternative is now 470 acres, with actual disturbance for detention basins comprising approximately 114 acres of the detention basin area. (p. 3)

Comment Calico-8: Chapter 2 of the FEIS does not describe the reliability of the SunCatcher system or site security. Please see Calico's CEC Exhibits 80 and 89, and the supplemental Staff Assessment pages C.5-14 - C.5-15, which provide information on these topics. (p. 3)

Comment Calico-9: The discussion of Alternative 3 includes the following sentence: "Operations emissions would be less than the Proposed Action due to smaller footprint (7,050 acres) and less area of disturbance." The same should be said of Alternative 1a, i.e. "Operations emissions would be less than the Proposed Action due to the smaller footprint (6,215 acres) and less area of disturbance." The FEIS should be clear that Alternative 1a is superior to both the Proposed Action and the Avoidance of Donated and Acquired Lands Alternative in this respect. (p. 3)

Comment Calico-10: Calico does not intend to mow the entire project site...and re-mowing is anticipated to be needed on only 5% of the SunCatcher array area...Because mowing would be very limited in both extent and frequency, the FEIS overstates the impacts to vegetation and wildlife of Alternative 1a. (p. 4)

Comment Calico-11: [T]he FEIS states, without a citation, that noise from an individual SunCatcher is 84 dBA at a distance of 50 feet. In fact, sound measurements of operating SunCatchers at the Maricopa Solar site in Arizona show that the noise level from each unit is approximately 74 dBA, not 84 dBA...Therefore, the FEIS overstates the noise impacts of the project on wildlife at all locations and should be corrected to reflect the lower expected noise levels...[T]he reduction in the project footprint from 8,230 acres for the Proposed Action to 6,125 acres for Alternative 1a, the Agency Preferred Alternative, means that noise impacts to the north of the project will be further reduced. (p. 4)

Comment Calico-12: It should also be noted that noise levels in some areas of the project site are already fairly high under existing conditions, primarily due to the presence of the BNSF rail line...sound levels of 75 dBA Lea and 81 dBA Ldn. (p. 4)

Comment Calico-13: [T]he FEIS suggests that under the Proposed Action, the applicant would be required to "mitigate for the loss of 1,180 acres of donated and acquired lands"...Calico notes that neither the BLM nor the CEC would require mitigation for donated and acquired lands simply because those lands were donated or acquired with LWCF funds. Instead, mitigation would be required based on the habitat values that those lands represent. For Alternative 1a, thousands of acres of mitigation lands would be acquired; this reflects the habitat value of the site's acquired lands, donated lands, and other lands that would be utilized under Alternative 1a. (p. 4)

Comment Calico-14: [T]he FEIS states that the Proposed Action would cause electrocution risk to Golden Eagles. Elsewhere, however, the FEIS explains that the electrocution risk to all birds

that would be caused by the types of transmission lines needed for the project would be "extremely low" ...Any electrocution risk to Golden Eagles would be extremely low. (p. 4)

Comment Calico-17: [T]he FEIS quantifies CO2 emissions due to train transport of water from Cadiz. This emissions category should be deleted because local well water is not the primary water source for the project and water will be transported to the main services complex by pipeline. (p. 5)

Comment Calico-18: This section provides tables showing CO2 emissions per kilowatt-hour for all action alternatives other than Alternative 1a. It should be noted, however, based on the tables that are provided, that if a similar table were prepared for Alternative 1a, that alternative would demonstrate the most favorable ration of emissions per kilowatt hour. (p. 5)

Comment Calico-22: [T]he FEIS describes the local economic benefits of the Proposed Action as "negligible in comparison with the existing populations of the nearby communities"...Based on testimony before the CEC, representatives of local communities do not view these benefits as "negligible". (p. 6)

Comment Calico-24: [T]he FEIS identifies loss of grazing as an irreversible and irretrievable commitment of land use resources...As the FEIS states elsewhere, however, the project site is not currently used for grazing and is not known to have been used for grazing at any time in the past. Grazing is not a genuine land use resource on the project site, so lost opportunities for grazing do not represent an irreversible and irretrievable commitment of resources resulting from the Calico Solar Project. (p. 6)

Comment Calico-25: Section 4.22, titled a "summary" of the unavoidable adverse impacts of the various Calico Solar Project build alternatives, does not accurately reflect the analyses that precede it. (p. 6)

Comment Calico-26: Whereas Section 4.3 of the FEIS finds that the Proposed Action would cause significant unavoidable impacts to biological resources, it also finds that Alternative 1a would greatly reduce the scale and magnitude of these impacts. The biological resources impacts of Alternative 1a are not identified as unavoidable adverse impacts in Section 4.3 of the FEIS. (p. 6)

Comment Calico-27: As the CEC's Supplemental Staff Assessment concluded, with the reduction of the project's size from 8,230 to 6,215 acres, almost all of the impacts of the project level and cumulative impacts of the Agency Preferred Alternative would be mitigated...The combination of avoidance and minimization measures with the provision of habitat reduces the impacts of the Agency Preferred Alternative to a level that is not significant, whether the project is considered individually or in combination with cumulative project. The FEIS should acknowledge this. (p. 7)

Comment Calico-28: [S]ection 4.22 identifies a significant unavoidable impact to special-status species because some species potentially in the area have not been found on the project site after repeated surveys, but might in fact occur there...Section 4.3 of the FEIS draws no such conclusion. If this analytical approach were valid, every project would be found to result in significant unavoidable impacts to special status species...This conclusion is unjustified and should be deleted. (p. 7)

Comment Calico-30: [T]he summary states that the closure of open BLM routes through the project site would represent an unavoidable adverse impact to private property owners and recreational users of these routes. The build alternatives would, however, provide different access routes for these travelers, so this impact would be mitigated. (p. 7)

Comment Calico-32: Typographical errata submitted with comment letter. Fourteen errata were submitted.

Response: Subsequent to publication of the FEIS, additional information regarding the Calico Solar Project has been provided to and docketed by the CEC, and CEC staff has published a Supplemental Staff Assessment acknowledging that information. BLM can likewise acknowledge new information received after publication of the FEIS in development of the ROD. BLM has considered new information and changes in circumstance in light of the information and analysis of the FEIS, pursuant to the provisions of Section 5.1 of the BLM NEPA Handbook H-1790-1.

Requests to change the text of the FEIS and address typographical errata are noted.

1.6 Alternatives (22500)

1.6.1 Range of Alternatives (22500, 22900)

Comment DEF-4: B. In its search for and consideration of potential alternative locations for the proposed project, BLM appeared to take an overly narrow approach by searching for sufficient land in essentially one contiguous block that could accommodate the size of the project proposed by the applicant. This approach is perplexing because the Stirling dish-engine technology proposed for the Calico project is highly modular, unlike other solar-thermal technologies that rely on large-scale integrated arrays of mirrors, heat transfer devices and powerplants. Thus, the Stirling dish-engine technology is suited for smaller, isolated or fragmented parcels of land rather than large continuous blocks that would be sufficient for the entire project. (p. 3)

Comment WWP-2: The CDCA Plan Amendment/FEIS Analysis of Alternatives Violates NEPA...In the FEIS the BLM has failed to consider and analyze alternatives that would allow the project to proceed but would avoid impacts to desert tortoise, rare plants, cultural resources and other scarce and sensitive resources. (p. 2)

Comment WWP-4: The BLM has eliminated from detailed study alternatives that would avoid or minimize impacts to biological resources or avoid or minimize impacts to public lands. Locating the project on private lands would obviously minimize impacts to public land resources...the BLM dismissed this alternative from detailed study on the grounds that the analysis of impacts would not define issues or provide a basis for choice in a manner any different than the No Action Alternative. But given the size of the project, there will be cumulative effects from constructing the project on private lands that cannot possibly be the same as “no action”. BLM also argues that the applicant would have to buy the land and acquire multiple parcels which would be costly and time-consuming. But by this token, the BLM will never consider private land alternatives for projects. This is not in keeping with the spirit or intent of NEPA. (p. 3)

Comment WWP-5: In order to address impacts to LWCF acquisitions and donated lands, the BLM has contrived Alternative 3. This is not a reasonable alternative since it compensates for the loss of impacts to the acquired and donated lands by increasing the project footprint and thus drastically increasing impacts on other resources. (p. 4)

Response: Twenty-four alternatives were identified and considered by the BLM and CEC in the SA/DEIS, including alternative sites, a range of solar and renewable and nonrenewable energy generation technologies, and conservation/demand-side management. Of these 24 alternatives, 3 action alternatives were determined by BLM to meet its purpose and need for the proposed Calico Solar Project. The FEIS describes the alternatives screening methodology, and explains the process by which the action alternatives, the No Action alternative, and two land use plan amendment alternatives were selected for detailed analysis. Section 2.9.2 of the FEIS generally describes the rationale for why some classes of alternatives were determined to not be reasonable or feasible alternatives to meet the purpose and need for the proposed project.

1.6.2 Private Land Alternatives (22510)

Comment SC-23: BLM impermissibly omitted analysis of the private lands alternative: The FEIS did not evaluate the private lands alternative, which would involve the Applicant’s acquisition of private parcels for development of the solar plant. The SA/DEIS included a private lands alternative, but the FEIS dropped the issue and did not consider or analyze it as an alternative...The private lands alternative clearly falls within the range of reasonable alternatives because it would potentially allow the Applicant to develop a solar facility on previously disturbed desert lands, which could dramatically reduce the impacts from the Project. BLM’s

failure to even consider the private lands alternative was therefore unjustified and constituted a violation of NEPA. (p. 19)

Comment DEF-3: The dismissal of private land alternatives is contrary to the requirements of NEPA, yet BLM has systematically dismissed all private land alternatives for all the “fast-track” renewable energy projects proposed in the CDCA, and failed to carry any of them forward for analysis on the ground that it has no jurisdictional authority. BLM’s dismissal of private land alternatives is also based on the conclusion that they would be contrary to BLM’s perceived purpose and need for the proposed project, which is to respond to the application for a right of way under Title V of FLPMA. Based on BLM’s rationale for dismissing private land alternatives from analysis under NEPA, it is reasonable to conclude that private land alternatives will never be carried forward to analysis under NEPA for any project. This is clearly a violation of NEPA. (p. 3)

Response: The environmental and other impacts of the Private Lands Alternative are extensively addressed in the SA/DEIS (Section B.2.7.2). The rationale for eliminating the Private Lands Alternative from detailed analysis is discussed in the FEIS.

A private land alternative is not a reasonable alternative to the BLM since analysis in the FEIS of such an alternative, over which BLM has no discretionary approval authority, would not present an analysis of impacts in a form that would define issues or provide a basis for choice in a manner any different than the No Action Alternative, which is fully considered in this document. Impacts on public land resources would not occur if the project was located on private land, just as impacts on public land resources would not occur if the No Action Alternative was approved (and the project was denied). In addition, since the BLM’s responsibility related to the Proposed Action in this EIS is whether to approve, or deny, or approve with modification an application for a Solar Project to be sited on public land, analysis of a private land alternative would be ineffective in that it does not respond to BLM’s purpose and need. Finally, approval of any specific private land alternative would be remote and speculative. The northern section of the Private Lands Alternative that was analyzed by the State is made up of approximately 64 parcels with 27 separate landowners. The southern portion of the Private Lands Alternative is made up of 45 parcels with 22 separate landowners. Due to the highly fragmented land ownership pattern, development of these sections would be impractical and economically infeasible. Because the BLM has no approval jurisdiction over such an alternative and since no application is before the CEC, and/or the County of San Bernardino, the BLM determined the private land alternatives to be speculative and remote.

1.7 Cumulative Impacts - Reasonably Foreseeable Future Actions (20940)

1.7.1 Cumulative Impacts Generally

Comment EPA-11: The response to comments on the FEIS should provide the rationale for limiting the scope of the cumulative impacts analysis to the specified local area. If the Project would affect the ability of other foreseeable projects to be permitted, the ROD and responses to comments on the FEIS should discuss this. (p. 2)

Comment EPA-7: EPA is concerned that the scope of the cumulative air impacts analysis has been improperly confined, both temporally and geographically... Regardless of whether other projects in the cumulative effects study area have received permits to date, they appear to be reasonably foreseeable and should be analyzed in the cumulative impacts analysis. (p. 2)

Comment EPA-8: Furthermore, the scope of the cumulative impact analysis in the Final EIS is geographically limited to focus on 'localized' cumulative impacts. Determination of the affected environment should not be based on a predetermined geographic area, but rather on perception of meaningful impacts for each resource at issue. (p. 2)

Response: The cumulative impact assessment of air quality and climate clearly describes the procedure used to assess cumulative impacts. The air quality impacts of past, present and reasonably foreseeable projects are discussed in Section 4.2, Air Quality and Climate, in the FEIS, to the extent feasible given available data regarding the other cumulative projects.

The FEIS identifies existing renewable and non-renewable energy projects, other past and existing projects, and energy and non-energy related reasonably foreseeable future actions as the context for cumulative impacts analysis. The FEIS also provides additional information on resource impacts for all of the analyzed alternatives to supplement the cumulative impacts analysis. The Office of Energy Efficiency and Renewable Energy and BLM are preparing a Solar Energy Development Programmatic EIS (PEIS) to develop utility-scale solar energy development; develop and implement agency-specific programs that would establish environmental policies and mitigation strategies for solar energy projects; and amend relevant BLM land use plans with the consideration of establishing a new BLM solar energy development program. The PEIS included lands within the CDCA which are open to solar energy development in accordance with the provisions of the CDCA Plan. The Calico Solar Project site is located within the boundaries of the Pisgah solar energy zone. The BLM is processing active solar applications while the PEIS is being prepared.

1.7.2 Transmission Upgrade Projects Comments

Comment BRW-13: The 850 MW project is simply not feasible due to the need for a 65-mile long stretch of the 220kV line from the Pisgah Substation to Lugo in Hesperia needing to be replaced with a new 500 kV transmission line by SCE. No ROW application has even been filed yet for this, and therefore its location is yet to be determined, and would need separate environmental review.

SCE would also need to upgrade the Pisgah-Lugo substation to as much as 100 acres, and again no ROW application has been filed. (p. 8)

Comment CURE-42: Additionally, BLM must draft and circulate an analysis of the impacts associated with the transmission upgrades necessary for the Project. The analysis of the transmission upgrades must be integrated into the Biological Assessment, the Programmatic Agreement and the Translocation Plan and all federal approvals. BLM is required to prepare a supplemental EIS that adequately evaluates the Project's potentially significant effects to cultural and biological resources. (p. 36)

Comment CURE-43: V. BLM FAILED TO INCLUDE A COMPLETE DESCRIPTION AND ANALYSIS OF ALL CONNECTED ACTIONS

Perhaps the most glaring error in the FEIS is the failure to study a number of significant environmental impacts associated with all connected actions, such as the transmission upgrades necessary for the Project...The FEIS dismisses the need for this analysis by stating that the transmission line is not a proposal before the BLM yet. This is nonsensical since transmission is required for the Project to proceed, and it violates NEPA. (p. 37)

Comment CURE-44: Here, it is undisputed that the proposed Project cannot be constructed or operated without transmission upgrades. Because the transmission upgrades are a critical component of the Project without which the Project cannot proceed, impacts resulting from the construction and operation of transmission upgrades for the Project is a connected action that must be analyzed in this EIS. Moreover, the inclusion of the transmission impacts in the Project's EIS will undoubtedly result in a more integrated, logical and efficient analysis of the direct, indirect and cumulative impacts of the Project as is recommended in the BLM NEPA Handbook. (p. 38)

Comment CURE-45: 1. BLM Has Not Analyzed Biological Impacts of Transmission Upgrades... According to biologist Scott Cashen, numerous other special-status species have the potential to occur along the route were not identified by the Applicant. For example, the Upper Johnson Valley Yucca Rings ACEC contains a unique assemblage of ancient vegetation. Impacts to this ACEC would be significant and unmitigable. White-margined beardtongue occurs along the transmission line route. This species has an extremely limited distribution in California, with most known occurrences in the immediate Project area. The continued existence of white-

margined beardtongue in California would be threatened by the Project. Because the species is known to occur along the transmission line route, transmission upgrades required for the Project would exacerbate the threat, and might not be mitigable.

Therefore, the BLM has failed to undertake a meaningful analysis of the biological impacts that will occur as a result of the transmission upgrades necessary for the Project to operate. Although BLM has known for over a year that the transmission upgrades are connection actions under NEPA, BLM did not follow through with the analysis. As a result, there are unanalyzed and unmitigable impacts associated with the Project that have not even been considered by BLM, not least of which will be additional significant impacts to desert tortoise.

The BLM cannot approve the Project until it provides a complete analysis of the impacts of each of the connected transmission upgrades. (p. 38)

Comment CURE-46: 2. BLM Has Not Analyzed Cultural Impacts from Transmission Upgrades

The Applicant did not conduct a cultural resources survey of the areas where the transmission upgrades would be built. The BLM attempts to defer this analysis until after the Project has been approved. However, the significant cultural resource impacts that will result from the transmission upgrades must be studied as a connected action. To permit this Project without knowing the magnitude of the cultural resources that will be affected improperly segments the analysis in violation of NEPA. (p. 39)

Comment CURE-47: 3. BLM Has Not Analyzed Impacts to Water Resources from Transmission Upgrades

Transmission upgrades will require water for construction. Construction will result in a large amount of grading and earth moving activities, most likely requiring water for dust control. Although water is in short supply in the Mojave desert and the availability of water can determine the viability of most development, this significant impact was not considered by Staff. (p. 39)

Comment CURE-66: 4. Transmission Upgrades (pg. 51)... Again, the Supplemental BA fails to analyze whether the transmission components of the Project may jeopardize the continued existence of desert tortoise. The BLM undertook no efforts whatsoever to determine how many tortoises would need to be moved, where they would be moved, and whether the transmission components of the Project comply with FESA. This is a fundamental flaw in the Supplemental BA, the Translocation Plan and the FEIS and renders the analysis incomplete and inadequate in violation of FESA. (p. 52)

Response: The upgrades to the Southern California Edison (SCE) electrical transmission grid are addressed in the FEIS as a reasonably foreseeable future action. Because SCE has not yet submitted completed applications (ROW or other) to the BLM for system upgrades, the project

is not yet a proposal. The designs and specific details of the upgrades would be discussed in future separate environmental documentation. In the future environmental documentation, consideration of the two projects cumulatively would occur with the Calico Solar project being considered either a cumulative/connected action or in the cumulative effects analysis. In this way, all environmental impacts of both projects will be analyzed under NEPA.

1.8 CDCA Plan Amendment (20930, 20940)

Comment BNSF-5: Moreover, BNSF does not believe that a determination can be made that the proposed CDCA amendment is in accordance with applicable laws and regulations and will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA, as required by Chapter 7 of the CDCA. (p. 6)

Comment CURE-48: VI. FLPMA VIOLATIONS

BLM must carefully consider the extensive programmatic inventory that went into the establishment of the CDCA plan. In keeping with the plan, BLM must not approve intensive industrialization in areas that were not designated for intensive use. (p. 40)

Comment CURE-49: 1. CDCA Plan Should Not Be Amended in a Piecemeal Fashion... The BLM is proposing to amend the CDCA on a project-by-project basis for a whole swath of industrial-scale renewable power plants.... Because the CDCA was developed as a concerted effort with many federal and state agencies and enormous public input, it is improper to amend the Plan in such a piecemeal fashion on a Project by Project basis. The decision of whether to fundamentally change the character of the CDCA by permitting large industrial renewable development on areas not currently designated for intensive use should only be considered on a programmatic basis. (p. 41)

Comment CURE-50: 2. The Industrial Character of the Project Does Not Strike CDCA's Controlled Balance or Protect Sensitive Resources in Violation of the CDCA's Designation (pg. 41)... Although it might be appropriate to allow some solar development on Class M lands, not all solar development is the same size or level of intensity. The intensity and size of the use associated with the proposed Project is fundamentally incompatible with the BLM's Class L and M designations. The proposed power plant will severely impact every aspect of the resources on the site by covering the site with a network of roads, SunCatcher dishes and other infrastructure. The fragile desert pavement will be destroyed and the site will not likely recover for centuries, if ever. (p. 42)

Comment CURE-51: Thus, the Project design has not been constrained to "maintain a controlled balance between higher intensity uses and protection of public land" as is required by the CDCA Class M designation. Nor is the Project designed to "accommodate sensitive, natural,

scenic, ecological, and cultural resource values on the project site”, as is required for the portions of the Project under the CDCA Limited Use designation. Thus, the Project is incompatible with the CDCA Plan designations that were adopted after a comprehensive planning effort and the BLM should not override the wisdom of this planning effort for the short-term benefits that may or may not accrue from the siting of this experimental power plant.

BLM failed to assess the proposed Project’s impact on sensitive values or to strike the controlled balance between the high intensity use and protection of public lands, as required by FLPMA and the CDCA Plan. (p. 42)

Comment DEF-12: II. The Proposed CDCA Plan Amendment and FEIS Do Not Comply with FLPMA and the CDCA Plan, as amended... A. The proposed CDCA Plan amendment and project have not been analyzed in the context of the CDCA and the CDCA Plan. Although specific management principles and guidelines are contained in the CDCA Plan, they have not been applied to either the proposed amendment or project. Nor have landscape level issues and management objectives been considered in evaluating these proposals or in selecting meaningful alternatives to them. Specifically, the analysis of proposed plan amendment and project have not been adequately analyzed in the context of FLPMA’s mandate for the CDCA: “...to provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality. FLPMA Sec. 601(b). (p. 5)

Comment DEF-21: For the reasons set out above, the Proposed CDCA Plan Amendment and FEIS for the proposed Calico Solar Project violates NEPA, FLPMA and BLM policies. BLM must therefore prepare a new or amended FEIS that fully addresses and appropriately avoids, minimizes and compensates for the impacts to the species and their habitats noted above. (p. 9)

Comment WWP-1: The CDCA Plan Amendment/FEIS Project Conflicts with State Policy in Violation of NEPA...On September 3, 2010...the CEC committee reviewing the Calico Solar Project licensing process issued a determination that they cannot recommend approval of the configuration of the Calico Solar Project as currently proposed by the Applicant due to the scope and scale of high quality habitat affecting desert tortoises and bighorn sheep that would be lost in order to construct and operate the project...Since the CEC will not license the Calico project as currently proposed, the BLM must suspend its environmental review pending clarification as to what if any project will be moving forward, and then issue a new NEPA document for public review as appropriate. (p. 2)

Comment WWP-3: If the BLM decides to approve the ROW grant, the BLM will also amend the CDCA Plan as required by the ROW. FEIS at C-4. Presumably then, the BLM’s proposed action for the CDCA plan amendment is to allow solar development on 6,215 acres in the project area. Or is it? What happens if the subsequent BLM ROD for the ROW modifies the size of the ROW?

The FEIS is unclear in not specifying what acreage would be subject to land use modification to allow solar development under the land use plan amendment. (p. 3)

Comment WWP-22: The Federal Land Policy Management Act (FLPMA) guides the BLM's management and uses of public lands. 43 U.S.C. § 1732(a) directs that these lands be managed under principles of multiple use and sustained yield...The adoption of the proposed plan amendment will change the multiple-use character of these lands. (p. 8)

Comment WWP-23: The CDCA Plan Amendment/FEIS violates Federal Land Policy Management Act...BLM has failed to conduct an adequate inventory of the resources of the affected lands as required by 43 U.S.C. § 1711(a), including the inventory of cultural resources, listed species, and sensitive species. Without this baseline inventory, BLM cannot ensure that its decisions will prevent unnecessary and undue degradation of the public's lands in violation of FLPMA sections 1732(b) and 1732(d)(2)(a). (p. 8)

Comment WWP-25: In order to comply with NEPA and FLPMA, the BLM must deny the Calico solar project and should adopt a plan amendment that makes the project area unavailable to renewable energy projects. (p. 9)

Response: The CDCA Plan is a comprehensive, long-range plan that was adopted in 1980; it since has been amended many times. It establishes goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA. Frequently, long range plans that cover large geographic areas such as the California Desert are "living" documents intended to provide overall land use planning guidance and general regulation with more detailed land use information provided through amendments, special area plans, or other more focused planning documents.

The proposed plan amendment is consistent with the BLM's multiple use and sustained yield mandate pursuant to the FLPMA. FLPMA (Section 103(c)) defines "multiple use" as the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people. Accordingly, the BLM is responsible for the complicated task of striking a balance among the many competing uses to which public lands can be put. The BLM's multiple use mandate does not require that all uses be allowed on all areas of the public lands. The purpose of the mandate is to require the BLM to evaluate and choose an appropriate balance of resource uses, which involves tradeoffs between competing uses.

The proposed plan amendment is also consistent with the specific management principles and guidelines listed in the CDCA Plan. The CDCA Plan itself recognizes that proposed plan amendments such as the proposed plan amendment may occur, and outlines a process to approve or deny them (CDCA Plan, pp. 119-20). The management principles listed are: "multiple use, sustained yield, and maintenance of environmental quality contained in law."

(CDCA Plan, p. 6). These principles were the basis for BLM's development of the proposed plan amendment. The CDCA Plan recognizes the potential compatibility of solar generation facilities on public lands, and requires that all sites proposed for power generation or transmission not specifically identified in the CDCA Plan be considered through the Plan Amendment process. The CDCA Plan outlines a framework for balancing use and protection in the context of the entire CDCA, but recognizes that certain sites will strike the balance one way or another depending on relevant factors. The CDCA Plan specifically cites energy development and transmission as a "paramount national priority" to consider in striking that balance (CDCA Plan, p. 13).

The CDCA Plan originally included, has been amended several times to include, and contemplates additional industrial uses analogous to the use analyzed by the proposed plan amendment, including utility rights of way outside of existing corridors, power plants, and solar energy development and transmission (CDCA Plan, p.95). As the FEIS states, the sole purpose of this amendment is to allow power generation and transmission on the Calico project site, which was not previously identified in the CDCA plan. This amendment is limited geographically to only the Calico project site, and further, by the accompanying right-of-way grant application. This amendment will allow solar energy use on the Calico project site only, and will not result in any changes in land use designations or authorized land uses anywhere else in the CDCA.

The FEIS also analyzes the effects of amending the CDCA Plan to designate the proposed project site as unsuitable for power generation or transmission. The BLM considered the suitability of the entire 8,230 acre project site for solar power generation, and noted the variations in habitat and cultural resource values across the site. The Agency Preferred Alternative was identified based on the greater suitability of the southern portion of the project site as compared to the higher-value habitat present in the northern portion of the site.

1.9 Air Quality (40000)

Comment EPA-2: The ROD and responses to FEIS comments should thoroughly evaluate the additional use of diesel powered equipment for Project construction and incorporate appropriate mitigation measures to reduce impacts. (Please see our July 6, 2010 DEIS comment letter for additional construction mitigation recommendations for mobile and stationary sources.) The evaluation in the ROD and responses to comments should include consideration of the feasibility and impacts of avoiding the need for diesel power by altering the construction schedule. (p. 1)

Comment EPA-3: At a minimum, any additional non-road, diesel-powered engines should comply with federal requirements, as applicable, for 40 CFR Part 89. (p. 1)

Comment EPA-4: For those engines that will be sited and operated for 12-months or more, federal applicable requirements should be identified for, at a minimum, air quality permitting, hazardous air pollutants (40 CFR Part 63, Subpart ZZZZ), and new source performance standards (40 CFR Part 60, Subpart IIII). (p. 1)

Comment EPA-5: The ROD and responses to FEIS comments should discuss and address whether the diesel equipment would require a permit from the Mojave Desert Air Quality Management District. (p. 1)

Comment EPA-6: The Response to Comments should assess whether the diesel powered equipment that will be used for a period of time during construction of the Calico Project will contribute to an exceedence of the General Conformity de minimis thresholds. (p. 1)

Comment EPA-9: EPA disagrees that there is never significant overlap for sources separated by six miles. This would depend on the emissions, size of the source, and release height, among other criteria. For example, in our permitting process, we require modeling of the significant impact area plus 50 kilometers out. Due to the serious nature of the PM10 and 8-hour ozone conditions in the Mojave Desert Air Basin, the cumulative effects study area could be the entire air basin because ozone precursors are reactive over hundreds of miles.(p. 2)

Comment EPA-10: It is also unclear what "significant" means with respect to concentration overlap. While this may be true in CEC's experience for some source types, the FEIS will need to substantiate this in the specific case of the Calico Solar Project emissions. (p. 2)

Response: Impacts to air quality and climate, including impacts from diesel-fueled construction equipment and vehicles, are discussed in Section 4.2 of the FEIS. All equipment used for the project will comply with all applicable federal requirements. BLM will review the construction mitigation recommendations for mobile and stationary sources from EPA's comments on the DEIS prior to issuance of the ROD.

1.9.1 Climate Change (40500)

Comment BRW-3: Section 3.4 analyzes Climate Change and greenhouse gases. Sulfur hexafluoride is mentioned as a GHG, but no analysis is given as to how to mitigate it when transmission upgrades are undertaken and 65 miles of new 500 kV line are put in. Less SF6 is emitted than CO2 in California, but its effect is 20,000 times greater according to the EPA. (p. 2)

Response: Transmission Line upgrades are addressed in the FEIS as reasonably foreseeable future actions, and are therefore not analyzed in the FEIS.

Comment Calico-15: The FEIS asserts that the Calico Solar Project could, by disturbing desert soils, result in 115,000 tons per year of lost carbon sequestration...Neither the FEIS for the Imperial Valley Solar Project, nor the FEIS for any other desert solar project...suggests that desert solar projects would cause such impacts, much less that any such impacts could be quantified. Moreover, the Calico FEIS does not provide usable citations for its conclusion; nothing on this topic is included in the References section of the FEIS; and Calico has been unable to locate the FEIS's references using the incomplete citations provided. (p. 4)

Comment Calico-16: Calico respectfully submits that the FEIS should not purport to conclude that the project would cause a loss of carbon sequestration in desert soils, much less assert that the effect would occur equally every year the project is in operation, and still less attempt to quantify and purported loss of carbon sequestration for the various project alternatives. (p. 5)

Comment Calico-29: The climate change discussion in section 4.22 states that the project's CO2 emissions during construction represent a short-term, unavoidable adverse impact of the build alternatives. Section 4.4 of the FEIS quantifies these construction emissions, but does not identify them as an unavoidable adverse impact of the build alternatives. In comparison to the climate change benefits of the build alternative - and particularly Alternative 1a - these emissions are negligible. (p. 7)

Comment CURE-14: 1. BLM Failed to Provide a Good Faith Reasoned Response to CURE's Comments Regarding Climate Change (p. 15)

Comment CURE-15: The evaluation of global climate change under NEPA must include an analysis of the Project in the context of global climate change; the agency's analysis should not be limited to the greenhouse gas (GHG) emissions associated with the proposed project. (p. 15)

Comment CURE-16: NEPA requires agencies to provide a "reasoned analysis containing quantitative or detailed qualitative information." As such, the information provided in those sections of the FEIS does not respond to CURE's comments regarding the effect of climate change on the proposed Project. BLM's response violates NEPA, because BLM's response hardly equates to a good faith effort to respond to public comment. (p. 16)

Response: Emissions of SF6 are quantified in Section 4.4, Climate Change, in the FEIS. The project-related emissions are no more than for any other type of electrical power plant, as they are from high voltage equipment. This is the only greenhouse gas (GHG) that is the same as traditional electrical power plants. All the other GHG emissions for the project are either tremendously reduced or nonexistent for a solar power plant. Section 4.4 discusses construction and operational GHG emissions and climate change impacts. As stated in the FEIS, no mitigation measures related to GHG emissions are proposed because the Calico Solar Project would result in net beneficial GHG impacts. The project owner would have to comply with any

future applicable GHG regulations formulated by the CARB or the EPA, such as GHG reporting or emissions cap and trade markets.

CURE's comment regarding Climate Change is addressed in the FEIS in section G.8.1 Climate Change (40500). The BLM reviewed the recommended revisions and incorporated them as appropriate. The FEIS also provides discussion of the Calico Solar Project and climate change impacts in Section 4.4. Air quality mitigation and BMPs would help reduce criteria pollutants which contribute to the formation of GHGs. Since the proposed project will result in a net beneficial impact on GHG emissions and climate change, it therefore does not contribute meaningfully to this cumulative effect.

The FEIS provides discussion of the Calico Solar Project and climate change impacts in Section 4.4. Air quality mitigation and BMPs would help reduce criteria pollutants which contribute to the formation of GHGs. Since the proposed project will result in a net beneficial impact on GHG emissions and climate change, it does not contribute meaningfully to this cumulative effect.

1.10 Biological Resources (30000)

1.10.1 Inventory of Biological Resources (30000)

Comment DEF-13: B. BLM failed to conduct an adequate inventory of the resources of the affected lands prior to preparing the DEIS and FEIS as required by 43 U.S.C. § 1711(a), as the result of which it cannot ensure that its decisions will prevent unnecessary and undue degradation of the public's lands in violation of id. §§ 1732(b), 1732(d)(2)(a). (pg. 5)

Response: In support of development of the FEIS, the BLM has worked with the Applicant to conduct the full scope of resource inventories necessary to support consultation with respect to biological resources for a Federal project. Although the BLM realizes that more data could always be gathered, the baseline data provided in Chapter 3 and various appendices to the FEIS provide the necessary basis to make an informed decision regarding the project and the proposed CDCA plan amendment.

1.10.2 Wildlife (30200)

1.10.2.1 Desert Tortoise – Significance of the Project Site

Comment CURE-68:1. Importance of Project Site to Survival of the Species... Not only would the Project eliminate a considerable portion high quality habitat in the region, but it would also

completely sever essential connectivity for desert tortoise the eastern and western populations of tortoises in the Mojave Desert. An action of this magnitude would impede recovery of a species that is known to require landscape-level connectivity, and, according to biologist Scott Cashen, it could very easily lead to local extinctions. (pg. 53)

Comment DEF-14: The biological resources that would be affected by the proposed project and their significance weren't appreciated until applicant-supported surveys were conducted and corresponding reports issued. The high-density Desert Tortoise population in the proposed project area and its strategic location at the crossroads of two Desert Tortoise Recovery Areas is particularly relevant to the issue of consistency with FLPMA mandates for the CDCA. An adequate description and analysis of the Desert Tortoise and its habitat on the proposed project site was not fully disclosed until the FEIS was published. (pg. 5)

Comment WWP-6: The FEIS fails to analyze the significance of the desert tortoise population at the project site and the importance of the habitat there in the light of the population declines that have occurred throughout the region. (pg. 4)

Comment WWP-7: The FEIS fails to consider that desert tortoise critical habitat designation and subsequent DWMA designation are based on data collected over 20 years ago. (pg. 4)

Comment WWP-8: The FEIS fails to explain why this population [of desert tortoise] appears to be doing so well and thus fails to analyze what the impacts of the loss of the proposed project site will have on desert tortoise recovery. (pg. 4)

Response: The BLM recognizes that the Pisgah Valley is an important part of the desert tortoise habitat which connects the West Mojave Desert Wildlife Management Areas and Mojave National Preserve. The valley serves as an important habitat linkage connecting not only the critical habitat units (Ord-Rodman, Superior-Cronese, and Ivanpah), but it also provides one of the few pathways connecting the Western Mojave and Eastern Mojave recovery units, as well as the Western Mojave and Colorado Desert recovery units. The Agency Preferred Alternative was specifically developed to minimize impacts to desert tortoise by avoiding disturbance to high quality habitat in the northern portion of the project area.

Subsequent to publication of the FEIS, and in response to information submitted to and docketed by the CEC, the Applicant has proposed reducing the project footprint to 4,614 acres. Approval of the reduced-footprint project would result in a further, substantial decrease in direct impacts to desert tortoises and would avoid most of the highest-quality habitat identified in the northern portion of the originally proposed 8,230-acre project site.

1.10.2.2 Desert Tortoise – Analysis of Impacts

Comment CURE-3: ...BLM has both underestimated the number of tortoises that would be impacted and failed to provide an adequate assessment of the significant effects on the species from the translocation of desert tortoises into offsite populations. (pg. 9)

Comment CURE-4: ...the estimate of 883-1,228 tortoises that will be impacted by the Project does not include tortoises that will not be handled but will nevertheless be impacted by increased predator densities and other inadvertent effects of human disturbance in areas around the Project site and in the receiver and control sites.

BLM failed to accurately disclose indirect impacts to offsite desert tortoise populations. Nevertheless, the FEIS estimate that the Project will impact 883- 1,228 tortoises is ten times higher than what was disclosed and discussed in the DEIS. The change from 100 tortoises impacted to 1,228 tortoises impacted constitutes significant new information relevant to environmental impacts that warrants recirculation of the EIS for comment and response. And, certainly, this change has implications on the proposed action and its effects that are not yet known and which will certainly affect the environmental in a different manner. (pg. 10)

Comment CURE-7: The DEIS and FEIS have not provided adequate or accurate information to inform the public and decision-makers about the magnitude of the impacts to desert tortoise populations in the Project region. BLM must identify the receptor sites and provide an analysis of the likely impacts to those populations that include identification of impacts to the offsite tortoise populations that are not directly handled. Finally, BLM should revise the translocation plan so that it is complete, and this should be circulated to the public for review and comment. (pg. 12)

Comment CURE-22: BLM is required to include high quality information in the FEIS, such as accurate scientific analysis and expert agency comments, to meet the public disclosure requirements of NEPA. Here, BLM has impermissibly strayed from its duty under NEPA by failing to undertake a good faith effort to examine the proposed Project's effects on the environment. In effect, BLM has misled the public by obscuring the mitigation for one of the most controversial aspects of the proposed Project. BLM's failure to adequately analyze the Project violates NEPA. (pg. 21)

Comment CURE-33: b. BLM Failed to Take a Hard Look at Impacts to Desert Tortoise... The BLM failed to take a hard look at the proposed action's impacts to desert tortoises in the receptor sites such as the Ord-Rodman Desert Wildlife Management Area ("DWMA"). Although the FEIS includes a cursory statement about potential effects at receptor sites, the FEIS does not contain detailed analysis and instead defers this analysis to future planning efforts (pg. 29)...The FEIS's conclusory and unsupported statements do not constitute the hard look required by NEPA. (pg. 30)

Comment CURE-56: ...BLM and the USFWS correctly determined that the Project is likely to adversely affect the desert tortoise. However, the consultation to date is incomplete because the BLM failed to adequately or accurately define the baseline for impact assessment. Specifically, the BLM failed to adequately determine the appropriate action areas that will be impacted by the Project and the conditions on the action areas. This determination is essential to determine whether the Project impacts could reasonably be expected to, directly or indirectly, “reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” In order for consultation to be adequate, the agencies must accurately define the environmental baseline, including the description of areas where tortoises will be impacted. (pg. 47)

Comment CURE-57: The BLM failed to provide adequate and accurate facts to support the required determination that must be made under FESA. Moreover, new facts show that the Project may jeopardize the continued existence of the species triggering the requirement that USFWS provide reasonable and prudent alternatives to the proposed action, none of which have been proposed, to date. Finally, since the release of the Supplemental BA and FEIS, new and significant information has been provided to the BLM that compels the BLM to revise the Supplemental BA and recirculate the FEIS. (pg. 47)

Comment CURE-58: A. BLM Failed to Provide Accurate and Adequate Baseline Information to Conduct an Analysis under FESA

BLM has not adequately or accurately identified the areas that will be impacted by the development of the Project. For example, in the Supplemental BA, the BLM identified the Pisgah ACEC and the Northern Linkage Area as sites for the short distance relocation of tortoises. However, these areas are unavailable to receive more than two tortoises total. (pg. 48)

Comment CURE-69: 2. Importance of DWMA's to the Survival of the Species (pg. 54)... By moving desert tortoise into the Ord-Rodman DWMA, the Project would result in human disturbance to the DWMA, thereby increasing the density of tortoises and potentially increasing disease that also, in turn, can increase predator density. Therefore, the Project could trigger a decline in the populations in a DWMA, a very serious impact on the overall recovery efforts for the species... The impacts from this transmission line to the species have not been analyzed at all by the BLM. These impacts must be thoroughly analyzed as a part of the jeopardy determination.

Impacts to the Project area, when coupled with impacts to the Ord-Rodman DWMA, provide overwhelming evidence that BLM's action would jeopardize the continued existence of the species. (pg. 55)

Comment CURE-75: D. The Severity of the Expected Mortality to Tortoises and the Impacts to Offsite Recovery Areas and Critical Habitat Show that the Project Will Jeopardize The Continued Existence of the Species and Result In the Destruction of Habitat

Based on the dismal survival rate expected for translocation (25% mortality per year), the sheer numbers of individual tortoises that will be impacted and killed, and the recovery areas and critical habitat that may suffer declines in desert tortoise populations, the BLM's action would jeopardize the continued existence of the species and result in the destruction or adverse modification of critical habitat. Moreover, there is no evidence to show that the proposed translocation would alleviate jeopardy to the species. In fact, the BLM must undertake a specific analysis as to whether translocation is likely to result in higher mortality of tortoises. (pg. 58)

Comment DEF-6: Desert Tortoise translocation is considered by the U.S. Fish and Wildlife Service an experimental procedure intended to minimize "take" of this threatened species. However, due to recently documented high rates of mortality due to increased predation of Desert Tortoises affected by translocation, its value even as a take-minimization strategy is questionable. Translocation, by definition, is not an impact mitigation measure. (pg. 3)

Comment DEF-7: The FEIS does not adequately address the issue of mortality to both resident and translocated Desert Tortoises, and the impacts to public land habitat or this species associated with anticipated mortality due to predation by Coyotes and Common Ravens. (pg. 4)

Comment SC-10: NEPA requires an agency to assess at the earliest practicable point all of the "reasonably foreseeable" impacts that a project will create. The Draft Translocation Plan constitutes a reasonably foreseeable consequence of the Calico Project...Instead of analyzing the impacts that would result from the Draft Translocation Plan, the BLM simply attached the company's plan as an appendix. (pg. 9)

Comment SC-15: BLM's assertion that it did not have sufficient data to evaluate the impacts of the Draft Translocation Plan does not relieve it of its obligations under NEPA...Ms. Blackford of U.S. Fish and Wildlife summarized the constraints as follows: "I would agree that if we had started two years ago and we didn't have ARRA pushing us, that [additional] information would be – we would be looking to achieve that information."...NEPA does not allow for the exclusion or deferral of relevant information due to the Applicant's funding deadline. (pg. 12)

Comment WWP-11: The agency preferred alternative has a marginal reduction in the size of the project footprint. While this might provide some kind of potential movement corridor for wildlife, if the habitat fragments that remain are not contiguous and are not large enough to maintain viable desert tortoise populations it will not function as linkage habitat. The FEIS undertakes no analysis of the degree of fragmentation, viability of the fragmented populations, nor does it establish if the potential movement corridor is viable linkage habitat for desert tortoise. (pg. 4)

Response: The Applicant conducted a 100 percent survey of the 8,230-acre project site in March/April 2010. The results of this survey are provided in Section 3.3.5.4 (Special-Status Species) of the FEIS. Impacts to desert tortoises are discussed for each alternative in Section 4.3.2 (Direct and Indirect Impacts) of the FEIS. The mitigation measures that address project-related impacts to desert tortoises were provided in Section 4.3.4 (Mitigation, Project Design Features, BMPs, and Other Measures) of the FEIS.

Since publication of the FEIS, and based on the continuing proceedings before the CEC, the Applicant has proposed to further reduce the size of the project footprint to avoid high value desert tortoise and desert bighorn sheep habitat. The reduced 4,614-acre project footprint that was proposed would result in the same types of direct, indirect, and operational impacts to desert tortoises that were analyzed in the FEIS for the proposed project. However, when compared to the proposed project, the 4,614-acre footprint would result in a reduction in impacts to desert tortoise habitat and a net reduction in the number of desert tortoises lost through direct mortality from construction activities, direct loss through translocation, and from potential indirect effects of translocation mortality.

The 4,614-acre project footprint was designed to reduce impacts to areas supporting the highest concentration of desert tortoise and their burrows. The 4,614-acre footprint represents a 26 percent decrease in the amount of desert tortoise habitat that would be impacted by the project, and provides for the avoidance of 1,601 acres of high quality desert tortoise habitat that would have been impacted under the other project alternatives. The 4,614-acre footprint would provide a much wider habitat linkage. With the 4,614-acre footprint, there would be a direct loss of approximately 4,614 acres of desert tortoise habitat; this includes 2,141 acres of habitat located between the BNSF railroad and Interstate 40 and 2,472 acres located north of the BNSF railroad.

A total of six adult and four juvenile tortoises were detected during surveys within the 4,614-acre project footprint. Using the USFWS's formulas (described in the FEIS) the 4,614-acre project footprint supports an estimated 11 adult and sub-adult desert tortoise, between 5 and 11 juvenile desert tortoises, and approximately 56 eggs. The 95 percent confidence interval for this estimate ranges from a low of four to a high of 29 adult and sub-adult desert tortoises, and 11 adult and sub-adult tortoises is the median point within this range. The 4,614-acre footprint is therefore estimated to support a total population of approximately 22 adults, sub-adults, and juvenile desert tortoise, and approximately 56 eggs. In addition to the desert tortoises identified within the 4,614-acre footprint, one adult and one juvenile desert tortoise were detected in the small exclusion area west of the southern Not-A-Part parcel. These desert tortoises were not considered in the USFWS formula, but fall within the range of expected tortoises that would require translocation. A summary of the number of desert tortoises that would be impacted by the project is provided in Table 1-2.

Table 1-2 Desert Tortoise Impact Summary

Project Component	Estimated Number of Tortoises—Adult/ Sub-adult (Min-Max) [Table Note 1]	Estimated Number of Tortoises — Juveniles (Min-Max) [Table Note 2]	Estimated Number of Tortoises—Eggs [Table Note 3]	Estimated Number of Tortoises—Total Adult/Sub-adult and Juvenile (Min-Max) [Table Note 4]
Direct Effects				
Project Site [Table Note 5]	11 (4-29)	11 (5-11)	56	22 (9-59)
Translocation Area [Table Note 6]	11 (4-29)	11 (5-11)	N/A	22 (9-59)
Control Area [Table Note 7]	11 (4-29)	11 (5-11)	N/A	22 (9-59)
Subtotal	33 (12-87)	33 (15-33)	56	66 (27-177)
Indirect Effects				
Buffer Area [Table Note 8]	37	39 (17-39)	N/A	76 (54-76)
NAP Area A [Table Note 9]	24	15 (11-15)	N/A	39 (35-39)
Subtotal	61	54 (28-54)	N/A	115 (89-115)
Total Direct and Indirect	94 (12-87)	87 (43-87)	56	181 (107-292)

Table Source: Adapted from CEC's September 2010 Biological Resources Addendum.

Table Note 1: Estimate based on USFWS formula.

Table Note 2: Table assumes high end of juveniles present.

Table Note 3: Assumes a 1:1 sex ratio and that all females present would clutch in a given year.

Table Note 4: Min-Max values are not additive with the data in the preceding columns. Minimum total tortoise values use the lower limit of the 95 percent confidence level (4-29) of the USFWS formula added to the minimum percentage identified by Turner et al (5-11) for estimating the number of juvenile tortoises in a population. Therefore the minimum estimated total population on the project site is 4+5=9 desert tortoises. Maximum tortoise values use the upper limit of the 95 percent confidence level (4-29) of the USFWS formula added to the maximum percentage identified by Turner et al equation (51.1 percent) for estimating the number of juveniles tortoise in a population. Therefore the maximum estimated number of total desert tortoise on the project site is 29+30=59.

Table Note 5: Includes 4,614 acres project site.

Table Note 6: Assumes one tortoise handled at the translocation site for each translocated tortoise.

Table Note 7: Assumes one tortoise handled at the control site for each translocated tortoise.

Table Note 8: Assumes a 1,000-foot buffer and a tortoise density of 16 tortoises per square mile.

Table Note 9: Assumes the 960-acre NAP Area A supports up to 24 tortoises.

Implementation of the project with a 4,614-acre project footprint would also reduce the number of desert tortoises that would require translocation compared to the Agency Preferred Alternative. Based on the information provided in Table 1-2, it is expected that 22 adult, sub-adult, and juvenile desert tortoises and 56 eggs would be directly or indirectly affected on the

project site. Under the assumption that 85 percent of juvenile tortoises would be overlooked by surveyors, it is expected that nine of the juvenile desert tortoises, in addition to 56 eggs, would be lost during construction of the proposed project. With the 4,614-acre project footprint, approximately 13 desert tortoises (11 adults and sub-adults; 2 juveniles) would require translocation from the project site compared to 107 (93 adults and sub-adults; 14 juveniles) under the Agency Preferred Alternative.

The overall strategy for translocation of desert tortoises has not changed, but the number of tortoises that would be impacted by the capture, disease testing, and relocation of desert tortoises on the project site, the control group site, and the translocation receptor sites has been substantially reduced. For every tortoise that is moved to a long distance translocation site, two other tortoises must be handled, disease tested, and radio tagged; therefore, three tortoises are handled for each translocation, including one tortoise from the project site, one tortoise from the host population at the proposed recipient site, and one tortoise at the control site. With the 4,614-acre footprint, an estimated 39 tortoises ([11 adults and sub-adults and 2 juveniles] x 3) that would potentially require handling, radio tagging, and long term monitoring compared to 321 tortoises ([93 adults + 14 juveniles] x 3) under the Agency Preferred Alternative. Some juveniles may be too small to accommodate a radio-tag, and the final number of desert tortoises that are detected and translocated may be somewhat lower than what is described in this analysis. It is expected that a total of 181 tortoises and 56 eggs would be subject to direct and indirect effects with the 4,614-acre project footprint; this includes effects associated with capture, disease testing, and translocation of tortoises on the project site, the control group site, and the recipient site.

With the 4,614-acre project footprint, there is not likely to be a need to obtain or identify additional translocation sites to accommodate the desert tortoises that are translocated from the project site. The larger habitat linkage area to the north of the project site that is associated with the 4,614-acre project footprint provides more opportunity for the translocation of tortoises that are detected within 500 meters of the northern project boundary. Allowing the translocation of tortoises into this area will likely reduce translocation-related mortality because it is likely that some of the desert tortoises will remain within a portion of their home range. Based on the reduced number of desert tortoises expected to occur within the 4,614-acre project footprint, the ability of the northern linkage area to accommodate additional tortoises, and placement of two tortoises into the Pisgah ACEC, the existing translocation sites should be large enough to support all of the tortoises that would need to be translocated from the project site.

With regard to potential impacts to resident desert tortoises at translocation receptor sites, potential density-dependent effects such as increased spread of upper respiratory tract disease or increased rates of predation are expected to be minor, and will be minimized by limiting the number of tortoises that can be translocated into any one area and using appropriate protocols for disease testing and handling.

The BLM agrees that translocation poses risks for the translocated and resident desert tortoises, and is aware of the outcome of large scale translocation efforts at Fort Irwin and elsewhere. The BLM considers translocation to be a minimization measure for desert tortoise rather than mitigation for project impacts. Since the publication of the draft translocation plan, additional detail has been added based on the concerns and input from the various individuals, organizations, and agencies that were provided during the CEC's evidentiary hearings and staff workshops. The revised Desert Tortoise Translocation Plan was submitted to the US Fish and Wildlife Service, along with a Biological Assessment Supplement that addresses the 4,614-acre footprint, on September 27, 2010. The terms and conditions of the US Fish and Wildlife Service's Biological Opinion for the project will be incorporated as project mitigation requirements in the ROD (see ROD Appendix 3 – Biological Opinion).

1.10.2.3 Desert Tortoise - Translocation Plan

Comment CURE-8: The translocation plan was not released with the DEIS and has only been circulated for the first time in the FEIS. The translocation plan is rife with omissions, inaccuracies and wholesale incompetence. (pg. 12)

Comment CURE-9: Dr. Kristin Berry, a renowned desert tortoise biologist who is currently studying the nearby Ft. Irwin translocation effort, testified under oath at the California Energy Commission regarding the inadequacy of the current translocation plan:

“The translocation plan seems to be hastily assembled, lacks basic and careful science, and it's not a rigorous, thoughtful plan. Very little background information is presented and no supporting scientific or quantitative data on such important topics that are raised in the documents such as annual and perennial vegetation, soils and surficial geology...The second point I'd like to make is that the writers of the translocation plan used layers of assumption unsupported by scientific evidence...”

Dr. Berry's warnings that the Translocation Plan needs a lot of improvement should be heeded. She has witnessed first-hand the tragedy of the nearby Ft. Irwin translocation effort that has resulted in 50% mortality of desert tortoises. (pg. 13)

Comment CURE-10: Similarly, Scott Cashen reviewed the newly released translocation plan and found it wholly inadequate. Mr. Cashen's testimony on the translocation plan is attached and incorporated herein. According to Mr. Cashen's professional opinion, if the translocation plan were to be adopted, most of the tortoises on the Project site would not survive. (pg. 13)

Comment CURE-12: NEPA requires the BLM to circulate a draft translocation plan in the DEIS in order to obtain meaningful input and revise the plan prior to approving the Project. Now, the translocation plan is new and incorrect. The BLM's decision to present the numbers of impacted

tortoises and this mitigation strategy for the first time in the FEIS undermines public participation and fundamentally violates the NEPA process. (p. 14)

Comment CURE-34: Dr. Kristin Berry of USGS, Tonya Moore of CDFG and biologist Scott Cashen all testified that the translocation plan's analysis of impacts to offsite populations is incomplete and additional analysis is needed to determine the likely impacts to these populations. The Applicant's proposal to move tortoises to DWMA's is a very serious undertaking that must be carefully considered because the DWMA's were set aside by the US Fish and Wildlife Service as the core locations to enable recovery of the desert tortoise. There are only 14 DWMA's and the long-term persistence of populations in DWMA's are listed as critical elements in the strategy to recover the desert tortoise in the Desert Tortoise Recovery Plan. The BLM must identify which offsite desert tortoise populations will be affected and provide additional analysis of impacts to these offsite populations. (pg. 30)

Comment CURE-39: A. BLM Failed to Include in the FEIS Reasonable Measures to Reduce Significant Adverse Affects to Desert Tortoise

Although BLM agrees that mitigation is necessary to minimize significant adverse effects on desert tortoise, the translocation plan presented in the FEIS is nothing more than an incomplete first draft that is not scientifically defensible.

Moreover, the draft translocation plan provides absolutely no mitigation for indirect impacts to desert tortoise adjacent to the Project site or to tortoises in the receptor sites that are not handled.

For these reasons, BLM's conclusion that significant adverse impacts to desert tortoise will be fully mitigated is arbitrary and capricious and violates NEPA. (pg. 35)

Comment CURE-63: Consequently, the BLM analysis is fundamentally lacking in the information necessary to determine how the translocation effort would impact the desert tortoise population in the Ord-Rodman DWMA and how conditions at the Ord-Rodman DWMA would impact the newly translocated tortoises. At a minimum, BLM must conduct a comprehensive health survey of all resident tortoises in the Ord-Rodman DWMA prior to designating these areas as eligible recipient sites. (pg. 50)

Comment CURE-64: 2. Northern Linkage Area... The Supplemental BA and the Translocation Plan are inconsistent (pg. 50)... The widely inconsistent and inaccurate information about the existing capability of the Northern Linkage Area to accept desert tortoises, as proposed in the Translocation Plan and Supplemental BA, mandates that the BLM prepare a new analysis of where potentially displaced tortoises on the Project site would be moved and the baseline conditions at the new proposed receptor locations. (pg. 51)

Comment CURE-74: 3. Translocation Plan Is Laden with Unsupported Assumptions and Inaccuracies and Must be Substantially Rewritten Before Project Impacts Can Be Adequately Analyzed

Given the results of the Fort Irwin translocation project, the fate of the 131 to 185 tortoises that the Applicant proposes to translocate off the Calico Solar Project site is clear: most are likely to die. Selection of appropriate translocation sites, health evaluation techniques, and remedial action measures each are critical considerations of a desert tortoise translocation plan that have not been adequately evaluated by BLM or USFWS. Dr. Kristin Berry and Scott Cashen provided substantial testimony regarding the inadequacies of the Draft Translocation Plan for the Project. BLM must conduct additional analysis and substantially revise the Supplemental BA as a result of this information and include this information in an SEIS before the Project can be approved. (pg. 57)

Comment DEF-8: Dr. Berry, considered among the most qualified scientists involved with Desert Tortoise biology, ecology and translocation, should be a key participant in discussions on Desert Tortoise translocation ecology by the regulatory agencies. (pg. 4)

Comment DEF-10: The use of public lands for Desert Tortoise translocation associated with the proposed Calico project is a significant action warranting involvement by the public under the provisions of NEPA, which to date has not occurred. The draft translocation plan should be included in a supplemental DEIS and released to the public for review and comment for a minimum of 45 days, and a supplemental FEIS containing a proposed translocation plan should be released for an additional 30 days to allow for public review, comment and protest before a decision on the proposed project is made. (p. 4)

Comment SC-7: According to CEC Staff's findings, the Draft Translocation Plan could result in the mortality of up to 282 tortoises, an estimate that included mortality in the host/receptor population and the control population of tortoises. Despite these acknowledged impacts, the FEIS discussion of the Draft Translocation Plan did not include any analysis of the impacts that the plan would cause to the host/receptor sites or the control sites. It also did not include a quantification of the expected mortality to the translocated tortoises. (pg. 8)

Comment SC-9: [T]he impacts that would result from the proposed Draft Translocation Plan require BLM to engage in a full NEPA review of its environmental impacts. As a reasonably foreseeable consequence of the proposed Project, and in fact a necessary component of the proposed mitigation, NEPA requires BLM to assess the cumulative impacts to the desert tortoise that would result from the Translocation plan, which the FEIS did not do. (pg. 9)

Comment SC-11: [I]t is unclear which process BLM is relying on for the public to comment on the company's Draft Translocation Plan or what deadline defines the 30-day comment period.

The Draft Translocation Plan is clearly not the subject of an independent DEIS, although it should be, and BLM did not officially notice an EIS that fully assesses the plan. (p. 10)

Comment SC-12: NEPA required BLM to include a thorough discussion of the cumulative impacts that would result from both the Calico Project and the Draft Translocation Plan in the DEIS and the FEIS. This did not occur, and in fact it could not occur because BLM failed to gather the required information to fully analyze the impacts of the Draft Translocation Plan. This omission violated NEPA's requirement to take a hard look at the impacts of the proposed plan. (pg. 11)

Comment SC-13: Neither the Applicant nor BLM have any idea whether the receptor sites are sufficient for the Draft Translocation Plan, and as a result they could not make any informed conclusions regarding the impacts that the Draft Translocation Plan would have on the translocated tortoises or the receptor sites. (pg. 11)

Comment SC-14: As a result of this lack of data, BLM cannot make an informed and reasoned assessment of the impacts that the Draft Translocation Plan would have...Therefore, it is a violation of NEPA for BLM to approve the Calico Project and the Draft Translocation Plan without having first identified and analyzed the environmental impacts in the EIS...BLM must therefore withhold its record of decision until it gathers sufficient information on the Draft Translocation Plan and distributes a supplemental EIS for public review and comment. (pg. 12)

Comment WWP-12: The draft translocation plan will take an experimental approach to judge success by establishing "control" groups of tortoises that are outside the project area...However, as with the Fort Irwin translocation, the proposed translocation plan does not have a true control group because there will be no group of tortoises that remain at the project site that are not translocated. (pg. 5)

Comment WWP-14: The BLM needs to address the general issue of desert tortoise translocation within the CDCA prior to considering any individual renewable energy project. (p. 6)

Comment WWP-15: [T]he BLM must allow full public review of the [desert tortoise] translocation plan for the Calico project prior to making a decision. (p. 6)

Response: While still in draft form because of the ongoing agency input that was occurring at the time, the Draft Desert Tortoise Translocation Plan was circulated with the FEIS because it provided substantive information regarding BLM's strategy for removing desert tortoises from the project site and placing them in suitable habitats off-site. The Draft Desert Tortoise Translocation Plan identified the number of tortoises that would potentially be impacted, clearance survey methodologies, potential receptor sites for tortoises that are removed from the project site, tortoise handling and translocation methodologies, tortoise health considerations, a

translocation schedule, requirements for monitoring, and reporting requirements. The FEIS identified and discussed potential impacts to tortoises that would be translocated over the course of the project, as well as potential impacts to resident desert tortoises at translocation receptor sites.

Since the publication of the draft translocation plan, additional detail has been added based on the concerns and input from the various individuals, organizations, and agencies that were provided during the CEC's evidentiary hearings and staff workshops. With the recent proposal of the reduced 4,614-acre project footprint by the Applicant, the overall strategy for translocation has not changed, but the number of tortoises that would be impacted by the capture, disease testing, and relocation of desert tortoises on the project site, the control group site, and the translocation receptor sites has been substantially reduced. Please refer to the response under 1.10.2.2, above for additional information regarding the number of tortoises that would be impacted under the reduced footprint project.

1.10.2.4 Desert Tortoise - Translocation Receptor Sites not Adequate

Comment CURE-5: It has also become clear since the release of the FEIS that two of the named receptor locations in the FEIS, the northern "linkage" area and the Pisgah Area of Critical Environmental Concern ("ACEC") will not be appropriate locations to accept more than collectively two tortoises. The remaining tortoises that will require translocation exceed the capacity of the identified receptor locations. Therefore, BLM does not have adequate receptor locations for the tortoises that would need to be moved for Project development. (pg. 11)

Comment CURE-6: The determination that the identified receptor areas will not be adequate to receive desert tortoises is significant new information bearing on environmental concerns that triggers the need for supplemental analysis. It is apparent that a substantial planning effort is needed prior to the conclusion of the BLM's analysis on this Project. (pg. 12)

Comment CURE-59: Furthermore, the primary translocation receptor area identified by the BLM in the Supplemental BA and the FEIS is the Ord-Rodman Desert Wildlife Management Area ("DWMA"). However, BLM's analysis to date is wholly inadequate to determine the baseline conditions in this DWMA. Establishing the baseline conditions in the Ord-Rodman DWMA is necessary to evaluate the likely impacts to the survival of the tortoises in this DWMA and whether it is an appropriate receptor site for any of the 131-185 tortoises that must be relocated from the Project area. (pg. 48)

Comment CURE-60: 1. Ord-Rodman DWMA

According to the Applicant's proposed draft Translocation Plan, an estimated 131 (but possibly as many as 185) desert tortoises must be moved off the Project site. The Translocation Plan proposes to move most of the desert tortoises found on the project site to locations in the Ord-Rodman DWMA. However, the Translocation Plan specifically states that the proposed DWMA locations can support up to 60 translocated tortoises. Therefore, the Applicant identified potentially suitable translocation sites for 62 tortoises when the Pisgah ACEC area is included. The Applicant does not have a plan for the 71 to 125 remaining tortoises requiring translocation. This error must be remedied before the Project, including the Translocation Plan, can be approved. (pg 48)

Comment CURE-61: Additionally, the Ord-Rodman DWMA may not be an appropriate translocation area for any tortoises from the Project site. (pg 48)

Comment CURE-62: Furthermore, although BLM is well-aware of the significant affects to the Ord-Rodman DWMA and to threatened desert tortoise, the BLM did not study the populations and habitat in the DWMA adequately to determine whether any areas in the DWMA are appropriate receptor locations where such impacts would not occur. Instead, the BLM listed sites within the Ord-Rodman DWMA as eligible recipient locations without conducting the necessary full health assessment, including blood and tissue samples of all resident tortoises, as has been required by USFWS. In fact, disease prevalence and large die-off events have already been observed throughout the Ord-Rodman DWMA, including in the areas that the Translocation Plan has targeted for receptor areas. It is undisputed that translocating tortoises into this area could exacerbate the decline of the tortoise in these areas and for the population as a whole. (pg. 49)

Comment CURE-65: 3. Pisgah ACEC

The Draft Translocation Plan proposes to move tortoises into the Pisgah ACEC. However, the Applicant's biologist admitted that no more than two tortoises may be moved into this ACEC.

The Draft Translocation Plan is incorrect. This incorrect information about the existing capability of the Pisgah ACEC to accept desert tortoises, as proposed in the Translocation Plan, mandates that the BLM prepare a new analysis of where potentially displaced tortoises on the Project site would be moved and the baseline conditions at the new proposed receptor locations. (pg. 51)

Response: The BLM's selection of designated critical habitat within the Ord-Rodman DWMA as a translocation receptor site is consistent with the guidance provided in the US Fish and Wildlife Service's *Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance* (2010). Preliminary habitat assessments and tortoise density surveys have been conducted by the Applicant in preparation for the translocation activities, and the required site assessments will be completed before any desert tortoises are translocated.

As identified in the response under 1.10.2.2, above, the substantially lower number of tortoises that would need to be translocated from a 4,614-acre project footprint should eliminate the need to obtain or identify additional translocation sites to accommodate the desert tortoises that are translocated from the project site. The larger habitat linkage area to the north of the project site that is associated with the 4,614-acre project footprint provides more opportunity for the translocation of tortoises that are detected within 500 meters of the northern project boundary, and allowing the translocation of tortoises into this area will likely reduce translocation-related mortality because it is likely that some of the desert tortoises will remain within a portion of their home range. With the reduced number of desert tortoises expected to occur within the 4,614-acre project footprint, the ability of the northern linkage area to accommodate tortoises, and the ability to place two tortoises into the Pisgah ACEC, the existing translocation receptor sites are expected to be large enough to support all of the tortoises that would need to be translocated from the project site.

1.10.2.5 Desert Tortoise – Translocation Plan Conformance with BLM Manual 1745

Comment DEF-9: Assessment of conditions of the Desert Tortoise translocation sites proposed by the project applicant and contained in the Draft Desert Tortoise Translocation Plan in the FEIS has not been completed to the standards established in BLM Manual 1745 regarding ecological condition, and disease occurrence among the translocation sites “host population” of Desert Tortoises has not been established. (pg. 4)

Comment DEF-19: IV. The Proposed CDCA Plan Amendment and FEIS do not conform with the requirements contained in BLM Manual 1745: Introduction, Transplant, Augmentation and Reestablishment of Fish, Wildlife and Plants (pg. 7)

Comment DEF-20: Meaningful public participation mandated by Manual 1745 policy has not occurred and cannot be fulfilled until a complete and accurate draft Desert Tortoise translocation plan has been prepared and released for public review and comment. A final translocation plan could be developed after the required public participation has occurred. Such participation must include specific organizations or groups having expertise in Desert Tortoise biology, ecology and the Independent Science Advisors to the DRECP. (pg. 8)

Response: BLM Manual 1745 (1992) is guidance that applies to the introduction, transplant, augmentation and re-establishment of fish, wildlife and plant species. Translocation of a species, as is being proposed for desert tortoises in the project area, is not addressed in BLM Manual 1745. Further, BLM Manual 1745 references land use planning manual sections that have been removed; in November 2000, the BLM removed BLM Manual Sections 1617 and 1622 and issued BLM Manual 1601. BLM Manual Section 1601 (2000) explains that site-specific plans (for example, habitat management plans) are implementation level decisions

rather than planning decisions. The BLM's translocation plan for this project is considered an implementation or activity plan, rather than an element of the land use plan, and is consistent with the guidance provided in the US Fish and Wildlife Service's *Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance* (2010).

1.10.2.6 Desert Tortoise – Translocation Plan Violates the ESA

Comment CURE-11: Finally, it is not clear that desert tortoise translocation should be conducted as a minimization strategy. Dr. Berry testified that the very high mortality rate of the tortoises in the nearby Ft. Irwin translocation effort leads her to believe that translocation may not be an effective minimization strategy... (pg. 13)

Comment CURE-55: VIII. ESA VIOLATIONS

The Project's elimination of a sizable and healthy population of desert tortoises is a significant impact that cannot be mitigated. The BLM's efforts to minimize the decimation of the tortoises on the Project site and around the Project site, and in offsite populations in recovery areas, without any information whether even minimization will work is a clear violation of the Federal Endangered Species Act ("FESA"). Substantial evidence shows that the Project would jeopardize the continued existence of the species and result in the destruction of habitat for the species. The BLM's approval of the Project would be arbitrary and capricious and would violate FESA. (pg. 45)

Comment CURE-67: B. The Project Could Jeopardize the Continued Existence of the Species; USFWS Must Develop Reasonable and Prudent Alternatives to the Proposed Action. (pg. 52)

Comment CURE-76: The BLM has an enormous amount of analysis that still must be done to identify adequate receptor sites, study the baseline conditions at the receptor sites and analyze whether translocation would alleviate the Project's impacts to the species that, thus far, show that the Project would result in jeopardy to desert tortoise as prohibited by FESA. If the BLM approves this Project without conducting this analysis, the BLM would violate FESA. (pg. 58)

Comment SC-6: The project and the impacts of the proposed Draft Translocation Plan would result in the destruction of over 6,000 acres of high quality desert tortoise habitat, the mortality of up to 282 individual desert tortoises, and the destruction of up to 863 desert tortoise eggs. This proposed travesty directly contradicts the clearly articulated policy of the Endangered Species Act ("ESA"), which requires BLM and all other Federal departments and agencies to use their authorities to conserve, protect and restore the desert tortoise. (pg. 7)

Comment SC-8: BLM's support of the Draft Translocation Plan violates the ESA's requirement to conserve and restore the desert tortoise and insure the BLM's actions do not jeopardize the continued existence of the species.

Comment WWP-13: Translocation of desert tortoises to the DWMA could place the entire Ord-Rodman DWMA tortoise population at risk...[and]...directly contravenes the specific recommendation of the 1994 Desert Tortoise (Mojave Population) Recovery Plan. There are no provisions in the West Mojave Plan for a large-scale translocation of desert tortoises into the Pisgah ACEC or the DWMA that that CDCA Plan Amendment established. (pg. 5)

Response: The BLM is fulfilling the procedural and regulatory requirements of the Endangered Species Act through formal Section 7 consultation with the US Fish and Wildlife Service. Since the publication of the FEIS, the proposed project footprint has been reduced to avoid impacts to most of the highest-density tortoise habitat and to provide a larger habitat linkage area to the north of the project site. In addition, a suite of project-specific mitigation measures has been developed to reduce the project's impacts on the desert tortoise, including requirements for compensatory mitigation, funding of regional raven management activities, implementation of worker awareness training and construction monitoring, installing tortoise-proof fencing along the project boundary and access roads, and removing desert tortoises from the project site prior to construction.

Desert tortoises that are removed from the project site will be translocated to suitable habitats off-site, including the habitat linkage area to the north of the project site, the Pisgah Area of Critical Environmental Concern, and designated critical habitat within the Ord-Rodman Desert Wildlife Management Area. Ongoing monitoring will be used to determine the ultimate fate of these tortoises and ongoing reporting and agency coordination will allow the BLM, CDFG, and the US Fish and Wildlife Service to address any unforeseen issues that arise during the course of the project and the implementation of the project mitigation measures. The BLM's translocation plan for this project is considered an implementation or activity plan, rather than an element of the land use plan, and is consistent with the guidance provided in the US Fish and Wildlife Service's *Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance* (2010).

1.10.2.7 Desert Tortoise – Compensatory Mitigation

Comment WWP-9: The CEC proposed mitigation ratio of 5:1 for acquisition of replacement habitat...is arbitrary based on comparative mitigation ratios for ground disturbance in DWMA. Full analysis may establish that an appropriate mitigation ratio should to be much higher. (pg. 4)

Response: The BLM is requiring 1:1 mitigation across the project site, as identified in the West Mojave Plan. Additional mitigation requirements have been proposed by the CDFG and subsequently supported by the CEC, and are the responsibility of the State of California.

1.10.2.8 Biological Assessment

Comment CURE-70: C. Since Critical Information in the Supplemental BA is Inadequate and Incorrect, the BLM Must Prepare and Circulate a New BA

After BLM's release of the FEIS, the Draft Translocation Plan, and the Supplemental BA, new information was made available that rendered the analysis and baseline in the Supplemental BA inadequate and inaccurate. (pg. 55)

Comment CURE-71: 1. Information About Receptor Sites is Inaccurate (pg. 55)

The BLM must significantly revise the Supplemental BA to provide sufficient information about the Ord-Rodman DWMA as a potential translocation site, if that is the plan. The BLM must include a complete health assessment of resident populations and an assessment of the food source for desert tortoises, among other factors recommended by Dr. Kristin Berry and Scott Cashen and as incorporated herein. (pg. 56)

Comment CURE-72: 2. Assumption About the Importance of Project Changes Along Northern Boundary Is Inaccurate

The BLM's Supplemental BA assumes that the Applicant's reduction of the Project boundary along the Northern Boundary is a 4,000 foot reduction that would comply with the USFWS' Desert Tortoise Recovery Office recommendations. However, biologist Scott Cashen conducted an independent assessment of that area and found that it is not 4,000 feet wide throughout. In fact, Project construction reduces the width to as narrow as approximately 2,400 feet. Thus the BLM's Supplemental BA includes an inaccurate explanation of the linkage area north of the Project site. (pg. 56)

Comment CURE-73: Thus, the BLM's Supplemental BA must be revised to correct the inaccuracies in the description of the width of the corridor and to take into account the expert opinions provided by Scott Cashen and Jeff Aardahl that the current corridor is insufficient to maintain connectivity for desert tortoise populations and violates the 1994 recovery plan. (pg. 57)

Comment EPA-15: When finalized, [the Biological Opinion and the final Desert Tortoise Translocation Plan] should play an important role in informing the decision on which alternative to approve and what commitments, terms, and conditions must accompany that approval. (pg. 3)

Response: The BLM initiated formal consultation under the Endangered Species Act to address adverse impacts to the desert tortoise associated with the 8,230-acre project footprint on April 1, 2010, and has continued to coordinate with the US Fish and Wildlife Service during the subsequent revisions to the project footprint. The reduced 4,614-acre project footprint that

has been proposed by the Applicant would expand the habitat linkage area between the project site and the foothills of the Cady Mountains, where the highest density of tortoises was observed, and would reduce substantially the project-related impacts to desert tortoises compared to the Agency Preferred Alternative that was identified in the FEIS.

The BLM has prepared Supplement #5 to the Biological Assessment that addresses the proposed 4,614-acre project footprint; the Biological Assessment Supplement was submitted to the US Fish and Wildlife Service on September 27, 2010, along with a revised Desert Tortoise Translocation Plan. The Biological Assessment Supplement and revised Desert Tortoise Translocation Plan take into consideration the comments and testimony presented by various individuals, agencies, and organizations at the CEC's evidentiary hearings and staff workshops. Upon the completion of the Endangered Species Act consultation, the BLM will incorporate the terms and conditions of the US Fish and Wildlife Service's Biological Opinion, as well as the terms and conditions of the California Department of Fish and Game's Incidental Take Permit, into the project mitigation requirements.

1.10.2.9 Mojave Fringe-toed Lizard (30213)

Comment BRW-4: Based on these field observations, it is my professional opinion that more than 164.7 acres of Mojave fringe-toed lizard habitat exists on the Calico Solar Project site, especially when considering connectivity corridors. Formal surveys should be undertaken to determine habitat extent during March through May when lizards are most active. (p. 4)

Comment BRW-5: Connectivity habitat has not been adequately considered... if most of the Mojave fringe-toed lizard habitat sand is from the west, then the potential exists that the project will block sand flow to the east, to Mojave fringe-toed lizard habitat patches in Pisgah Area of Critical Environmental Concern. This needs to be considered in approval of the project and mitigation. The area may be a unique geographic connectivity location, which cannot be mitigated. (p. 4)

Comment CURE-37: II. BLM FAILED TO TAKE A "HARD LOOK" AT THE CUMULATIVE EFFECTS OF THE PROPOSED PROJECT ON THE MOJAVE FRINGE-TOED LIZARD

The FEIS fails to analyze or mitigate cumulative impacts to Mojave fringetoed lizards and their habitat from compaction of soils; the introduction of exotic plant species; alterations to the existing hydrological conditions; alterations in the existing solar regime from shading; modification of prey base; and altered species composition. Further, the placement of fencing and other structures would provide roosting opportunities for avian predators that target lizard prey. Studies show that fencing depletes lizard populations around the edges of human development.

The proposed action's contribution to a significant cumulative impact on Mojave fringe-toed lizard would be considerable. This is primarily due to the net habitat loss and interruption of suitable breeding and dispersal habitat between occupied habitat to the east and west. The FEIS proposes no additional mitigation for the Project's cumulative impacts to Mojave fringe-toed lizard. Given the population dynamics exhibited by this species, including its reliance on a functioning metapopulation structure to persist, biologist Scott Cashen concluded that the cumulative impacts from the proposed action would result in the extirpation of the Mojave fringe-toed lizard from the region.

The BLM failed to take a hard look at the cumulative impacts to this species. (p. 33)

Comment EPA-14: We note that BLM does not propose mitigation for the Mojave fringe-toed lizard (pg. 154, BIO-13), although the FEIS acknowledges that that species has been observed on the Calico project site and the Proposed Action will contribute to a potentially significant cumulative effect on the lizard (pg. 4-102-103). (p. 3)

Comment SC-17: BLM's Proposed Mitigation Measures Were Unclear and Inadequate: "Impacts on the Mojave fringe-toed lizard would be unavoidable, but would be minimized and mitigated through the implementation of project-specific mitigation measures." The FEIS provided no additional discussion or analysis of which mitigation measures would reduce those impacts or what the likely outcome of the mitigation would be. The only subsequent mention of mitigation for the impacts to the Mojave fringe-toed lizard occurred in the mitigation section of the FEIS under BIO-13...However, the FEIS stated that, "this [BIO-13] is not a mitigation measure that is proposed by the BLM,"...[T]herefore,...BLM has not independently proposed any mitigation measures... As a result, the FEIS did not contain any indication or assurance that BLM will require mitigation for the recognized impacts to the Mojave fringe-toed lizard. (p. 14)

Comment WWP-17: During the CEC Hearings additional evidence was presented that the amount of Mojave fringe-toed lizard habitat on the project site has been underestimated. (p. 7)

Comment WWP-18: The analysis must include full consideration of Aeolian transport of sediment to blowsand habitat on the Pisgah ACEC to protect the Pisgah Mojave fringe-toed lizard populations. (p. 7)

Response: The CEC has estimated the amount of potentially suitable habitat for the Mojave fringe-toed lizard on the project site as including 21.4 acres of breeding habitat and 143.3 acres of foraging and cover habitat. In producing this estimate, the CEC indicated that there is potentially more suitable habitat present on the project site. To more accurately assess the extent of breeding habitat and adjacent foraging and cover habitat on the project site, the Applicant would be required to contract with an expert on the species' ecology to provide a delineation of habitat for Mojave fringe-toed lizards on the project site and provide compensatory mitigation based on that delineation of suitable habitat.

The FEIS does take a “hard look” at the environmental consequences of the proposed action on the Mojave fringe-toed lizard. Chapter 4 of the FEIS is solely dedicated to assessing and analyzing the direct, indirect, cumulative and residual effects to the human and physical/natural environment that could result from the implementation of the proposed action and its alternatives. Potential impacts to the Mojave fringe-toed lizard associated with each alternative are discussed in Section 4.3.2 and an analysis of cumulative effects is provided in Section 4.3.3. As was discussed in the FEIS for the white-margined beardtongue, while the built structures on the project site would likely alter the wind-driven transport of sand across the site to downwind habitat within the adjacent Pisgah ACEC, the BLM has determined that the blow-sand habitats within the ACEC are supported by sediment transport processes within the ACEC and the project is not considered likely to result in habitat degradation that would reduce the quality of blow-sand habitat farther east.

The proposed 4,614-acre project footprint would result in a reduction in the project footprint north of the BNSF railroad; however, this reduction in the project footprint would not reduce the amount of potentially suitable Mojave fringe-toed lizard habitat that would be impacted. The Applicant has proposed to implement a 223-foot set back from the railroad, which would result in increased habitat connectivity for east-west movement of Mojave fringe-toed lizards along the north and south sides of the railroad tracks.

1.10.2.10 Bighorn Sheep (30213)

Comment CURE-35: c. BLM Failed to Take a Hard Look at Impacts to Bighorn Sheep (pg. 30)... Although the Project would result in the loss of approximately 1,078 acres of spring foraging habitat, BLM inexplicably failed to require any mitigation for the loss of this habitat. Moreover, BLM failed to find that the Project would significantly impact a movement corridor for bighorn sheep.

Dr. Bleich testified about the importance of maintaining connectivity and the potential for recolonization by avoiding disruption of natural dispersal routes. Dr. Bleich provided unrebutted testimony that the Project area also provides a movement corridor for bighorn sheep. BLM’s failure to adequately analyze and mitigate significant impacts to bighorn sheep forage and movement violates NEPA. (p. 31)

Comment WWP-16: The CDCA Plan Amendment/FEIS fails to take NEPA’s requisite “hard look” at impacts to bighorn sheep...FEIS fails to propose mitigation measures such as the acquisition of replacement habitat or construction of land bridges to compensate for impacts to connectivity (as called for in the West Mojave Plan). (p. 6)

Response: The BLM has considered the direct, indirect, and cumulative impacts of the proposed project on Nelson’s bighorn sheep and their movement. Discussions of impacts to

Nelson's bighorn sheep and wildlife movement can be found in Section 4.3.2 (Direct and Indirect Impacts) of the FEIS. The BLM recognizes that the proposed project would impact wildlife movement and habitat connectivity, and has considered project alternatives that would reduce these impacts as well as appropriate mitigation measures that would minimize potential impacts under any of the project alternatives. The reduction in acreage under the proposed 4,614-acre project footprint would provide Nelson's bighorn sheep greater access to foraging habitat and would provide a greater buffer between the project site and the foothills of the Cady Mountains. The mitigation measures that address project-related impacts to Nelson's bighorn sheep are provided in Appendix 6 (Environmental and Construction Compliance Monitoring Program) of the ROD.

1.10.2.11 Golden Eagle (30213)

Comment CURE-32: a. BLM Did Not Take a Hard Look at Impacts to Golden Eagle... Even though an active nest was detected, the Applicant failed to conduct golden eagle surveys in accordance with USFWS regulations and, therefore, failed to establish an accurate environmental setting for impacts to golden eagles. Thus, the approval of the Project may result in an unanalyzed and unpermitted take of golden eagle in violation of the Bald and Golden Eagle Act. Project approval may also violate the California Endangered Species Act, because golden eagles are designated as "fully protected" under California law and thus may not be taken or possessed (pg. 28)... Consequently, by failing to establish the affected environmental setting for golden eagle, BLM failed to take the hard look at the Project's impacts required by NEPA. (p. 29)

Comment DEF-17: III. The Proposed CDCA Plan Amendment and FEIS Do Not Comply with BLM Policy contained in Instruction Memorandum No. 2010-156 (7/13/2010) regarding Golden Eagle protection

A. Impacts to the BLM Sensitive Golden Eagle through loss of a foraging habitat is recognized and analyzed in the FEIS, but potential impacts to this species from collision with project facilities and mortality caused by concentrated reflected sunlight between the mirror fields, transmission lines and towers have not been adequately studied. Rather, the FEIS states that monitoring for such impacts would be required and that additional, but unspecified, mitigation may be required through adaptive management provisions contained in the Avian Protection Plan, which would be submitted to the agencies for review, necessary modification and approval within 30 days of project approval. Due to the sheer size of the proposed project, proximity to known Golden Eagle nesting territories in the adjacent Cady Mountains, and known foraging habitat on the proposed project site, it is inappropriate to defer additional impact analysis and mitigation to a future date after construction has commenced. (p. 7)

Comment DEF-18: There is no documentation in the FEIS that the Avian Protection Plan could reasonably achieve the “no net loss standard” established by the U.S. Fish and Wildlife Service for Golden Eagles... There is no indication or documentation in the FEIS that the U.S. Fish and Wildlife Service has confirmed that an APP could potentially fully mitigate the impacts anticipated to occur due to the proposed project, including the loss of several thousand acres of foraging habitat adjacent to known nesting territories. (p. 7)

Comment SC-20: The FEIS failed to analyze impacts to golden eagle: In the context of the Calico Project, the FEIS did not gather sufficient data or address the known risks to the golden eagle and other birds from potential collisions with the solar facilities. This omission was particularly concerning given the sensitive status of golden eagles and Congress’ clear intention, articulated through the Eagle Act, to protect that species. Following, *National Audubon Society v. Department of the Navy*, BLM’s failure to analyze the risks to golden eagles prior to issuing the DEIS or the FEIS constituted a violation of NEPA. (p. 17)

Response: Helicopter surveys for golden eagle nests were conducted in March 2010; the results of these surveys are provided in Section 3.3.5.4 (Special-Status Species) of the FEIS. Impacts to golden eagles are discussed for each alternative in Section 4.3.2 (Direct and Indirect Impacts) of the FEIS. Mitigation measures that have been developed to address potential impacts to golden eagles include requirements for pre-construction surveys, monitoring of active nests, and the use of adaptive management to avoid construction-related impacts. These mitigation measures can be found in Section 4.3.4 (Mitigation, Project Design Features, BMPs, and Other Measures) of the FEIS. As discussed in the FEIS, an Avian Protection Plan (APP) would be required by the BLM as a condition of the right-of-way grant. The APP would evaluate options to avoid and minimize the potential project-related impacts, and would be developed by the Applicant in coordination with the US Fish and Wildlife Service and the BLM.

The BLM’s Instruction Memorandum No. 2010-156 (dated July 13, 2010) states that the BLM will not issue a Record of Decision approving a project unless the US Fish and Wildlife Service concurs that an APP is sufficient to meet the standards of the Bald and Golden Eagle Protection Act (Eagle Act). The BLM has consulted with the US Fish and Wildlife Service regarding potential impacts to golden eagles, as recommended in BLM’s Instruction Memorandum. The US Fish and Wildlife Service has provided a concurrence letter (dated September 15, 2010) indicating that, while there would be no impact to breeding pairs or their progeny and it is unknown if there would be project-related impacts to floaters, migrating birds, or wintering birds, an APP is sufficient to meet the standards of the Eagle Act’s take provision (refer to Appendix 6 of the ROD, Environmental and Construction Compliance Monitoring Program).

1.10.2.12 Bats (30210)

Comment CURE-17: 2. BLM Failed to Provide a Good Faith Reasoned Response to CURE's Comments Regarding Project Impacts to Special Status Bats. (pg. 17)

Comment CURE-18: As stated in Mr. Cashen's comments on the DEIS, BLM did not conduct (or require the Applicant to conduct) the surveys necessary to establish the absence of roosting bats, as is required by the West Mojave Plan. Indeed, BLM provides no evidence to support its claim that construction of the Calico Solar Project is not likely to result in the loss of bat roosts. (pg. 19)

Comment CURE-19: BLM's response to CURE's comment is not consistent with information in the FEIS and entirely fails to address CURE's comments regarding the effects on bat roosts on or adjacent to the Project site. As such, BLM failed to provide a good faith reasoned response to CURE's comments in violation of NEPA. (pg. 19)

Response: As discussed in Section 4.3.2 of the FEIS, construction of the Calico Solar facility would not be expected to result in the loss of maternity colonies, day roosts, or hibernacula for bats. These features are not known to occur on the project site and, while bats will utilize large trees for day roosts, the habitat on the project site (primarily creosote bush scrub and windrows of sparse salt cedar) is generally not suited for this behavior; however, it may be possible that some areas of the project site that have rock outcrops or exposed lava formations may have limited potential to support small bat roosts. As stated in the FEIS (Section 4.3.2), in general, bats are highly mobile and it is unlikely that construction activities would result in any direct impacts. However, because potential roost sites occur on the project site (e.g., railroad trestles, areas of rock outcrop) and special-status bats are known to occur nearby at Pisgah Crater, the BLM would require the development of a Bat Protection Plan and implementation of project mitigation measures by the Applicant to address potential impacts to bats. These measures would include conducting pre-construction surveys of suitable roosting habitats including rock outcrops and railroad trestles, allowing bats to leave prior to demolition of any roosts, and avoiding impacts on any maternity colonies that are found by providing alternate roosting habitat.

CURE's comments regarding special status bats are addressed in Section G.9.4.2 of the FEIS. The BLM reviewed the comments and requested revisions, and incorporated the revisions into the project mitigation measures, as appropriate. This included protection of "significant roosts", as identified in the West Mojave Plan (i.e., all maternity and hibernation roosts containing more than 10 Townsend's big-eared bats or California leaf-nosed bats, or 25 bats of any other species). Mitigation Measure BIO-25 (Bat Impact Avoidance and Minimization Measures) specifically addresses mitigation measures for special status bats (see ROD Appendix 6 – Environmental and Construction Compliance Monitoring Program).

1.10.2.13 Consistency with CDCA Plan and WEMO

Comment CURE-52: A. BLM May Not Approve the Project Because it Would Severely Diminish Wildlife Resources Within the Project Region... As explained above, the FEIS determined that impacts to desert tortoise, golden eagle, burrowing owl, Mojave fringe-toed lizard and other special status species would be unavoidable if the Project is developed. Moreover, due to the Project's immense size, the Project will completely block the north south corridor for a number of species, including desert tortoise and bighorn sheep. In light of this finding, BLM may not approve the Plan Amendment to allow the significant diminishment of wildlife resources within the Planning Area. Such approval would be inconsistent with the CDCA Plan. (p. 43)

Comment DEF-15: C. The proposed action conflicts with the CDCA Plan Wildlife goals... Clearly, the habitat that would be affected by the proposed project is sensitive to the proposed action as demonstrated in the DEIS and FEIS. The project site north of the railroad contains high quality habitat for the Desert Tortoise as evidenced by its relatively high density population. Overall, the project site contains habitat that supports BLM Sensitive Species, including the Mojave Fringe-toed Lizard, Burrowing Owl and White-margined Beardtongue. (p. 6)

Comment WWP-10: The March 2006 WMP ROD includes "Goal 3: ensures genetic connectivity among tortoise populations, both within the West Mojave Recovery Unit, and between this and other recovery units." The FEIS does not explain how the proposed plan amendment will be consistent with this biological goal...the proposed mitigations do not address how the loss of linkage habitat will be mitigated. (p. 4)

Comment WWP-24: The West Mojave Plan ROD signed March 2006 includes "Goal 3: ensures genetic connectivity among tortoise populations, both within the West Mojave Recovery Unit, and between this and other recovery units." The preferred alternative does not explain how the proposed plan revision will help the BLM meet this biological goal and comply with current CDCA Plan as amended. (p. 8)

Response: The CDCA Plan Amendment/FEIS is not contrary to the BLM's conservation commitments in the CDCA or the West Mojave Plan Amendments. The CDCA Plan is specifically referenced and analyzed throughout the proposed CDCA Plan Amendment/FEIS. As the FEIS states in Section 3.9.3.2, "All CDCA land-use actions and resource management activities must meet the multiple-use guidelines within the Plan..." The BLM has the discretion, based on its expertise, to determine whether a plan amendment adheres to the principles of multiple use, sustained yield, and maintenance of environmental quality. The proposed plan amendment adheres to the management principles and guidelines in the CDCA Plan and considers the broader CDCA context. As discussed in Section 4.18 of the FEIS, the project would be in conformance with the multiple-use guidelines and elements from the CDCA Plan that pertain to the various resources analyzed.

1.10.3 Vegetation (30100)

1.10.3.1 Special Status Species (30117)

Comment BRW-2: On P. 3-32 a new species or variety of lupine was found on the project site, so far endemic to the Cady Mountains. This alone should require the No Action alternative and designation of the area as an ACEC. (p. 2)

Comment DEF-16: D. The proposed action conflicts with the CDCA Plan for conservation of the White-margined Beardtongue, a BLM Sensitive Species. (p. 6)

Comment SC-21: The FEIS failed to analyze impacts to white-margined beardtongue: FEIS based its evaluation and proposed mitigation of the white-margined beardtongue on the 2010 spring surveys prepared by the Applicant. Given the nature of the white-margined beardtongue, a single survey in spring is not adequate to determine the presence of the plant on the site. BLM's failure to obtain sufficient information on the presence of this species prior to conducting its analysis violated NEPA's requirement that BLM take a hard look at the information on potential impacts prior to issuing a decision. (p. 18)

Comment SC-22: The FEIS also failed to explain how the proposed mitigation measure to create a 250-foot buffer around existing white-margined beardtongue within the Project site would prevent direct impacts to the population. The white-margined beardtongue exhibits population fluctuation within its habitat. Therefore, although the 250-foot buffer may protect an individual plant during one season, the shifting nature of the species over time would likely result in the extirpation of the on-site population. (p. 18)

Comment WWP-19: The FEIS fails to quantify the project's impacts to white-margined beardtongue impacts in reference to the 50 acre-threshold [of the West Mojave Plan]. (p. 7)

Comment WWP-20: The FEIS fails to quantify cumulative white-margined beardtongue loss since the West Mojave Plan ROD was signed. (p. 7)

Response: As identified in Section 4.3 of the FEIS, all known occurrences of the unnamed lupine species would be avoided by the reduced project footprint associated with the Agency Preferred Alternative. The 4,614-acre project footprint that has recently been proposed by the Applicant would also avoid all known occurrences of this species. The presence of a new species or variety of lupine would not, in itself, require designation of the area as an ACEC.

The white-margined beardtongue is a BLM Sensitive plant species that is known to occur on the project site, as well as in the adjacent Pisgah ACEC. With BLM's adoption of Alternative B under the West Mojave Plan Amendment to the CDCA, no additional protections were provided to this species (i.e., there is no requirement to limit impacts to white-margined beardtongue

habitat to less than 50 acres). The presence of white-margined beardtongue in the proposed project area is described in Section 3.3.5.4 of the FEIS. As proposed in Mitigation Measure BIO-12 (Special-Status Plant Impact Avoidance and Minimization), the applicant would be required to conduct additional late season surveys for special status plants, and all occurrences of white-margined beardtongue would be avoided in specially-designated Environmentally Sensitive Areas (ESAs) that are established in fenced areas on the project site. As part of Mitigation Measure BIO-12, the Applicant would also be required to prepare and implement a White-margined Beardtongue Impact Avoidance and Minimization Plan. The plan would be designed to prevent any direct or indirect impacts from project construction and operation to all white-margined beardtongue occurrences within the project boundary; the plan would also specify success standards for protection of special-status plant occurrences within the ESAs and identify specific triggers for remedial action (e.g., numbers of plants dropping below a threshold). An ongoing monitoring program would be implemented to determine whether remedial action is necessary at some point in the future.

As identified in Section 4.3.3 (p. 4-99 to p. 4-100), there is no quantitative data available on population sizes or areal extent of occupied habitat for white-margined beardtongue. In the absence of quantitative data on populations and habitat area, the project's cumulative impacts on this species were evaluated in qualitative terms in the FEIS.

1.10.4 Biological Resources Mitigation (30000)

1.10.4.1 General Biological Mitigation (30170/30270)

Comment BRW-1: On page 4-31 of the FEIS it is admitted that the project will disturb over 7,000 acres of desert and that decommissioning and restoration will most likely not restore or revegetate the original Mojave Desert vegetation due to compaction, removal of biotic soil crusts and desert pavement, weed management, and other activities. Therefore the desert here will be permanently lost, and the area will no longer serve as functioning habitat for desert tortoise, golden eagle, Mojave fringe-toed lizard, or rare plants. Multiple use will be reduced. Therefore the No Project alternative should be chosen, and the area denied any further solar applications. (p. 1)

Comment CURE-20: 3. BLM Failed to Respond to Comments Submitted by Scott Cashen Regarding the Effectiveness of Unidentified Compensation Land to Mitigate for Significant Effects on Desert Tortoise (p. 19)

Comment CURE-21: BLM's response does not satisfy its obligation under NEPA because it provides no evidence that lands of adequate quality and quantity will be available for purchase to mitigate impacts to desert tortoise. Although it may be true that BLM is coordinating the

review of this Project with other agencies, there is nothing in the record that shows that there is adequate land available to mitigate impacts to this Project, or to the other proposed Projects on desert tortoise land in the Project area. (p. 20)

Comment CURE-38: III. BLM FAILED TO INCLUDE A COMPLETE DISCUSSION OF MEASURES REQUIRED TO MITIGATE THE PROJECT'S SIGNIFICANT EFFECTS ON DESERT TORTOISE

The mandate to thoroughly evaluate all feasible mitigation measures is critical to NEPA's purposes. Hence, a "perfunctory description" or a "mere listing" of possible mitigation measures is not adequate to satisfy NEPA's requirements. That individual harms are somewhat uncertain due to limited understanding of the Project characteristics and baseline conditions does not relieve BLM of the responsibility under NEPA to discuss mitigation of reasonably likely impacts at the outset. (p. 34)

Comment EPA-12: Detailed compensatory mitigation measures are determined on a project-specific basis, and must be contained in each project's environmental analyses and decision documents. The ROD should describe the final biological resources mitigation commitments and how they would be funded and implemented. (p. 3)

Comment EPA-13: The FEIS specifies that the applicant shall contribute to the National Fish and Wildlife Foundation (NFWF) Account to compensate for the loss of tortoise habitat (p. 4-168). For each species requiring compensatory mitigation, the ROD should state whether and how the project applicant would use the NFWF Account, an in-lieu fee strategy, or an applicant-directed implementation strategy. (p. 3)

Comment EPA-16: Incorporate final information on the compensatory mitigation proposals (including qualification of acreages, estimates of species protected, costs to acquire compensatory lands, etc.) for unavoidable impacts to biological resources including desert tortoise, peninsular bighorn sheep, Mojave fringe-toed lizard, and Special-status plants. (p. 3)

Comment EPA-17: If the applicant is to acquire compensation lands, the location(s) and management plans for these lands should be fully disclosed in the ROD. (p. 3)

Comment EPA-18: Include the provisions or mechanism(s) in the ROD that will ensure that habitat selected for compensatory mitigation will be protected in perpetuity. (p. 3)

Comment EPA-19: All mitigation commitments should be included in the ROD. (p. 3)

Comment SC-16: BLM's Proposed Mitigation Measures Were Unclear and Inadequate: The FEIS simply cut and pasted the proposed conditions of certification drafted by CEC Staff and proposed in the SA/DEIS...the FEIS stated that BLM has not finalized any of the proposed mitigation measures related to the Calico Project, and all of those mitigation measures are

subject to change depending on BLM's whim. The FEIS's ambiguous assertions regarding the proposed mitigation measures make it impossible for the public or any agency to determine what the actual impacts from the Project would be. This is a clear violation of NEPA. (p. 14)

Comment SC-18: BLM's Proposed Mitigation Measures Were Unclear and Inadequate: The Supplemental Staff Assessment ("SSA"), which BLM did not sponsor, contained numerous substantial changes to the proposed conditions of certification. Those conditions of certification continued to change as the CEC conducted evidentiary hearings on biological resources and other issues...It was premature, therefore, for the FEIS to conclude that, "Mitigation measures described here address environmental impacts...to reduce intensity or eliminate the impacts." Furthermore, if BLM adopts the CEC's final conditions of certification in the Record of Decision, it will have violated NEPA's requirement to discuss the mitigation measures... (p. 15)

Comment SC-19: The FEIS did not include sufficient information to analyze the effectiveness of impacts from compensatory mitigation: The FEIS relied on several proposed CEC conditions of certification that would require the Applicant to pay compensatory mitigation...However, the public and other agencies cannot evaluate or consider the potential impacts of this proposed mitigation because neither BLM nor the Applicant identified which lands would serve as compensatory habitat...The compensatory mitigation proposals completely fail as a mitigation strategy under NEPA because they did not adequately identify or analyze the lands that the Applicant would acquire to purportedly reduce the impacts of the Project. (p. 16)

Response: The SA/DEIS and the FEIS include extensive mitigation addressing the potential adverse project impacts. Many of the proposed mitigation measures have been used extensively throughout the State and, therefore, are anticipated to effectively address the adverse project impacts. In addition, many of the proposed measures include performance standards or other requirements that, if not met, would trigger the need for additional mitigation. The BLM's position is that the mitigation as presented in the FEIS is adequate to address the potential adverse project impacts and includes sufficient performance standards and other requirements to ensure that the impacts are properly mitigated. Many of the mitigation measures require the preparation of detailed plans during final design and prior to any activity on the project site. This is consistent with the requirements of NEPA because these measures identify the impacts intended to be addressed by those plans and key activities that would be included in those plans to mitigate the identified impacts. Where there are adverse impacts that cannot be entirely mitigated, these impacts have been identified as unavoidable adverse impacts of the Proposed Action and the other build alternatives.

1.11 Cultural Resources and Paleontology (60000)

Comment BRW-6: On July 12, 2010, we visited the project site and found what appears to be a geoglyph on low desert pavement hills between the BNSF railway and I-40. The location is UTM

11S, 0551672E, 3850618N (WGS84)...This feature should be preserved, and the area needs to be avoided from SunCatcher placement. The feature could be historically significant and needs assessment. (p. 5)

Comment BRW-7: The quality of artifacts and features described in the FEIS indicates the need for the applicant to carry out much more thorough archaeological surveys, better assessment of what is eligible under NRHP, and potentially the entire project site should be avoided and considered for designation as an Area of Critical Environmental Concern. (p. 5)

Comment BRW-8: P. 3-58 of the FEIS states that the ACHP does not have a reasonable time period to comment on the finds in the project site. Clearly the finds can be considered important to science to revealing information about the prehistory of the area, even as Dr. David Whitley related, "to the peopling of the Americas" (CEC evidentiary hearing August 12, 2010). The CDCA plan states: Ensure cultural resources are given full evaluation in land use planning. This is being denied in the rush to meet ARRA deadlines, and is unacceptable. (p. 5)

Comment BRW-9: P. 3-63 says that desert pavements predate humans in the New World. However Dr. David Whitley disagreed with this statement. Saying new evidence shows buried archaeological resources have been found under desert pavement, including ceramics. Therefore desert pavement formation can be more recent, and the existence of such surfaces cannot be used to deny the presence of archaeological sites. (p. 6)

Comment Calico-19: [T]he FEIS states that an adverse indirect impact of the Agency Preferred Alternative is vandalism to cultural resources, in part "as a result of improved access to the project site." As noted elsewhere in the FEIS, all of the action alternatives would eliminate, rather than improve, the general public's existing access to the project site. (p. 5)

Comment CURE-1: A. BLM Must Prepare a Supplemental Environmental Impact Statement (pg. 3)... on August 25, 2010, after release of the FEIS, the BLM, in consultation with the California State Historic Preservation Office, conceded that additional testing should be conducted to determine whether additional significant cultural resources are present on the Project area. (pg. 5)... Dr. Hunter's acknowledgement of the potential for subsurface cultural resources is a significant departure from the conclusions reached in the FEIS and constitutes significant new information bearing on the potential for new significant adverse environmental effects from the proposed project. In this instance, the BLM's complete reversal about the potential for significant subsurface resources constitutes new circumstances relevant to environmental concerns that necessitate the circulation of a supplemental EIS. (p. 6)

Comment CURE-2: The use of mechanical excavation in sites known to contain cultural resources was not mentioned in the DEIS or the FEIS and would pose significant unmitigated impacts to cultural resources on the Project site. (pg. 7)... BLM must analyze significant effects

on cultural resources associated with the new proposal to use mechanical excavation in a supplemental EIS that is circulated for public review and comment. (p. 9)

Comment WWP-21: [T]he cultural surveys and analysis are incomplete. Additional evidence and testimony presented at the recent CEC Hearings indicates that the project site is of great scientific significance and may harbor evidence of early human occupation of the Americas. Although the site likely harbors subsurface cultural resources, the cultural surveys have been largely surficial...the BLM must undertake detailed and thorough surveys for cultural resources so that it can analyze the direct, indirect, and cumulative effects of the proposed project (p. 7-8)

Comment CURE-24: 1. BLM Failed to Take a “Hard Look” at the Significant Cultural Resources Consequences of the Project... The BLM failed to adequately identify the cultural resources that constitute the affected environment and, as a result, have not, and could not, identify the environmental consequences of the project on these resources or develop appropriate mitigation. (p. 23)

Comment CURE-25: a. BLM Did Not Adequately Define the Affected Environment (pg. 23)... According to testimony of Dr. Whitley, additional analysis and testing is also necessary to develop appropriate mitigation measures for each of the Project’s adverse impacts. The types of mitigation that will be appropriate will vary depending upon the nature of the specific resource, and the significance values that are identified through the additional analysis and testing. A prehistoric village containing a cemetery, for example, will likely be determined significant based both on its religious importance to Native Americans, and its potential to yield valuable scientific information about the past. A prehistoric tool-making workshop, in contrast, may be identified as significant solely due to its potential to provide archaeological information. These very different types of resources would require substantially different mitigation that was not analyzed anywhere in the FEIS. (p. 24)

Comment CURE-26: b. BLM Neglected to Develop Adequate Mitigation for Cultural Impacts (p. 25)

Comment CURE-27: After BLM’s release of the FEIS, BLM has now decided a PA is necessary and that additional testing will be required to determine the extent of the impacts to cultural resources on the Project site. The recent 180-degree shift in mitigation strategy for significant effects on cultural resources belies the BLM’s continued failure to take a hard look at the resources on the Project site. Moreover, BLM has not drafted the PA or circulated it for public review and comment in the FEIS, as the DEIS stated would occur. (p. 25)

Comment CURE-28: BLM’s “analysis” in the FEIS is insufficient under NEPA because it is devoid of evidence that would ensure that BLM has been informed of the environmental consequences of the proposed action, and because it precludes meaningful public comment.

Certainly, the discussion provided in the FEIS falls far short of the “full and fair discussion of every significant impact” that is required under NEPA.

This scant record clearly demonstrates that BLM failed to take a “hard look” at cultural resources within the Project site and its area of impact, as required by NEPA. In the absence of evidence, the only reasonable conclusion that could be drawn from the impact analysis provided is that BLM should not act at all in order to avoid significant adverse impacts to cultural resources. (p. 26)

Comment CURE-29: c. PA Does Not Comply With Full & Fair Disclosure Requirements

In deferring the development of the PA until after the circulation of the FEIS, the BLM has improperly shielded the mitigation plan from public scrutiny in violation of NEPA. The National Historic Preservation Act’s Section 106 process will not cure this defect. This process is not open to the public and does not meet NEPA’s public disclosure requirements. (p. 26)

Comment CURE-30: It is a blatant and egregious violation of NEPA to defer the entire environmental review process, from the identification of the resources in the affected environment to the determination of environmental consequences and mitigation measures, until after both the DEIS and FEIS have been released for review and comment. Furthermore, to defer the identification of impacts and development of mitigation to the Section 106 consultation process where members of the public would have to apply and demonstrate an interest before being allowed to participate, offends the fundamental public disclosure requirements of NEPA.

The BLM must develop the PA now as part of the NEPA process and provide the public with an opportunity to review the PA, comment on the PA, and receive responses to comments from BLM on this mitigation strategy for cultural resources. (p. 27)

Comment CURE-31: d. PA Does Not Comply with the National Historic Preservation Act... If a PA is developed to mitigate significant impacts to cultural resources, the PA must fully consider the impacts to cultural resources and propose mitigation for those impacts, PRIOR to the issuance of any license for the Project. (p. 27)

Comment CURE-40: 1. BLM Failed to Mitigate for Project Effects to Cultural Resources

BLM failed to include in the FEIS the mitigation plan for impacts to cultural resources. A final PA has not yet been prepared, or attached to FEIS.

A plan to make a plan does not satisfy the BLM’s obligation under NEPA and the NHPA. BLM clearly failed to thoroughly evaluate all feasible mitigation measures, as required by NEPA. (p. 35)

Comment CURE-53: B. BLM Failed to Evaluate and Preserve the Cultural Resources Within the Project Site

As explained above, BLM failed to adequately survey or analyze subsurface cultural resources at Project site. These resources were not analyzed in the DEIS or the FEIS; in fact, the FEIS includes no information about the direct, indirect or cumulative effects on subsurface resources other than at 3 of the 335 sites. The PA was improperly omitted from the DEIS and the FEIS.

Further, BLM has failed to devise enforceable measures to prevent significant effects to cultural resources as a result of the proposed Project. As such, BLM has unequivocally failed to evaluate and ensure that cultural resources are evaluated and preserved, as required by FLPMA and the CDCA Plan. BLM may not approve the Plan Amendment until it has ensured that it has balanced the need for development with efforts to preserve cultural resource values. (p. 43)

Comment CURE-54: VII. NHPA VIOLATIONS (pg. 44)... In this case, BLM has opted to use a PA to comply with its Section 106 obligation. A PA may not be used to improperly defer an agency's Section 106 obligations. To date, BLM has failed to, (1) identify historic properties within the Planning Area; (2) determine which of these properties would be eligible for listing in the National Register; or (3) identify measures to avoid and minimize any adverse effects on eligible resources.

BLM may not approve the Project until it has made a good faith effort to comply with Section 106 of the NHPA. (p. 45)

Comment NAHC-1: Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the names of the culturally affiliated tribes and interested Native American individuals that the NAHC recommends as 'consulting parties,' for this purpose, that may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We recommend that you contact persons on the attached list of Native American contacts.

Comment NAHC-2: Also, the NAHC recommends that a Native American Monitor or Native American culturally knowledgeable person be employed whenever a professional archaeologist is employed during the 'Initial Study' and in other phases of the environmental planning processes.

Comment NAHC-3: Consultation with tribes and interested Native American tribes and interested Native American individuals, as consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C. 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470[f] et se), 36 CFR Part 800.3, the President's Council on Environmental Quality (CSQ; 42 U.S.C. 4371 et seq.) and NAGPRA (25

U.S.C. 3001-3013), as appropriate. The 1992 Secretary of the Interior's Standards for the Treatment of Historic Properties were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e).

Comment NAHC-4: Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

Comment NAHC-5: The authority for the SLF record search of the NAHC Sacred Lands Inventory, established by the California Legislature, is California Public Resources Code §5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code §6254.10). The results of the SLF search are confidential. However, Native Americans on the attached contact list are not prohibited from and may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of the NHPA or at the Secretary of the Interior's discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C. 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibly threatened by proposed project activity.

Comment NAHC-6: CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens. Although tribal consultation under the California Environmental Quality Act (CEQA; CA Public Resources Code Section 21000-21177) is 'advisory' rather than mandated, the NAHC does request 'lead agencies' to work with tribes and interested Native American individuals as 'consulting parties,' on the list provided by the NAHC in order that cultural resources will be protected. However, the 2006 SB 1059 the state enabling legislation to the Federal Energy Policy Act of 2005, does mandate tribal consultation for the 'electric transmission corridors. This is codified in the California Public Resources Code, Chapter 4.3, and §25330 to Division 15, requires consultation with California Native American tribes, and identifies both federally recognized and non-federally recognized on a list maintained by the NAHC.

Comment NAHC-7: Again, Lead agencies should consider avoidance, as defined in §15370 of the California Code of Regulations (CEQA Guidelines), when significant cultural resources are discovered during the course of project planning and implementation.

Response: As part of a good faith and reasonable effort to identify historic properties in the project APE, a cultural resource survey was conducted for the entire APE. Following the completion of the survey and site recordation, three sites were determined eligible because the sites have the potential, under Criterion (d) of the NRHP, to have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4). As the BLM has determined that the project would have no adverse effect on those or any historic properties, no mitigation is necessary. However, because there may be potential for subsurface deposits, a Programmatic Agreement (PA) has been executed (September 21, 2010) to mitigate any potential impacts to historic properties. Cultural monitoring will be required during construction and specific protocols to follow during construction are discussed in Section 4.5.4 Mitigation, Project Design Features, BMPs, and Other Measures.

As stated in the FEIS, with the filing of the application for a right-of-way, the BLM took the lead for formal tribal consultation pursuant to the NHPA as well as other laws and regulations. The PA will serve to mitigate potential impacts to historic properties within the APE. (see ROD Appendix 4 – Programmatic Agreement, and Appendix 5 – Historic Properties Findings and Determination) Cultural monitoring will be required during construction, as discussed in Section 4.5.4 Mitigation, Project Design Features, BMPs, and Other Measures. In consultation with the tribes, the BLM shall seek to develop a written plan of action pursuant to 43 CFR 10.5(e) to manage the inadvertent discovery or intentional excavation of human remains, funerary objects, sacred objects, or objects of cultural patrimony.

The Agency Preferred Alternative described in the FEIS includes a modification of the Proposed Action project site. The cultural resources located in the southern portion of the Proposed Action project site are located outside the boundaries identified for the Agency Preferred Alternative and would not be disturbed by the proposed project. Tribal consultation was conducted for this project. (see ROD Appendix 4 – Programmatic Agreement, and Appendix 5 – Historic Properties Findings and Determination.

1.12 Geology, Soils and Mineral Resources (42000)

1.12.1 General Soils Comments

Comment CURE-36: 3. BLM Failed to Take a Hard Look at Soil Resources... Desert pavement and cryptobiotic crusts are critical resources that stabilize the desert soil and prohibit fine particle transport in the winds and storm water flows from the Project site. Despite being

informed of these resources, BLM failed to establish the extent of desert pavement and cryptobiotic crusts as part of the baseline environmental conditions on the Project site. Because these important features were not surveyed or acknowledged, BLM did not adequately analyze or mitigate significant impacts to onsite and offsite resources. (p. 31)

Response: Specific quantification of desert pavement types has not been conducted. Desert pavement does occur on the site and will be disturbed during construction. Impacts to biological resources from the loss of biotic soil crusts are identified for each alternative in Section 4.3.2, Direct and Indirect Impacts; these impacts would occur across the entire project site, and the mapping of biotic soil crusts would not result in any additional information that is required to analyze these impacts.

1.13 Public Health and Safety and Hazardous Materials (63000)

Comment BNSF-1: The FEIS, however, does not properly analyze the impacts of glare and glint previously identified in the SA/DEIS. The FEIS does reference the temporary access roads proposed by Calico Solar within the BNSF RoW. This reference, however, is a brief comment in the mitigation measures section that it will be an "all-weather road designed to allow for fire-truck and emergency vehicle access." [See FEIS, at Section 4.15.4.] There is no reference to any environmental study or analysis performed relating to the impacts of those proposed Project features. (p. 3)

Comment BNSF-6: 1. The FEIS fails to adequately describe the impacts of glint and glare from the Project on BNSF's rail line.

The FEIS fails to provide a "full and fair discussion of significant environmental impacts" as required by NEPA with regard to the Project's impacts relating to glint and glare. 40 C.F.R. 1502.1. Without such a discussion, the BLM District Manager, Desert District is not able to determine the environmental impact of the proposed CDCA amendment as required by Chapter 7 of the CDCA. (p. 6)

Comment BNSF-7: Daytime glint and glare from the 34,000 SunCatcher mirrors and associated structures, in particular when the mirrors are in offset tracking position, may significantly impact BNSF engineers' ability to see the signal. The situation would be exacerbated by the site elevations which Calico Solar has proposed. Experts for both the Staff and BNSF uniformly agree that a comprehensive study has not been done and needs to be done before any SunCatcher is put into place. (p. 7)

Comment BNSF-8: Both FRA regulations and the BNSF General Code of Operating Rules ("GCOR"),¹³ BNSF's federally-regulated operating procedures, require BNSF to maintain visual

contact with signals. The illuminated background created by the SunCatcher field could interfere with this contact, because it could result in an engineer perceiving the signal to be dark or to be displaying a white light. Both of these circumstances, under GCOR Section 9.4, require the engineer immediately to stop the train. This often requires an emergency application of the brakes, risking derailment of the train, collision with another train, and other catastrophic events. When a train has been stopped through emergency application of the brakes, GCOR Section 6.23 requires the engineer to inspect all cars, units, equipment and track pursuant to BNSF special instructions and rules. This can cause significant delays to rail operations with ramifications reaching from the Ports of Los Angeles and Long Beach to Chicago and beyond. Thus, glint and glare are critical safety and operational issues. (p. 7)

Comment BNSF-9: The FEIS addresses glint and glare as relates to potential impacts on wildlife (FEIS pp. 4-40 – 4- 41), and as relates to possible visual or scenic impacts with an emphasis on changes in aesthetic values. FEIS pp. 4-349. The FEIS acknowledges the visual impacts to rail where it states: “From [the BNSF Railroad], the Proposed Action would create a strong degree of contrast. The magnitude of change from this viewpoint would be very high, and the Proposed Action would dominate the landscape.” FEIS 4-345. The FEIS, however, does not address the potential for glint and glare to adversely affect the safety of rail operations and personnel on BNSF property adjacent to the proposed right-of-way for the Project. (p. 7)

Comment BNSF-10: 2. The FEIS fails to discuss potential mitigation measures for the glint and glare impacts of the Project.

Without an adequate discussion of glint and glare impacts, the discussion of the “means to mitigate adverse environmental impacts” required by NEPA (40 C.F.R. 1502.1) is impossible. The discussion of mitigation measures for Traffic and Transportation defers discussion of mitigation measures until the issuance of the Record of Decision... As a result, with the exception of the below, BNSF is unable to provide meaningful comments on possible mitigation measures at this time. (p. 8)

Comment BNSF-11: ...the FEIS does not propose to condition the issuance of the proposed right-of-way or the approval of the CDCA amendment upon Calico Solar cooperating as described, nor does it propose any mitigation measures to address these adverse environmental impacts. BNSF therefore requests that the following be incorporated into the Project as Mitigation Measure TRANS-1:

TRANS 1 – Prevention of Glare and Glint from SunCatchers to BNSF Train Crews and Motorists on Hector Road; Route 66; Interstate 40 [Note: see BNSF letter for full text of proposed Mitigation Measure TRANS-1] (p. 8)

Response: These comments raised concerns about glint/glare from the SunCatchers and cumulative glint/glare impacts associated with other solar development projects. Mitigation

measure TRANS-4 specifically requires that: "The project owner shall prepare and implement a SunCatcher Mirror Positioning Plan that would avoid the potential for human health and safety and significant visual distractions from solar radiation exposure." This plan will be coordinated with the Federal Aviation Administration (FAA), the California Department of Transportation (Caltrans), the California Highway Patrol (CHP), and Imperial County and will be updated on an annual basis for the first five years and at 2-year intervals after that. The project applicant will be specifically required to coordinate with the FAA on the placement of the SunCatchers, pursuant to the FAA regulations in the Code of Federal Regulations Part 77.

The recommended mitigation measure will be considered prior to issuance of/incorporated into the ROD.

1.14 Recreation (50600)

Comment Calico-20: [T]he FEIS states that the impacts of the alternatives on recreation would be the "same" as the impacts of the 8,240-acre Proposed Action. But because of their reduced footprints, all of the alternatives would reduce direct recreation impacts, and Alternatives 1a and 2 would reduce indirect impacts as well. (p. 5)

Comment Calico-21: [T]he FEIS notes the potential for the project to cause on-site recreational uses to be relocated to other areas nearby, including the Pisgah Crater ACEC. However, as the FEIS states elsewhere, the project site currently receives "minimal" use by OHV and other recreational users (page 4-230). Therefore, any recreation displacement effect would also be minimal. (p. 5)

Response: BLM agrees that direct impacts to recreation would be less for the Agency Preferred Alternative than for the Proposed Action, and that, because the project site currently is receiving minimal recreational use, any recreational use displaced to adjacent areas would likewise be minimal.

1.15 Traffic and Transportation (50700)

Comment BNSF-4: As a major transcontinental transportation corridor responsible for the shipment of a significant portion of the goods to and from the west coast, the federal government has an important economic interest in ensuring that rail traffic is not interrupted. This issue has been raised repeatedly by BNSF and it has not been addressed by the FEIS. Additionally, the FEIS fails to analyze or address how the proposed Project will protect BNSF's lawful use of its ROW. (p. 5)

Comment BNSF-12: 3. The FEIS list of Applicable Laws, Regulations, Plans and Policies relating to Traffic and Transportation is incomplete.

FEIS Table 3-33, Traffic and Transportation Laws, Regulations, Plans and Policies, fails to include a number of applicable laws, regulations plans and policies relating to rail (pg. 11)... Based on the evidence received at the CEC evidentiary hearings, which are incorporated herein by reference, the issuance of the proposed right-of-way to Calico Solar and the approval of the CDCA amendment may adversely affect BNSF's ability to operate consistent with these laws, regulations and standards. Moreover, an approval of the CDCA amendment would require the BLM Desert District Manager to make a threshold determination that the proposed CDCA amendment is in accordance with applicable laws and regulations. CDCA Chapter 7. Because the FEIS does not include all applicable laws, regulations, plans and policies, that threshold determination cannot be made. (p. 12)

Comment BNSF-13: Table 3-33 must therefore be augmented with the following:

Federal: CFR; Title 49, Transportation, Part 209 to Part 244, Federal Railroad Administration...
Federal: Federal Railroad Safety Act of 1970 (FRSA) (pg. 12)... Rail Safety Improvement Act of 2008 (RSIA)... BNSF General Code of Operating Rules (p. 13)

Comment BNSF-14: ...the FEIS does not address potential impacts to rail from any access roads and at-grade and above-grade crossings proposed to be constructed over the BNSF right-of-way, nor does it propose any mitigation for impacts to rail other than those associated with the temporary access road. BNSF is concerned that any proposed access roads and at-grade and above-grade crossings be constructed in conformance with applicable railroad laws, regulations, plans and policies, including those listed above, and that they be constructed using materials which meet with approval from the proper regulatory authority. These access roads and at-grade and above-grade crossings, subject to BNSF's voluntary agreement to allow them, must be conditioned on measures which ensure the safety of railroad operations. (p. 13)

Comment BNSF-15: ...BNSF requests that a proper environmental study be conducted of the potential impact of the proposed access roads and at-grade and above-grade crossings within the BNSF ROW and that the following mitigation measure be incorporated into the FEIS:

TRANS-2 Construction of All-Weather Roads and Bridge.

If an easement is granted and the applicant begins construction, the applicant shall construct an all-weather road according to (1) California State Fire Marshall specifications as outlined in California Fire Code Section 902.2.1 et seq.... In addition, the applicant shall coordinate its activities with BNSF Railway... During construction of both the temporary and permanent road, temporary crossing of BNSF tracks, and permanent crossing of BNSF tracks, the applicant shall prepare and coordinate with BNSF Railway; California Public Utilities Commission; and Federal

Railroad Administration a safety plan for ensuring that all state and federal safety requirements for railroad crossings are followed. (p. 13)

Comment BNSF-16: For all the foregoing reasons, BNSF respectfully requests that the BLM supplement the FEIS to include: (1) a comprehensive glare/glint study that will address the impact of 34,000 SunCatchers on BNSF rail operations and safety; and (2) a proper environmental analysis of the potential impact of the proposed access roads and at-grade and above-grade crossings within the BNSF ROW. (p. 14)

Comment BNSF-17: BNSF further requests that the Conditions of Certification set forth in Exhibit 1209 and as set forth hereinabove in TRANS 1 and TRANS 2 be incorporated into the FEIS and adopted by the BLM. (p. 14)

Comment Jackson-2: The Applicant proposes and the PRMP-A/FEIS mandates the closure of long-established California Desert Conservation Area (CDCA) Plan designated open routes and the substitution of alternative "Public Access Routes" but the Applicant's "Public Access Routes" have not been proven legal or safe for public use. The Applicant also has not conducted environmental studies for the off-site "Public Access Routes" as required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). (p. 5)

Comment Jackson-4: I request the BLM Director rule the closure of existing CDCA designated "open routes" and the substitution of the Applicant's "Perimeter Road" and "Public Access Routes" do not comply with FLPMA, CDCA, NEPA, CEQA, ESA, SUWA v. BLM and CBD v. BLM. (p. 5)

Comment Jackson-5: I also request the BLM Director rule the Land Use and the Traffic and Transportation sections are incomplete and do not comply with NEPA and CDCA on the grounds the withholding of information by the BLM Barstow Field Office prevents me and other interested third parties from participating fully in the PRMP-A/FEIS process. (p. 6)

Comment Jackson-6: Part of the preceding statement is not correct. The "proposed project access road outside the site perimeter fence would not provide non-exclusive alternative access from AF133, on the westerly boundary of the project site" as AF133 will be closed. (p. 7)

Comment Jackson-7: The Tenth Circuit ruling in SUWA v. BLM mandates the BLM lacks the unilateral authority to make binding determinations on the validity of existing rights-of-way and the BLM cannot close CDCA designated open routes as closure of the routes would constitute as an irreversible binding determination. The Applicant and the BLM do not have the authority to amend the CDCA Plan to deprive the private property owners of adjacent lands of their right to use CDCA designated open routes...Given established history and the above facts and law, I request the BLM Director rule the CDCA designated open routes in the Project area remain

open in keeping with FLPMA and CDCA and so the adjacent private lands will not be landlocked. (p. 10)

Comment Jackson-8: The Applicant's proposed perimeter access roads are not safe and do not comply with all applicable laws, ordinances, regulations and standards (LORS).

1. The Applicant has not presented evidence as required by CEQA the proposed perimeter access roads are safe. The proposed perimeter access roads are to be within 223 feet of the Project's SunCatchers and motorists on the perimeter access roads will be subject to flash blindness from glint and glare.

2. The Applicant and the BLM have not established the necessary environmental baseline conditions for the proposed perimeter access roads as required by Center for Biological Diversity v. Bureau of Land Management, 422 F.Supp.2d 1115, 1166-67 (N.D. Cal. 2006).

3. The Applicant has not presented evidence motorists on the perimeter access road can cross the Southern California Edison (SCE) right-of-way or the BNSF railroad crossing on the east side of the Project. (p. 11)

Comment Jackson-9: The Land Use and the Traffic and Transportation sections of the PRMP-A/FEIS do not comply with CEQA Guidelines as these sections do not identify the environmental consequences of the "Proposed Public Access Routes". The Applicant has not presented evidence of any environmental studies conducted on the "Proposed Public Access Routes". (p. 11)

Comment Jackson-10: Section 15088.5(a) of the CEQA Guidelines state: A lead agency is required to re-circulate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification... The fact the Applicant has not presented any evidence to show environmental studies were conducted on the 24 and 17 miles of "Proposed Public Access Routes" is significant... (p. 12)

Comment Jackson-11: As the Applicant has not conducted environmental studies for the "Proposed Public Access Routes," I request the BLM Director rule the Land Use and the Traffic and Transportation sections of the PRMP-A/FEIS do not comply with CEQA Guidelines §§ 15088.5(a), 15151.

I also request the BLM Director rule the Land Use and the Traffic and Transportation sections of the PRMP-A/FEIS are incomplete as the PRMP-A/FEIS does not mention or discuss the off-site "Public Access Routes". (p. 13)

Comment Jackson-12: To date, the BLM Field Office has not provided relevant and material information requested under FOIA. In not providing the requested information, the BLM's actions do not meet the legal requirements of Title 20 California Code of Regulations § 1716.

The BLM's withholding of relevant and material records prevents me and other interested parties from presenting evidence and participating fully in commenting on the PRMP-A/FEIS as required under NEPA and Title 20 California Code of Regulations §§ 1711, 1723(b).

Pursuant to the BLM/CEC MOU, the BLM Director is bound by California Code of Regulations to rule the BLM Barstow Field Office did not comply with Title 20 California Code of Regulations § 1716 and further rule the Land Use and the Traffic and Transportation sections of the PRMP-A/FEIS are incomplete and do not comply with all applicable LORS. (p. 14)

Comment Jackson-13: NEPA requires the BLM to provide information requested under FOIA... The Land Use and the Traffic and Transportation sections of PRMP-A/FEIS do not comply with Section 1500.1 of NEPA as the BLM Barstow Field Office withheld significant information on CDCA designated open routes requested under FOIA. (p. 15)

Comment Jackson-20: I request the BLM Director rule the Land Use and the Traffic and Transportation sections of the PRMP-A/FEIS are incomplete and do not comply with FLPMA, CDCA, NEPA, CEQA, ESA, SUWA v. BLM and CBD v. BLM. (p. 16)

Comment Jackson-21: I request the BLM Director rule the Land Use and the Traffic and Transportation sections are incomplete and do not comply with NEPA and CDCA on the grounds the withholding of information by the BLM Barstow Field Office prevents me and other interested third parties from participating fully in the PRMP-A/FEIS process. (p. 16)

Comment Jackson-22: I request the BLM Director rule the Land Use and the Traffic and Transportation sections of the PRMP-A/FEIS be revised to comply with all applicable LORS and recirculated for public comment. (p. 16)

Response: The ROW grant would specifically be subject to all existing pre-existing rights within and adjacent to the project site. The BLM acknowledges the commenter's request to consider augmenting Table 3-33, Applicable Laws, Regulations, Plans and Policies relating to Traffic and Transportation, and will ensure that all applicable laws, regulations, plans and policies are referenced in the ROD. The BLM may consider incorporating the suggested mitigation measures TRANS-1 and TRANS-2 when developing the ROD.

The BLM does not propose to designate any new public routes in the vicinity of the project site. As described in the FEIS, Applicant proposes to construct a perimeter access road around the project site within the ROW grant area. The terms of the ROW grant would specify that such perimeter roads are for the non-exclusive use of the Applicant, meaning the Applicant would be unable to deny the use of perimeter roads to the general public.

Since this document is an EIS developed under NEPA, and not an EIR developed under CEQA, there is no requirement to comply with CEQA guidelines. However, environmental consequences of the perimeter roads are discussed in the FEIS in Chapter 4, with mitigation measures for road impacts located in BIO-8 Impact Avoidance and Minimization Measures, as well as other various resource mitigation measures. In addition, when developing the Record of Decision for the proposed Calico Solar Project and CDCA Plan Amendment, the BLM may consider the SA/DEIS Conditions of Certification, additional Conditions of Certification from the Supplemental SA, and other mitigation measures developed by the BLM, the CEC and other regulatory agencies.

The Applicant has explained that, due to additional safety requirements, BNSF requires gates to be installed at all crossings where an entity other than BNSF (i.e., the Applicant) would have access. The private crossing granted to Calico Solar/Tessera Solar is for the purposes of establishing an access to the western side of the proposed project site. In addition to installation of the gate and barricades, the Applicant was required to acquire insurance for potential damage to BNSF property and attend a safety course. The Applicant complied with these conditions and was granted access, which established the need for gates and barricades. The crossing was established as a BNSF ROW for access to, and maintenance of, the rail line and, and therefore, the crossing is not a public road. Therefore, the installation of the gate at this crossing does not result in a conflict with any applicable laws or regulations.

1.16 Visual Resources (64000)

Comment BRW-10: It is my opinion that the Calico Project will impact the view, quality of life and property values of any land-owners that have property in or adjacent to the project. (p. 7)

Comment BRW-11: My visitor experience of the Monument would be negatively impacted by seeing a large industrial development so close, with glare and night lighting, as I plan to visit the Cady Mountains again in the future. Based on my NPS experience, many visitors to the new monument and the nearby Wilderness areas would not appreciate the desert landscape developed to such an extent so close to their boundaries... The impacts to the local scenery could not be mitigated. (p. 7)

Comment BRW-12: We have visited the Pisgah Crater Area of Critical Environmental Concern and the Rodman Mountains Wilderness Area on 28 March 2010 and 17 April 2010. The industrial look that development of the Calico project would bring to the area would take away from the wild character of these two areas. (p. 7)

Comment Calico-23: Figure 4-3 is a simulated view of the Proposed Action site from Key Observation Point 1, U.S. Route 66/Interstate 40. It should be noted that this simulated view depicts the project site as it would appear without the 223-foot setback from Interstate 40

agreed to by Calico after the simulation was prepared. With this setback, the view of the Proposed Action site will change and the potential visual impacts of the Calico Solar Project on motorists will be significantly reduced. (p. 6)

Response: Section 4.16 Visual Resources in the FEIS considers the direct, indirect, and cumulative impacts on visual resources associated with the Applicant's proposal and all project alternatives. As stated in the comments, the EIS states that direct adverse impacts to visual resources will occur, and cannot be mitigated. This information has been considered by BLM in the selection of a preferred alternative in the FEIS, and will be considered in the decision whether or not to authorize the ROW grant in the Record of Decision.

1.17 Hydrology and Water Resources

1.17.1 Water Resources Generally (43000)

Comment BNSF-3: The FEIS fails to meet BLM's requirements under NEPA. There is no environmental analysis whatsoever of the impact of utilizing temporary "all-weather" access roads within the BNSF ROW. Nor is there any analysis of the glare and glint issues identified in the SA/DEIS. (p. 5)

Comment EPA-20: EPA is concerned about the increased erosion, migration of channels, local scour, and potential destabilization and damage that could result from installing equipment in drainages, and we strongly recommend maximum avoidance of these waters and high risk flood hazard zones. (p. 3)

Comment EPA-21: The DEIS indicated that there would be numerous sediment basins throughout the site, including 4 separate basins constructed on the northern boundary. These are also depicted in the layout of the Proposed Project in the FEIS (Fig. 1-2). The FEIS states that the Agency Preferred Alternative will result in similar hydrological impacts and that the detention basins in the northern boundary would be designed and constructed to perform in the same manner as in the Proposed Action (pg. 4-371). However, Figure 2-6 shows the layout of the Agency Preferred Alternative and indicates one large detention basin instead of 4 smaller ones. (p. 4)

Comment EPA-22: The Response to Comments should discuss the effectiveness and hydrological impacts of the modified detention basin location(s) including whether the sediment basins would substantially change the pattern of sediment delivery in ephemeral waters downstream. (p. 4)

Comment EPA-23: The ROD and responses to comments on the FEIS should discuss all measures to avoid washes and placement of SunCatchers in drainages. (p. 4)

Comment EPA-24: The Response to Comments should demonstrate that the downstream flows will not be disrupted due to proposed changes to natural washes nor the accumulation of large amounts of sediment that will be trapped in the sediment basins and not permitted to flow through the site. (p. 4)

Comment EPA-25: Fully discuss, in responses to FEIS comments, how many SunCatchers will be installed in drainages for the final design. Impacts from such construction to waters of the State should be quantified. All analyses should be updated to include a full evaluation of impacts to waters, sedimentation, scouring, etc. from locating SunCatchers in flood hazard areas. (p. 4)

Comment Calico-3: After July 12, 2010...Calico made three additional revisions to Alternative 1a, which have been presented to the CEC, but were not made in time to be included in the FEIS...Third, Calico has determined that with appropriate treatment, including chlorination, water from Lavic Basin well 3 could be used for the project's potable water requirements, eliminating the need for potable water to be trucked to the project site. (p. 2)

Comment Calico-31: [S]ection 4.22 identifies unavoidable impacts to surface hydrology on and off the project site. The mitigation measures provided in the CEC Conditions of Certification would avoid any such significant impact.

Response: Section 4.17 Hydrology and Water Resources of the FEIS considers the direct, indirect, and cumulative impacts on water resources associated with the Applicant's proposal and project alternatives. Impacts to erosion, channel migration, scour, and destabilization are discussed in Chapter 4 of the FEIS, in Section 4.17 Hydrology and Water Resources. The project has avoided and minimized direct and indirect impacts to desert washes to the extent practicable. As noted in the FEIS, no structural buildings are proposed to be located in areas susceptible to flooding resulting from a 100-year storm. The project's Stormwater Damage Monitoring and Response Plan would ensure that structures are protected and that redirected flows are designed such that they not cause adverse impacts. The existing flooding patterns would remain once the Project is constructed.

The CEC has received and docketed additional information regarding the hydrology of the project site and has issued a Supplemental Staff Assessment that addresses some of the concerns raised by comments. In response, the Applicant has proposed a reduced 4,613-acre project footprint, and has proposed to remove the sediment detention basins from the proposed project, allowing the natural function of project site drainages to continue. Removal of the detention basins will eliminate surface impacts to the approximately 600 acres proposed to be disturbed for their construction and operation. The Applicant has agreed to conduct a

hydrological evaluation of the reduced 4,613-acre project and implement mitigation to prevent any off-site flooding impacts. A final decision of the CEC has not yet been made. However, when developing the Record of Decision for the proposed Calico Solar Project and CDCA Plan Amendment, the BLM may consider the SA/DEIS Conditions of Certification, additional Conditions of Certification from the Supplemental SA, and other mitigation measures developed by the BLM and other regulatory agencies.

Appendix 2

Biological Opinion



United States Department of the Interior



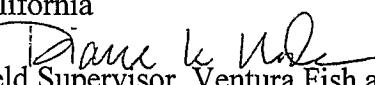
FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
81440-2010-F-0246

October 15, 2010

Memorandum

To: Field Manager, Barstow Field Office, Bureau of Land Management, Barstow, California

From: 
Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California

Subject: Biological Opinion on Tessera Solar's Calico Solar Power Generating Facility, San Bernardino County, California [(3031) P CA-680.33] (8-8-10-F-34)

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the Bureau of Land Management's (Bureau) proposed issuance of a right-of-way grant to Tessera Solar (Tessera) for the Calico Solar Power Generating Facility (Calico) and its effects on the federally threatened desert tortoise (*Gopherus agassizii*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). The proposed project involves construction, operation, maintenance, and decommissioning of a 4,613-acre solar power generating facility and the establishment of a 3,617-acre solar development exclusion zone on an 8,230-acre Bureau right-of-way. Your April 1, 2010 request for formal consultation was received by our office on April 7, 2010.

This biological opinion is based on information that accompanied your April 1, 2010, request for consultation (Bureau 2010a, URS 2010a) and additional information regarding changes in the project description obtained from Bureau staff during the formal consultation process. This additional information includes the revised biological assessment (URS 2010b), supplemental biological assessment (URS 2010c), supplemental biological assessment supplement: phased development of the Phase 1 component of the Calico Solar Project (URS 2010d), supplement #5 to the biological assessment (URS 2010e), final desert tortoise translocation plan (URS 2010g), draft staff assessment/environmental impact statement (Bureau and California Energy Commission [CEC] 2010), supplemental staff assessment (CEC 2010a), and final environmental impact statement and proposed amendment to the California Desert Conservation Area Plan (Bureau 2010b). A complete record of this consultation is on file at the Ventura Fish and Wildlife Office.

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Consultation History

On April 1, 2010, the Bureau initiated consultation for construction, operation, maintenance, and decommissioning of the Calico facility (Bureau 2010a). On April 22, 2010, we responded to your request with a memorandum that identified specific insufficiencies in the biological assessment (Service 2010a). On May 17, 2010, the Bureau submitted a revised biological assessment for the proposed project (URS 2010b), which we determined to contain sufficient information to initiate formal consultation (Service 2010b). Following release of the draft staff assessment/environmental impact statement (Bureau and CEC 2010), Tessera modified its project to reduce adverse effects to desert tortoises and rare plant species. The Bureau developed a supplemental biological assessment to describe the changes in the project description and the addition of critical habitat, and submitted it on July 19, 2010 (URS 2010c). The Service shared a draft biological opinion with the Bureau on the proposed project on August 18, 2010 (Service 2010c). Subsequent to the development of the supplemental biological assessment and the issuance of the draft biological opinion, Tessera further refined the project description to include phasing of the Phase 1 component of the proposed project construction, dividing Phase 1 into Phase 1a and Phase 1b; the Bureau provided a description of the new project in a supplement on August 30, 2010 (URS 2010d). On September 3, 2010, the CEC directed Tessera to explore alternatives to the proposed project with a further reduced project footprint (CEC 2010b). The Bureau submitted a final project description with a project footprint of 4,613 acres on September 27, 2010 (URS 2010e). This biological opinion analyzes the effects associated with the reduced project footprint, phasing of the proposed project construction, and establishment of the solar development exclusion zone.

In addition, by electronic mail dated July 17, 2010 (Otahal 2010), you requested our concurrence with your determination that translocation of desert tortoises from the project site is not likely to adversely affect the critical habitat of the desert tortoise; the information to support your determination is contained in the supplemental biological assessment (URS 2010c). Tessera proposes to translocate a portion of the desert tortoises from the project site into the Ord-Rodman Critical Habitat Unit and monitor them for a period of no less than 5 years. In addition, Tessera would monitor resident desert tortoises in the critical habitat unit for the same period. Translocation and monitoring activities would consist of driving on Bureau- designated open routes, parking in small areas immediately adjacent to roads, and foot traffic within habitat to translocate and monitor desert tortoises. We concur with your determination that the proposed action is not likely to adversely affect critical habitat of the desert tortoise. We have reached this conclusion because most activities would occur on existing roads designated as open routes by the Bureau, which do not support the primary constituent elements of desert tortoise critical habitat. Activities associated with translocation could temporarily disturb a small amount of critical habitat adjacent to roads as a result of parking adjacent to the open routes and walking through areas to release and monitor desert tortoises; however, we expect the size of this disturbance to be minimal and its effect on the function of critical habitat to be insignificant. Construction, operation, maintenance, and decommissioning of the Calico facility would not occur within or indirectly affect critical habitat in any manner. Accordingly, we will not address critical habitat in this biological opinion. If the proposed action changes in a manner that may

affect critical habitat, the Bureau should contact us as soon as possible to determine whether further consultation would be appropriate.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Introduction

The proposed site is approximately 37 miles east of Barstow, south of the Cady Mountain Wilderness Study Area and directly adjacent to the southeastern boundary of the Pisgah Crater Area of Critical Environmental Concern (ACEC). The Ord-Rodman Desert Wildlife Management Area (DWMA) is located southwest of the project and south of Interstate 40. Tessera would construct the solar facility in three phases (Phase 1a, Phase 1b and Phase 2; URS 2010d). Phase 1 would be 275 MW covering approximately 1,876 acres and sub-divided into 2 phases, Phase 1a and Phase 1b. Construction of Phase 1a would consist of 250 acres of ground disturbance and would include the construction of the main access road, a 990-foot underground water pipeline, a main services area, a substation area, a temporary at-grade crossing, a permanent bridge spanning the Burlington Northern Santa Fe (BNSF) railroad tracks and the installation of 60 solar dish Stirling systems (SunCatchers) pedestals. Prior to completion of the at-grade railroad crossing, the existing BNSF crossing and right-of-way (ROW) would be used to access Phase 1a. Phase 1b would cover the remainder of Phase 1, approximately 1,626 acres. The third phase, Phase 2, would cover approximately 2,737 acres and bring the total number of installed SunCatchers to 26,390. In addition, Tessera would construct an approximately 2-mile transmission line to connect the on-site Calico substation to the Pisgah substation located just east of the project site. The Bureau will also establish a 3,617-acre solar development exclusion zone through amendment of the California Desert Conservation Area Plan to prevent future solar development in portions of the right-of-way not disturbed by project activities. We summarized the description of the proposed action from your request for consultation (Bureau 2010a), the revised biological assessment (URS 2010b), the supplemental biological assessment (URS 2010b), the supplemental biological assessment supplement (URS 2010d), supplement #5 to the biological supplement (URS 2010e), the supplemental staff assessment (CEC 2010a), and the Calico Solar Power Project presiding member's proposed decision (CEC 2010b).

Construction

Construction of the Calico facility would occur over approximately 44 months (CEC 2010b) and require a workforce of 400 to 750 people. Heavy construction would typically occur from 7:00 a.m. to 7:00 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. The temporary fencing for Phase 1a may be installed throughout the night to expedite project construction (URS 2010e). Access to the facility during construction and operation would be via the Hector Road exit at an existing interchange from Interstate 40.

All project site construction would occur within desert tortoise exclusion fencing. Tessera would install this fencing in conjunction with the construction phases. Within the project site, Tessera proposes to build surface-treated roadways, north-south access routes and east-west access routes, including a combination of roadway dips and elevated sections across drainage features. The Calico facility includes an on-site substation (approximately 15 acres), a main services complex (37.6 acres), water supply and treatment system, a buried septic tank system with a dual sanitary leach field, two hydrogen generating and distribution systems, an electrical collection system (both underground and overhead), railroad overpass to cross the existing BNSF railroad tracks, a temporary at-grade railroad crossing, two 3,000,000-gallon evaporation ponds, and security perimeter fencing. Localized channel grading would be used on a limited basis to improve channel hydraulics and to control the direction of storm water flow. If retention basins are necessary, they would be designed to be empty within 72 hours. The main services complex would contain three SunCatcher assembly buildings, administrative offices, operations control room, maintenance facility, demineralized water storage tank, and a potable water tank. The Calico facility solar field includes 26,450 38-foot-tall SunCatchers. Tessera would vibrate the base of each SunCatcher unit into place. Paired rows of SunCatchers would have access roads on either side, allowing for 40 to 80 feet of vegetation to remain between each alternate row of SunCatchers. The construction and operation of most of these facilities would not affect the desert tortoise in any manner; consequently, we will not discuss them further in this document.

The proposed project would transmit electricity to the existing Pisgah substation via an approximately 2-mile-long, 220-kilovolt transmission line, requiring the installation of 12 to 15 structures, 90 to 110 feet high. The transmission line would extend outside of the project site fencing by 2,800 feet. Construction of the portion of the line outside of the project site would occur within temporary desert tortoise exclusion fence.

An underground pipeline would deliver water to the Calico facility from a production well on private lands north of the facility, identified as "Not a Part Area 1" (NAP 1) (URS 2010c). This pipeline would extend outside of the project boundary fence; construction would occur within temporary desert tortoise exclusion fence.

Operation and Maintenance

The Calico facility would have an operating life of 40 years; however, the Bureau would issue the right-of-way grant for 20 years and has considered the life of the project to be 30 years. The Calico facility would likely operate 7 days a week with a staff of approximately 180 full-time employees. Including maintenance, the proposed facility would operate 24 hours a day. Workers would access the Calico facility by way of the Hector Road exit, which would connect to new and existing access roads, which Tessera would fence with desert tortoise exclusion fencing. All maintenance activities would occur within fenced areas.

On a monthly basis, Tessera would wash each SunCatcher mirror surface with 14 gallons of demineralized water. During a 3-month period each year, every SunCatcher would receive a "scrub" wash that could require up to 42 gallons of water per SunCatcher (SES 2008). In total, Tessera would use approximately 36.2 acre-feet of well water per year for washing SunCatchers,

dust control, and water treatment system discharge. (Water consumption may actually be less than 36.2 acre-feet per year, which was the estimated use associated with the original, larger project; Tessera did not provide an updated estimate on water consumption in association with the reduction of the number of SunCatchers for the proposed project.) Tessera would mow or trim vegetation between the rows of SunCatchers to allow for proper operation, maintenance, and fire safety.

Decommissioning and Restoration

If the Calico facility were permanently closed, all the project equipment, facilities, structures and associated facilities would be removed from the site. Prior to decommissioning, Tessera would coordinate with the appropriate agencies to develop a decommissioning plan acceptable to the Bureau (Bureau and CEC 2010). At that time, the Bureau would determine if decommissioning requires additional consultation, pursuant to section 7(a)(2) of the Endangered Species Act. Consequently, we will not analyze the potential effects of decommissioning and associated restoration on the desert tortoise at this time.

Minimization Measures

General Protective Measures

To minimize adverse effects to the desert tortoise, Tessera will implement the following protective measures during construction, operation and maintenance activities. We have changed the wording of some measures identified in the biological assessment and incorporated some of the conditions of certification from the CEC supplemental staff assessment (CEC 2010a), but we have not changed the substance of the measures that Tessera has proposed.

1. Tessera will employ authorized biologists, approved by the Bureau, Service, CEC and California Department of Fish and Game (CDFG) and desert tortoise monitors to ensure compliance with protective measures for the desert tortoise. Use of authorized biologists and desert tortoise monitors will be in accordance with the most up-to-date Service guidance and will be required for monitoring of any construction, operation, or maintenance activities that may result in adverse effects to the desert tortoise. The current guidance is entitled *Desert Tortoise – Authorized Biologist and Monitor Responsibilities and Qualifications* (Service 2008a).
2. Tessera will provide the credentials of all individuals seeking approval as authorized biologists to the Bureau. The Bureau will review these and provide the credentials of appropriate individuals to the Service, CEC and CDFG for approval at least 30 days prior to the time they must be in the field for construction-related ground disturbance.
3. Tessera will designate a field contact representative who will oversee compliance with protective measures during construction, operation, and maintenance activities that may result in injury or mortality of desert tortoises. If the field contact representative, authorized biologist, or desert tortoise monitor identifies a violation of the desert tortoise

protective measures, they will halt work until the violation is corrected.

4. Individuals approved to handle desert tortoises (i.e., authorized biologists and desert tortoise monitors approved by the authorized biologist) will do so in compliance with the most up-to-date guidance from the Service. The Service is currently using the *Desert Tortoise Field Manual* (Service 2009a).
5. Tessera will develop and implement a worker environmental awareness program approved by the Bureau, Service, CEC and CDFG. The worker environmental awareness program will be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The worker environmental awareness program will be implemented during site preconstruction, construction, and operation and will include, but is not limited to, the following:
 - (a) a presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants.
 - (b) special emphasis on desert tortoises, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures.
 - (c) identification of a contact if workers have further comments and questions about the material discussed in the program.
6. Prior to any ground-disturbing activities, Tessera will fence the area with desert tortoise exclusion fence, either temporary or permanent, and conduct desert tortoise clearance surveys. Desert tortoise exclusion fencing will follow the specifications provided in the *Desert Tortoise Field Manual* (Service 2009a). We have provided a description of the procedures for clearance, translocation, and monitoring of these animals below. Workers will perform all ground-disturbing activities in areas fenced with desert tortoise exclusion fence. Only activities related to desert tortoise translocation and translocation monitoring will occur outside of these areas.

Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary and permanent exclusionary fencing, the fencing shall be regularly inspected. Permanent and temporary fencing will be inspected at least two times a day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent and temporary fencing will be inspected monthly and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing will be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage. Inspections of permanent site fencing will occur for the life of the Project. If the fence may have permitted tortoise entry while damaged, the DETO monitors will inspect the area for tortoise. If fencing is not repaired within 48 hours, the BLM, USFWS, and CDFG Wildlife Biologists will be

notified immediately to determine if additional remedial action is required, such as the need for conducting additional clearance surveys within the Project footprint.

7. Tessera will confine all construction activities (including staging and material storage), project vehicles, and equipment within the delineated boundaries of construction areas that authorized biologists or designated desert tortoise monitors have identified and cleared of desert tortoises.
8. Tessera will prohibit project personnel from driving off road or performing ground-disturbing activities outside of designated areas during construction, operation, and maintenance except to deal with emergencies.
9. During operation and maintenance activities at the completed project site, Tessera will confine all vehicle parking, material stockpiles, and construction related materials to the permanently fenced project site. Vehicular traffic will be confined to existing routes of travel to and from the project site; cross country vehicle and equipment use outside designated work areas will be prohibited except to deal with emergency situations.
10. To reduce the potential for vehicle strikes of desert tortoises, Tessera will enforce a 25-mile-per-hour speed limit for project-related travel (i.e., construction, operation, and maintenance) within the site and on non-public access roads in areas surrounding the site. All project personnel will maintain this speed limit when traveling outside of a fenced area; this measure does not apply to public roads that have been posted with speed limits.
11. With the exception of security personnel, Tessera will prohibit firearms on the project site.
12. Project personnel working outside of fenced areas will check under vehicles or equipment before moving them. If project personnel encounter a desert tortoise, they will contact an authorized biologist. The desert tortoise will be allowed to move a safe distance away prior to moving the vehicle. Alternatively, an authorized biologist may move the desert tortoise to a safe location to allow for movement of the vehicle.

Management of Common Ravens

Tessera will implement the following project design features and protective measures to reduce the adverse effects associated with predation of desert tortoises by common ravens (*Corvus corax*). The draft management plan for common ravens (URS 2010g) contains more detailed information on the following actions. The Bureau, Service, CEC, and CDFG must approve this plan prior to the initiation of any ground-disturbing activity.

1. Tessera will dispose of all trash- and food-related waste associated with the project in secure, self-closing receptacles to prevent the introduction of subsidized food resources for common ravens.

2. Tessera will promptly remove and dispose of all road-killed animals on the project site or its access roads.
3. Tessera will use water for construction, operation, and maintenance (e.g., truck washing, dust suppression, SunCatcher washing, landscaping, etc.) in a manner that does not result in puddling. Because mirror cleaning will be conducted at night, Tessera anticipates that water will either evaporate or sink into the ground by morning and therefore be unavailable to wildlife.
4. Tessera will monitor the evaporation ponds on site for common raven use according to the approved Calico Solar Evaporation Pond Design Monitoring and Management Plan.
5. Tessera will install generation tie-lines on utility poles designed to be incompatible with nesting of common ravens in accordance with Avian Power Line Interaction Committee guidelines (2006) and will monitor the effectiveness of these deterrence measures. Tessera will implement alternative measures if the current effort is unsuccessful.
6. All transmission lines associated with the Calico facility will be designed in a manner that will reduce the likelihood of nesting by common ravens. Tessera will monitor all of these utility lines and other potential nesting structures and remove common raven nests that it identifies, following authorization by the Bureau and the Service.
7. Tessera will monitor the Calico facility to identify frequently used perching locations for common ravens. If it identifies such locations, Tessera will install bird barrier spikes or other functional equivalents.
8. Tessera will fund lethal removal of problem common ravens if deemed appropriate by the Bureau and the Service. Problem common ravens are individuals that have been shown, through monitoring, to prey on desert tortoises.
9. Tessera will monitor the effectiveness of its management plan for common ravens during construction and for 5 years following completion of the project. After this initial period, Tessera will monitor once every 5 years, unless results indicate more or less frequent monitoring is necessary.

Tessera will develop and implement adaptive management measures if monitoring shows that the management plan is not effective in controlling common raven use of the project site. Tessera will consult with the Bureau, the Service, CEC and CDFG prior to implementing adaptive management changes.

To address indirect and cumulative effects that it cannot fully eliminate through implementation of an onsite common raven management plan CEC is requiring Tessera to contribute funds to the regional common raven management program. The fee will contribute to an account established with the National Fish and Wildlife Foundation, discussed later under the Compensation section

of this biological opinion, to implement recommendations in the Service's *Environmental Assessment to Implement a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise* (Service 2008b). This environmental assessment identifies several activities to reduce common raven predation on desert tortoises, including reduction of human-provided subsidies (e.g., food, water, sheltering and nesting sites), education and outreach, the removal of common ravens and their nests, evaluation of effectiveness, and adaptive management. In addition to the fees described in the Compensation section, Tessera will contribute \$105 per acre of disturbance for the 4,613 acres of desert tortoise habitat affected by this project. The Bureau has informed the Service that this CEC condition is also part of its action and thus has been considered in this analysis (Pogacnik 2010).

Weed Management

Tessera has submitted a draft plan to the Bureau that provides monitoring, preventative, and management strategies for weed control during construction activities and a long-term strategy for weed control and management during the operation of the project. The Bureau, Service, CEC and CDFG must approve the plan prior to the initiation of any ground-disturbing activity.

1. Tessera will designate an environmental compliance manager to provide oversight of construction practices and ensure compliance with weed management provisions.
2. Tessera will provide training to all personnel charged with environmental management responsibilities that will include the following: a) weed plant identification, b) effects of non-native invasive weeds on native vegetation, wildlife, and fire activity, and c) required measures to prevent the spread of non-native invasive weeds on the site.
3. Tessera will survey for new invasive weed populations and monitor identified and treated populations at the Calico facility as well as within a 250-foot buffer area surrounding the site on Bureau-managed lands and accessible private lands. Tessera will quantify the baseline weed abundance in the portion of the Pisgah Crater ACEC adjacent to and within 500 meters of the eastern project boundary, north of the BNSF railroad tracks.
4. Tessera will maintain vehicle wash and inspection stations and closely monitor materials brought onto the site to minimize the potential for weed introduction.
5. Vehicles traveling into the areas used for desert tortoise translocation (i.e., recipient and control sites) will follow the requirements of the Calico Weed Management Plan to minimize the potential for the introduction of non-native species to these areas.
6. Tessera will apply all herbicides used in weed treatments according to a plan approved by the Bureau and in accordance with the herbicide labels. Tessera will only use licensed individuals for herbicide application and will suspend herbicide use when any of the following conditions are met: a) wind velocity exceeds 6 miles-per-hour during application of liquids or 15 miles-per-hour during application of granular herbicides, b)

snow or ice covers the foliage of weeds, c) precipitation is occurring or is imminent, or d) air temperatures exceed 90 degrees Fahrenheit.

7. Tessera will only use herbicides that have shown empirically-proven low toxicity to test animals. Tessera will request and receive approval of herbicides from the Bureau and Service prior to use.
8. Mulch or green waste from mown weed infestations on site will be removed from the Calico facility in a covered vehicle and transported to a licensed landfill or composting facility.

Desert Tortoise Translocation

Fencing and Clearance Surveys

Tessera will fence the Calico facility with a standard security fence and construct a boundary road around the project site to maintain public access to Bureau and private lands. To minimize adverse effects to desert tortoises from the project and the boundary road, Tessera will install desert tortoise exclusion fencing on the edge of the boundary road furthest from the site to prevent desert tortoises from accessing the road or the Calico facility. Where the fenced project boundary road intersects any other designated route or open road, Tessera will install cattle guards to prevent desert tortoises from gaining entry to the project site and associated roads. For the construction of each phase of the Calico facility, Tessera will install any additional temporary or permanent exclusion fence around the planned construction area to prevent desert tortoises from gaining access. Tessera will install temporary exclusion fencing around the construction area for the 2,800-foot interconnect line, the 990-foot underground pipeline, and the groundwater well, all of which extend outside the project site fence. Tessera will remove this temporary fence following completion of construction.

Within 24 hours prior to construction of the desert tortoise exclusion fence, authorized biologists will survey the staked fence alignment for desert tortoises. Tessera will conduct desert tortoise clearance surveys with transects 5 meters apart, covering a 30-meter-wide band centered on the fence alignment. During these surveys, an authorized biologist will inspect all burrows to determine occupancy and collapse unoccupied burrows. To the extent feasible, Tessera will modify the fence alignment to fence occupied burrows out of the Calico site and associated boundary road. If the fence cannot avoid a desert tortoise burrow, an authorized biologist will remove the individual and process it as detailed in the desert tortoise translocation plan.

For Phase 1a, Tessera will construct the 15.5 miles desert tortoise exclusion fence in 2 shifts, one during the day and one at night (night defined as: 1 hour before sunset until one hour after sunrise). To minimize the potential adverse effects to desert tortoises specific to night construction, Tessera will implement the following measures during the fencing of Phase 1a of the Calico project:

1. Tessera will delineate the 30-meter survey area centered on the fence line during daylight hours so that all workers can identify the authorized construction area. No work, during the day or night, will occur outside of the delineated area.
2. Tessera will inspect all the desert tortoise burrows in the 30-meter survey area during the day before night activities are to occur to determine occupancy, using an optical scope if necessary. If a burrow is determined to be occupied, a temporary desert tortoise exclusion fence will be built around the burrow and the Phase 1a exclusion fence will be built around the burrow. If the fence re-alignment excludes the desert tortoise from Phase 1a, Tessera will remove the temporary fencing around the burrow after construction in the area is complete. If the fence re-alignment encompasses the burrow within Phase 1a, the fencing will remain in place and Tessera will begin monitoring this burrow according to the translocation plan. The fencing around the burrow should encompass the entire burrow including the front apron and allow room for the desert tortoise to exit the burrow; approximately 3 square feet of open area extending from the outer edge of the burrow apron edge should remain at the mouth of the burrow.
3. Tessera will collapse burrows that are determined to be empty in accordance with the Service's guidelines. The Service is currently using guidance provided in the *Desert Tortoise Field Manual* (Service 2009a).
4. Tessera will collect any desert tortoises found on the surface during nighttime construction activity and hold them in a sanitized tub. In the morning, Tessera will move the desert tortoise to a previously constructed quarantine pen outside of Phase 1a. Quarantine pens will be constructed as described in the project's desert tortoise translocation plan.
5. Tessera will not clear any vegetation during the night shift of Phase 1a; any vegetation removal will take place during daytime hours.
6. Tessera will stage all fencing material within the previously delineated construction area the day before night fencing activities will occur.
7. Tessera will ensure that work areas have adequate lighting to minimize potential shadow effects, to ensure authorized biologists can detect desert tortoises without added difficulty, and to ensure that work crews stay within the allowed work area.
8. Tessera will ensure that all vehicles observe a 5-mile-per-hour speed limit during nighttime construction activities including access to construction areas.

Following construction of the desert tortoise exclusion fence around any given portion of the Calico project (i.e., Phase 1a, Phase 1b, Phase 2, transmission line, underground water pipeline, fences which may be constructed to allow for small areas of phased development), Tessera will perform a full clearance survey of the fenced area during the spring (i.e., April to May) or fall

(i.e., late August to mid-October). Authorized biologists and supervised desert tortoise monitors will conduct a minimum of 2 complete clearance sweeps over the entire project site with transects no wider than 5 meters. Surveyors will conduct transects for each sweep in different directions to allow for opposing angles of observation. Tessera will consider the site clear after no new desert tortoises have been discovered during two complete passes. Authorized biologists will excavate all potential desert tortoise burrows by hand to confirm occupancy status. Tessera will collect data on all desert tortoises handled as outlined in the project translocation plan.

Because construction of Phase 1a will not begin until after the end of the fall clearance window in mid-October, Tessera will conduct special clearance surveys for this phase of the project. Tessera will follow all clearance survey methodology with the exception of clearance windows provided above; however, any desert tortoises found in burrows will be left undisturbed and a desert tortoise exclusion fence will be built around the burrow. Tessera will check the desert tortoises enclosed in the pen weekly to ensure that they remain in hibernation. If a desert tortoise is found above ground during a weekly check, Tessera will move the desert tortoise to a quarantine pen outside of Phase 1a. Any desert tortoise detected above ground during surveys will be collected and placed in a quarantine pen. Tessera will translocate all of the desert tortoises found in Phase 1a in the spring as provided in the project translocation plan.

Translocation

Tessera will follow the procedures outlined in the translocation plan for the proposed project (URS 2010f). An authorized biologist will move all desert tortoises found during clearance surveys to pre-selected recipient sites. Recipient sites for the translocated desert tortoises include portions of the Pisgah Crater ACEC to the east of the project (Pisgah ACEC translocation site), the area north of the project site between the Cady Mountains and the desert tortoise exclusion fence (Linkage translocation site), and the northeastern portion of the Ord-Rodman DWMA (Ord-Rodman DWMA translocation site; URS 2010c).

All desert tortoises determined to be appropriate for translocation (i.e., having good body condition and showing no sign of diseases such as upper respiratory tract disease, herpes virus, shell disease, or other diseases) will be marked with a unique identifier determined by the Desert Tortoise Recovery Office and released in a safe location underneath a shrub. If desert tortoises show signs of disease, they will not be released until Tessera has coordinated with the Service. Prior to translocation, Tessera will ensure that all desert tortoises receive a visual health assessment to verify that each individual does not show signs of disease. Desert tortoises translocated a distance greater than 500 meters will be tested for disease [i.e., Enzyme-linked immunosorbent assay, (ELISA) test] via blood sampling. Any desert tortoises that are moved a distance less than 500 meters will not require a blood sample as part of the health assessment. Tessera will quarantine desert tortoises that show signs of disease at a location agreed upon by the Bureau, CDFG, CEC, and Service. Tessera will not translocate desert tortoises outside of the recommended temperature guidelines or outside of the desert tortoise active season (generally between April 1 and May 31), with the exception of the desert tortoises in Phase 1a, which will be moved to quarantine pens within the project site if they are detected above ground during

clearance surveys. Tessera will maintain a record of all desert tortoises encountered and translocated during project surveys and monitoring.

For Phases 1b and 2, Tessera will quarantine desert tortoises requiring blood samples for disease testing (individual translocated greater than 500 meters) within the desert tortoise exclusion fence constructed for the particular construction phase. During clearance surveys, Tessera will fit each desert tortoise with a transmitter and give it a unique identifier when blood samples are collected. These desert tortoises will move freely within the project fence boundary until disease test results are received (i.e., *in situ* quarantine). Tessera will hold juvenile desert tortoises, which are too small to receive transmitters, in a quarantine pen within the project site until disease results are available. In some instances, Tessera may move subadult and adult desert tortoises (i.e., those greater than 180 millimeters in length) located during clearance surveys into a quarantine pen on another portion of the project site rather than proceeding with *in situ* quarantine. (By "subadult and adult desert tortoises," we mean any combination of individuals of these age classes.) Desert tortoises with negative disease test results that are found within 500 meters of a desert tortoise with positive test results (either on day of blood collection or translocation) will be retested for infections prior to translocation. Tessera will not translocate any desert tortoises prior to the Service's concurrence with the health assessment and disposition plan for that individual. (Each disposition plan will describe the conditions regarding a specific desert tortoise; staff from the Service's Desert Tortoise Recovery Office will review each plan and approve it before any desert tortoise is translocated. Based on the specific conditions of the desert tortoise, the capture area, the translocation area, and possibly other factors, the Desert Tortoise Recovery Office may allow for minor modifications of the guidance in the translocation plan as a result of the information in the disposition plan. For example, if the Desert Tortoise Recovery Office deems the conditions to be appropriate, a desert tortoise found slightly more than 500 meters from the project's boundary may be moved under the prescriptions for a short-distance translocation (i.e., less than 500 meters from the fence).)

To reduce the potential that translocated desert tortoises could become infected by disease from contact with individuals within the recipient area, Tessera will conduct surveys within the Ord-Rodman DWMA translocation area to demonstrate the prevalence of disease. The disease rate in the Ord-Rodman DWMA translocation area must be less than 5 percent (95 percent confidence level) to be considered a valid recipient area for translocated desert tortoises. To further decrease the potential for disease spread associated with translocation, Tessera will establish a 6-kilometer buffer around any resident desert tortoise that is determined to be diseased or seropositive (i.e., a seropositive animal is one that has a positive result from blood testing) based on the health assessment and blood testing.

Monitoring

Tessera will attach transmitters to and monitor all desert tortoises cleared from the Calico project site which are of sufficient size to accommodate transmitters. Smaller animals will be blood tested (when being moved greater than 500 meters) and translocated without transmitters if found to be in good health. Tessera will also attach transmitters to and monitor desert tortoises

that are resident to the recipient and control areas. Tessera will attempt to locate and attach transmitters to equal numbers of recipient, control, and translocated desert tortoises. In the event that too few resident desert tortoises can be located, Tessera will confer with the Service, Bureau, CEC, and CDFG to determine if additional searches to located more desert tortoises are needed. The location of the control population will be in habitat similar to but at least 6.2 miles distant from the recipient area or in an area separated from the recipient area by a physical barrier that prevents desert tortoise movement. The area selected for the Calico facility is north of the project site on the western edge of the Cady Mountain Wilderness Study area (URS 2010c). Tessera will use qualified biologists, authorized by the Service, Bureau, CEC, and CDFG to monitor these populations.

In addition to attaching transmitters to desert tortoises in the recipient and control areas, Tessera will collect blood samples on the resident subadults and adults located in the recipient areas receiving desert tortoises from more than 500 meters away and all subadult and adult desert tortoises receiving transmitters in the control site. Tessera will not translocate any desert tortoises from the project site to a location within 6 kilometers of a resident desert tortoise showing either clinical signs of disease or with a blood test result indicating that the individual is seropositive.

During monitoring, Tessera will collect information on survivorship, mortality rates, health status, body condition, movement of individuals, and predation to inform adaptive management. Tessera will monitor the translocated, resident, and control desert tortoises for a minimum of 5 years. Tessera has provided a more detailed description of the monitoring program in its translocation plan (URS 2010f). Following more intensive monitoring immediately after translocation, locations for individuals will be collected at a minimum of once per week from March to November and once every other week from November to February.

To minimize adverse effects to the desert tortoises, Tessera will implement the following protective measures when implementing clearance surveys, desert tortoise translocation and monitoring:

1. Tessera will design all desert tortoise exclusion fencing in accordance with the Service guidelines. The Service is currently using guidance provided in the *Desert Tortoise Field Manual* (Service 2009a).
2. Tessera will comply with the most up-to-date guidance for performing clearance surveys and handling desert tortoises. The Service is currently using the *Desert Tortoise Field Manual* (Service 2009a).
3. Tessera will use authorized biologists for the performance of clearance surveys and for any other activities that require the handling of desert tortoises. If Tessera uses desert tortoise monitors during clearance surveys or for other activities that require identification of sign or handling of desert tortoises, they will do so under the direct supervision of an authorized biologist.

4. Tessera will use authorized biologists with additional qualifications approved by the Service for attaching transmitters and collecting blood samples.
5. Following clearance of the fenced project phases, an authorized biologist will be onsite during initial clearing and grading to move any desert tortoises missed during the clearance surveys. Following initial clearing and grading, an authorized biologist will be on-call during construction, should a desert tortoise be located inside the project construction site.
6. An authorized biologist will hydrate all desert tortoises scheduled for translocation within 12 hours prior to release in accordance with the translocation plan.
7. Tessera will only use Service-authorized individuals that have experience identifying the clinical signs of upper respiratory tract disease, herpes virus, and cutaneous dyskeratosis for the performance of health assessments. Tessera will provide the Service with the qualifications of any authorized biologists that it will use to perform health assessments on desert tortoises during clearance and translocation activities.
8. The number of desert tortoises translocated into each translocation area will not exceed the Service (2010g) recommended percentage over the estimated population density (i.e., 30 percent above 5.0 subadult and adult desert tortoises per square kilometer for the Pisgah ACEC translocation area and 30 percent above 8.2 subadult and adult desert tortoises per square kilometer for the Ord-Rodman DWMA translocation area). Because desert tortoises translocated into the Linkage translocation area will be moved less than 500 meters, no density threshold has been applied for this translocation area.

Compensation

We summarized the following information from the Bureau's final environmental impact statement for the proposed action (Bureau 2010b). The Bureau will require Tessera to compensate for the loss of desert tortoise habitat at a compensation ratio of 1:1 per the provisions of the West Mojave Plan (Bureau et al. 2005). Tessera will pay the Bureau's compensation as a fee based on the July 23, 2010 Renewable Energy Action Team (REAT) fee schedule (total \$16,196,623.95) or as modified by the REAT at the time of compensation payment. Furthermore, Tessera may pay this fee in a phased manner, pending discussions with the REAT, rather than as a lump sum. The memorandum of agreement between the REAT agencies and National Fish and Wildlife Foundation allows the REAT agencies to require additional funding to be deposited into the project-specific account if the agencies find the money is not adequate to implement the required biological mitigation (REAT 2010). The funds will be used for enhancement of desert tortoise habitat within the Ord-Rodman DWMA. The enhancement funds may be used to cover environmental review and implementation of the activities listed below, including the hiring of contractors to carry out the activities. The following is a list of potential habitat enhancement and rehabilitation actions, identified by the Bureau that could be implemented to fulfill the Bureau's compensation requirements:

1. Construction of 40 miles of desert tortoise exclusion fence along State Route 247 from Barstow to Lucerne Valley to prevent desert tortoises from entering the roadway, with the primary focus area being between Barstow and Stoddard Ridge.
2. Installation of 60 miles of barrier fencing (post and cable) along Camp Rock road to prevent unauthorized vehicular use of desert tortoise habitat within the DWMA.
3. Addressing road needs within the Ord-Rodman DWMA including signing of 280 miles of open routes, signing and closure of 172 miles of undesignated routes, and rehabilitation of at least 100 miles of these routes.
4. Habitat enhancement via exotic weed control.
5. Installation of desert tortoise exclusion fence along Interstate 40.
6. Securing mines in which desert tortoises may become trapped.
7. Funding a headstart program for desert tortoises developed in coordination with the Service's Desert Tortoise Recovery Office.

In addition to the required compensation described above, the CDFG and CEC will require compensation for loss of desert tortoise habitat at a ratio of 2:1 for the lands north of the BNSF railroad. The State agencies will require compensation at a ratio of 4:1 for 369 acres of this area, because of their high value to desert tortoises. The portion of compensation required by these agencies will be used to acquire desert tortoise habitat in the Ord-Rodman, Superior-Cronese, or Fremont-Kramer DWMAs. The Bureau informed the Service that this compensation requirement is part of the project description for its action, and thus has been considered in this analysis (Pogacnik 2010).

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of desert tortoises, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the desert tortoise in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the desert tortoise; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the desert tortoise; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the desert tortoise.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the desert tortoise, taking into account any cumulative effects, to determine if implementation of the proposed

action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the desert tortoise in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the desert tortoise and the role of the action area in the survival and recovery of the desert tortoise as the context for evaluation of the significance of the effects of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

STATUS OF THE SPECIES

Basic Ecology of the Desert Tortoise

The desert tortoise is a large, herbivorous reptile found in portions of the California, Arizona, Nevada, and Utah deserts. It also occurs in Sonora and Sinaloa, Mexico. In California, the desert tortoise occurs primarily within the Creosote, Shadscale, and Joshua Tree Series of Mojave Desert Scrub, and the Lower Colorado River Valley subdivision of Sonoran Desert Scrub. Optimal habitat has been characterized as creosote bush scrub in areas where precipitation ranges from 2 to 8 inches, diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982, Turner and Brown 1982, Schamberger and Turner 1986). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. In California, desert tortoises are typically associated with gravelly flats or sandy soils with some clay, but occasionally occur in windblown sand or in rocky terrain (Luckenbach 1982). Desert tortoises occur in the California desert from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982, Schamberger and Turner 1986). Recent range-wide monitoring efforts have consistently documented desert tortoises above 3,000 feet (Service 2006a).

Desert tortoises may spend more time in washes than in flat areas outside of washes; Jennings (1997) notes that, between March 1 and April 30, desert tortoises "spent a disproportionately longer time within hill and washlet strata" and, from May 1 through May 31, hills, washlets, and washes "continued to be important." Jennings' paper does not differentiate between the time desert tortoises spent in hilly areas versus washes and washlets; however, he notes that, although washes and washlets comprised only 10.3 percent of the study area, more than 25 percent of the plant species on which desert tortoises fed were located in these areas. Luckenbach (1982) states that the "banks and berms of washes are preferred places for burrows;" he also recounts an incident in which 15 desert tortoises along 0.12 mile of wash were killed by a flash flood. Desert tortoises are most active in California during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. Desert tortoises spend most of their time during the remainder of the year in burrows, escaping the extreme conditions of the desert; however, recent work has demonstrated that they can be active at any time of the year. Further information on the range, biology, and ecology of the desert tortoise can be found in Burge (1978), Burge and Bradley

(1976), Hovik and Hardenbrook (1989), Luckenbach (1982), Weinstein et al. (1987), and Service (1994).

Food resources for desert tortoises are dependent on the availability and nutritional quality of annual and perennial vegetation, which is greatly influenced by climatic factors, such as the timing and amount of rainfall, temperatures, and wind (Beatley 1969, 1974, Congdon 1989, Karasov 1989, Polis 1991; all in Avery 1998). In the Mojave Desert, these climatic factors are typically highly variable; this variability can limit the desert tortoise's food resources.

Desert tortoises will eat many species of plants. However, at any time, most of their diet consists of a few species (Nagy and Medica 1986 and Jennings 1993 in Avery 1998). Additionally, their preferences can change during the course of a season (Avery 1998) and over several seasons (Esque 1994 in Avery 1998). Possible reasons for desert tortoises to alter their preferences may include changes in nutrient concentrations in plant species, the availability of plants, and the nutrient requirements of individual animals (Avery 1998). In Avery's (1998) study in the Ivanpah Valley, desert tortoises consumed primarily green annual plants in spring; they ate cacti and herbaceous perennials once the winter annuals began to disappear. Medica et al. (1982 in Avery 1998) found that desert tortoises ate increased amounts of green perennial grass when winter annuals were sparse or unavailable; Avery (1998) found that desert tortoises rarely ate perennial grasses.

Desert tortoise females typically produce one to two clutches of 1 to 7 eggs per year (Turner et al. 1986 in Service 1994). On rare occasions, clutches can contain up to 15 eggs; most clutches contain 3 to 7 eggs. Multi-decade studies of the Blanding's turtle (*Emydoidea blandingii*), which, like the desert tortoise, is long lived and matures late, indicate that approximately 70 percent of the young animals must survive each year until they reach adult size; after this time, annual survivorship exceeds 90 percent (Congdon et al. 1993). Research has indicated that 50 to 60 percent of young desert tortoises typically survive from year to year, even in the first and most vulnerable year of life. We do not have sufficient information on the demography of the desert tortoise to determine whether this rate is sufficient to maintain viable populations; however, it does indicate that maintaining favorable habitat conditions for small desert tortoises is crucial for the continued viability of the species.

Desert tortoises typically hatch from late August through early October. At the time of hatching, the desert tortoise has a substantial yolk sac; the yolk can sustain them through the fall and winter months until forage is available in the late winter or early spring. However, neonates will eat if food is available to them at the time of hatching; when food is available, they can reduce their reliance on the yolk sac to conserve this source of nutrition. Neonate desert tortoises use abandoned rodent burrows for daily and winter shelter; these burrows are often shallowly excavated and run parallel to the surface of the ground.

Neonate desert tortoises emerge from their winter burrows as early as late January to take advantage of freshly germinating annual plants; if appropriate temperatures and rainfall are present, at least some plants will continue to germinate later in the spring. Freshly germinating

plants and plant species that remain small throughout their phenological development are important to neonate desert tortoises because their size prohibits access to taller plants. As plants grow taller during the spring, some species become inaccessible to small desert tortoises.

Neonate and juvenile desert tortoises require approximately 12 to 16 percent protein content in their diet for proper growth. Desert tortoises, both juveniles and adults, seem to selectively forage for particular species of plants with favorable ratios of water, nitrogen (protein), and potassium. The potassium excretion potential model (Ofstedal 2001) predicts that, at favorable ratios, the water and nitrogen allow desert tortoises to excrete high concentrations of potentially toxic potassium, which is abundant in many desert plants. Ofstedal (2001) also reports that variation in rainfall and temperatures cause the potassium excretion potential index to change annually and during the course of a plant's growing season. Therefore, the changing nutritive quality of plants, combined with their increase in size, further limits the forage available to small desert tortoises to sustain their survival and growth.

In summary, the ecological requirements and behavior of neonate and juvenile desert tortoises are substantially different from those of subadults and adults. Smaller desert tortoises use abandoned rodent burrows, which are typically more fragile than the larger ones constructed by adults. They are active earlier in the season. Finally, small desert tortoises rely on smaller annual plants with greater protein content; the smaller plant size allows them to gain access to food and the higher protein content promotes growth.

Status of the Desert Tortoise

The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California. On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 *Federal Register* 32326). In its final rule, dated April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 *Federal Register* 12178).

The Service listed the desert tortoise in response to loss and degradation of habitat caused by numerous human activities including urbanization, agricultural development, military training, recreational use, mining, and livestock grazing. The loss of individual desert tortoises to increased predation by common ravens, collection by humans for pets or consumption, collisions with vehicles on paved and unpaved roads, and mortality resulting from diseases also contributed to the Service's listing of this species.

Recovery Plan for the Desert Tortoise

The recovery plan for the desert tortoise is the basis and key strategy for recovery and delisting of the desert tortoise. The recovery plan divides the range of the desert tortoise into 6 distinct population segments or recovery units and recommends the establishment of 14 DWMA's throughout the recovery units. Within each DWMA, the recovery plan recommends

implementation of reserve-level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The recovery plan also recommends that DWMA's be designed to follow the accepted concepts of reserve design and be managed to restrict human activities that negatively affect desert tortoises (Service 1994). The delisting criteria established by the recovery plan are:

1. The population within a recovery unit must exhibit a statistically significant upward trend or remain stationary for at least 25 years;
2. Enough habitat must be protected within a recovery unit or the habitat and desert tortoises must be managed intensively enough to ensure long-term viability;
3. Populations of desert tortoises within each recovery unit must be managed so discrete population growth rates (λ s) are maintained at or above 1.0;
4. Regulatory mechanisms or land management commitments that provide for long-term protection of desert tortoises and their habitat must be implemented; and
5. The population of the recovery unit is unlikely to need protection under the Endangered Species Act in the foreseeable future.

The recovery plan based its descriptions of the six recovery units on differences in genetics, morphology, behavior, ecology, and habitat use over the range of the Mojave population of the desert tortoise. The recovery plan contains generalized descriptions of the variations in habitat parameters of the recovery units and the behavior and ecology of the desert tortoises that reside in these areas (pages 20 to 22 in Service 1994). The recovery plan (pages 24 to 26 from Service 1994) describes the characteristics of desert tortoises and variances in their habitat, foods, burrow sites, and phenotypes across the range of the listed taxon. Consequently, to capture the full range of phenotypes, use of habitat, and range of behavior of the desert tortoise as a species, conservation of the species across its entire range is essential.

The Service has released a revised recovery plan for public review (Service 2008c). The revised recovery plan includes a discussion of reducing the number of recovery units to four, based on information that has been generated since the release of the original document.

Relationship of Recovery Units, Distinct Population Segments, Desert Wildlife Management Areas, and Critical Habitat Units

The recovery plan (Service 1994) recognized six recovery units or evolutionarily significant units across the range of the listed taxon, based on differences in genetics, morphology, behavior, ecology, and habitat use of the desert tortoises found in these areas. The boundaries between these areas are vaguely defined. In some cases, such as where the Western Mojave Recovery Unit borders the Eastern Mojave Recovery Unit, a long, low-lying, arid valley provides a fairly substantial separation of recovery units. In other areas, such as where the Eastern Mojave

Recovery Unit borders the Northern Colorado Recovery Unit, little natural separation exists. Because of the vague boundaries, the acreage of these areas has not been quantified. Over the years, the Service has commonly referred to the areas as "recovery units;" the term "distinct population segment" has not been in common use.

The recovery plan recommended that land management agencies establish one or more DWMA's within each recovery unit. As mentioned previously in the Recovery Plan for the Desert Tortoise section of this biological opinion, the recovery plan recommended that these areas receive reserve-level management to remove or mitigate the effects of the human activities responsible for declines in the number of desert tortoises. As was the case for the recovery units, the recovery plan did not determine precise boundaries for the DWMA's; the recovery team intended for land management agencies to establish these boundaries, based on the site-specific needs of the desert tortoise. At this time, DWMA's have been established throughout the range of the desert tortoise.

Based on the recommendations contained in the draft recovery plan for the desert tortoise, the Service designated critical habitat throughout the range of the desert tortoise (59 *Federal Register* 5820). The 14 critical habitat units have defined boundaries and cover specific areas throughout the 6 recovery units.

The Bureau used the boundaries of the critical habitat units and other considerations, such as conflicts in management objectives and more current information, to propose and designate DWMA's through its land use planning processes. In California, the Bureau also classified these DWMA's as areas of critical environmental concern, which allows the Bureau to establish management goals for specific resources in defined areas. Through the land use planning process, the Bureau established firm boundaries for the DWMA's.

The Department of Defense installations and National Park Service units in the California desert did not establish DWMA's on their lands. Where the military mission is compatible with management of desert tortoises and their habitat, the Department of Defense has worked with the Service to conserve desert tortoises and their habitat. Examples of such overlap include the bombing ranges on the Navy's Mojave B and the Chocolate Mountains Aerial Gunnery Ranges; although the target areas are heavily disturbed, most of the surrounding land remains undisturbed. Additionally, the U.S. Army has established several areas along the boundaries of Fort Irwin where training with vehicles is prohibited; desert tortoises persist in these areas, which are contiguous with lands off-base. The National Park Service did not establish DWMA's within the Mojave National Preserve, because the entire preserve is managed at a level that is generally consistent with the spirit and intent of the recovery plan for the desert tortoise.

The following table depicts the relationship among recovery units, DWMA's, and critical habitat units through the range of the desert tortoise.

Critical Habitat Unit	Desert Wildlife Management Area	Recovery Unit	State	Size of Critical Habitat Unit (acres)
Chemehuevi	Chemehuevi	Northern Colorado	CA	937,400
Chuckwalla	Chuckwalla	Eastern Colorado	CA	1,020,600
Fremont-Kramer	Fremont-Kramer	Western Mojave	CA	518,000
Ivanpah Valley	Ivanpah Valley	Eastern Mojave/Northeastern Mojave	CA	632,400
Pinto Mountain	Joshua Tree	Western Mojave/ Eastern Colorado	CA	171,700
Ord-Rodman	Ord-Rodman	Western Mojave	CA	253,200
Piute-Eldorado- CA	Fenner	Eastern Mojave	CA	453,800
Piute-Eldorado- NV	Piute-Eldorado	Northeastern Mojave/ Eastern Mojave	NV	516,800
Superior-Cronese	Superior-Cronese Lakes	Western Mojave	CA	766,900
Beaver Dam: NV	Beaver Dam	Northeastern Mojave (all)	NV	87,400
UT	Beaver Dam		UT	74,500
AZ	Beaver Dam		AZ	42,700
Gold Butte-Pakoon NV	Gold Butte-Pakoon Gold Butte-Pakoon	Northeastern Mojave (all)	NV	192,300
AZ			AZ	296,000
Mormon Mesa	Mormon Mesa Coyote Spring	Northeastern Mojave	NV	427,900
Upper Virgin River	Upper Virgin River	Upper Virgin River	UT	54,600

Methods of Estimating the Number of Desert Tortoises

Before entering into a discussion of the status and trends of the desert tortoise in the Western Mojave Recovery Unit where the proposed action is located, a brief discussion of the methods of estimating the numbers of desert tortoises would be useful. Three primary methods have been widely used: permanent study plots, triangular transects, and line distance sampling.

Generally, permanent study plots are defined areas that are visited at roughly 4-year intervals to determine the numbers of desert tortoises present. Desert tortoises found on these plots during the spring surveys were registered; that is, they were marked so they could be identified individually during subsequent surveys. Between 1971 and 1980, 27 plots were established in California to study the desert tortoise; 15 of these plots were used by the Bureau to monitor desert tortoises on a long-term basis (Berry 1999). Range-wide, 49 plots have been used at one time or another to attempt to monitor desert tortoises (Tracy et al. 2004).

Triangular transects are used to detect sign (i.e., scat, burrows, footprints, etc.) of desert tortoises. The number of sign is then correlated with standard reference sites, such as permanent study plots, to allow the determination of density estimates.

Finally, line distance sampling involves walking transects while trying to detect live desert tortoises. Based on the distance of the desert tortoise from the centerline of the transect, the length of the transect, and a calculation of what percentage of the animals in the area were likely to have been above ground and visible to surveyors during the time the transect was walked, an estimation of the density can be made. This density only represents an estimation of the number of desert tortoises that are greater than 180 millimeters in size. Desert tortoises that are larger than this size are typically classified as subadult or adult desert tortoises.

Each of these methods has various strengths and weaknesses. In general, permanent study plots have been used to estimate the status of desert tortoises across large areas over time. Triangular transects were used to assess the density of desert tortoises on specific sites at a point in time; this method was commonly used to determine how many desert tortoises may be affected by a specific proposed action. In 2001, the Service initiated line-distance sampling to estimate the density of desert tortoises in desert wildlife management areas and critical habitat throughout the range.

Note that, when reviewing the information presented in the following sections, determining the number of desert tortoises over large areas is extremely difficult. The report prepared by the Desert Tortoise Recovery Plan Assessment Committee (Tracy et al. 2004) acknowledges as much. Desert tortoises spend much of their lives underground or concealed under shrubs, are not very active in years of low rainfall, and are distributed over a wide area in several different types of habitat. Other factors, such as the inability to sample on private lands and rugged terrain, further complicate sampling efforts. Consequently, the topic of determining the best way to estimate the abundance of desert tortoises has generated many discussions over the years. As a result of this difficulty, we cannot provide concise estimations of the density of desert tortoises in each recovery unit or DWMA that have been made in a consistent manner.

Given the difficulty in determining the density of desert tortoises over large areas, the reader needs to understand fully that the differences in density estimates in the recovery plan and those derived from subsequent sampling efforts may not accurately reflect on-the-ground conditions. Despite this statement, the reader should also be aware that the absence of live desert tortoises and the presence of carcasses over large areas of some desert wildlife management areas provide at least some evidence that desert tortoise populations seem to be in a downward trend in some regions.

Status and Trends of Desert Tortoise Populations

The following paragraphs provide general information on the status and trends of the desert tortoise population in the Western Mojave Recovery Unit, where the proposed action is located. We have not included detailed information on the status of the desert tortoise in the other

recovery units throughout the range of the species in this biological opinion. This omission will not compromise the analysis in the biological opinion because our determination regarding whether a proposed action is likely to jeopardize the continued existence of a species must be conducted at the level of the listed taxon. When the range of the listed taxon is divided into recovery units, our level of analysis begins with the recovery unit; if the effects of the proposed action have the potential to compromise the ability of the species to survive and recover within the recovery unit, the next level of analysis considers how the compromised recovery unit would affect the listed taxon throughout its range (Service 2005). Our analysis can therefore be conducted in a comprehensive manner through an iterative process. The Western Mojave Recovery Unit comprises one of six recovery units for the desert tortoise; consequently, our level of analysis in this biological opinion will begin at this level.

In the Western Mojave Recovery Unit, desert tortoises generally occur from Olancho and the northern Panamint Valley in the north to Joshua Tree National Park in the south and from the lower foothills of the southern Sierra Nevada and Tehachapi Mountains in the west east to Death Valley and the eastern side of Joshua Tree National Park. Although desert tortoises were historically widespread in the western Mojave Desert, their distribution within this region was not uniform. For example, desert tortoises likely occurred at low densities in the juniper woodlands of the western Antelope Valley and in the sandier habitats in the Mojave River valley. They were also likely largely absent from the higher elevations of the area's mountains and from playas and the areas immediately surrounding dry lakes.

In the following paragraphs, we present information regarding the status of the desert tortoise in areas of the Western Mojave Recovery Unit that are outside of critical habitat and desert wildlife management areas. Most of these areas are at the range limits of the species or are near areas that have undergone extensive habitat disturbance as a result of human activities. Much of this area is privately owned.

We do not have extensive data on the density or status of desert tortoises in the areas of the Western Mojave Recovery Unit that lie outside of critical habitat and desert wildlife management areas. The lack of data may be because at least some of this area had been extensively disturbed prior to the listing of the desert tortoise and includes large amounts of private land; consequently, researchers have not conducted large-scale surveys in most of these areas. Where data do exist (e.g., a Bureau study of desert tortoise density west of Highway 14 between Red Rock Canyon State Park and Highway 178 (Keith et al. 2005); various surveys of the eastern Antelope Valley, Victor Valley, and near the town of Rosamond), they were collected using methods other than line distance sampling and are not comparable to the numbers obtained through the line distance sampling. Much of the information in the following paragraphs was gathered from these sources; additionally, we used anecdotal information as a partial basis for the following discussion and conclusions reached by the Service (e.g., "I saw desert tortoises all the time here when I was young but have not seen one in the last 15 years").

Desert tortoises occur over large areas of Fort Irwin where the U.S. Army conducts realistic, large-scale exercises with large numbers of wheeled and tracked vehicles. The distribution and

abundance of the desert tortoise within the boundary of Fort Irwin have been greatly affected by military exercises. They have been essentially eliminated from most of the valleys and bajadas where vehicles frequently travel off road. They persist in small numbers on the steep, rugged slopes of the mountain ranges and in incised washes that occur throughout Fort Irwin where they are protected from vehicles by the terrain.

We do not have specific information on the numbers of desert tortoises in these areas. We expect that desert tortoises that reside away from the most active training areas will persist long into the future as small aggregations of animals that are likely isolated from desert tortoises in the remainder of the Western Mojave Recovery Unit; some exchange may occur with desert tortoises in the South Range portion of the Naval Air Weapons Station to the west of Fort Irwin and a narrow strip of Bureau lands and Death Valley National Park to the north.

Because of the U.S. Army's proposal to expand the area that is available for training at Fort Irwin, the Service and U.S. Army concluded formal consultation (Service 2004) that resulted in an agreement to remove all desert tortoises from the areas of the base south of the UTM 90 line (i.e., the southern expansion area) and in the Superior Valley (i.e., the western expansion area). To date, 569 desert tortoises of all class sizes have been translocated from the southern expansion area (U.S. Army 2009). Eighty-nine desert tortoises of all class sizes remain to be translocated. Therefore, 658 desert tortoises of all class sizes have been detected in the southern expansion area. Walde et al. (2009 in U.S. Army 2009) estimate between 583 and 895 (95 percent confidence interval) desert tortoises occupy the western expansion area; this estimate is based on transects conducted in 2009. This estimate reflects the number of adult desert tortoises; consequently, the total number of animals within the southern and western expansion areas is likely somewhat greater.

The Naval Air Weapons Station, China Lake, is divided into two large units. The southern unit lies to the west of Fort Irwin and north of the western expansion area; the northern portion of the Naval Air Weapons Station lies to the northwest of the southern unit. The Department of the Navy (Navy) has designated approximately 200,000 acres of the South Range at the Naval Air Weapons Station, China Lake as a management area for the desert tortoise (Service 1995a). Through a consultation with the Service (1992a), the Navy agreed to try to direct most ground-disturbing activities outside of this area, to use previously disturbed areas for these activities when possible, and to implement measures to reduce the effects of any action on desert tortoises. This area also encompasses the Superior Valley Tactical Bombing Range located in the southernmost portion of the Mojave B South land management unit of the Naval Air Weapons Station; it continues to be used as an active bombing range for military test and training operations by the Navy and Department of Defense. In the 9 years for which we had annual reports, activities conducted by the Navy did not kill or injure any desert tortoises (see Navy 1995); one carcass was found at a bombing site but the cause of mortality could not be determined. In general, desert tortoises occur in low densities on the North Range of the Naval Air Weapons Station; Kiva Biological Consulting and McClenahan and Hopkins Associates (in Service 1992a) reported that approximately 136 square miles of the North Range supported densities of 20 or fewer desert tortoises per square mile. The South Range supported densities of

20 or fewer desert tortoises per square mile over an area of approximately 189 square miles and densities of greater than 20 per square mile on approximately 30 square miles. The higher elevations and latitude in this area may be responsible for these generally low densities (Weinstein 1989 in Bureau et al. 2005).

The Indian Wells Valley, which is located to the southwest of the northern portion of the Naval Air Weapons Station, likely supported desert tortoises at higher densities in the past. Urban, suburban, and agricultural development is the likely cause of the lower densities that are currently found in this area; the city of Ridgecrest and town of Inyokern are located in this valley. Rose Valley, which lies generally to the north of the Indian Wells Valley and west of the northern portion of the Naval Air Weapons Station seems to support few desert tortoises and is likely the northern extent of the species' range in this portion of the Western Mojave Recovery Unit.

Edwards Air Force Base, which lies in the eastern portion of the Antelope Valley, is used primarily to test aircraft and weapons systems used by the Department of Defense. Desert tortoises occur over approximately 220,800 acres of the installation. Approximately 80,640 acres of the base have been developed for military uses or are naturally unsuitable for use by desert tortoises, such as Rogers and Rosamond dry lakes. Based on surveys conducted between 1991 and 1994, approximately 160,640 acres of the base supported 20 or fewer desert tortoises per square mile. Approximately 55,040 acres supported densities between 21 and 50 desert tortoises per square mile; from 51 to 69 desert tortoises per square mile occurred on several smaller areas that totaled 5,120 acres (U.S. Air Force 2004). We expect that current densities are somewhat lower, given the regional declines in desert tortoise numbers elsewhere in the Western Mojave Recovery Unit.

Four townships of private land east of the city of California City, north of Edwards Air Force Base, and south of the Rand Mountains supported large numbers of desert tortoises as late as the 1970s. High levels of off-road vehicle use, extensive grazing of sheep, scattered development, and possibly poaching have greatly reduced the density of desert tortoises in this area.

South of Edwards Air Force Base, the direct and indirect effects of urban and suburban development have largely eliminated desert tortoises from this area of primarily private lands that extends from Lancaster in the west to Lucerne Valley in the east. A few desert tortoises remain on the northern slopes of the San Bernardino Mountains, south of Lucerne Valley; however, they seem to be largely absent from the portion of this area in Los Angeles County (Bureau et al. 2005). The Bureau manages the 24,000-acre El Mirage Off-highway Vehicle Management Area, which lies south of the eastern portion of Edwards Air Force Base; the Bureau has designated this and three other off-highway vehicle management areas in the western Mojave Desert for use by off-road vehicles. Low numbers of desert tortoises persist in the area that generally lies between the off-highway vehicle management area and Edwards Air Force Base.

Continuing to the east, the northern portion of Joshua Tree National Park is within the Western Mojave Recovery Unit. Given the general patterns of visitor use at Joshua Tree National Park (i.e., most visitors remain close to established roads and trails), we expect that most of this area receives little visitor use. Private lands between the northern boundary of Joshua Tree National Park and the southern boundary of the Marine Corps Air Ground Combat Center continue to support desert tortoises; the primary threat to desert tortoises in this area is urbanization. The cities of Twentynine Palms, Yucca Valley, Joshua Tree, and Morongo Valley are located in this area.

The Marine Corps Air Ground Combat Center is located north of the cities mentioned in the previous sentence and southeast of Barstow; the center generally supports a wide variety of training exercises that include the use of tracked and wheeled vehicles and live fire. The Marine Corps' integrated natural resource management plan for the center notes that the number of desert tortoises may have declined in its more heavily disturbed areas and that vehicles, common ravens, and dogs are responsible for mortalities (Natural Resources and Environmental Affairs Division 2001). Desert tortoises occur within the Marine Corps Air Ground Combat Center in densities of greater than 50 per square mile in limited areas; most of the installation, however, supports from 0 to 5 animals per square mile (Jones and Stokes Associates 1998 in Natural Resources and Environmental Affairs Division 2001).

The 189,000-acre Johnson Valley Off-highway Vehicle Management Area lies to the west of the Marine Corps Air Ground Combat Center (Service 1991b). The Stoddard Valley Off-highway Vehicle Management Area lies to the west of the Johnson Valley Off-highway Vehicle Management Area. Desert tortoises remain in suitable habitat in these areas, primarily in the portions that are less heavily used for recreation.

The Mojave River valley lies to the northwest of the Marine Corps Air Ground Combat Center. It is generally a low-lying area with current and fallow agricultural use; private lands dominate this area. We are aware of a few records of desert tortoises in this area, primarily in creosote scrub habitat near the Marine Corps Logistics Base, Nebo, and around Elephant Mountain, which lie at the western end of the valley.

The city of Barstow lies at the western end of the Mojave River valley. A large expanse of primarily private land lies between Barstow and the city of Victorville. This area, which is subjected to heavy unauthorized use by off-road vehicles, likely supported high densities of desert tortoises prior to the development of surrounding areas. The cities of Adelanto, Apple Valley, and Hesperia and the Southern California Logistics Airport generally surround Victorville.

Death Valley National Park lies to the north of Fort Irwin. Desert tortoises are uncommon in the national park, primarily because much of the habitat lies either lower or higher than optimal elevations for the species; Greenwater Valley, to the east of Death Valley, seems to support a moderate number of desert tortoises. Panamint Valley lies to the west of Death Valley and east

of the northern section of the Naval Air Weapons Station. It supports low densities of desert tortoises, likely because of unsuitable habitat over large areas of the valley.

The Spangler Hills Off-highway Vehicle Management Area lies to the southwest of the Panamint Valley and southeast of Ridgecrest. We do not have recent information on the number of desert tortoises in this area; we expect that the area supports low densities as a result of extensive recreational use.

Major roads in the Western Mojave Recovery Unit include Interstates 15 and 40, U.S. Route 395, and State Routes 14, 18, 58, 62, 127, 138, 178, and 247. These roads fragment habitat; vehicles using these roads strike and kill numerous desert tortoises every year. Portions of Interstate 15 and Routes 58 and 395 are fenced to prevent entry by desert tortoises. Smaller paved roads and unpaved roads probably do not fragment habitat to a substantial degree but are responsible for additional mortalities of desert tortoises.

The following paragraphs describe efforts to define the density of desert tortoises in and near critical habitat and desert wildlife management areas in the Western Mojave Recovery Unit. The Pinto Mountains DWMA is located in the southeastern portion of the Western Mojave Recovery Unit, generally to the southeast of the Marine Corps Air Ground Combat Center and abutting the northeastern portion of Joshua Tree National Park. No permanent study plots are located in this desert wildlife management area. Tracy et al. (2004) noted that the distribution of carcasses and live desert tortoises appeared to be what one would expect in a "normal" population of desert tortoises; that is, carcasses occurred in the same areas as live animals and were not found in extensive areas in the absence of live desert tortoises. Through line distance sampling, the Service estimated the density of desert tortoises in this DWMA to be approximately 6.2 subadults and adults per square mile in 2007 (Service 2009b).

The Ord-Rodman DWMA is located to the southeast of the city of Barstow, north of the Johnson Valley Off-highway Vehicle Management Area, and west of the Marine Corps Air Ground Combat Center. The recovery plan notes that the estimated density of desert tortoises in this area is 5 to 150 animals per square mile (Service 1994). Three permanent study plots are located within and near this DWMA. The following table contains the density estimates for these plots; the data are from Berry (1996); all data are in the approximate number of desert tortoises of all sizes per square mile.

	Stoddard Valley	Lucerne Valley	Johnson Valley
1980		176	114
1981	146		
1986		150	80
1987	178		
1990		82	18
1991	225		
1994		73	73

Berry (1996) notes that, for various reasons, surveys at the Stoddard Valley plot encountered various difficulties; some desert tortoises from this plot were taken by poachers and at least one animal became ill with upper respiratory tract disease and contained environmental contaminants. Common ravens and feral dogs have killed desert tortoises at the Lucerne Valley plot; Berry (1996) notes that little recruitment into adult size classes was occurring. Berry also notes that at least two desert tortoises from the Johnson Valley plot were killed by off-road vehicle use or cattle; at least one ill and salvaged animal contained environmental contaminants. Through line distance sampling, the Service estimated the density of desert tortoises in this DWMA to be approximately 21.3 subadults and adults per square mile in 2007 (Service 2009b). Note that, for all desert wildlife management areas, the densities estimated by different methods are not directly comparable; i.e., the differences in numbers depicted in Berry (1996) and Service (2009b) do not necessarily represent a specific change in the density of desert tortoises in the area. For example, the information from study plots may reflect changes in the density of desert tortoises in those specific areas over time, while line distance sampling provides information regarding the density of the entire DWMA.

The Superior-Cronese DWMA is located north of the Ord-Rodman DWMA; two interstate freeways and rural, urban, and agricultural development separate them. This DWMA is located south of Fort Irwin and the southern portion of the Naval Air Weapons Station, China Lake. No permanent study plots have been established in this area; the density of desert tortoises has been estimated through numerous triangular transects and line distance sampling efforts. The recovery plan notes that this DWMA supports densities of approximately 20 to 250 desert tortoises per square mile (Service 1994). Through line distance sampling, the Service estimated the density of desert tortoises in this DWMA to be approximately 16.4 subadults and adults per square mile in 2007 (Service 2009b).

The Fremont-Kramer DWMA is located west of the Superior-Cronese DWMA; the two DWMA's are contiguous. The recovery plan notes that the estimated density of desert tortoises in this area was 5 to 100 animals per square mile (Service 1994). Five permanent study plots are located within this DWMA; one plot, the Interpretive Center plot at the Desert Tortoise Natural Area, is split into two subplots. The following table contains the density estimates for these plots; the data are from Berry (1996); all data are in the approximate number of desert tortoises of all sizes per square mile.

	Fremont Valley	Desert Tortoise Natural Area, Interior	Desert Tortoise Natural Area, Interpretive Center		Fremont Peak	Kramer Hills
			Inside Fence	Outside Fence		
1979		387	339	296		
1980					99	223
1981	278					
1982		332				314
1985			229	134	45	

1987	179					130
1988		195				
1989			106	80	32	
1991	101					60
1992		47				
1993			61	42	8	
1995						139
1996		18				
1997		8*	34#	23#		
2001	19*					
2002			28#	10#		

* These values represent the actual numbers of desert tortoises found on the plot and do not represent a density estimate; the data are from Berry (2005).

These data are from Connor (2003).

Berry (1996) noted that the overall trend in this DWMA is “a steep, downward decline” and lists predation by common ravens and domestic dogs, off-road vehicle activity, illegal collecting, upper respiratory tract disease, and environmental contaminants as contributing factors. Through line distance sampling, the Service estimated the density of desert tortoises in this DWMA to be approximately 7.0 subadults and adults per square mile in 2007 (Service 2009b).

We estimate that the overall density of desert tortoises in critical habitat and desert wildlife management areas in the Western Mojave Recovery Unit is approximately 12.2 subadults and adults per square mile (Service 2009b). The 95 percent confidence intervals for this estimate range from approximately 7.8 to 22.1 subadults and adults per square mile (Service 2009b).

By multiplying the approximate area of desert tortoise habitat in the Western Mojave Recovery Unit by the average density of 12.2 subadult and adult desert tortoises per square mile, we estimate that approximately 125,855 subadult and adult desert tortoises may reside within the recovery unit. To estimate the area of desert tortoise habitat within the Western Mojave Recovery Unit, we used a model developed by Nussear et al. (2009), which is based on desert tortoise habitat across the range of the species. This model does not consider habitat loss, fragmentation, or degradation associated with human-caused effects; however, it provides a reference point relative to the amount of desert tortoise habitat. We then used urbanized area cartographic boundary files (Census Bureau 2000) to estimate the portion of modeled habitat that has been lost as a result of human activities; this model depicts areas where human activity has caused substantial ground disturbance (i.e., urbanization, agriculture, and military training). By subtracting the amount of area no longer considered suitable habitat [i.e., the census data] from the area of potential habitat (i.e., from the Nussear et al. model), we estimate that the Western Mojave Recovery Unit contains approximately 10,316 square miles of potential desert tortoise habitat (Waln 2010). The Nussear et al. model does not account for habitat disturbance and variations caused by other factors that affect the density of desert tortoises (e.g., highways). Additionally, the data from line distance sampling were collected in DWMAs, where,

presumably, the density of desert tortoises is greater than in other portions of the Western Mojave Recovery Unit; however, we applied this density for the entire Western Mojave Recovery Unit. Consequently, we recognize that the number of subadult and adult desert tortoises in the Western Mojave Recovery Unit we provide here may be an overestimate.

We estimate that approximately 56,544 to 130,992 juvenile desert tortoises (i.e., smaller than 180 millimeters) reside within the Western Mojave Recovery Unit. This estimate is based on the assumption that 125,855 subadults and adults occur in the Western Mojave Recovery Unit and that 31 to 51 percent of the total population of desert tortoises in the recovery unit are juveniles (Turner et al. 1987). Reproductive success and neonate survival is likely to vary significantly across the range of the desert tortoise. The Turner et al. (1987) study was conducted in the eastern Mojave Desert where we would expect to detect lower mortality for juvenile desert tortoises because of fewer threats. In addition, juvenile desert tortoises are extremely difficult to detect because of their small size and cryptic nature. Consequently, the result of the Turner et al. (1987) study may not adequately represent demography throughout the Western Mojave Recovery unit and the number of juvenile desert tortoises could be greater than or less than our estimates.

The biological opinion for the Bureau's amendment to the California Desert Conservation Area Plan for the western Mojave Desert (Service 2006b) contains a description of the results of studies done on permanent plots in the Western Mojave Recovery Unit. Based on this work, the Desert Tortoise Recovery Plan Assessment Committee (Tracy et al. 2004) concluded that the population densities of adult desert tortoises in the Western Mojave Recovery Unit exhibited a significant downward trend ($P < 0.0001$) from approximately 1975 through 2000. Some of the permanent study plots are located outside of the DWMAs; therefore, the trends within and outside of DWMAs may not be precisely the same. However, data from the permanent study plots provide the only long-term assessment of the status of the desert tortoise in this area.

ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For the purposes of this biological opinion, we consider the action area to include all areas of the 4,613-acre project site and its necessary components as described in the Description of the Proposed Action section of this biological opinion, the privately owned parcels adjacent to and protruding into the project area (NAP areas; see URS 2010a), the 3,617-acre solar development exclusion area, a 2,617-foot buffer from the project boundary, the proposed desert tortoise translocation control site (control site), the proposed translocation areas, all contiguous desert tortoise habitat within 1.5 kilometers of the translocation areas receiving desert tortoises from less than 500 meters and all contiguous desert tortoise habitat within 12.6 kilometers of translocation areas receiving desert tortoises from greater than 500 meters away.

We included the 2,617-foot buffer from the project boundary to address adverse effects to desert tortoises whose home ranges overlap the proposed solar facility; the buffer is based on the assumption that the home range of a male desert tortoise is approximately 2 square kilometers (O'Conner et al. 1994, Duda et al. 1999, Harless et al. 2009). We included habitat within 1.5 and 12.6 kilometers of the translocation areas to address the area in which desert tortoises may disperse following translocation. For situations where desert tortoises are translocated less than 500 meters, the buffer is based on the maximum straight-line distance that a male desert tortoise traveled in the first year following translocation (Walde et al. 2008). For situations where desert tortoises are translocated more than 500 meters, the buffer is based on the maximum straight-line distance the majority of male desert tortoises were observed to disperse during the first year after release (Field et al. 2007, Walde et al. 2008). This distance does not include one male that traveled 14 miles after release; we consider this behavior to be anomalous when compared with that of the majority of translocated desert tortoises.

The action area defined for this biological opinion covers approximately 87,767.6 acres and includes 84,626.1 acres of desert tortoise habitat modeled as 0.5 or greater by U.S. Geological Survey (Nussear et al. 2009); 22,702 acres of this total is desert tortoise critical habitat. The northeast corner of the Ord-Rodman DWMA comprises 25,893.84 acres of the action area and contains 9,402 acres identified as the Ord-Rodman DWMA translocation area. The Pisgah ACEC translocation area is adjacent to the east side of the project site, and includes 604 acres of the Pisgah Crater ACEC. The linkage translocation area includes 576 acres and is located directly north of the project boundary and does not include the area north of NAP 1. All of the identified translocation areas are composed entirely of desert tortoise habitat modeled as 0.5 or greater by U.S. Geological Survey. The control site covers 6,929 acres located northwest of the project site and adjacent to the west edge of the Cady Mountain Wilderness Study Area.

Past Consultations in the Action Area

On December 21, 1990, the Service issued a biological opinion for the Kern River and Mojave Pipeline projects (1-5-87-F-36R, Service 1990). The biological opinion anticipated that pipeline installation would kill or injure 15 desert tortoises along the Mojave River portion of the line in addition to harassing 120 desert tortoises and eliminating 16 nests. For the operation and maintenance of the pipeline, the biological opinion anticipated the harm or mortality of five desert tortoises and the harassment of ten desert tortoises. A portion of the Mojave Pipeline crosses the Calico facility action area. In total, 38 desert tortoises were killed during the construction of these 2 pipelines (Circle Mountain Biological Consultants 1996).

On August 12, 1991, the Service issued a biological opinion to the Bureau for expansion of the existing Hector Mine (1-6-91-F-40, Service 1991a). This biological opinion anticipated the harassment, as a result of moving them from harm's way, of 10 desert tortoises during construction and operation, the mortality of 1 desert tortoise from expansion and operation of the facility, and the loss of 174 acres of desert tortoise habitat.

On October 8, 1992, the Service issued a biological opinion to the Bureau for construction and operation of a disposal and storage facility for dry, treated, and stabilized hazardous waste materials (1-6-92-F-57, Service 1992b). This biological opinion anticipated the harassment, as a result of moving them from harm's way, of 15 desert tortoises during construction and operation, the mortality of 2 desert tortoises during construction, and the mortality of 1 desert tortoise every 2 years as a result of operation of the project facility. Although this proposed project was authorized, the facility was never constructed.

On October 29, 1992, the Service issued a biological opinion to the Bureau for the construction and operation of a boron mine and processing plant (1-6-92-F-54, Service 1992c). This biological opinion anticipated the harassment, as a result of moving them from harm's way, of 30 desert tortoises during construction and operation, the mortality of 3 desert tortoises during the construction of the facility, and the mortality of 1 desert tortoise every 2 years as a result of operation of the project.

On November 28, 1995, the Service issued a biological opinion to the Bureau for the maintenance and repair of Southern California Gas Company's pipeline system in the California deserts (1-8-95-F-28, Service 1995b). This biological opinion anticipated the mortality of two desert tortoises per year as a result of maintenance activities including travel on all associated access roads. A portion of the pipeline system passes through the action area considered in this biological opinion.

On August 15, 1997, the Service issued a biological opinion to the Bureau for the issuance of a temporary use permit to the County of San Bernardino to construct and operate a waste disposal transfer station in Newberry Springs (1-8-97-F-35, Service 1997). This biological opinion anticipated the harassment, as a result of moving them from harm's way of all the desert tortoises found within the 5-acre parcel, and the mortality of 2 desert tortoises as a result of construction and operation of the facility.

On March 7, 2002, the Service issued a biological opinion to the U.S. Marine Corps for base wide operations and training on the Air Ground Combat Center in Twentynine Palms (1-8-99-F-41, Service 2002). Since the issuance of this biological opinion, the Marine Corps generally reports the mortality of two or three desert tortoises per year. Given the nature of training activities, some desert tortoises that are killed are likely not observed. Only the northwestern corner of the installation is within the action area for this biological opinion; this area of the Air Ground Combat Center includes extensive lava flows. We do not have specific information about desert tortoises in this area or whether the Marine Corps' activities have resulted in mortalities there.

On June 30, 2003, the Service issued a biological opinion to the Bureau regarding the effects of the designation of routes of travel in the western Mojave Desert on the desert tortoise and its critical habitat (1-8-03-F-21, Service 2003). As a result of the proposed action, the Bureau designated routes of travel on public lands as open, closed, or limited to vehicular use. The proposed action resulted in a reduction in the mileage of open routes on public lands;

additionally, any route that was not designated as open was considered to be an unauthorized route. The Service concluded that the Bureau's designation of routes of travel was not likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat. Although the Service did not estimate the number of desert tortoises that could be killed or injured by the project because of the large size of the action area and the patchy distribution of desert tortoises, it required the Bureau to contact the Service to determine if re-initiation was necessary if more than five desert tortoises were found dead or injured in a 12-month period.

On January 9, 2006, the Service issued a biological opinion to the Bureau regarding the effects of a proposed amendment to the California Desert Conservation Area Plan for the western Mojave Desert on the desert tortoise and its critical habitat (1-8-03-F-08, Service 2006b). In this case, the Bureau's proposed action was a substantial revision of the California Desert Conservation Area Plan, with the fundamental goal of adopting numerous management prescriptions that were intended to promote the recovery of the desert tortoise. These prescriptions addressed grazing, land use classification, recreation, and numerous other elements of the Bureau's management of the western Mojave Desert, including a minor revision of the route network considered in the consultation discussed in the previous paragraph. The Service concluded that the Bureau's amendment of the California Desert Conservation Area Plan for the western Mojave Desert was not likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat because the vast majority of changes addressed in the amendment reduced the intensity of use and were protective of the desert tortoise.

The Service also issued a biological opinion to the Federal Highway Administration for the development of a materials site near the transfer station mentioned previously in this section. The Service concluded that the development of the approximately 88-acre site was not likely to jeopardize the continued existence of the desert tortoise and was likely to result in the injury or mortality of few, if, any, desert tortoises.

In aggregate, the number of desert tortoises that we anticipated would likely be killed or injured by the actions proposed in the aforementioned biological opinions comprises a relatively small portion of the desert tortoises in the action area. Furthermore, several of the biological opinions analyzed the effects of actions that extended over action areas many times the size of the action area being considered in this consultation. Therefore, the mortality associated with these larger actions would not occur or has not occurred entirely within the action area for the Calico project. Consequently, we conclude that the mortality associated with these biological opinions has not substantially affected the environmental baseline of the desert tortoise within the current action area.

Habitat Characteristics of the Action Area

The proposed Calico project site, control site, and translocation sites are located entirely on land managed by the Bureau. The NAP areas (URS 2010b) adjacent to and protruding into the project site are privately owned by multiple landowners, but contain the same habitat characteristics as the project site. We summarized the information in the remainder of the

Environmental Baseline section from the revised biological assessment, supplemental biological assessment, supplement #5 to the biological assessment, and the California Energy Commission's supplemental staff assessment (URS 2010a, URS 2010b, URS 2010d, CEC 2010a).

Habitat within the project site consists primarily of Mojave creosote bush scrub (4,372 acres) and desert saltbush scrub (242 acres). Additional plant communities detected on the project site include catclaw acacia thorn scrub, smoke tree woodland, and big galleta shrub-steppe. The Cady Mountains provide a source of sediments that are transported by fluvial processes onto the project site and redistributed by wind, particularly on the southeastern part of the project site (CEC 2010a). Based on geographic information system (GIS) analysis, Tessera estimated vegetation coverage on the remainder of the action area to be 95 percent Mojave creosote bush scrub with 5 percent saltbush scrub and 5 percent big galleta dune habitat (Miller 2010a).

Both the proposed control area and the Ord-Rodman DWMA have historically supported cattle grazing. The vegetation in the control area, northwest of the project site, shows effects of varying levels of grazing. However, the Bureau does not anticipate authorizing any future grazing in this area (URS 2010b, Chavez 2010). A portion of the Ord-Rodman DWMA still supports grazing within the Ord Mountain Cattle Allotment. This allotment includes approximately 154,948 acres, of which 117,363 acres are within the DWMA (Fesnock 2010b). In addition to cattle grazing, other factors that have affected the habitat within the action area include off-road vehicle use, non-native species, the indirect effects of Interstate 40, a utility corridor, and the BNSF railroad (URS 2010a, URS 2010b).

Status of the Desert Tortoise in the Action Area

From March 29 to April 15, 2010, URS Corporation conducted desert tortoise surveys over an 8,230-acre area, which included the 4,613-acre project site (URS 2010a). URS performed additional surveys in the proposed translocation and control areas to determine suitability, collecting habitat data during desert tortoise surveys. All of these surveys followed the Service's pre-project survey protocol (Service 2010d). During the 2010 surveys on the 4,613-acre project site, URS located 6 subadult and adult desert tortoises, 4 juvenile desert tortoises, and 122 burrows, with the greatest density of sign in the northern portion of the project site. URS detected 12 subadult and adult desert tortoises in the Pisgah ACEC translocation area, and 79 subadult and adult desert tortoises within a 3,616-acre area surveyed north of the project site, which contains the Linkage translocation area (URS 2010e).

The following table depicts the estimated numbers of desert tortoises in the action area. Because of the wide confidence interval in this estimate and the inherent difficulties in developing an accurate estimate, we will assume that the actual project site population may be as high as 29 subadult and adult desert tortoises. We have selected this more conservative approach because it will provide a more robust analysis and identify any potential issues associated with the proposed translocation strategy.

Location	Estimated Density and Number of Desert Tortoises (subadults and adults)	Source of Information
Project site	- 29	2010 survey results (URS 2010d)
Linkage translocation area and its dispersal buffer	8.4 per square kilometer 115	(Miller 2010b, 2010d)
Pisgah ACEC translocation area and its dispersal buffer	7.4 per square kilometer 130	2010 survey results (Miller 2010b, 2010d)
Ord-Rodman DWMA within the action area	8.2 per square kilometer 859	range wide monitoring in conducted in 2007; the density of desert tortoises in the Ord-Rodman DWMA (Service 2009b)
Action area outside of the project boundary, Linkage and Pisgah ACEC translocation areas and their 1.5-kilometer dispersal buffers, and the Ord-Rodman DWMA	4.7 per square kilometer 945	range wide monitoring in conducted in 2007; the density of desert tortoises in the Western Mojave Recovery Unit (Service 2009b)
Total Number of Desert Tortoises in the Action Area	2,078	

Juvenile desert tortoises are extremely difficult to detect because of their small size and cryptic nature. Based on a 4-year study, Turner et al. (1987) determined that juveniles accounted for 31.1 to 51.1 percent of the overall population. Reproductive success and neonate survival is likely to vary substantially across the range of the desert tortoise. Consequently, the demography of desert tortoises on Calico project site may differ from the results of the Turner study. Therefore, as we estimated with the subadults and adults, we have used the upper end of the range to will provide a more robust analysis and identify any potential problems associated with the proposed translocation strategy. Therefore, using estimated numbers for subadult and adult desert tortoises, we estimate the action area may support 2,172 juveniles and the 4,613-acre project site may support 30 juvenile desert tortoises.

Using the average number of eggs that a reproductive female produces in a given year (5.8 eggs; Turner et al. 1986 in Service 1994), we estimate that each reproductive female on the project site could produce 5.8 eggs in a given year. Using our population estimates and assuming a 1:1 sex ratio, we estimate that the project site and action area may contain as many as 15 and 1,039 reproductive females, respectively. These individuals could produce approximately 87 and 6,026

eggs in a given year in the project site and action area, respectively. For the project site, fewer eggs are likely to be present at any given time because the territories of some of the female desert tortoises likely extend outside of the Calico project boundary and individuals may establish nests in these areas. In addition, at the time the project site is cleared, not all of the reproductive females may have deposited their eggs for the season, because not all females will lay their eggs at the same time.

Tessera performed additional protocol surveys on the control and translocation sites. In spring 2010, URS surveyed the Pisagah ACEC translocation area, the Linkage translocation area, the control area and 3,170 acres of the Ord-Rodman DWMA translocation area. URS will conduct surveys for the remainder of the Ord-Rodman DWMA translocation area in spring 2011. The following table includes our estimates of the number of desert tortoises that likely occur in the translocation sites. We used the densities discussed above and the area of the translocation sites and control sites to derive this estimate. We did not anticipate that the proposed action will adversely affect desert tortoise nests in the translocation and control areas; therefore we will not provide estimates for eggs for these areas.

Translocation Area	Subadults and Adults	Juveniles	Total
Pisgah ACEC	18	19	37
Linkage	20	21	41
Ord-Rodman	300	314	614
Control Site	132	138	270

Two additional construction areas outside of the project footprint include the underground water pipeline and transmission line to the Pisgah substation. The associated ground disturbance with each component is 4.5 and 12.9 acres, respectively. Because of the small size of the work sites and the uncertainty associated with estimating the numbers of desert tortoises and their eggs, we have not included estimates for these areas. If desert tortoises or eggs are present in these areas, the numbers would be so low that the overall estimate for the project site would easily encompass any animals or eggs likely to occur on these two sites.

We emphasize that, although our estimate of the number of subadult and adult desert tortoises, juveniles, and eggs on the project site and within action area is based on the best scientific and commercial data, as required by the implementing regulations for section 7(a)(2) (50 Code of Federal Regulations 402.14(g)(8)), these numbers represent only an estimate; the overall number of animals and eggs on site may be different. We recognize that the survey data used for these estimates represents a single point in time and the number of individuals in these areas may change by the onset of construction. For example, some desert tortoises may leave or die. Alternatively, the number of desert tortoises present on the site may increase by the time construction commences. For example, one or more desert tortoises may not have been detected during the initial survey; other desert tortoises may have moved on to the site since the time of the surveys. Finally, desert tortoises may have emerged from a nest on the site; this scenario could increase the overall number of individuals; for example, if a clutch of seven eggs (i.e., the number of eggs in a clutch that would be considered large) hatched, this increase would be much

more than we would expect from individuals moving on to the site. However, because we have selected to consider the high range for our estimates for the population sizes, we expect that we have a reasonably accurate baseline for analysis.

EFFECTS OF THE ACTION

In the previous section of this biological opinion, we derived our estimates of the numbers of juvenile, subadult, and adult desert tortoises and eggs that are likely present in the action area from the pre-project survey data and published literature. These sources constitute the best available information. Consequently, we have used the estimates of the numbers of juvenile, subadult, and adult desert tortoises and eggs from the Environmental Baseline in the following analysis. Because of the desert tortoise's cryptic coloration, fossorial habits, and relatively small size, we recognize that not all individuals that are injured or killed during construction, operations, and maintenance will be detected by monitors and workers and reported to us. Juvenile desert tortoises and eggs will be even more difficult to detect, because they are even smaller and, in the case of eggs, always hidden from sight. Lastly, scavengers may find the carcass before monitors or workers and remove it or dismember it to the extent that the cause of death may not be determinable.

Effects of the Translocation Strategy

The primary effects of the proposed action on desert tortoises will result from the capture and translocation of desert tortoises prior to ground disturbance associated with the proposed construction activities. We anticipate that Tessera will capture and translocate all subadult and adult desert tortoises from the fenced project areas, and any other portion of the action area, that are in harm's way due to project-related activities. Because of the difficulty in locating juvenile desert tortoises, Tessera may not find all juveniles on site and thus may move some but not all juvenile desert tortoises from the project site. Tessera will move all desert tortoises to the translocation area nearest its point of capture.

Based on the current survey estimates that cover the Calico Solar project site, we estimate that Tessera will translocate 29 subadult and adult desert tortoises into the identified translocation areas. Tessera will move all desert tortoises located within 500 meters of the northern portion of the project boundary into the Linkage translocation area. Tessera proposed to move 2 desert tortoises located within 500 meters of the Pisgah ACEC translocation area into this receptor site. Based on the estimated density of this area, we anticipate that this receptor site cannot accommodate any additional desert tortoises without exceeding the 30 percent increase in density established as a minimization measure. Therefore, we base our analysis on the assumption that Tessera will translocate the remainder of the desert tortoises found on the project site to the Ord-Rodman DWMA translocation area. Based on the results of the project site surveys in 2010, we do not anticipate that clearance surveys will find desert tortoises in the southern portion of Phase 2; however, if clearance surveys locate any individuals, Tessera will move them to the Ord-Rodman DWMA.

Tessera has proposed numerous measures to minimize injury or mortality of desert tortoises and ensure success of the translocation effort. Although Tessera will install desert tortoise exclusion fencing around the project prior to commencement of construction, we cannot predict exactly how many desert tortoises it will remove from the project site and other related work areas. This is because prior to the fencing and clearance of the project site, desert tortoise numbers may increase or decrease as individuals move throughout the landscape, are born and die. However, based on current surveys, we estimate that Tessera will capture and translocate no more than 29 subadult and adult desert tortoises from the Calico Solar site. Project site surveys from spring 2010 indicate that highest density of subadult and adult desert tortoises were located in the northern portion of the project site and action area. Therefore, we anticipate that Tessera will move most desert tortoises less than 500 meters into the Linkage translocation area. We estimate that the project site contains approximately 30 juvenile desert tortoises and reproductive females on the project site collectively produce approximately 87 eggs per year. However, because of the difficulty in finding desert tortoise eggs and juvenile desert tortoises, we anticipate that Tessera will translocate few, if any, eggs or juveniles from the project site. Effects to juvenile desert tortoises and eggs that are missed on the project site are discussed later in this section.

To measure the effectiveness of translocation, Tessera will monitor desert tortoises in the recipient sites and a control site. The number of desert tortoises that Tessera monitored in a given recipient site will be equal to the number of desert tortoises translocated to that site. The number of desert tortoises that Tessera monitors in the control site will equal the total number of desert tortoises translocated. Monitoring will require the capture, handling, and attachment of transmitters to all monitored individuals. Based on the population estimate for the Calico project site, we anticipate that Tessera will capture, handle, and transmitter 29 resident subadult and adult desert tortoises in the recipient sites and 29 subadult and adult desert tortoises in the control site. We have addressed the effects of capturing, handling, and attaching transmitters to these animals later in our analysis. To minimize the potential adverse effects of disease, Tessera will perform visual health assessments and ELISA testing for all desert tortoises that it locates during protocol level surveys of the recipient and control sites regardless of whether these individuals are included in the population to be monitored. Because Tessera will use experienced biologists, authorized by the Service, to perform health assessments and blood collection, we do not anticipate that these activities will result in injury or mortality of individuals.

Translocation has the potential to increase the prevalence of diseases, such as upper respiratory tract disease, in a resident population. Tessera will conduct visual health assessments on all the desert tortoises that will be translocated. For desert tortoises moved greater than 500 meters, Tessera will also collect blood to test for antibodies to the pathogens that cause upper respiratory tract disease. Tessera will not release desert tortoises in the recipient sites prior to the receipt of the disease test results and Service approval of the desert tortoise disposition plan. While waiting for disease test results, Tessera will quarantine desert tortoises on the project site within their associated construction phase (i.e., *in situ* quarantine) within temporary or permanent desert tortoise exclusion fencing. Tessera will hold juvenile desert tortoises in quarantine pens while awaiting disease test results. For Phase 1a, Tessera will quarantine any desert tortoises found above ground during clearance surveys in quarantine pens outside of Phase 1a and within the

project site until they can be tested for disease and permanently translocated. We address the effects of the quarantine and blood collection on desert tortoises below.

Tessera will conduct health assessments on all resident and control desert tortoises that are handled and fitted with transmitters. This will include the collection of a blood sample for all the desert tortoises in the Ord-Rodman translocation area and the control site. The Linkage translocation area will only receive visual health assessment for resident and translocated individuals.

The prevalence and distribution of disease in the translocation areas will affect the number of desert tortoises that the recipient sites can accommodate. To assess the prevalence of disease, Tessera will handle, conduct visual health assessments, and collect blood samples for ELISA testing on desert tortoises within the Ord-Rodman DWMA translocation. To determine whether the translocation area is below the 5 percent disease prevalence threshold, established in the description of the proposed action, with a sufficient level of confidence (i.e., 95 percent), we estimate that Tessera may have to handle and draw blood from as many as 105 desert tortoises (Averill-Murray 2010). To further reduce the potential for disease transmission, Tessera will not translocate desert tortoises within 6 kilometers of any resident desert tortoises showing signs of disease or with a blood test result indicating that the individual is seropositive.

Tessera will collect blood, for disease testing, from all desert tortoises that it will move greater than 500 meters from their point of collection to their point of release. All desert tortoises fitted with transmitters in the control site, and a sample of desert tortoises in the Ord-Rodman DWMA translocation. Some potential exists that handling and drawing blood from desert tortoises for disease tests may cause elevated levels of stress that may render these animals more susceptible to disease or dehydration from loss of fluids. Because Tessera will use experienced biologists, approved by the Service, Bureau, CEC, and CDFG, and approved handling techniques, collected desert tortoises are unlikely to experience substantially elevated stress levels during handling and blood collection and, we do not expect any injury or mortality to result from handling or blood collection. Furthermore, the use of disease testing and quarantine procedures will reduce the potential for disease spread due to translocation.

In addition, stress associated with handling and movement or due to density dependent effects could exacerbate the threat of increased disease prevalence if translocated individuals with subclinical upper respiratory tract disease or other diseases begin to exhibit clinical signs of disease. This conversion of translocated desert tortoises from a non-contagious to a contagious state may increase the potential for infection in the resident population above pre-translocation levels.

We cannot reasonably predict the increase in disease prevalence within the resident population that may occur due to translocation. However, the following mitigating circumstances are likely to reduce the magnitude of this threat: 1) Tessera will use experienced biologists and approved handling techniques that are unlikely to result in substantially elevated stress levels that can make translocated animals more susceptible to disease or make them convert from a non-

contagious to contagious state; 2) Tessera will conduct thorough health assessments using qualified biologists to identify any visual signs of disease for desert tortoises being moved less than 500 meters to reduce the potential of introducing disease into the resident population; 3) Tessera will collect blood and perform additional disease tests (i.e., ELISA testing) for all desert tortoises that it moves greater than 500 meters per the recommendation of the Desert Tortoise Recovery Office (Service 2010e) to reduce the potential of introducing disease into the resident population; 4) The desert tortoises on the project site are currently part of a continuous population with the resident populations in the Linkage translocation area where the majority of desert tortoise will be moved and are likely to share similar pathogens and immunities; 5) Tessera will not translocate any animal that either has clinical signs of disease or tests ELISA-positive to reduce the potential of introducing disease into the resident population; 6) Tessera will buffer any resident individual showing signs of disease in the Ord-Rodman DWMA translocation area by 6 kilometers; and 4) density-dependent stress is unlikely to occur for the reasons discussed later in our analysis.

Although the measures proposed by the Bureau and the other mitigating circumstances described above are substantial barriers to disease spread, the potential for post-translocation disease transmission remains. Specifically, the Bureau is not proposing to perform pre-translocation surveys to determine disease prevalence in areas into which translocated animals may move following release in the translocation areas. Additionally, the Bureau is not proposing to establish sufficiently large buffers around diseased resident animals to account for the movement of translocated desert tortoises that is likely to occur after their release (see discussion of post-translocation movement distance later in this section). Without consideration of post-translocation dispersal in analysis of resident disease prevalence at translocation sites, some potential exists that dispersing desert tortoises may move into areas where they may contract diseases from resident animals. In addition, the buffer proposed by the Bureau to reduce the potential of placing translocated animals in close proximity to diseased resident animals is not sufficient to account for some long-range movements that we are likely to see after release of translocated individuals.

Because ELISA testing can result in false positive results (i.e., an animal may test positive even though it is not a carrier of the disease), the potential exists for removal of healthy individuals from the translocated population due to concern over disease. These individuals would not be released into the wild and would no longer contribute to the population. In addition, removal of these animals may reduce the resistance of the population to disease outbreaks because they may carry immunities that could buffer the population against an outbreak that results in high mortality of animals that are not immune. Because Tessera would coordinate with the Service and perform follow-up testing of ELISA-positive individuals, the potential for removing false-positive individuals from the translocated population is low. We expect that, of the 29 subadults and adults and any juveniles to be translocated more than 500 meters, only a small subset are likely to test positive for upper respiratory tract disease. Of these positive desert tortoises, an even smaller subset would test positive on a second ELISA screening. Consequently, we conclude that few desert tortoises will be incorrectly removed from the population due to false positive results.

Translocating desert tortoises may also adversely affect resident desert tortoises within the translocation area due to local increases in population density. The density of resident desert tortoises observed in translocation sites during surveys will determine the number of desert tortoises translocated into the Pisgah ACEC and Ord-Rodman translocation areas. The 2010 survey data indicated that the density of the Pisgah ACEC translocation area was 19.16 sub adult and adult desert tortoises per square mile (Miller 2010c), already greater than 30 percent above 5.0 subadult and adult desert tortoises per square kilometer (12.95 per square mile); therefore, no desert tortoises will be translocated into this area. For the Ord-Rodman DWMA translocation area, Tessera will ensure that the post-translocation density is not more than 30 percent above 8.2 subadult and adult desert tortoises per square kilometer (21.2 per square mile). The number of desert tortoises translocated into the Linkage translocation area will not be restricted based on the density of desert tortoises in this area this area will only be used for desert tortoises moved less than 500 meters. We anticipate that the biological benefits (e.g., remaining within the individual's anticipated home range where burrow locations, resources, and other neighboring desert tortoises are familiar) of moving these individual desert tortoises less than 500 meters is greater than any negative effects that could result from a slight increase in the density in the Linkage translocation area.

Increased densities may result in an increased spread of upper respiratory tract disease, an increased incidence of aggressive interactions between individuals, and an increased incidence of predation that may not have occurred in the absence of translocation. Saethre et al. (2003) evaluated the effects of density on desert tortoises in nine semi-natural enclosures at the Desert Tortoise Conservation Center in Nevada. The enclosures housed from approximately 289 to 2,890 desert tortoises per square mile. Saethre et al. (2003) observed a greater incidence of fighting during the first year of the experiment but did not detect any trends in body condition index, reproduction, or presence of the symptoms of upper respiratory tract disease among the enclosures. Body condition index and reproduction are important indicators of how translocation may affect resident desert tortoises; generally, stress suppresses body condition index and reproduction in desert tortoises. This study did not draw any conclusions regarding density-dependent effects on predation of desert tortoises. Additionally, as discussed previously in this section, desert tortoises tend to move substantial distances from the release sites; this behavior reduces the likelihood of overcrowding in smaller areas.

We anticipate that density-dependent effects on resident populations are likely to be minor for the following reasons: 1) Tessera will perform health assessments on all desert tortoises prior to translocation thus decreasing the potential of moving an individual with poor health into the area; 2) a threshold for density for the Ord-Rodman translocation site has been set so as not to exceed 30 percent of the current estimated densities for each area; 3) translocation will result in a dispersed release of individuals; 4) the translocation areas are not a confined space, so released individuals would be able to disperse into other areas; and 5) density limits at which adverse effects were observed in previous studies are significantly greater than the post-translocation densities that are likely to be in the action area. In addition, Tessera will perform health assessments on the translocated and recipient desert tortoises wearing transmitters during monitoring, which could provide the opportunity for adaptive management, should an

unanticipated effect be observed. Adaptive management could include actions like predator control, removal of desert tortoises showing clinical signs of disease, removal of some translocated animals to new translocation areas to reduce densities, or other measures. However, specific adaptive management measures have not been identified for our evaluation, so we cannot predict their effectiveness in this biological opinion.

Based on these density requirements and the resident population sizes that were estimated for the translocation areas in the Environmental Baseline Section of this biological opinion and the density estimates determined from surveys in 2010, the Ord-Rodman DWMA translocation area should accommodate 90 translocated desert tortoises in total (subadult, adult, and juvenile desert tortoises combined). The Linkage translocation area will accommodate the limited number of individual desert tortoises moved less than 500 meters into the 3,617-acre translocation area. Although this is sufficient to facilitate translocation of the upper end of the 95 percent confidence interval for the project site population estimate (i.e., 29 subadult and adult desert tortoises) and all of juvenile desert tortoises estimated, the proposed areas may not be sufficient to support all project site desert tortoises if the level of disease determined to be present in the translocation areas is above 5 percent or if the establishment of buffers around diseased individuals restricts the number of desert tortoises that the translocation area can accommodate. Consequently, we anticipate that Tessera could have to expand the boundaries of its translocation areas in some locations. Because we cannot predict if or how these expansions would occur, we are not analyzing this contingency in our biological opinion. Expansion of the translocation areas would necessitate re-initiation of consultation.

The proposed translocation strategy and the best available information regarding translocation site densities and project site population size indicate that Tessera's translocation strategy will accommodate more than 90 desert tortoises in the Ord-Rodman DWMA and Linkage translocation areas. Consequently, we anticipate that these areas will accommodate all of the desert tortoises that Tessera will clear from the project site. However, disease prevalence in the Ord-Rodman DWMA translocation area may prevent the translocation of desert tortoises to this recipient area. If project site clearance surveys locate a number of desert tortoises greater than the translocation areas can accommodate due to density or disease constraints, Tessera will need to identify additional areas for translocation, and this would constitute a change in the project description requiring re-initiation of consultation.

For Phase 1a, Tessera will use quarantine pens to hold desert tortoises located above ground during clearance surveys and other desert tortoises that emerge from hibernation during the winter. In addition, Tessera may use quarantine pens in other phases of project construction to hold individual desert tortoises while waiting for disease test results. Tessera will construct all quarantine pens following the specifications of the desert tortoise translocation plan (URS 2010f). The quarantine pens will be 20 by 20 meters, and a veterinarian-approved plan will guide care of the desert tortoises during quarantine. Maintaining the desert tortoises within quarantine pens could affect desert tortoises by increasing their vulnerability to exposure, stress, dehydration, inadequate food resources, and increased predation. Because Tessera will regularly monitor the desert tortoises and provide care based on a veterinarian approved plan, and the

desert tortoises will be held for a limited amount of time, we anticipate that the quarantined individuals are unlikely to experience from exposure, stress, dehydration, or inadequate nutrition. However, the potential exist that predators or poachers could target desert tortoises in the quarantine pens. Tessera will monitor and reduce these threats through regular observations of the quarantined individuals as identified in the proposed construction of Phase 1a and the desert tortoise translocation plan.

Once it receives test results, Tessera will translocate all desert tortoises identified as healthy to the nearest available translocation site. Restricting the desert tortoises to within the phased project elements could affect desert tortoises by increasing their vulnerability to exposure, stress, dehydration, and inadequate food resources. Because Tessera will allow the desert tortoise to wander freely within the area, we anticipate that desert tortoises will be within their individual home ranges where the potential for stress would be relatively low and animals could find adequate shelter and nutrition.

Following release, we cannot predict the movement patterns that all translocated animals are likely to exhibit. Desert tortoises translocated shorter distances (i.e., less than 500 meters) are not likely to move as far following release as desert tortoises moved longer distances. Walde et al. (2008) found that maximum straight-line dispersal distance for male desert tortoises was approximately 1.5 kilometers in the first year following translocation. For desert tortoises translocated greater than 500 meters, mean straight-line dispersal distances of adult translocated desert tortoises (males and females) reported by Nussear (2004, Figures 2 and 4) were approximately 1, 1.5, 1.8, 3.5, and 6 kilometers. Walde et al. (2008) reported mean straight-line dispersal distances of adult translocated desert tortoises using 2 experimental treatments as 2.6 and 4.2 kilometers for males and 1.5 and 2.3 kilometers for females. Maximum straight-line dispersal distances for translocated male desert tortoises ranged from 6.2 to 23 kilometers in the first year following translocation (Field et al. 2007, Walde et al. 2008). Maximum straight-line dispersal distances for translocated males at each site reported in these studies varied from 6.2 kilometers (Field et al. 2007) to 7.3, 7.4, 11.3, 11.6, and 12.6 kilometers (Walde et al. 2008).

Translocated populations can also expand the area they occupy in the first year following translocation (e.g., from 3.9 to 6.9 square miles at a Nevada site; from 0.2 to 10.3 square miles at a Utah site). The degree to which these animals expand the area they use depends on whether the translocated animals are released into typical or atypical habitat; that is, if the translocation area supports habitat that is similar to that of the source area, desert tortoises are likely to move less (Nussear 2004). Translocated animals appear to reduce movement distances following their first post-translocation hibernation to a level that is not significantly different from resident populations (Field et al. 2007, Nussear 2004). As time increases from the date of translocation, most desert tortoises change their movement patterns from dispersed, random patterns to more constrained patterns, which indicate an adoption of a new home range (Nussear 2004).

We cannot predict the direction that translocated animals are likely to move. In some studies, translocated desert tortoises have exhibited a tendency to orient toward the location of their capture and attempt to move in that direction (Berry 1986), but in other instances, no discernible

homing tendency has been observed in translocated animals (Field et al. 2007). Information specific to short-distance translocations indicates that at least some individuals will attempt to return to their former home ranges after release (Stitt et al. 2003, Rakestraw 1997).

Based on this information, at least a portion of the translocated animals are likely to make extensive, long-distance movements during the first year following translocation, and the area that the translocated population occupies is likely to increase. We anticipate that the desert tortoises moved greater than 500 meters will likely make the largest movements since they have been moved the greatest distance. Based on the maximum straight-line dispersal distances discussed above, which constitute the best available scientific and commercial data at this time, we anticipate that some of the desert tortoises translocated long distances (greater than 500 meters) may disperse up to approximately 12.6 kilometers from the point of release in first year following translocation. We consider the 23-kilometer dispersal distance identified above to represent an outlier since only one male desert tortoise moved this far. Because female desert tortoises were found to move shorter distances than males following translocation (Field et al. 2007, Walde et al. 2008), the 12.6-kilometer distance captures the maximum straight-line dispersal distance of translocated females as well. We anticipate that most of the translocated individuals moved into the Ord-Rodman DWMA translocation area are likely to make long distance movements that are not typical of normal desert tortoise movement patterns.

Based on the distribution of desert tortoises in the Pisgah Valley portion of the action area, we anticipate that Tesseria will translocate the majority of the animals found on the Calico facility site less than 500 meters into the Linkage translocation site. We anticipate that these individuals are likely to move much shorter distances and remain within the maximum straight-line dispersal distance observed for male desert tortoises (1.5 kilometers) discussed above for short-distance translocations. Some of the translocated desert tortoises, especially those moved into the Linkage translocation area, are likely to attempt to return to the project site, where they would encounter the project site fence and either turn around or walk the fence line. Because the action area for this project includes buffers that encompass all the contiguous desert tortoise habitat extending outside the translocation areas based on the maximum straight-line dispersal distances predicted for desert tortoises to move following translocation, we anticipate that all translocated animals, including those that make long-distance movements, will remain in the action area. Following the first hibernation period after translocation, individuals are likely to reduce movement distances and establish new home ranges.

In one study, the majority of the dispersal movement away from the release site occurred during the first 2 weeks after translocation (Field et al. 2007). During this time and over the period prior to home range establishment, desert tortoises may experience higher potential for mortality because they are moving great distances through unfamiliar territory and are less likely to have established cover sites for protection. Desert tortoises that make long-distance movements following translocation can travel for 5 to 10 days and average 671.5 yards per day (Berry 1986). Studies have documented various sources of mortality for translocated individuals, including predation, exposure, fire, disease, crushing by cattle, and flooding (Nussear 2004, Field et al. 2007, Berry 1986, U.S. Army 2009, 2010). Of these, predation appears to be the primary source

of mortality in most translocation studies (Nussear 2004, Field et al. 2007, U.S. Army 2009, 2010). Based on the description of the action area in the Environmental Baseline section of this biological opinion, the potential exists for all six sources of mortality within the action area. However, fire is likely to be localized and highly dependent on the abundance of non-native grasses and other weeds. In addition to these threats, the potential exists for desert tortoises to be killed on roads during the period when translocated individuals are seeking new home range locations.

Tessera has selected translocation areas in desert tortoise habitat that should serve as suitable recipient sites for these animals based on habitat suitability, proximity to home ranges of the translocated animals, and density of the resident population. It has proposed numerous protective measures in its translocation plan that are likely to reduce the potential for mortality of translocated individuals. Tessera will fence the perimeter road around the project site, and require all project associated personnel to follow a 25-mile-per-hour speed limit, reducing the likelihood of mortality along the road. Tessera has selected translocation areas within the Ord-Rodman DWMA that are a great distance from heavily traveled roads, and outside of the active grazing allotment, further reducing the likelihood for mortality. The length of monitoring will provide for some form of adaptive management to occur in association with the translocation. However, adaptive management measures are not available for our evaluation, so we cannot predict their effectiveness in this biological opinion.

Studies have documented mortality rates of 0, 15, 21, and 21.4 percent of translocated animals in other areas (Nussear 2004, Cook et al. 1978 in Nussear 2004, Field et al 2007). Nussear (2004) found that mortality among translocated animals was not statistically different from mortality observed in resident populations. This study did not compare mortality rates in resident populations to those in control groups; therefore, we cannot determine if the translocation caused increased mortality rates in the resident population. In addition, Esque et al. (2010) found that mortality rates in resident (29 of 140 desert tortoises; 20.7 percent mortality), control (28 of 149 desert tortoises; 18.8 percent mortality), and translocated populations did not differ statistically and concluded that the translocation was not the cause of the observed mortality. With the exception of the Esque et al. (2010) study, none of the studies cited in this paragraph used controls to compare mortality rates in resident and translocated populations to the mortality rate experienced in populations not affected by translocation.

Based on the information that we have gathered and considering the uncertainty of site-specific applicability, we estimate that translocated, resident, and control desert tortoises are likely to experience mortality rates of approximately equal proportions due to predation, exposure, fire, disease, crushing by vehicles, and flooding. We conclude that mortality rates in the resident and translocated populations are unlikely to be elevated above levels that these populations would experience in the absence of translocation, based on the information provided in Esque et al. (2010). Therefore, we do not anticipate this mortality will be the result of translocation and, consequently, we anticipate that few, if any, eggs, juveniles, subadults, or adults will die or be injured as a result of translocation. The monitoring of a nearby control population will assist us in determining whether this prediction is realized.

Based largely on one study (Esque et al. 2010), we anticipate that the mortality of translocated and resident desert tortoises is not likely to differ significantly from that of control animals. Such a finding indicates that we do not anticipate desert tortoises are likely to die after being translocated or having translocated animals released within their home ranges specifically because of the translocation. Because the best available data indicate that mortality is unlikely, we are not anticipating any take associated with post-translocation effects to resident or translocated animals; because we are not anticipating any incidental mortality of that nature, this biological opinion cannot contain any reasonable and prudent measures or terms and conditions that address such post-translocation mortality. However, because the survival of the translocated and resident animals (with regard to any effects of translocation) is key to the success of the Bureau's and Tessera's efforts to minimize the effects of the proposed action on the desert tortoise, being able to address any unforeseen effects of translocation is a key component of ensuring that unforeseen effects of the proposed action are not likely to jeopardize the continued existence of the desert tortoise. Consequently, we have added language to the Re-initiation Notice section of this biological opinion to specifically identify when new information reveals effects of the action that may affect the desert tortoise in a manner or to an extent that was not previously considered (i.e., 50 Code of Federal Regulations 402.16(b)).

We have estimated that few, if any, desert tortoises may be moved during installation of the water pipeline and the portion of the transmission line outside the project site. Because disturbance areas on these projects are small, movement of desert tortoises immediately outside of the work areas is not likely to remove them from their current home ranges. Consequently, any desert tortoise moved from the water pipeline and transmission line will likely continue to occupy familiar territory and use known shelter sites and is unlikely to experience post-translocation mortality associated with displacement from the work areas. Furthermore, following completion of construction, desert tortoises occupying these areas will be able to move through and return to the area.

Juvenile desert tortoises will comprise a portion of the overall mortality predicted above for resident and translocated populations. We anticipate that translocated juveniles are likely to experience a higher mortality rate than translocated subadult and adult desert tortoises, simply because smaller and younger desert tortoises in general have higher mortality rates than larger individuals. Because we anticipate that Tessera will move few, if any, juvenile desert tortoises, we do not anticipate large numbers of juveniles will die as a result of translocation because surveyors will miss most of these individuals during clearance surveys of the project site. We have discussed juvenile mortality during construction below. Because juvenile desert tortoises experience high mortality rates under natural circumstances, many of these individuals would likely not survive to reproductive age in the absence of project-related effects.

Effects of Post-translocation Monitoring

Based on the description of the post-translocation monitoring program and our estimate of the number of desert tortoises on the project site, we anticipate that Tessera will transmitter no more than 87 subadult and adult desert tortoises to facilitate monitoring of the translocated, resident,

and control populations. This will require desert tortoises to carry transmitters and will require periodic monitoring and handling of individuals to perform visual health assessments and assess body condition. Some potential exists that handling of desert tortoises may cause elevated levels of stress that may render these animals more susceptible to disease or dehydration from loss of fluids. Because Tessera will use experienced biologists, approved by the Service, Bureau, CEC and CDFG, and approved handling techniques, these desert tortoises are unlikely to experience substantially elevated stress levels resulting from handling and monitoring activities. Any effects would be limited to Subadult and adult desert tortoises because Tessera has not proposed to monitor juveniles.

Effects of Construction of Calico Facility

Prior to construction, Tessera will permanently fence the entire Calico project facility with desert tortoise exclusion fence. On the portions of the project where Tessera must maintain a perimeter road to allow for public access, it will install the desert tortoise exclusion fence on the outside of the road to prevent desert tortoises from accessing the road or project site. Tessera will install cattle guards at every location where the perimeter road intersects a Bureau open route or county road. Tessera will clear all desert tortoises from the 4,613-acre site prior to ground disturbance. During construction of the permanent and temporary exclusion fencing, Tessera will perform pre-activity clearance surveys and employ monitors to move desert tortoises out of harm's way if they re-enter work areas. For these reasons, we anticipate that construction, including construction access, is unlikely to kill subadult and adult desert tortoises. Some potential always exists that surveyors may miss an individual during clearance surveys and construction monitoring. We cannot predict how many subadult and adult desert tortoises that clearance surveys and construction monitoring would miss. However, because Tessera will use qualified biologists, authorized by the Service for clearance surveys, we anticipate the number is likely to be small.

In addition, construction of the transmission line and water pipeline has the potential to result in injury or mortality of individuals on work sites. We have estimated that work areas associated with these activities would have few if any desert tortoises. However, Tessera would conduct clearance surveys and move desert tortoises out of harm's way if they are found on work sites. In addition, Tessera would use experienced biologists to monitor work activities on these project sites and move any desert tortoises out of harm's way that they may have missed during clearance surveys. For these reasons, we anticipate that construction activities associated with the water pipeline and transmission line are unlikely to kill subadult and adult desert tortoises. Some potential always exists that surveyors may miss an individual during clearance surveys and construction monitoring. We cannot predict how many subadult and adult desert tortoises that clearance surveys and construction monitoring would miss. However, because Tessera will use qualified biologists, authorized by the Service for clearance surveys, we anticipate the number is likely to be small.

In addition, juvenile desert tortoises and eggs are difficult to detect during clearance surveys and construction monitoring; therefore, the potential exists that surveyors may miss most of them and

they are likely to remain in the work areas during construction. Construction activities are likely to kill juvenile desert tortoises and eggs that surveyors miss during clearance surveys or project monitoring. Because Tessera will not be grading the entire project site and vegetation will remain between SunCatcher rows, some small portion of juveniles and nests may survive through construction in the remaining habitat. Based on the estimates in the Environmental Baseline section of this biological opinion, we estimate that up to 30 juvenile desert tortoises may reside on site. We anticipate that construction may kill or injure these individuals, if they are not translocated from the site. Because juvenile desert tortoises experience high mortality rates under natural circumstances, many of these individuals would be unlikely to survive to reproductive age in the absence of project-related effects.

We have estimated that the reproductive females on the project site collectively produce as many as 87 eggs per year. However, we cannot estimate how many of these eggs that construction activities would destroy because this number covers the entire year's production and we do not know what portion of this total will be present on site when construction activities are occurring on a given phase. We anticipate that construction may kill or injure up to 87 desert tortoise eggs on the project site, if they are not translocated; the eggs are unlikely to be translocated, given their small size and the fact that they are underground and, therefore, difficult to detect.

Because clearance surveys are likely to miss juvenile desert tortoises, we anticipate that many, if not all desert tortoises associated with work areas on the water pipeline and transmission line would be injured or killed. However, we have estimated that few, if any, juvenile desert tortoises would occupy these work areas because the areas would be small and are unlikely to support more than a few juveniles. Because juvenile desert tortoises experience high mortality rates under natural circumstances, many of these individuals would be unlikely survive to reproductive age in the absence of project-related effects.

Effects of Operations and Maintenance Activities

As discussed above, rows of vegetation may provide for the survival of a small portion of juvenile desert tortoises and nests through construction. Therefore, some potential exists that regular operations and maintenance activities could kill or injure juvenile and newly hatched desert tortoises during the early years of operations. Because Tessera will collapse desert tortoise burrows during clearance surveys, only small areas of vegetation will remain, vegetation is likely to be mowed, and maintenance activities will be fairly continuous; we do not expect that a population of desert tortoises will subsist within the Calico project site. We cannot predict the number of juvenile desert tortoises that will survive through construction and will be killed during operations and maintenance; however, based on our estimate of the numbers of juveniles and eggs on the site, we anticipate that up to 30 juveniles and 87 eggs may be killed or injured due to operation and maintenance, if they are not captured and translocated. We have discussed additional indirect effects associated with operation and maintenance of this facility in the Miscellaneous Effects section of this biological opinion.

Tessera plans to conduct most operation and maintenance activities inside the desert tortoise exclusion fence over the 30-year life of this project anticipated by the Bureau; however, Tessera may perform some ground-disturbing maintenance activities outside of fenced areas while conducting perimeter fence repair. Activities associated with fence repair have the potential to injure or kill desert tortoises primarily as a result of vehicle strikes, as workers travel to and from work sites outside of the fenced areas, by workers walking the perimeter of the fence during inspections, and during repair of the perimeter fence. Additionally, if the perimeter fence is damaged, desert tortoises that enter the facility could be killed or injured during routine activities. Because Tessera plans to conduct all maintenance activities inside the desert tortoise exclusion fence and has proposed several protective measures such as limiting speed limits to 25 miles per hour, and regular inspections of the perimeter fence, we anticipate few desert tortoises will be affected.

Effects of Restoration/Reclamation Activities for Construction and Operation

Restoration activities within the permanently fenced project area are unlikely to result in injury or mortality of desert tortoises because few if any desert tortoises are likely to occupy the project site after clearance surveys and construction activities. Tessera will restore temporarily disturbed areas associated with the water pipeline and the portion of the transmission line extending outside of the project boundary. Tessera will implement restoration as identified in the restoration plan. The restoration plan will include measures to insure that no activities injure or kill desert tortoises (e.g., pre-activity clearance surveys, use of desert tortoise monitors, and use of tortoise exclusion fencing). Consequently, restoration activities will injure or kill few, if any, desert tortoises.

Effects of Accessing Worksites

The primary access road to the Calico facility will be almost entirely within the fenced project facility. Tessera will install desert tortoise exclusion fencing on the short segment of the main access road that is outside the project facility. Tessera will fence any temporary access roads that it uses while the main access road is constructed and the project facility is fenced. Tessera will also install desert tortoise exclusion fencing on the outside edge of the project perimeter boundary fence. Because Tessera will fence all of the roads associated with worksite access, it is unlikely that access to the Calico facility will result in injury or mortality of desert tortoises. In the event that the fence is damaged, a small number of desert tortoises could enter the roadway and be injured or killed. Because all workers will undergo an education program about desert tortoises and will be limiting travel speeds to 25 miles per hour, workers may be less likely to strike desert tortoises than a casual user. We cannot predict how many individuals will be killed or injured because of the variables involved, such as weather conditions, the nature and condition of the road, and activity patterns of desert tortoises at the time the roads are being used; however we expect this number to be small.

Effects of Partial Loss of Desert Tortoise Home Ranges

Construction of the Calico facility and the surrounding desert tortoise exclusion fence will result in the partial loss of desert tortoise home ranges. Construction of the Calico facility could exclude desert tortoises that occupy the area adjacent to the proposed site from a portion of their home range. There are approximately 6,100 acres of land within a 797-meter buffer of the proposed project. We used the 797-meter buffer as an index for the home range of desert tortoises based on a male desert tortoise home range of approximately 2 square kilometers (O'Conner et al. 1994; Duda et al. 1999; Harless et al. 2009). Using the same desert tortoise density used for the action area outside of the project boundary, 4.7 subadult and adult desert tortoises per square kilometer (12.2 per square mile), determined by the 2007 range wide monitoring to represent the density of desert tortoises in the Western Mojave Recovery Unit (Service 2009b), we estimate that approximately 116 subadult and adult desert tortoises may have home ranges within the area surrounding the project site and an additional 121 juvenile desert tortoises may occupy this area. Displacement of these desert tortoises from a portion of their home range could have similar effects to those described for translocation such as elevated levels of stress that may render these animals more susceptible to disease or dehydration from loss of fluid, increase density of animals and associated effects, and increased exposure to disease. Because desert tortoise home ranges vary greatly in size, we cannot determine how many desert tortoises will actually lose part of their home range as a result of the construction of the Calico facility; however, we expect that the number of desert tortoises that will be injured or killed due to the partial loss of home range to be low because we expect these individuals will all maintain some portion of their home range, be in familiar surroundings, and will be able to expand their territory into contiguous habitat.

Effects of Loss of Habitat

Construction of the Calico facility would cause the long-term loss of a maximum of 4,613 acres of desert tortoise habitat. Tessera estimates that 30 percent of the solar field would be undisturbed, as the SunCatcher solar arrays will allow for approximately 40 to 80 feet of vegetation to be left generally undisturbed between alternate rows of SunCatchers. However, Tessera may trim vegetation to approximately 3 inches throughout the disturbed portions of the project site (i.e., portions of the project site not included in the alternating rows of undisturbed vegetation) to provide for reduced shading and fire hazards.

The Calico facility will remove approximately 4,613 acres of desert tortoise habitat for a period of more than 30 years. Tessera will restore the habitat in the fenced project area when the project is decommissioned, but it is unlikely to function as suitable desert tortoise habitat for many years following facility closure. We cannot predict the amount of time required to return areas of long-term disturbance to suitable desert tortoise habitat because of numerous variables associated with restoration success. The following table provides details on the habitat loss associated with the Calico Solar facility.

Permanent Disturbance¹	Acres
Calico facility - Solar Field	3,175.9
Calico facility – rows between SunCatchers	1,361.1 ²
Temporary Disturbance	
Water pipeline	4.5
Transmission line (between Calico and Pisgah substation)	12.9
Temporary Functional Loss (through isolation)	
N.A.P. 2	429
Lands adjacent to N.A.P. 2	245
Total	5,228.4

¹Bellows 2010; ²Potential temporary loss of habitat depending on the extent of mowing activities

Outside the project site, the groundwater pipeline and transmission line will result in the temporary loss of desert tortoise habitat that Tessera will restore following completion of construction of these linear features. The underwater pipeline will result in 4.5 acres of disturbance, while the transmission line will affect 12.9 acres.

In the southern portion of the project, the NAP 2 and the adjacent project exclusion areas include 674 acres of desert tortoise habitat (Miller 2010c). This area will have a severely restricted connection to other desert tortoise habitat in the surrounding area due to development of the project facilities. Although project activities would not disturb this portion of desert tortoise habitat, it will have little, if any, future value to desert tortoises.

These disturbances are likely to result in desert tortoise habitat loss that will persist for various periods. Following extensive disturbance and compaction, Mojave Desert soils can take between 92 and 124 years to recover in the absence of active restoration (Webb 2002). In addition, recovery of plant cover and biomass in the Mojave Desert can require 50 to 300 years in the absence of restoration efforts (Lovich and Bainbridge 1999). Although active restoration, including decompaction, seeding, and planting, can reduce the time required to restore desert ecosystems, success is varied and dependent on numerous variables. Based on this information, 3,175.9 acres, currently characterized as desert tortoise habitat are likely to be permanently lost or unsuitable as habitat for several decades following decommissioning of the facilities and commencement of restoration work. However, we anticipate that the mowed and un-mowed areas within the project facility will respond more quickly to restoration efforts and may provide desert tortoise habitat value more rapidly than the rest of the project site. Because active restoration will occur on the linear components, we estimate that Tessera will restore 17.4 acres of desert tortoise habitat prior to decommissioning of the facility. If additional development

does not occur within NAP 2, we anticipate that following the decommissioning of the facility, the 674 acres that were functionally lost to desert tortoise will be again be available for their use.

We estimate that the Western Mojave Recovery Unit contains approximately 10,316 square miles of potential desert tortoise habitat (Waln 2010, see Status of the Desert Tortoise - Status and Trends of Desert Tortoise Populations section of this biological opinion). The habitat that would be disturbed on a long-term basis (i.e., approximately 7.21 square miles) constitutes approximately 0.07 percent of the remaining modeled habitat in the Western Mojave Recovery Unit. Although this percentage does not constitute a numerically substantial portion of the recovery unit, we do not have the ability to place a numerical value on edge effects that the proposed action may cause or that occurs in the recovery unit as a whole. Given that, this low percentage of the recovery unit that would be lost likely underestimates the biological value of the area.

Miscellaneous Effects

The noise produced by the Calico facility during operation has the potential to affect desert tortoises in the areas surrounding the project site. Operation of the Calico facility will generate noise of 63 to 74 adjusted decibel, equivalent sound level (dBA Leq), primarily from the operation of the SunCatchers. This increase of constant noise within the valley could disturb desert tortoises or discourage them from using the area near the project site. Tessera will install all of the SunCatchers greater than 100 feet from the project boundary, thereby reducing the amount of noise extending outside of the project to below 74 dBA Leq. Rabin et al. (2006) illustrated that some species can successfully adapt to ambient sound levels of 90-118 dB decibel sound pressure level (SPL). Limited data exists on the effect of noise on desert tortoises, Bowels et al. (1999 in Service 2008c) demonstrated that desert tortoises hearing is relatively sensitive (mean = 34 dB SPL) and that few physiological effects were observed with short-term exposures to jet air craft noise and sonic booms. However, we cannot extrapolate this result to determine the effects of chronic noise exposure over a desert tortoise's life-time (Service 2008c). Chronic elevated noise levels could lead to elevated levels of stress that may render these animals more susceptible to disease or dehydration from loss of fluid, decreased reproduction, or shifts in home ranges leading to increased density-dependent effects. We cannot reasonably predict the magnitude of the effect that noise will have on desert tortoises in the surrounding area; however, we expect the number of desert tortoises that will be injured or killed will be low based on the ability of other species to adapt to noise disturbance, the level of noise and any effects will attenuate as distance from the project site increases, and the fact that desert tortoises do not appear to rely on auditory cues for their survival. In addition, some portions of the population of desert tortoises occupying this site are likely affected to some extent already by noise generated by Interstate 40 and the railroad that runs through the project site.

Indirect effects associated with construction, operation and maintenance of the Calico facility may injure or kill desert tortoises. These effects include increased predation by common ravens and modification of the habitat and diet of desert tortoises due to the spread of non-native plant species.

Common ravens are attracted to human activity in the desert. Securing trash and reducing other subsidies will likely reduce the attractiveness of the area to predators. We expect that common ravens are still likely to frequent the site because it would offer perching, roosting, and nesting sites within the solar field. Consequently, the proposed facility has the potential to attract common ravens to some degree and lead to further predation on desert tortoises in the vicinity; the proposed measures to monitor use of the site by common ravens and to attempt to remove any subsidies are likely to reduce the attractiveness of the facility to these birds to some degree.

Tessera will contribute funds to the regional common raven management program to address the indirect and cumulative impacts associated with project development that facilitate the expansion of common raven populations into desert tortoise habitat. The one-time fee of \$105 per acre of disturbance to 4,613 acres of desert tortoise habitat impacted by this project will fund the project's portion of the regional raven management plan for the 30-year life of the project anticipated by the Bureau. Tessera's funding of the regional management plan for common ravens will contribute to a large-scale management action that the Service and other agencies are undertaking to control and manage common ravens on a regional basis. We expect that implementation of this plan will promote the recovery of the desert tortoise by reducing the number of common ravens that prey on desert tortoises and by implementing actions that are likely to reduce subsidies for common ravens on a regional basis.

Non-native plant species currently occur on the proposed project site and are likely to occur in other portions of the action area at varying densities. Within the action area, numerous features serve as vectors for infestation by non-native plant species (e.g., BNSF railroad, Interstate 40). However, construction and operation of the Calico facility has the potential to increase the distribution and abundance of non-native species within the action area due to ground-disturbing activities that favor the establishment of non-native species. In addition, access to the project site and other project features by construction and operations personnel is likely to increase the volume and distribution of non-native seed carried into the action area. The increased abundance in non-native species associated with this project may result in an increased fire risk, which may result in future habitat loss. Tessera has proposed numerous measures to address control of non-native plant species within the project site and a surrounding 250-meter (820-foot) buffer and to minimize the potential for fire in and around the facility, including an onsite fire response team. We cannot reasonably predict the increase in non-native species abundance that this project will create within the action area, but we anticipate that the program proposed by Tessera will be reasonably effective in reducing the increase in some species. However, we anticipate that the amount of disturbance created by the 4,613-acre solar field and the activities in the action area will result in an increase in the abundance of non-native species and thereby elevate the risk of fire, which, in turn, heightens the risk of future habitat loss. This could reduce the number and distribution of desert tortoises within the action area.

The loss of habitat associated with this project has the potential to reduce the connectivity between desert tortoise populations. Maintaining a functional corridor through the Pisgah Valley is critical for the long term recovery of the desert tortoise. Specifically, Pisgah Valley is an important part of the desert tortoise habitat which connects desert wildlife management areas in

the West Mojave Recovery Unit (e.g., Ord-Rodman) with the Mojave National Preserve. The valley serves as an important corridor connecting not only the critical habitat units (Ord-Rodman, Superior-Cronese, and Ivanpah), but it also provides one of the few pathways connecting the Western Mojave and Eastern Mojave recovery units, as well as the Western Mojave and Colorado Desert recovery units, as described in the draft revised desert tortoise recovery plan (Service 2008c). However, based on the currently reduced size of the project site, the establishment of the solar development exclusion area, and the amount of remaining desert tortoise habitat in this area, we conclude that the reduced project design will not eliminate connectivity in this area.

Effects of Compensation

The Bureau is proposing to require compensation for loss of habitat associated with this project at a ratio of 1 to 1 per the provisions of the West Mojave Plan (Bureau et al. 2005). The Bureau will use compensation funds for enhancement of desert tortoise habitat within the Ord-Rodman DWMA. Specific habitat enhancement and rehabilitation actions will include all or some of the following: construction of a fence along State Route 247 from Barstow to Lucerne Valley to prevent desert tortoises from entering the roadway, with the primary focus area being Barstow to Stoddard Ridge; installation of barrier fencing along Camp Rock road to prevent unauthorized vehicular use; signing open routes within Ord-Rodman DWMA and visually obscuring routes that have been administratively closed but continue to be used by vehicles; and installation of desert tortoise fencing along Interstate 40. The Bureau may also use these funds to support head start programs for desert tortoises developed in coordination with the Service's Desert Tortoise Recovery Office.

In addition to the Bureau's compensation strategy, the CEC and CDFG will collect additional compensation for loss of desert tortoise habitat north of the BNSF railroad at a ratio of 2 to 1 with an additional ratio of 4 to 1 compensation collected for 369 acres of this habitat. CDFG will use these compensation funds to acquire mitigation lands with potential to contribute to desert tortoise habitat connectivity and linkages between critical habitat, known populations of desert tortoise, and other preserve lands inside the Western Mojave Recovery Unit. To satisfy this mitigation condition, Tessera will acquire, protect, and transfer to a management entity no fewer than 10,302 acres of desert tortoise habitat and provide funding for the initial improvement and long-term maintenance and management of the acquired lands (CEC 2010b). All acquisition and habitat enhancements or rehabilitation actions associated with the Bureau's and the State of California's compensation requirements will be performed within the Western Mojave Recovery Unit.

Although the purchase, protection, and enhancement of suitable desert tortoise habitat through these compensation requirements will not create new habitat within the recovery unit, it will result in an increase in the amount of desert tortoise habitat managed for the conservation of this species in protected areas. These actions will increase the quality of habitat for desert tortoises and reduce the number of existing threats and mortality sources in the areas where they occur. Because habitat enhancement actions and land acquisition would occur in DWMAs or other

locations that are important to desert tortoise conservation, the proposed compensation requirements would provide a positive recovery benefit to desert tortoises.

Implementation of some habitat enhancement actions has the potential to result in adverse effects to the desert tortoise. Because we do not have specific information regarding future habitat enhancement and rehabilitation projects, we cannot perform a detailed analysis of these actions. The Bureau has indicated that these actions would likely require future project-specific authorizations prior to implementation. Consequently, we will address their potential adverse effects to the desert tortoise in future project-specific, section 7 consultations.

Summary

Prior to construction of the Calico facility, we estimate that Tessera will capture and translocate no more than 29 subadult and adult desert tortoises from the project worksite. We anticipate the size and configuration of the current recipient sites will accommodate all of these animals. However, Tessera may have to identify new translocation areas if it cannot demonstrate compliance with the density and disease thresholds in its translocation plan. Because we cannot predict if or how the translocation strategy might change, these changes would require further analysis and consultation. We anticipate that they will translocate few if any juvenile desert tortoises or desert tortoise eggs. Because they will implement a variety of measures to reduce stress to translocated desert tortoises, we do not anticipate that injury or mortality will result from handling of these animals. Following release of translocated animals, we anticipate that mortality rates in the resident and translocated populations are unlikely to be elevated above normal levels, and that mortality rates will be approximately equal among the translocated, resident, and control desert tortoises.

In addition to the 29 translocated subadult and adult desert tortoises that Tessera will monitor following release, we estimate that it will capture and monitor an additional 29 subadult or adult desert tortoises in the resident and control populations. Furthermore, based on our current estimates, Tessera will collect blood samples from 105 resident desert tortoises located in the Ord-Rodman DWMA translocation area, 29 desert tortoises in the control site, and 29 desert tortoises on the project site. We do not anticipate that placing transmitters on these animals and periodic handling for the purposes of monitoring or collection of blood samples will result in substantial adverse effects because Tessera will use experienced biologists, approved by the Service, and approved handling techniques.

Because Tessera will surround all of its work areas with desert tortoise exclusion fencing, perform clearance surveys on all work areas, and implement numerous measures to prevent injury and mortality of desert tortoises, we anticipate that construction of the Calico project site, including use of access routes, is likely to kill or injure few, if any, subadult and adult desert tortoises. Because of the difficulty detecting and removing them, we estimate that project construction may kill or injure a portion of the 30 juvenile desert tortoises we anticipate to be on site. We also anticipate that project construction will destroy some portion of the 87 desert

tortoise eggs. Given the numerous variables discussed in this section, we cannot predict the precise number of eggs with any certainty.

Following construction, we anticipate that operations and maintenance within the permanently fenced portions of the Calico facility would kill or injure few, if any, subadult and adult desert tortoises and this is only likely to occur in the event that a portion of the exclusion fencing is washed out and a desert tortoise gains access to the site. We anticipate that this occurrence would be rare. Because Tessera will not grade the entire project site, some potential exists for juvenile desert tortoises to survive through construction and for some nests to hatch eggs within the remaining vegetation. Because of the difficulty in detecting juveniles, we estimate that project operations and maintenance will kill or injure all juvenile desert tortoises that survive through construction, and thus will kill or injure a portion of the 30 juveniles we anticipate to be on site. We expect that restoration activities outside of the project site are unlikely to injure or kill desert tortoises because of the numerous protective measures that Tessera will implement. With the exception of activities associated with fence repair, all maintenance activities for the project site will occur within the permanent desert tortoise fencing. Because of the protective measures that Tessera will implement and the nature of the fence repair activities, we anticipate fence maintenance activities will kill or injure few, if any, desert tortoises. Tessera has not identified any specific maintenance activities, other than fence repair after storm events, which will be conducted outside of the desert tortoise fencing; any activities identified in the future are not covered by this biological opinion and may require additional consultation.

Project development will result in 4,613 acres of long-term/permanent disturbance to desert tortoise habitat and a large reduction in the functionality of an additional 674 acres of desert tortoise habitat. Although all disturbed areas will undergo restoration/reclamation work upon decommissioning, it is unlikely to serve as suitable desert tortoise habitat for many years following facility closure. We cannot predict the amount of time required to return areas of long-term disturbance to suitable desert tortoise habitat because of numerous variables associated with restoration success, including the timing and amount of rainfall. We estimate that Tessera will return an additional 17.4 acres of short-term disturbance to suitable desert tortoise habitat by the end of the 40-year project lifespan, and re-open the 674 acres isolated for desert tortoise occupancy following decommissioning.

Construction, operation, and maintenance of the Calico facility have the potential to increase common raven predation on desert tortoises within the action area. In addition, this project is likely to result in an increased abundance of non-native plant species and a subsequent increase in fire frequency within the action area. The measures proposed by Tessera to address these threats will reduce the magnitude of these effects, but some level of adverse effect will likely persist. We cannot reasonably predict the number of desert tortoises that these threats will adversely affect.

The compensation required by the Bureau and the State of California would, to some degree, offset the adverse effects of the proposed solar power facility. All of the actions that would be undertaken as compensation will be consistent with recommendations for recovery of the desert

tortoise. However, the lack of specificity with regard to which actions will be implemented, the uncertainty of success of the actions, and the time lag between implementation of the conservation actions and a substantive effect on recovery of the desert tortoise prohibit us from concluding that the compensation measures would completely offset the adverse effects of the solar facility. Because of the long-term or permanent loss of approximately 4,613 acres of desert tortoise habitat, the project will likely result in a net decrease in desert tortoise habitat.

Areas permanently disturbed by the proposed solar facility and its ancillary features would no longer support reproduction of desert tortoises unless the site closes and habitat restoration is successful. Most of the desert tortoises that currently reside within these areas will likely continue to reproduce after translocation. Consequently, we anticipate that the proposed action will not appreciably diminish the reproductive capacity of the species.

Implementation of the proposed action would not appreciably reduce the number of desert tortoises in the Western Mojave Recovery Unit. Based on the amount of modeled desert tortoise habitat (10,316 square miles) and the average density (12.2 desert tortoises per square mile) that the Service has estimated for this recovery unit, we could estimate that approximately 125,855 subadult and adult desert tortoises occur in the Western Mojave Recovery Unit. Using this estimate and the information and methods described above for estimating the number of juvenile desert tortoises and eggs on the project site, action area, and translocation area, we estimate that the Western Mojave Recovery Unit may contain between 56,544 to 130,992 juvenile desert tortoises at any given time and reproductive females within the Western Mojave Recovery Unit may produce as many as 583,972 desert tortoise eggs over the course of a year. Consequently, we conclude that the number of desert tortoises and eggs that are likely to be lost as a result of the Calico project comprises a relatively small portion of the overall population in the Western Mojave Recovery Unit.

In previous consultations, we estimated the number of desert tortoises found in the desert wildlife management areas and critical habitat by multiplying the average density of animals found in these areas by their total size. For the numbers of desert tortoises outside of those areas, we used a density value of one-tenth of that estimated within desert wildlife management areas and critical habitat, which we multiplied by the estimated area of available desert tortoise habitat. We did not correct for areas that were unsuitable habitat in either case in these past consultation estimates. Because the method of estimating the number of desert tortoises we use in this biological opinion takes into account a conservative estimate of modeled desert tortoise habitat, we used the same average density across all areas of desert tortoise habitat for our estimate. The distribution of the desert tortoise would be reduced by approximately 7.21 square miles, based on the amount of long-term and permanent disturbance associated with the proposed action. This loss comprises approximately 0.07 percent of the modeled habitat in the Western Mojave Recovery Unit. Although this percentage does not constitute a numerically substantial portion of the Western Mojave Recovery Unit, we do not have the ability to place a numerical value on edge effects and fragmentation that the proposed action may cause or that occurs in the recovery unit as a whole. Therefore, even though the percentage of habitat lost is low, the biological effect of the loss could be greater if the actual biological value of the area is greater and has been

underestimated. The Bureau's designation of the area north of the project site and south of the Cady Mountains as a solar exclusion zone is important in reducing habitat fragmentation caused by the proposed action.

Although the effects of this project on desert tortoises are substantial, we do not anticipate that it will result in effects that appreciably reduce the current distribution, numbers, or reproduction of the overall population within the Western Mojave Recovery Unit or range wide. We anticipate that the compensation programs (i.e., one proposed by the Bureau and the other approved by the California Energy Commission) will result in an increase in the amount of habitat that is managed for the conservation of this species and will result in many advances in the implementation of recovery actions. We anticipate that this compensation will offset many adverse effects associated with this project. Taking into consideration the compensation that is proposed and considering the relative scale of the adverse effects in context with our current estimates of the species' status in the Western Mojave Recovery Unit and range wide, we do not anticipate that construction of this project would appreciably reduce our ability to recover the desert tortoise.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Most of the land within the action area is managed by the Bureau. According to the County of San Bernardino, no future projects are reasonably certain to occur on the small amount of private land occurring in the action area. (URS 2010b).

CONCLUSION

After reviewing its status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the desert tortoise. We have reached this conclusion because:

1. Project activities are likely to kill or injure few subadult or adult desert tortoises because Tessera will implement numerous measures to reduce the potential that desert tortoises will occupy project work sites (i.e., clearance surveys, exclusion fencing, translocation, qualified biologists, desert tortoise monitors).
2. The number of desert tortoises injured or killed as a direct result of translocation activities (e.g., blood tests, handling, quarantine, etc.) will likely be small because only highly skilled biologists will perform this work in accordance with techniques approved by the Service.

3. Post-translocation mortality in the translocated or resident populations is unlikely to be elevated above that experienced by desert tortoises not affected by translocation.
4. Tessera will implement numerous measures to reduce the potential for increased predation by common ravens and spread of non-native plant species.
5. Regional management actions are likely to aid in reducing common raven predation of desert tortoises in a portion of the desert tortoise's range.
6. This project would not result in loss of desert tortoise habitat in areas that the Bureau or other agencies have designated for intensive management to achieve conservation of desert tortoises (e.g., desert wildlife management areas, critical habitat, etc.).
7. Compensation requirements through the Bureau and CDFG will result in an increase in the amount of existing habitat that is managed for the conservation of the desert tortoise and will likely lead to restoration of lost or degraded habitat within these areas.

We recognize the loss of individual desert tortoises as a result of this project will contribute to a decrease in the population; however, we anticipate that the proposed compensation will offset this effect to at least some degree, maintain a linkage in the Pisgah Valley, and reduce the overall impact of the Calico project. Furthermore, the land acquisition within the DWMA's and participation in the regional raven management plan support actions identified for the recovery of the species in the recovery plan (Service 1994).

As we noted previously in this biological opinion, the analysis we conduct under section 7(a)(2) of the Endangered Species Act must be conducted in relation to the status of the entire listed taxon. We based the analysis in this biological opinion within the context of the Western Mojave Recovery Unit because of the wide range of the desert tortoise. Because we have determined that the effects of this action would not compromise the integrity of the Western Mojave Recovery Unit or impede the survival or recovery of the desert tortoise in a measurable manner in this portion of its range, we have not extended the analysis of the effects of this proposed action to the remainder of the range of the Mojave population of the desert tortoise.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined

as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of an incidental take statement.

The measures described in this document are non-discretionary. The Bureau has a continuing duty to regulate the activities covered by the incidental take statement in the biological opinion. If the Bureau fails to include the terms and conditions of this incidental take statement as enforceable conditions of its right-of-way grant, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Bureau must report the progress of its action and its impact on the desert tortoise to the Service as specified in the incidental take statement [50 Code of Federal Regulations 402.14(i)(3)].

Translocation of Desert Tortoises

We anticipate that the translocation of approximately 29 subadult and adult desert tortoises from the Calico facility would take, in the form of capture, of all of these individuals. We emphasize that this number is an estimate, based on the best available information. The number of individuals requiring translocation may be somewhat lower; our estimate of the number of desert tortoises that Tessera would translocate from the project site is based on use of the upper limit of the 95 percent confidence range for the project sites population estimate. Consequently, we do not anticipate that Tessera would capture more than 29 subadult and adult desert tortoises for translocation during construction of the project. We do not anticipate that the act of translocating desert tortoises is likely to kill or injure any subadults and adults.

Due to the difficulty in locating juveniles and eggs, we anticipate the capture of few, if any, juvenile desert tortoises and eggs. However, the potential exists that up to 30 juveniles and 87 eggs may be taken through capture if they are found and translocated. We do not anticipate that the act of translocating these individuals will kill or injure any juveniles or eggs.

Because of the small work areas associated with the underground water pipeline and transmission line, we anticipate the translocation of few, if any, desert tortoises or eggs from construction areas for these linear features. Because desert tortoises can move through narrow, linear features quickly, past survey results do not provide a precise estimate of the number of individuals likely to be encountered along these portions of the proposed action. Consequently, we cannot provide an estimate of the number of individuals that may be translocated. We do not anticipate that the act of translocating these individuals will result in injury or mortality.

Disease Testing

We anticipate that as many as 163 subadult and adult desert tortoises (i.e., 29, 29, and 105 in the project site, control, and Ord-Rodman translocation areas, respectively) will be taken, in the form of capture and harassment, when Tessera handles desert tortoises and collects blood to assess

disease prevalence. Although such an invasive procedure presents some likelihood that individuals could be injured or killed, we do not anticipate that blood collection will result in the injury or mortality of any individuals because Tessera would use experienced biologists, authorized by the Service, and approved handling techniques.

Post-translocation Monitoring

We anticipate the take, in the form of capture, of approximately 58 desert tortoises for monitoring of the resident and control populations. Although these animals and the 29 desert tortoises from the translocated population would be captured multiple times over the course of the post-translocation monitoring effort, we do not anticipate injury or mortality of these individuals as a result of the post-translocation monitoring.

Construction of Calico Solar Facility

Because Tessera will fence all of its work areas with desert tortoise exclusion fencing, perform clearance surveys on all work areas, and implement numerous measures to prevent adverse effects to desert tortoises, we anticipate that construction of the Calico project site, including use of access routes, is likely to take few, if any, subadult and adult desert tortoises in the form of mortality or injury.

If juvenile desert tortoises and eggs are not detected and translocated from the project site prior to construction, we anticipate that construction of the Calico facility is likely to take, in the form of mortality or injury, up to 30 juvenile desert tortoises and 87 eggs. Locating juvenile desert tortoises and eggs is difficult because of their small size; consequently, we anticipate that many of these individuals are likely to be injured or killed during construction. We anticipate that construction of the water pipeline and transmission line will injure or kill few, if any, desert tortoises.

Operation and Maintenance of Calico Solar Facility

We anticipate that operation and maintenance activities, including site access, within permanently fenced areas are likely to take few desert tortoises. A small portion of the 30 juveniles and 87 eggs estimated to be on the project site could survive construction in the rows of vegetation between the SunCatchers. Because of the difficulty in locating juvenile desert tortoises, we anticipate that all of the remaining juveniles on the project site and any eggs that hatch will be killed or injured at some point during operations and maintenance. Based on the estimated numbers of juvenile desert tortoises and eggs on site, we anticipate that operation and maintenance may injure or kill up to 30 juveniles and 87 eggs.

A limited potential exists that a very small number of desert tortoises may find their way into a fenced area. Most of these individuals are likely to be taken in the form of capture as they are removed to offsite habitat; a small fraction of these individuals may be taken, in the form of

injury or mortality, if they are exposed to adverse weather conditions or crushed by vehicles before they are detected.

All operations and maintenance for the proposed project, except fence repair, will be within the permanent desert tortoise exclusion fence. Any maintenance activities associated with repair of the desert tortoise exclusion fence would kill or injure few, if any, desert tortoises because the need for this action would be localized and infrequent, access to repair sites would require little, if any, off-road travel, and Tessera would implement numerous protective measures to reduce the potential for take. Tessera has not identified any other maintenance activities that it will conduct outside of the desert tortoise fencing; any activities identified in the future are not covered by this biological opinion and will require additional consultation.

Restoration of Temporary Disturbance for the Calico Solar Facility

Restoration of temporary disturbance areas within fenced construction areas is unlikely to result in take of desert tortoises because Tessera will clear all fenced areas of desert tortoises prior to construction of the facilities. Restoration of temporary disturbances that occurs outside of fenced work areas has the potential to kill or injure desert tortoises because the desert tortoises have not been excluded from the restoration area. However, we estimate that Tessera will kill or injure few, if any, desert tortoises during restoration outside of fenced areas because Tessera will implement restoration as identified in its restoration plan and the plan will include measures to insure that all activities do not injure or kill desert tortoises (e.g., pre-activity clearance surveys and use of desert tortoise monitors).

Compensation

All actions associated with the Bureau's compensation requirements will likely require future Bureau authorizations. Consequently, we have provided no incidental take exemptions for these actions in this biological opinion. These actions will require future project-specific consultation if they may affect the desert tortoise or other listed species.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of desert tortoises during the implementation of the Calico Solar project:

1. The Bureau must ensure that desert tortoises do not enter fenced project facilities.
2. The Bureau must ensure that the level of incidental take anticipated in this biological opinion is commensurate with the analysis contained herein.
3. The Bureau must ensure desert tortoises held in quarantine pens while awaiting results from disease testing are not poached by humans or killed by natural predators.

4. The Bureau must ensure that injury and mortality of desert tortoises, missed during construction clearance and monitoring, is minimized during operation of the Calico facility.
5. The Bureau must ensure that the potential for disease transmission with the recipient translocation populations is minimized.
6. The Bureau must ensure that Tessera safeguards that the maximum number of desert tortoises are found during clearance surveys.
7. The Bureau must ensure that translocation does not result in density-dependent effects or disease related effects to the resident or translocated populations.

Because of the complex nature of this incidental take statement, we have attached a summary of the levels of incidental take that would necessitate re-initiation of formal consultation.

Our evaluation of the proposed action includes consideration of the protective measures described in the Description of the Proposed Action section of this biological opinion. Consequently, any changes in these protective measures may constitute a modification of the proposed action that causes an effect to the desert tortoise that was not considered in the biological opinion and require re-initiation of consultation, pursuant to the implementing regulations of the section 7(a)(2) of the Act (50 Code of Federal Regulations 402.16).

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Bureau must comply with the following terms and conditions, which implement the reasonable and prudent measures described in the previous section or make them enforceable conditions of its right-of-way grant and the reporting and monitoring requirements. These conditions are non-discretionary.

1. The following term and condition implements reasonable and prudent measure 1:

The Bureau must ensure that Tessera monitors the integrity of all desert tortoise exclusion fencing and the effectiveness of the cattle guards at keeping desert tortoises out of the project site. The Bureau must ensure that Tessera implements adaptive measures if the cattle guards are found to be ineffective in preventing desert tortoise from accessing the road or if smaller desert tortoises become entrapped in them.

2. The following terms and conditions implement reasonable and prudent measure 2:

- a. To ensure that the measures proposed by the Bureau and Tessera are effective and are being properly implemented, the Bureau must contact the Service immediately if it becomes aware that a desert tortoise has been killed or injured by project activities. At that time, the Bureau must review the circumstances surrounding the incident with the

Service to determine whether additional protective measures are required. Project activities may continue during the review, provided that the proposed protective measures in the project description and any appropriate terms and conditions of this biological opinion have been and continue to be fully implemented. Because we do not expect that capturing and removing desert tortoises from work areas outside of the project site is likely to result in injury or mortality of desert tortoises, we are not establishing a re-initiation criterion or notification requirement for that activity.

- b. If 6 desert tortoises are directly killed or injured as a result of any construction, operation, maintenance, or restoration activities covered by this biological opinion over the life of the Calico project, the Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action. This term and condition also applies to direct mortality and injury of desert tortoises during translocation and post-translocation monitoring on the resident, control, and translocated populations (i.e., due to handling, road kills, or other effects caused by personnel working on the project). However, it does not apply to post-translocation mortality within these populations that is not connected directly to an action required to carry out the translocation and monitoring effort (e.g. predation).
- c. If 2 desert tortoises are directly killed or injured in any 1 year as a result of any construction, operation, maintenance, or restoration activities covered by this biological opinion, the Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action. This term and condition also applies to direct mortality associated handling of desert tortoises during translocation and post-translocation monitoring on the resident, control, and translocated populations (i.e., due to handling, road kills, or other effects caused by personnel working on the project). However, it does not apply to post-translocation mortality within these populations that is not connected directly to an action required to carry out the translocation and monitoring effort (e.g., predation).

3. The following term and condition implements reasonable and prudent measure 4:

If 1 desert tortoise is depredated or poached from a quarantine pen, the Bureau must ensure that Tessera implements additional protective measures in consultation with the Bureau and Service to prevent any additional loss of individuals.

4. The following terms and conditions implement reasonable and prudent measure 5:

- a. The Bureau must ensure that Tessera has an authorized biologist available to handle desert tortoises that may be located on the project site during operations and maintenance. If more than 3 desert tortoises are located within the project area during operation,

Tessera must perform additional full coverage surveys of available habitat within the project area to ensure that all desert tortoises are removed.

- b. If Tessera locates desert tortoises within the rows of vegetation between the SunCatchers during operations, the Bureau must ensure that Tessera consults with the Service as to the appropriate translocation and disposition of the individual.
 - c. If Tessera locates desert tortoise burrows within the rows of vegetation between the SunCatchers during operations, the Bureau must ensure that an authorized biologist visits the project site and conducts surveys to locate any desert tortoises in proximity to the burrow. Once a desert tortoise is located, the Bureau must ensure that Tessera consults with the Service as to the appropriate translocation and disposition of the individual, and the burrow is collapsed in a manner consistent with current Service guidance.
5. The following terms and conditions implement reasonable and prudent measure 6:
- a. The Bureau must ensure that the disease prevalence within the Linkage and Pisgah ACEC translocation areas is less than 5 percent within a 95 percent confidence interval. The disease prevalence must be determined through visual health assessments of the resident population and the desert tortoises in the associated dispersal buffer (those animals within 1.5 kilometers of the translocation area), consistent with dispersal distances for translocations less than 500 meters.
 - b. The Bureau must ensure that Tessera conducts disease sampling of all areas that desert tortoises may move to following translocation to the Ord-Rodman DWMA translocation area (i.e., 12.6-kilometer dispersal buffer).
 - c. The Bureau must ensure that translocated desert tortoises are not placed within 1.5 kilometers of any desert tortoises within the Linkage and Pisgah ACEC translocation areas determined to be positive for disease based on the visual health assessment.
6. The following term and condition implements reasonable and prudent measure 7:
- The Bureau must ensure that two consecutive clearance surveys do not detect any desert tortoises for Tessera to consider the area clear of desert tortoises.
7. The following terms and conditions implement reasonable and prudent measure 8:
- a. If pre-translocation surveys of any translocation area indicate that it cannot accommodate the projected number of desert tortoises from the Calico project under the threshold established in the Description of the Proposed Action section of this biological opinion, the Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16 to address modifications to the translocation plan.

- b. If pre-translocation surveys of the translocation areas indicate a disease prevalence of more than 5 percent or indicate that additional translocation areas will be required to accommodate the disease buffering requirements identified in the Description of the Proposed Action section of this biological opinion, the Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16 to address modifications to the translocation plan.

Because of the complex nature of this incidental take statement, we have attached a summary of the levels of incidental take that would necessitate re-initiation of formal consultation.

REPORTING REQUIREMENTS

Within 60 days of the completion of the proposed action, the Bureau must provide a report to the Service that provides details on the effects of the action on the desert tortoise. The Bureau must also provide an annual report by December 31 of each year during construction of each phase and during the subsequent translocation monitoring. Specifically, these reports must include information on any instances when desert tortoises were killed, injured, or handled; the circumstances of such incidents; and any actions undertaken to prevent similar instances from re-occurring. In addition, these reports should provide detailed information on the results of translocation monitoring to include the following: 1) location of all translocated desert tortoises, 2) mortality rate from each population, 3) statistical analysis of differences in the mortality rates among all three populations, and 4) health status and body condition of all translocated desert tortoises.

We recommend that the Bureau provide us with any recommendations that would facilitate the implementation of the protective measures while maintaining protection of the desert tortoise. We also request that the Bureau provide us with the names of any monitors who assisted the authorized biologist and an evaluation of the experience they gained on the project; the qualifications form on our website (http://www.fws.gov/ventura/sppinfo/protocols/deserttortoise_monitor-qualifications-statement.pdf), filled out for this project, along with any appropriate narrative would provide an appropriate level of information. This information would provide us with additional reference material in the event these individuals are submitted as potential authorized biologists for future projects.

DISPOSITION OF DEAD OR INJURED DESERT TORTOISES

Within 3 days of locating any dead or injured desert tortoises, you must notify the Ventura Fish and Wildlife Office by telephone (805 644-1766) and by facsimile (805 644-3958) or electronic mail. The report must include the date, time, location of the carcass, a photograph, cause of death, if known, and any other pertinent information.

We will advise you on the appropriate means of disposing of the carcass when you contact us.

We may advise you to provide it to a laboratory for analysis. Until we provide information on the disposition of the carcass, you must handle it such that the biological material is preserved in the best possible state for later analysis. If possible, the carcass should be kept on ice or refrigerated (not frozen) until we provide further direction.

Injured desert tortoises must be taken to a qualified veterinarian for treatment. If any injured desert tortoises survive, the Service must be contacted regarding their final disposition.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the Bureau work with Tessera and the Service to determine if the translocated desert tortoises associated with the resident, control, and translocated populations can be used to answer additional research questions related to translocation or desert tortoise biology.
2. We recommend that the Bureau amend the California Desert Conservation Area Plan to prohibit further large-scale development (e.g., solar energy facilities, wind development, etc.) within the Pisgah Valley. We offer this recommendation because the Service has determined that maintaining a functional corridor through the Pisgah Valley is critical for the long term recovery of the desert tortoise. The importance of this corridor is heightened given the need to allow for the shifting distribution of the desert tortoise and the potential adverse effects of climate change (Service 2010f). While re-design of this project has reduced adverse effects to connectivity, given the uncertainty surrounding this issue, and the critical nature of this connection, we believe a conservative approach is warranted.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the Bureau's proposal to issue a right-of-way grant to Tessera for construction of the Calico Solar facility in San Bernardino County, California. Re-initiation of formal consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and: (a) if the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent

not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action (50 Code of Federal Regulations 402.16).

In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) will have lapsed and any further take would be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending re-initiation. If monitoring of translocated and resident desert tortoises indicates a statistically significant elevation in mortality rates above that observed in control populations, this information would constitute new information regarding the effects of the action that may affect desert tortoise in a manner or to an extent not previously considered.

If you have any questions regarding this biological opinion, please contact Ashleigh Blackford of my staff at (805) 644-1766, extension 234.

Attachment

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Appendix 3

Programmatic Agreement

**PROGRAMMATIC AGREEMENT
AMONG THE
BUREAU OF LAND MANAGEMENT-CALIFORNIA,
THE CALIFORNIA ENERGY COMMISSION,
THE TESSERA SOLAR COMPANY,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING THE TESSERA SOLAR – CALICO SOLAR PROJECT, SAN
BERNARDINO COUNTY, CALIFORNIA**

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INTRODUCTION

The purpose of this Programmatic Agreement (Agreement) is to provide the processes whereby the Bureau of Land Management (BLM), in consultation with the California State Historic Preservation Officer (SHPO), Advisory Council on Historic Preservation (ACHP), Indian Tribes and other consulting parties, take into account the effects of the Tessera Solar – Calico Solar Project on historic properties and provide the ACHP a reasonable opportunity to comment as required by Section 106 of the National Historic Preservation Act (Section 106). The California Energy Commission (Energy Commission) intends to use this Agreement to satisfy the requirements of the California Environmental Quality Act.

The BLM, in consultation with the consulting parties to this Agreement, will consider and incorporate within the Section 106 consultation process the performance standards (desired future condition), range of mitigation measures and commitment to mitigate, and monitoring requirements of the Energy Commission’s Staff Assessment for the Tessera Solar Calico Solar Project (Application for Certification 08-AFC-13). The BLM and the Energy Commission will endeavor to make the historic properties treatment and management provisions of this Agreement as it applies to the project as consistent as possible with the objectives and terms of the Staff Assessment within the context of the consultation process required by Section 106.

Government agencies, consulting parties, and the public identified in the scoping and public notification process for the Staff Assessment and Environmental Impact Statement will be advised in the Supplemental Staff Assessment and Final Environmental Impact Statement (FEIS) that historic properties associated with the Tessera Solar – Calico Solar Project will be treated consistent with the mitigation measures or performance standards identified in the Staff Assessment and adopted by the Energy Commission, and consistent with the stipulations of this Agreement. A proposed final draft of this Agreement will be circulated for public comment as an attachment to the FEIS. The Signatories have consulted with the Invited Signatories, Concurring Parties and Tribes on this Agreement, and have taken into consideration the views and comments received regarding the draft Agreement in preparing this final Agreement.

**PROGRAMMATIC AGREEMENT
AMONG THE
BUREAU OF LAND MANAGEMENT-CALIFORNIA,
THE CALIFORNIA ENERGY COMMISSION,
THE TESSERA SOLAR COMPANY,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING THE TESSERA SOLAR – CALICO SOLAR PROJECT, SAN
BERNARDINO COUNTY, CALIFORNIA**

WHEREAS, the Tessera Solar Company (Applicant) has applied for a right of way (ROW) grant on public lands managed by the Bureau of Land Management (BLM) and has submitted a Plan of Development (POD) to construct, operate and maintain a solar energy electrical generating plant (hereinafter referred to as the Calico Solar Project), including construction of solar dish power control units (SunCatchers), a 230 kilovolt (kV) transmission line, a water pipeline, paved arterial roads, unpaved perimeter access and maintenance roads, laydown and staging areas, and support facilities and infrastructure which are more fully described in Appendix D: Project Description and illustrated in Appendix E: Project Maps and Illustrations attached hereto and incorporated by this reference; and

WHEREAS, the BLM has determined that since it requires the issuance of a ROW to the Tessera Solar Company in accordance with the Federal Land Policy and Management Act (FLPMA) (Public Law 940-579; 43 U.S.C 1701), the Project is an Undertaking subject to Section 106 of the National Historic Preservation Act (NHPA), 16 USC 470(f), and its implementing regulations under 36 CFR Part 800 (2004) (Section 106); and

WHEREAS, in August 2005, the United States Congress enacted the Energy Policy Act of 2005 (Public Law 109-58). In Section 211 of that Act, Congress directed that the Secretary of the Interior (the “Secretary”) should, before the end of the 10-year period beginning on the date of enactment of the Act, seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity; and

WHEREAS, by Secretarial Order No. 3285 issued March 11, 2009, the Secretary stated as policy that encouraging the production, development, and delivery of renewable energy is one of the Department of Interior’s (DOI) highest priorities and that agencies and bureaus within the DOI will work collaboratively with each other, and with other federal agencies, departments, states, local communities, and private landowners to encourage the timely and responsible development of renewable energy and associated transmission while protecting and enhancing the Nation’s water, wildlife, and other natural resources; and

WHEREAS, the BLM, in consultation with the California State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP), pursuant to 36 C.F.R. 800.4(b)(2), seek to phase final identification and evaluation of historic properties for the project pursuant to 36 C.F.R. 800.4(b)(2) because the alternatives under consideration consist of large

land areas. In accordance with the requirements of 36 C.F.R. 800.4(b)(2), the BLM is preparing this Agreement to set forth the process for completing phased compliance with Section 106 of the NHPA; and

WHEREAS, the BLM has consulted with the SHPO and the ACHP, pursuant to 36 C.F.R. 800.14(b)(3) and following the procedures outlined at 36 C.F.R. 800.6, and are in the process of considering alternatives for the Project that have the potential to adversely affect historic properties and may reach a decision regarding approval of the ROW for the Project before the effects of the Project's implementation on historic properties have been fully determined, the BLM chooses to continue its assessment of the undertaking's potential adverse effect and resolve any such effect through the implementation of this Agreement; and

WHEREAS, in accordance with regulations at 36 CFR 800.14(b)(3) BLM has notified and invited the ACHP per 36 CFR 800.6(a)(1)(C) to participate in consultation to resolve the potential effects of the Undertaking on Historic Properties, and as per their letter dated April 12, 2010, the ACHP has elected not to participate in this Agreement; and

WHEREAS, the California Energy Commission (Energy Commission) may certify the Project located on both public and private lands pursuant to Section 25519, subsection (c) of California's Warren-Alquist Act of 1974 and, for the purposes of consistency, proposes to manage all historical resources in accordance with the stipulations of this Agreement, and has participated in this consultation and is an Invited Signatory to this Agreement; and

WHEREAS, the BLM has prepared the *Final Environmental Impact Statement Calico Solar Project (August 2010)* and the Energy Commission has prepared the *Supplemental Staff Assessment Calico Solar Project, Application for Certification (08-AFC-13) San Bernardino County (2010)* to identify the Project alternatives for purposes of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and have comparatively examined the relative effects of the alternatives on known historic properties; and

WHEREAS, the Applicant has participated in this consultation per 36 C.F.R. 800.2(c)(4) and, will be the entity to whom the BLM may grant a ROW related to Project activities, and has the responsibility for carrying out the specific terms of this Agreement under the oversight of the BLM, and therefore is an Invited Signatory to this Agreement; and

WHEREAS, pursuant to the special relationship between the Federal government and Indian tribes, and Section 101(d)(6)(B) of the NHPA, 36 C.F.R. 800.2(c)(2)(ii), the American Indian Religious Freedom Act (AIRFA), Executive Order 13175, and Section 3(c) of the Native American Graves Protection and Repatriation Act (NAGPRA), the BLM is responsible for government-to-government consultation with federally recognized Indian Tribes and is the lead federal agency for all Native American consultation and coordination; and

WHEREAS, the BLM has formally notified and invited Federally recognized tribes including the Fort Mojave Indian Tribe, the San Manuel Band of Mission Indians, the Twentynine Palms Band of Mission Indians, and the Chemehuevi Reservation (Tribes) to consult on this Project and

participate in this Agreement as a Concurring Party. BLM has documented its efforts to consult with the Tribes and a summary is provided as an Appendix to this Agreement; and

WHEREAS, through consultation, Tribes have expressed their views and concerns about the importance and sensitivity of specific cultural resources to which they attach religious and cultural significance. Tribes have expressed the connection of these resources to the broader cultural landscape within and near the Project area; and

WHEREAS, the BLM shall continue to consult with the Tribes throughout the implementation of this Agreement regarding the adverse effects to historic properties to which they attach religious and cultural significance. BLM will carry out its responsibilities to consult with Tribes that request such consultation with the further understanding that, notwithstanding any decision by these Tribes to decline concurrence, BLM shall continue to consult with these Tribes throughout the implementation of this Agreement; and

WHEREAS, the California Unions for Reliable Energy has been invited to consult on this undertaking and this Agreement, has been afforded consulting party status pursuant to 36 C.F.R. 800.3(f)(4), and has been invited to be a Concurring Party to this Agreement. The BLM will continue to consult with any consulting party that request such consultation regardless of their decision to concur by signature in this Agreement. BLM shall continue to consult throughout the implementation of this Agreement, however only Consulting Parties that have concurred in this Agreement by signature shall have rights with regard to implementation of the terms of this Agreement; and

WHEREAS, the BLM, in coordination with the Energy Commission, has authorized the Applicant to conduct specific identification efforts for this Project including a review of the existing literature and records, cultural resources surveys, ethnographic studies, and geomorphological studies to identify historic properties that might be located within the APE; and

WHEREAS, the BLM has defined the APE in which the project may directly or indirectly adversely affect historic properties pursuant to the definition of APE at 36 C.F.R. 800.16(d). The basis of the APE is described in greater detail in Section II of this Agreement and Appendix D to this Agreement.

WHEREAS, the Applicant has retained an archaeological consultant to complete all of the investigations necessary to identify and evaluate the National Register of Historic Places (NRHP) eligibility for cultural resources located within the APE for both direct and indirect effects. The consultant has completed a review of the existing historic, archaeological and ethnographic literature and records to ascertain the presence of known and recorded cultural resources in the APE and buffered study area; conducted an intensive field survey for 8,230 acres of land, including all of the lands identified in APE for direct effects for all project alternatives; and completed intensive field surveys for alternatives on lands that are no longer part of the Project. The consultant has also submitted a cultural resources inventory report (*Calico Solar Final Class III Cultural Resources Technical Report*, prepared by URS Corporation, July 2010) that presents the results of identification efforts was submitted to the BLM and Energy

Commission. The BLM has provided the report to the consulting parties and Indian Tribes for review and comment; and

NOW, THEREFORE, the BLM and SHPO (hereinafter “Signatories”) and the Energy Commission and Applicant (hereinafter “Invited Signatories”), agree that the Project shall be implemented in accordance with the following stipulations in order to take into account the adverse effect of the undertaking on historic properties, resolve such adverse effects through the process set forth in this Agreement, and provide the ACHP with a reasonable opportunity to comment in compliance with Section 106.

STIPULATIONS

The BLM shall ensure that the following measures are implemented:

I. DEFINITIONS

The definitions found at 36 C.F.R. 800.16 and in this section apply throughout this Agreement except where another definition is offered in this Agreement.

- a) **Area of Potential Effect.** The APE is defined as the total geographic area or areas within which the Project may directly or indirectly cause alterations in the character or use of historic properties per 36 C.F.R. 800.16(d). The APE is influenced by the scale and nature of an Undertaking and includes those areas which could be affected by a Project prior to, during and after construction.
- b) **Concurring Parties.** Collectively refers to consulting parties with a demonstrated interest in the Project, who agree, through their signature, with the terms of this Agreement. Concurring Parties may propose amendments to this Agreement.
- c) **Cultural Resource.** A cultural resource is an object or definite location of human activity, occupation, use, or significance identifiable through field inventory, historical documentation, or oral evidence. Cultural resources are prehistoric, historic, archaeological, or architectural sites, structures, buildings, places, or objects and locations of traditional cultural or religious importance to specified social and/or culture groups. Cultural resources include the entire spectrum of objects and places, from artifacts to cultural landscapes, without regard to eligibility for inclusion on the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR).
- d) **Consulting Parties.** Collectively refers to the Signatories, Invited Signatories and Concurring Parties who have signed this Agreement.
- e) **Historic Properties.** Properties (cultural resources) that are included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior and per the NRHP eligibility criteria at 36 CFR60.4 and may include any prehistoric or historic district, site, building, structure, traditional cultural property or object. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or

Native Hawaiian organization that meet the NRHP criteria. The term “eligible for inclusion in the NRHP” refers both to properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the NRHP criteria.

- f) **Historical Resources.** Historical resources are cultural resources that meet the criteria for listing on the CRHR as provided at California Code of Regulations Title 14, Chapter 11.5, Section 4850 and may include, but are not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.
- g) **Invited Signatories.** Invited Signatories are parties that have specific responsibilities as defined in this Agreement. Those Invited Signatories who actually sign this Agreement have the same rights with regard to seeking amendment or termination of this Agreement as the Signatory Parties, but whose signatures are not required for execution of the Agreement. Invited Signatories to this Agreement are the Energy Commission and Applicant.
- h) **Lands Administered by the U.S. Department of Interior, Bureau of Land Management (BLM)** means any federal lands under the administrative authority of the BLM.
- i) **Literature Review.** A literature review is one component of a BLM class I inventory, as defined in BLM Manual Guidance 8100.21(A)(1), and is a professionally prepared study that includes a compilation and analysis of all reasonably available cultural resource data and literature, and a management-focused, interpretive, narrative overview, and synthesis of the data. The overview may also define regional research questions and treatment options.
- j) **Records Search.** A records search is one component of a BLM class I inventory and an important element of a literature review. A records search is the process of obtaining existing cultural resource data from published and unpublished documents, BLM cultural resource inventory records, institutional site files, State and national registers, interviews, and other information sources.
- k) **Signatories.** Signatories are parties that have the sole authority to execute, amend or terminate this Agreement. Signatories to this Agreement are the BLM and SHPO.
- l) **Traditional Cultural Property.** A traditional cultural property is defined generally as a property that is important to a living group or community because of its association with cultural practices or beliefs that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. It is a place, such as a traditional gathering area, prayer site, or sacred/ceremonial location, that may figure in important community traditions. These places may or may not contain features, artifacts, or physical evidence, and are usually identified through consultation. A traditional cultural property may be eligible for inclusion in the NRHP and the CRHR.
- m) **Tribes.** The federally recognized Indian Tribes that BLM is consulting with on this undertaking.
- n) **Windshield Survey.** A windshield survey is the driving or walking of surveyors along streets and roads of a community in order to observe and record the buildings, structures, and landscape characteristics seen from those vantage points. A windshield survey is a

method commonly utilized in reconnaissance surveys to identify built-environment resources, such as buildings, objects, and structures.

II. AREA OF POTENTIAL EFFECTS

- a) The BLM has defined the APE for the Project based on both the direct and indirect impacts, to be a 15 mile radius around the block area of the Project. Below is a discussion about the APE and the methodology used to so identify. See Appendix E for APE map and Project illustrations.
 - i) The area within which historic properties could sustain direct effects as a result of the Project is defined to include:
 - (1) The block area of installation of the proposed Phase I and Phase II components of the Project, which includes approximately 6,215 acres of public lands. The area is generally bounded by the Cady Mountains to the north, Interstate 40 to south, undeveloped BLM land to the west, and the Southern California Edison 230-Kilovolt north and south transmission lines to the east. Per Energy Commission requirements, a 200-foot wide buffer around the APE was included in the survey for cultural resources within the block area. This buffer is deemed sufficient to include any Project-related activity conducted near the edge of the Project footprint..
 - (2) All linear elements of the Project including:
 - (a) A 10-foot wide ROW for a water supply line, extending for approximately .3 miles from private land owned by Tessera Solar to the main services complex. This buried pipeline will supply water from the Lavic Groundwater Basin via a well on private land owned by Tessera Solar. The pipeline will be buried 30 inches below grade in the shoulder of the Project access road. A survey corridor for cultural resources for this linear element was established as a 75-foot wide buffer on either side of the center line (150-foot wide corridor) to allow for changes in the ROW to avoid cultural resources.
 - (b) A 30-foot wide ROW for temporary or permanent access roads required outside the plant footprint. The survey corridor for cultural resources for this linear element included a 50-foot wide buffer on either side of the center line (100-foot wide corridor) to allow for changes in the ROW to avoid cultural resources.
 - (c) A ROW for the 230 kV transmission line is approximately 100-feet wide and .4 miles long and extends from the Project area to the Southern California Edison (SCE) Pisgah Substation. The survey corridor for cultural resources for this linear element was established as a 150-foot wide buffer on either side of the center line (300-foot wide corridor) to allow for changes in the ROW to avoid cultural resources.

- ii) The area within which historic properties could sustain indirect effects, including visual, auditory, atmospheric, and contextual, as a result of the Project includes:
 - (1) Historic properties or cultural resources within a 15 mile radius of the direct effects APE that are identified through a review of existing literature and records search, information or records on file with the BLM or at the San Bernardino Archaeological Information Center (SBAIC), interviews or discussions with local professional or historical societies and local experts in history or archaeology. For example, specific areas of concern or cultural resources that were identified include:
 - (a) Historic Route 66 Highway
 - (b) Historic properties or cultural resources identified through archaeological or other field investigations for this Project that, as a result of Project redesign to avoid direct effects to cultural resources, are no longer within the Project area.
 - (2) Historic properties or cultural resources within a 15 mile radius of the direct effects APE that are included in the Native American Heritage Commission Sacred Lands Files, identified through a literature review or records search, or identified by a Tribe or Tribal organization, through consultation as having religious or cultural significance. Specific places or cultural resources that have been identified through tribal consultation include:
 - (3) Historic properties or cultural resources within a 15 mile radius of the direct effects APE that have been identified by a consulting party, organization, governmental entity, or individual through consultation or the public commenting processes as having significance or being a resource of concern. Areas identified through consultation to date include:
 - (a) Historic Route 66 Highway.
 - (4) Built-environment resources located within one-half mile of the Project footprint,
 - (a) whose historic settings could be adversely affected. Specific areas of concern or cultural resources have been identified both south and north of the Project location and include:
 - (i) Historic Route 66 Highway
 - (ii) Old National Trails Highway
 - (b) On private property, historic properties or cultural resources within one-half mile of the direct effects APE that are identified through surveys, where access was granted, and windshield surveys, where access was not granted.

- b) The APE, as currently defined, encompasses an area sufficient to accommodate all of the proposed and alternative Project components under consideration as of the date of the execution of this Agreement. If it is determined in the future that the Project may directly or indirectly affect historic properties located outside the currently defined APE, then the BLM, in consultation with the Signatories, Invited Signatories, and Concurring Parties, shall modify the APE using the following process:
- i) Any consulting party to this Agreement may propose that the APE established herein be modified. The BLM shall notify the other Signatories, Invited Signatories, and Concurring Parties of the proposal and consult for no more than 15 days to reach agreement on the proposal.
 - ii) If the Signatories agree to the proposal, then the BLM will prepare a description and a map of the modification to which the Signatories agree. The BLM will keep copies of the description and the map on file for its administrative record and distribute copies of each to the other Signatories, Invited Signatories and Concurring Parties within 30 days of the day upon which agreement was reached.
 - iii) Upon agreeing to a modification to the APE that adds a new geographic area, the BLM shall follow the processes set forth in Stipulation III to identify and evaluate historic properties in the new APE, assess the effects of the undertaking on any historic properties in the new APE, and provide for the resolution of any adverse effects to such properties, known or subsequently discovered, per Stipulations IV and V.
 - iv) If the Signatories cannot agree to a proposal for the modification of the APE, then they will resolve the dispute in accordance with Stipulation XII.

III. IDENTIFICATION AND EVALUATION

- a) The BLM, in coordination with the Energy Commission, has authorized the Applicant to conduct specific identification efforts for this undertaking including, but not limited to, a literature review, records search, cultural resources surveys, ethnographic studies, and geo-morphological studies to identify historic properties that might be located within applicable specific APE.
- i) The Applicant has prepared and submitted a cultural resources report (URS June 2010) to the BLM and the Energy Commission that presents the results of the Applicant's identification efforts. The report is currently under review by the BLM and Energy Commission to assess whether the report conforms with the field methodology and site description template required under BLM Fieldwork Authorization CA-670-06-07FA09 and Fieldwork Authorization CA-670-06-07FA10 and Energy Commission transaction number Data Requests Set 2, Part 2 #142, Docket number 08-AFC-5.

- ii) The BLM, in consultation with the Energy Commission, may require additional field investigations to be conducted by the Applicant to ensure the accuracy of site recordation and to provide additional information to support site evaluations and the assessment of effects. However, the BLM and Energy Commission, separately or together, have the right and the discretion, under this Agreement, to request additional field studies.
 - iii) The BLM is consulting with interested Tribes, Tribal organizations or tribal individuals regarding the identification of historic properties within the APE to which they attach religious or cultural significance and shall respond to any additional request to consult with Tribes, Tribal organizations or tribal individuals.
- b) The BLM shall make determinations of eligibility consistent with 36 C.F.R. 800.4 prior to the Record of Decision (ROD) to the extent practicable, and will make any remaining determinations as soon as possible afterwards, on those cultural resources within the APE, and make the agency's determinations available to the consulting parties, Tribes and the public for a 45 day review and comment period.
- i) The BLM will respond to any request for consultation on its determinations from a consulting party to this Agreement or a Tribe.
 - ii) A consulting party may provide its comments directly to the SHPO with a copy to the BLM within the 45 day comment period.
 - iii) The BLM will forward to the SHPO all comments regarding its determinations received during the 45 day comment period.
 - iv) After the 45 day comment period, the BLM may request SHPO concurrence for those determinations and findings for which there is no disagreement.
 - (1) SHPO will have 15 days in which to comment.
 - (2) Should SHPO not comment, BLM shall document that SHPO has elected not to comment and may proceed in accordance with its proposed determinations.
 - (3) If the BLM and SHPO disagree on a determination, BLM shall seek a determination from the Keeper of the National Register.
 - v) Where a consulting party or Tribe objects to the BLM's determination for a specific cultural resource within the 45 day review period, the BLM shall consult with the objecting party and the SHPO regarding the nature of the objection and reconsider its determinations.
 - (1) If the objection is not resolved, the BLM shall further consult with the SHPO and follow the processes provided at 36 C.F.R. 800.4(c)(2).

- (2) The BLM may proceed with determinations for all cultural resources not subject to objection.
- vi) The BLM and the Energy Commission shall coordinate to the extent feasible and practicable on determinations of eligibility for the NRHP and CRHR.
 - (1) Historic properties determined eligible for inclusion in the NRHP are listed on the CRHR per California Code of Regulations Section 4851(a)(1).
 - (2) If the BLM and Energy Commission do not agree on the eligibility of historic properties for the NRHP and CRHR respectively, the BLM and the Energy Commission shall consult with the SHPO for 15 days to resolve such disagreements.
 - (a) The SHPO shall have the final authority to resolve disagreements regarding eligibility for the CRHR.
 - (b) The SHPO shall notify both agencies in writing of final determination regarding eligibility.
- vii) If adverse effects to a cultural resource can be avoided, the BLM may choose to prescribe avoidance without making an eligibility determination of that cultural resource.
- c) In only the following circumstances, the BLM may defer the final evaluation of significance of cultural resources
 - i) where BLM has determined significance is limited to scientific, prehistoric, historic or archaeological data and where testing or limited excavation is recommended to determine whether a site would be eligible under Criterion D for inclusion on the NRHP.
 - ii) where additional evaluation efforts are required to assess the scientific, prehistoric, historic or archaeological data values of a property, the BLM and Energy Commission shall ensure that such properties located within the APE are evaluated for the NRHP and CRHR pursuant to Stipulation III and the guidelines provided in Appendix A of this Agreement.

IV. ASSESSMENT OF EFFECTS

- a) The BLM shall make determinations of effect consistent with 36 C.F.R. 800.4(d) and identify the type of adverse effect for each affected property in accordance with the criteria established in 36 C.F.R. 800.5(a)(1) and (2)(i)-(vii) prior to the Record of Decision to the extent practicable on those cultural resources within the APE that are listed on or determined eligible for the NRHP, and provide the SHPO, Tribes, and the consulting parties with the results of this finding.

- iii) The Applicant shall submit to the BLM:
 - (1) a list of the cultural resources that the Project appears likely to affect.
 - (2) a list of the cultural resources that the Project has no potential to affect.
 - (3) a list of the cultural resources that the Applicant commits to avoiding through the implementation of formal avoidance measures.
 - (4) a list of the cultural resources that cannot be avoided and will need to be evaluated and/or treated by implementing the prescriptions of the HPTP required in Section V of the Agreement.
- b) The BLM shall issue a finding of effect, based on the BLM's own evaluation of the Applicant's analysis, and provide Tribes and consulting parties to this Agreement an opportunity to review the BLM's finding and the analysis to support its finding.
 - i) The BLM shall attempt to make its determinations and findings to the extent possible in a single consolidated decision and may submit findings of effect to the SHPO concurrently with its determinations of eligibility per Stipulation III(b), otherwise, the consulting parties shall have 30 days to comment on BLM findings of effect.
 - ii) The BLM will forward to the SHPO all comments regarding its findings of effect received during the comment period.
 - iii) After the comment period, the BLM may request SHPO concurrence for those findings for which there is no disagreement.
 - (1) SHPO will have 15 days in which to comment.
 - (2) Should SHPO not comment, BLM shall document that SHPO has elected not to comment and may proceed in accordance with its proposed determinations.
- c) The Applicant, at the direction of the BLM and Energy Commission, may prepare the analysis required above in phases that correspond to the proposed sequence of development for the Project or in phases for each block of 60 SunCatchers, provided that analyses are ultimately prepared for the entirety of the APE.
- d) If adverse effects to such cultural resources will not be avoided, the BLM must resolve the adverse effect by implementing the prescriptions of the Historic Properties Treatment Plan (HPTP). When developing these HPTPs, BLM does not need to consider those cultural resources that it has evaluated and determined are not eligible for inclusion in the NRHP consistent with the process under 36 C.F.R. 800.4.
- e) Where additional identification and evaluation efforts are required due to changes in the project and the APE, the BLM and Energy Commission shall ensure that cultural resources located within the APE are identified and evaluated for the NRHP and CRHR pursuant to Appendix A of this Agreement.

V. TREATMENT AND MANAGEMENT OF HISTORIC PROPERTIES

- a) BLM will ensure the resolution of identified adverse effects to historic properties through avoidance, minimization, or mitigation and shall be described in one or more HPTP(s) that shall be written and finalized as described below and included in Appendix B.
 - i) The BLM and Applicant, in consultation with the consulting parties and Tribes, shall develop a draft HPTP(s), prior to the ROD if feasible, or as soon as possible thereafter.
 - (1) Prior to the issuance of any Notice to Proceed by the BLM to initiate the Project or any component of it that may affect historic properties, the Applicant shall develop and submit to the BLM one or more HPTPs for the BLM's approval.
 - (2) The HPTP(s) will be implemented after the ROW is granted by the BLM and prior to the issuance of a Notice to Proceed for construction in those portions of the Project addressed by the HPTP. The process for developing the HPTPs is further described below in this stipulation.
 - (3) The BLM may authorize the phased implementation of the HPTP(s) (per Stipulation X), or if appropriate, the development of HPTPs for individual cultural resources, or HPTPs that are related to specific issues or geography.
 - ii) The BLM and Energy Commission, consistent with the guidelines provided in Appendix B(2), shall make every effort within the legal limits imposed on each party to incorporate into the HPMP and any HPTP the intent of the treatment or mitigation measures in the Energy Commission's Conditions of Certification and BLM's Environmental Impact Statement. The purpose of this effort is to evidence that due consideration of the intent inherent in the Energy Commission's Conditions of Certification were fully considered and incorporated when possible. If the BLM and Energy Commission cannot agree to proposed treatment measures, then they will resolve the dispute in accordance with Stipulation XII(c)(iii).
 - iii) The BLM shall submit the HPTP to the consulting parties and Tribes for a 30 day review period. BLM will consider timely comments when finalizing the HPTP. A consulting party may provide its comments directly to the SHPO with a copy to the BLM within the 30 day comment period. The BLM will forward to the SHPO all comments regarding the HPTP received during the comment period.
- b) BLM will provide the consulting parties and Tribes with written documentation indicating whether and how the draft HPTP will be modified in response to any timely comments received. If the HPTP is revised in response to comments received within that 30 day period, BLM shall submit the revised HPTP to all parties for a final, 15 day review period. BLM will consider any timely comments in finalizing the HPTP and provide the consulting parties and Tribes with a copy.

- i) Where an HPTP specifically addresses treatment for adverse effects to historic properties to which Tribes attach religious or cultural significance, the BLM shall submit the HPTP to the Tribes and seek their views and comments through consultation, regardless of the status of a Tribe as a Concurring party to this Agreement.
- ii) BLM shall submit to the SHPO any HPTP which addresses treatment for adverse effects to historic properties to which a Tribe(s) attaches religious and cultural significance. BLM shall consult with involved Tribe(s) on the distribution of the HPTP to other consulting parties.
- c) BLM shall ensure that any HPTP developed in accordance with this Stipulation and Appendix B of this Agreement is completed and implemented. A finalized HPTP will be included in Appendix B of this Agreement
- d) BLM shall ensure that a Historic Property Management Plan (HPMP), which provides for the protection and management of historic properties during the operational life and decommissioning of the solar energy power plant, is developed and implemented in accordance with Appendix C of this Agreement. A finalized HPMP will be included in Appendix C of this Agreement.
- e) An amendment to an HPTP or HPMP will go into effect when agreed to in writing by the Signatories. If the Signatories do not agree on an HPTP or HPMP amendment proposed by another Signatory, the disagreement will be resolved pursuant to the procedures in Section XII of this Agreement.

VI. DISCOVERIES AND UNANTICIPATED EFFECTS

- a) The BLM, in consultation with the consulting parties and Tribes, will seek to develop a monitoring and discovery plan for the Project pursuant to 36 C.F.R. 800.13(a)(1). A finalized monitoring and discovery plan will be included as Appendix J to this Agreement.
- b) If the BLM determines that implementation of the Project or a HPTP will affect a previously unidentified property that may be eligible for the NRHP, or affect a known historic property in an unanticipated manner, and a monitoring and discovery plan has not been finalized, the BLM, in coordination with the Energy Commission, will address the discovery or unanticipated effect by following the procedures at 800.13(b)(3) where a process has not been yet been agreed to pursuant to 800.13(a)(1).
- c) The BLM at its discretion may assume any discovered property to be eligible for inclusion in the NRHP. The BLM's compliance with this stipulation shall satisfy the requirements of 36 C.F.R. 800.13(a)(1).

VII. TREATMENT OF HUMAN REMAINS OF NATIVE AMERICAN ORIGIN

- a) The BLM shall ensure that any that Native American burials and related items discovered on BLM administered lands during implementation of the terms of the Agreement will be treated in accordance with the requirements of the NAGPRA. The BLM will consult with concerned Tribes, Tribal Organizations, or individuals in accordance with the requirements of Sections 3(c) and 3(d) of the NAGPRA and implementing regulations found at 43 C.F.R. Part 10 to address the treatment of Native American burials and related cultural items that may be discovered during implementation of this Agreement.
- b) In consultation with the Tribes, the BLM shall seek to develop a written plan of action pursuant to 43 C.F.R. 10.5(e) to manage the inadvertent discovery or intentional excavation of human remains, funerary objects, sacred objects, or objects of cultural patrimony. The finalized plan of action shall be included as Appendix K to this Agreement.
- c) The BLM shall ensure that Native American burials and related cultural items on private lands are treated in accordance with the applicable requirements of the California Public Resources Code at Sections 5097.98 and 5097.991 , and of the California Health and Human Safety Code at Section 7050.5(c).

VIII. STANDARDS AND QUALIFICATIONS

- a) **PROFESSIONAL QUALIFICATIONS.** All actions prescribed by this Agreement that involve the identification, evaluation, analysis, recordation, treatment, monitoring, and disposition of historic properties and that involve the reporting and documentation of such actions in the form of reports, forms or other records, shall be carried out by or under the direct supervision of a person or persons meeting, at a minimum, the Secretary of the Interior's Professional Qualifications Standards (PQS), as appropriate (48 Fed. Reg. 44739 dated September 29, 1983). However, nothing in this stipulation may be interpreted to preclude any party qualified under the terms of this paragraph from using the services of persons who do not meet the PQS, so long as the work of such persons is supervised by someone who meets the PQS. Tribal consultants who are available to perform monitoring duties are assigned and approved of by each Tribe.
- b) **DOCUMENTATION STANDARDS.** Reporting on and documenting the actions cited in this Agreement shall conform to every reasonable extent with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Fed Reg. 44716-40 dated September 29, 1983), as well as, the BLM 8100 Manual, the California Office of Historic Preservation's Preservation Planning Bulletin Number 4(a) December 1989, Archaeological Resource Management Reports (ARMR): Recommended Contents and Format (ARMR Guidelines) for the Preparation and Review of Archaeological Reports, and any specific and applicable county or local requirements or report formats.

- c) **CURATION STANDARDS.** On BLM-administered land, all records and materials resulting from the actions cited in Stipulation III, IV, V and VI of this Agreement shall be curated in accordance with 36 C.F.R. Part 79, and the provisions of the NAGPRA, 43 C.F.R. Part 10, as applicable. To the extent permitted under Sections 5097.98 and 5097.991 of the California Public Resources Code, the materials and records resulting from the actions cited in Stipulations III through V of this Agreement for private lands shall be curated in accordance with 36 C.F.R. Part 79. The BLM will seek to have the materials retrieved from private lands donated through a written donation agreement. The BLM will attempt to have all collections curated at one local facility where possible unless otherwise agreed to by the consulting parties.

IX. REPORTING REQUIREMENTS

- a) Within twelve (12) months after the BLM, in consultation with the Energy Commission, has determined that all fieldwork required by Stipulations III through V has been completed, the BLM will ensure preparation and concurrent distribution to the consulting parties and Tribes a written draft report that documents the results of implementing the requirements of each Stipulation. The consulting parties and Tribes will be afforded 45 days following receipt of each draft report to submit any written comments to the BLM. BLM will consider timely comments when making revisions to the draft report. A revised draft will be provided for a 14 day review. The BLM will consider timely comments in making final changes to the report. Thereafter, the BLM may issue the reports in final form and distribute these documents in accordance with Stipulation IX(b).
- b) Unless otherwise requested, the BLM will distribute one paper copy of final reports documenting the results of implementing the requirements of Stipulations III through V to each consulting party, Tribes and to the California Historical Resources Information System (CHRIS) Regional Information Center.
- c) The BLM shall ensure that any draft document that communicates, in lay terms, the results of implementing Stipulations III through V to members of the interested public is distributed for review and comment concurrently with and in the same manner as that prescribed for the draft technical report prescribed by Stipulation IX(a). If the draft document prescribed is a publication, such as a report or brochure, the BLM shall distribute the publication upon completion to the consulting parties and to other entities that the consulting parties may deem appropriate.

X. IMPLEMENTATION OF THE UNDERTAKING

- a) The BLM may authorize construction activities and manage the implementation of HPTP(s) in phases corresponding to the construction phases of the Project.

- i) Upon approval of the HPTP(s) and implementation of the components of the HPTP(s) subject to determinations of compliance by the BLM for Phase I, BLM may authorize a Notice to Proceed for construction activities within the Phase I area only.

- (1) An HPTP(s) for Phase II may be developed and implemented after approval of the HPTP(s) and issuance of the Notice to Proceed described above for the Phase I component.

- b) The BLM may authorize construction activities, including but not limited to those listed below, to proceed in specific geographic areas of the Undertaking's APE where there are no historic properties; where there will be no adverse effect to historic properties; where a monitoring and discovery process or plan is in place; or where an HPTP(s) has been approved and initiated. Such construction activities may include:
 - i) demarcation, set up, and use of staging areas for the Project's construction,
 - ii) conduct of geotechnical boring investigations or other geophysical and engineering activities, and
 - iii) grading, constructing buildings, and installing SunCatchers.
- c) Initiation of any construction activities on federal lands shall not occur until after the BLM issues the ROD and Notices to Proceed.

XI. AMENDMENTS TO THE AGREEMENT

- a) This Agreement may be amended only upon written agreement of the Signatories.
 - i) Upon receipt of a request to amend this Agreement, the BLM will immediately notify the other consulting parties and initiate a 30 day period to consult on the proposed amendment, whereupon all parties shall consult to consider such amendments.
 - ii) If agreement to the amendment cannot be reached within the 30 day period, resolution of the issue may proceed by following the dispute resolution process in Stipulation XII.
- b) This Agreement may be amended when such an amendment is agreed to in writing by all Signatories.
- c) Amendments to this Agreement shall take effect on the dates that they are fully executed by the Signatories.

XII. DISPUTE RESOLUTION

- a) Should the Signatories or Invited Signatories object at any time to the manner in which the terms of this Agreement are implemented, the BLM will immediately notify the other Signatories and Invited Signatories and consult to resolve the objection.

- b) If the objection can be resolved within the consultation period, the BLM may authorize the disputed action to proceed in accordance with the terms of such resolution.
- c) If the objection cannot be resolved through such consultation, the BLM will forward all documentation relevant to the objection to the ACHP. Any comments provided by the ACHP within 30 days after its receipt of all relevant documentation will be taken into account by the BLM in reaching a final decision regarding the objection. The BLM will notify the other Signatories, Invited Signatories, and Concurring Parties in writing of its final decision within 14 days after it is rendered.
- d) The BLM's responsibility to carry out all other actions under this Agreement that are not the subject of the objection will remain unchanged.
- e) At any time during implementation of the terms of this Agreement, should an objection pertaining to the Agreement be raised by a Concurring Party or a member of the interested public, the BLM shall immediately notify the Signatories, Invited Signatories, and other Concurring Parties, consult with the SHPO about the objection, and take the objection into account. The other consulting parties may comment on the objection to the BLM. The BLM shall consult with the objecting party/parties for no more than 30 days. Within 14 days following closure of consultation, the BLM will render a final decision regarding the objection and proceed accordingly after notifying all parties of its decision in writing. In reaching its final decision, the BLM will take into account all comments from the parties regarding the objection.

XIII. TERMINATION

- a) If any Signatory or Invited Signatory to this Agreement determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation XI above. If within sixty (60) days an amendment cannot be reached;
 - i) a Signatory or Invited Signatory may terminate the Agreement upon written notification to the other Signatories and Invited Signatories.
- b) If the Agreement is terminated, and prior to work continuing on the Project, the BLM shall continue to follow the process provided at 36 C.F.R. 800.4 – 6 until (a) a new Agreement is executed pursuant to 36 C.F.R. 800.6 or (b) the agencies request, take into account, and respond to the comments of the ACHP under 36 C.F.R. 800.7. The BLM shall notify the Signatories and Invited Signatories as to the course of action it will pursue.

XIV. ADDITION/WITHDRAWAL OF PARTIES FROM/TO THE AGREEMENT

- a) Should conditions of the Project change such that other state, federal, or tribal entities not already party to this Agreement request to participate, the BLM will notify the other consulting parties and invite the requesting party to participate in the Agreement. The Agreement shall be amended following the procedures in Stipulation XI.
- b) Should a Concurring Party determine that its participation in the Project and this Agreement is no longer warranted, the party may withdraw from participation by informing the BLM. The BLM shall inform the other consulting parties to this Agreement of the withdrawal.

XV. DURATION OF THIS AGREEMENT

- a) This Agreement will expire if the Project has not been initiated and the BLM right-of-way grant expires or is withdrawn, or the stipulations of this Agreement have not been initiated, within five (5) years from the date of its execution. This Agreement will also expire 30 years after its execution. At such time, and prior to work continuing on the Project, the BLM shall continue to follow the process provided at 36 C.F.R. 800.4 – 6 until either (a) a new memorandum of agreement or programmatic agreement is executed pursuant to 36 C.F.R. 800.6, or (b) the agencies request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. The BLM shall notify the Signatories as to the course of action they will pursue within 30 days.
- b) The Signatories and Invited Signatories shall consult at year 4 to review this Agreement and every 5 years subsequently. Additionally, the Signatories and Invited Signatories shall consult not less than one year prior to the expiration date to reconsider the terms of this Agreement and, if acceptable, have the Signatories extend the term of this Agreement. Reconsideration may include continuation of the Agreement as originally executed or amended, or termination. Extensions are treated as amendments to the Agreement under Stipulation XI.
- c) Unless the Agreement is terminated pursuant to Stipulation XIII, another agreement executed for the Project supersedes it, or the Project itself has been terminated, this Agreement will remain in full force and effect until BLM, in consultation with the other Signatories, determines that implementation of all aspects of the Project has been completed and that all terms of this Agreement and any subsequent tiering requirements have been fulfilled in a satisfactory manner. Upon a determination by BLM that implementation of all aspects of the undertaking have been completed and that all terms of this Agreement and any subsequent tiered agreements have been fulfilled in a satisfactory manner, BLM will notify the consulting parties of this Agreement in writing of the agency's determination. This Agreement will terminate and have no further force or effect 30 days after BLM so notifies the Signatories to this Agreement, unless BLM retracts its determination before the end of that period.

XVI. EFFECTIVE DATE

- a) This Agreement and any amendments shall take effect on the date that it has been fully executed by the Signatories. The Agreement and any amendments thereto shall be executed in the following order: (1) BLM, (2) SHPO.

Execution and implementation of this Agreement is evidence that the BLM have taken into account the effect of this Project on historic properties, afforded the ACHP a reasonable opportunity to comment, and that the BLM have satisfied their responsibilities under Section 106 of the NHPA. The Signatories and Invited Signatories to this Agreement represent that they have the authority to sign for and bind the entities on behalf of whom they sign.

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SIGNATORY PARTIES

U.S. BUREAU OF LAND MANAGEMENT

BY: *Roxie C. Trost* DATE: *Sept. 20, 2010*
Roxie Trost
Manager, Barstow Field Office

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

BY: *Milford Wayne Donaldson* DATE: *21 SEP 2010*
Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

SIGNATORY PARTIES

U.S. BUREAU OF LAND MANAGEMENT

BY: _____ DATE: _____
Roxie Trost
Manager, Barstow Field Office

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

BY: _____ DATE: _____
Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

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INVITED SIGNATORY PARTIES

California Energy Commission
Tessera Solar Company, L.L.C.

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Invited Signatory

CALIFORNIA ENERGY COMMISSION

BY: _____ DATE: _____

TITLE: _____

DRAFT

Invited Signatory

TESSERA SOLAR COMPANY L.L.C.

BY: _____ DATE: _____

TITLE: _____

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CONCURRING PARTIES

CHEMEHUEVI RESERVATION
FORT MOJAVE INDIAN TRIBE
SAN MANUEL BAND OF MISSION INDIANS
TWENTYNINE PALMS BAND OF MISSION INDIANS
CALIFORNIA UNIONS FOR RELIABLE ENERGY

DRAFT

Concurring Party

CHEMEHUEVI RESERVATION

BY: _____ DATE: _____

TITLE: _____

DRAFT

Concurring Party

FORT MOJAVE INDIAN TRIBE

BY: _____ DATE: _____

TITLE: _____

DRAFT

Concurring Party

SAN MANUEL BAND OF MISSION INDIANS

BY: _____ DATE: _____

TITLE: _____

DRAFT

Concurring Party

TWENTYNINE PALMS BAND OF MISSION INDIANS

BY: _____ DATE: _____

TITLE: _____

DRAFT

Concurring Party

CALIFORNIA UNIONS FOR RELIABLE ENERGY

BY: _____ DATE: _____

TITLE: _____

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APPENDIX A: IDENTIFICATION AND EVALUATION

I. IDENTIFICATION

- a) The BLM will ensure that all cultural resources identified during cultural resources survey are recorded on new or updated California Department of Parks and Recreation Form DPR 523 (Series 1/95), using the “Instructions for Recording Historical Resources” (Office of Historic Preservation, March 1995).
 - i) Previously unrecorded cultural resources which have religious or cultural significance to Tribes identified during cultural resources investigations and/or through consultations with Tribes may be recorded on the California DPR Form 523, unless a Tribe, Tribal Organization, or an individual from a Tribe objects. If such objection arises, the properties may be recorded on a form and in a manner that is in accordance with the recommendations of the Tribe, Tribal Organization, or of the individual. If the traditional cultural property is also a historical or archaeological site, those components of site will be recorded on the appropriate DPR form and filed with the California Historical Resources Information System (CHRIS).
- b) The cultural resources contractor will obtain permanent site numbers from CHRIS regional information center.
- c) The BLM, in consultation with the Energy Commission and the SHPO, shall review all site records for accuracy, adequacy of information, and completeness and determine whether they are sufficient to support agency determinations and findings. Final approved site records shall be submitted to the CHRIS. Permanent site numbers shall then be used in all final reports and other documents prepared pursuant to the requirements of this Agreement.
- d) The BLM, in consultation with the Energy Commission will ensure that cultural resources survey reports are responsive to Energy Commission Data Requests.

II. EVALUATION

- a) The BLM shall authorize field investigations by the Applicant for the purposes of evaluation of the potential site types identified in the APE listed below (but not limited to) and evaluation of the information potential and significance of the cultural resources in the APE.

Prehistoric Archaeological Resources
Chipped Stone Deposits
Sparse Lithic Scatters
Chipped and Ground Stone Deposits

Ceramic Deposits
Archaeological Deposits that Include FAR Concentrations
Trail Segments

Historical Archaeological Resources

Surveying Monuments
Historic Refuse Deposits
Pebble and Cobble Concentrations
Transportation and Trail segments

Unique Archaeological Resources

Historic Route 66 Highway
Old National Trails Highway

- b) BLM shall consult with Indian Tribes and seek the views and comments of Tribal Organizations and individual tribal members regarding any unevaluated cultural resource to which they may attach religious or cultural significance in order to ascertain the status of these places relative to NRHP and CRHR eligibility criteria.

APPENDIX B: HISTORIC PROPERTIES TREATMENT PLAN(S)

I. *HISTORIC PROPERTIES TREATMENT PLAN(S) provide for the resolution or mitigation of effects to historic properties as a result of the project.*

- a) Any HPTP tiered from the Agreement shall include but is not limited to:
 - i) A list of the historic properties subject to the HPTP, determined or treated as eligible for project management purposes, in the APE that the construction of the Project will unconditionally avoid,
 - ii) The measures that the Applicant will take to avoid, minimize, or mitigate the adverse effects on historic properties,
 - iii) If a separate monitoring and/or discovery plan is not already in place, provide a plan for monitoring during construction, which would include the treatment of inadvertent discoveries and the participation of tribal cultural specialists. The following shall be considered during development of these plans:
 - (1) Qualifications of archaeological monitors
 - (2) participation of tribal cultural specialists in monitoring
 - (3) areas in the APE requiring monitoring
 - (4) authority of monitors to halt work
 - (5) protective measures for historic properties
 - (6) communication protocols
 - (7) safety and resource training
 - (8) procedures upon discovery
 - (9) evaluation of the inadvertent discoveries
 - (10) implementation of standard treatment measures
 - (11) field protocol upon discovery of human remains
 - iv) The proposed disposition of recovered materials and records shall be curated in accordance with Stipulation VIII(c).
 - v) The procedures for treatment and disposition of any human remains, funerary objects, sacred objects, and objects of cultural patrimony in accordance with NAGPRA and the California Health and Safety Code 7050.5 as appropriate.
 - vi) A research design which addresses significant themes and questions for the types of historic properties to receive treatment.

- vii) A schedule for completing treatment measures, including analysis, reporting and disposition of materials and records, as well as a schedule for completing the draft and final data recovery report(s).
- viii) A description of alternative treatments for adverse effects that are not data recovery and that may include (but is not limited to):
 - (1) Placement of construction within portions of historic properties that do not contribute to the qualities that make the resource eligible
 - (2) Deeding cemetery areas into open-space in perpetuity and providing the necessary long-term protection measures
 - (3) Public interpretation including the preparation of a public version of the cultural resources studies and/or education materials for local schools
 - (4) Access by Indian tribes to traditional areas in property after the project has been constructed
 - (5) Support by Applicant to cultural centers in the preparation of interpretive displays
 - (6) Consideration of other off-site mitigation
- b) Any treatment plan tiered from this Agreement or the HPTP shall reflect the ACHP archaeological guidance at <http://www.achp.gov/archguide/>, the BLM 8100 Manual, and the Secretary of the Interior's Standards for the Treatment of Historic Properties.

II. COORDINATION WITH ENERGY COMMISSION MEASURES UNDER CEQA

- a) Guidelines for implementation codified in the California Code of Regulations (CCR), Title 14, Chapter 3, Sections 15000 et seq., requires state and local public agencies to identify the environmental impacts of proposed discretionary activities or projects, determine if the impacts will be significant, and identify alternatives and mitigation measures that will substantially reduce or eliminate significant impacts to the environment. Pursuant to 13 CRR Section 15126.4(a)(1), feasible measures which could minimize adverse impacts must be described in the environmental assessment.
 - i) Section 15221(b) provides that because NEPA does not require separate discussion of mitigation measures, these points of analysis will need to be added, supplemented, or identified before the EIS can be used as an EIR.
 - ii) Section 15126.4(a)(1)(B) states that formulation of mitigation measures should not be deferred until some future time, but that measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way.

III. PERFORMANCE STANDARDS FOR NHPA SECTION 106 AND CEQA MITIGATION

- a) Cultural mitigation measures and performance standards considered within the Section 106 consultation and CEQA process include, but are not limited to:
 - i) Avoidance
 - ii) For cultural resources, the preferred method of mitigation is avoidance of all cultural resources to the maximum extent practicable. Mitigation measures which could include avoidance are normally developed through consultation to reduce impacts to significant cultural resources. The BLM through the consultation process and development of the HPTP(s) will determine which mitigation measures are applied to specific cultural resources.
 - iii) Archaeological Data Recovery
 - (1) When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provision for adequately recovering the scientifically consequential information from and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken.
 - (2) Data recovery shall not be required for an historical resource if the lead federal agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the archaeological or historical resource.
 - iv) Built-Environment Resources
 - (1) Documenting built-environment resources in accordance with the standards and guidelines provided by the Historic American Building Survey (HABS), Historic American Engineering Record (HAER), Historic American Landscapes Survey (HALS).
 - (2) Relocating or moving historic buildings, objects or structures out of the APE.
 - v) Properties of Sacred or Cultural Significance to Indian Tribes
 - (1) Cremation/Burial Sites
 - (a) Avoidance of cremation or burial sites is the preferred management alternative.
 - (b) Where avoidance of direct physical effects is not achievable, treatment shall follow the provisions of the NAGRPA Plan of Action as provided in Appendix L.
 - (2) Trails

- (a) Avoidance of direct physical effects to trails is the preferred management alternative.
 - (b) Where avoidance of direct physical effects is not achievable, treatment shall follow the provisions of the HPTP. A study of trails may be carried out to determine the nature and extent of the trails beyond the APE and may be considered within the context of a HALS study.
- (3) Geological landforms or other places of religious or cultural significance.
- (a) BLM shall continue to seek information from the Tribe(s) or Tribal Organizations to determine the character and use of places of religious or cultural significance.
 - (i) Maintenance of existing access to places of religious or cultural significance is the preferred management alternative.
 - (b) Engineering solutions to eliminate or minimize direct or indirect non-physical effects will be identified, including but not limited to, orienting the SunCatchers to minimize glare, or erecting screens to eliminate glare.
- vi) Discoveries
- (1) Following the discovery of any resources determined by BLM to be eligible to the NRHP, the Applicant shall ensure that the designated cultural resources contractor prepares a research design and a scope of work for any necessary data recovery or additional mitigation. The Applicant shall submit the proposed research design and scope of work to the BLM and Energy Commission's Compliance Project Manager for review and approval.
 - (2) The proposed research design and scope of work shall include (but not be limited to): a discussion of the methods to be used to recover additional information and any needed analysis to be conducted on recovered materials; a discussion of the research questions that the materials may address or answer by the data recovered from the Project, and; discussion of possible results and findings.

vii) Monitoring

- (1) Prior to the start of vegetation clearance or earth disturbing activities or Project site preparation, the Applicant shall provide the designated cultural resources monitors and the BLM and/or Energy Commission's CPM with maps and/or drawings showing the footprint of the power plant and all linear facilities. Maps provided will include USGS 7.5-minute topographic quadrangle maps. If the designated cultural resource specialist requests enlargements or strip maps for linear facility routes, the Applicant shall provide them. If the footprint of the power plant or linear facilities changes, the Applicant shall provide maps and drawings reflecting these changes, to the cultural resources specialist within five

days. Maps shall show the location of all areas where surface disturbance may be associated with Project-related access roads, and any other Project components.

- (2) The designated cultural resource specialist shall be available at all times to respond within 24 hours after pre-construction or construction activities have been halted due to the discovery of a cultural resource(s). The specialist, or representative of the Applicant shall have the authority to halt or redirect construction activities if previously undiscovered cultural resource materials are encountered during vegetation clearance or earth disturbing activities or project site preparation or construction. If such resources are discovered, the designated cultural resource specialist shall be notified and the Applicant or Applicant's representative shall halt construction in order to protect the discovery from further damage and the BLM will be notified. Project construction may continue elsewhere on the Project if the BLM determines that it will not affect the cultural resource in question.

viii) Qualifications

- (1) Prior to the start of construction-related vegetation clearance, or earth-disturbing activities or Project site preparation; or the movement or parking of heavy equipment onto or over the Project surface, the Applicant shall provide the BLM and/or the Energy Commission CPM with the name and statement of qualifications for its designated cultural resource specialist and alternate cultural resource specialist, if an alternate is proposed, who will be responsible for implementation of all BLM cultural resources conditions and Energy Commission cultural resources conditions of certification. The statement of qualifications for the designated cultural resource specialist and alternate shall include all information needed to demonstrate that the specialist meets at least the minimum qualifications specified by the National Park Service, Heritage Preservation Services.

(2) Training

- (a) Prior to the start of vegetation clearance or earth disturbing activities or Project site preparation, the designated cultural resource specialist shall prepare an employee training program. The Applicant shall submit the cultural resources training program to the BLM, Energy Commission, and SHPO for review and written approval. If a video is used as part of the training program, the owner shall also submit the script for review and written approval.
- (b) Prior to the start of vegetation clearance or earth disturbing activities or Project site preparation, and throughout the project construction period as needed for all new employees, the Applicant shall ensure that the designated cultural resource trainer(s) provide(s) approved cultural resources training to all Project managers, construction supervisors, or anyone coming on the construction site as an employee, contractor, subcontractor, or in any other

capacity to complete work for the Applicant. The Applicant shall ensure that the designated trainer provides the workers with the approved a set of procedures for reporting any sensitive resources that may be discovered during Project-related ground disturbance. In addition, the Applicant shall communicate the work curtailment procedures that the workers are to follow if previously undiscovered cultural resources are encountered during construction.

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IV. HISTORIC PROPERTY TREATMENT PLANS (HPTP)

- a) Finalized HPTPs will be included as an attachment to this Appendix.
- b) In developing the HPTPs, the HPTPs shall consider the following measures:
 - i) Prehistoric Period Historic Properties
 - (1) Avoidance
 - (2) Minimize
 - (a) Strategic placement of transmission towers in areas of a site that would not adversely affect the information values
 - (b) Data recovery for historic properties eligible under Criterion D only
 - (i) Research Design
 - ii) Historic Period Historic Properties
 - (1) Avoidance
 - (2) Minimize
 - (a) Data recovery for historic properties eligible under Criterion D only
 - (i) Research Design
 - (b) Historic built-environment Historic Properties with associative values
 - (i) Historic Route 66 Highway
 - (c) Resources of Native American religious and cultural significance and Traditional Cultural Properties
 - (i) Avoidance
 - (ii) Minimize
 - (iii) Monitor
 - (iv) Access

APPENDIX C: HISTORIC PROPERTIES MANAGEMENT PLAN

I. HISTORIC PROPERTIES MANAGEMENT PLAN

- a) A Historic Properties Management Plan (HPMP) will be developed to further manage or prescribe additional treatment to historic properties within the APE during the future operation, long-term maintenance and decommissioning of the Project and consider effects to historic properties in relation to those actions. The HPMP will include but is not limited to monitoring requirements for those cultural resources within the APE that were avoided through project redesign.
- b) The BLM shall submit the HPMP to the consulting parties to the Agreement and Tribes for a 60 day review period. Absent comments within this time frame, the BLM may finalize the HPMP. If comments are received, the BLM will provide the parties with written documentation indicating whether and how the draft HPMP will be modified. If the HPMP is revised in response to comments, the BLM shall submit the revised HPMP to all parties for an additional 30 day review period. Absent comments within this time frame, the BLM will finalize the HPMP. The BLM will provide each of the consulting parties and Tribes a copy of the final HPMP.

APPENDIX D: PROJECT DESCRIPTION

The Calico Solar Project is a proposed 850-megawatt (MW) solar energy power plant. The project proposal also includes a 230-kilovolt (kV) on-site substation, 4 miles of 230 kV transmission line, a main services complex, a 0.4-mile water line, and other related facilities. The proposed project would be built on approximately 6,215 acres of land administered by the BLM in San Bernardino County, California, approximately 35 miles east of Barstow, and 13 miles east of Newberry Springs.

The proposed Calico Solar Project includes the following components:

- a) A solar thermal power plant facility.
- b) The proposed project would be constructed in two phases utilizing SunCatcher (Stirling Engine) technology, and would include approximately 34,000 25 kilowatt (kW) solar power dishes with a generating capacity of approximately 850 megawatts (MW). Construction of the facility would proceed in blocks of 60 SunCatchers, which each comprise a 1.5 MW group. Construction of the project is expected to begin in late 2010 and will take approximately 23 months for Phase 1 completion and another 29 months for Phase 2 and final Project completion. The schedule will be approximately 60 months in duration, with construction requiring approximately 52 months. Power, however, would be available for transmission to the grid as each 60-unit (1.5 MW) group of SunCatchers is completed.
 - i) The first phase would consist of up to 11,000 SunCatchers configured in arrays of 184 1.5 mW solar groups (60 SunCatchers/1.5 MW group) with a generating capacity of about 275 MW.
 - ii) The second phase would consist of approximately 23,000 SunCatchers configured in 383 1.5 MW groups (60 SunCatchers/1.5 MW group) with a net generating capacity of 575 MW.
 - iii) The SunCatcher is a 25-kilowatt-electrical (kW) solar dish system designed to automatically track the sun and collect and focus solar energy onto a power conversion unit (Stirling Engine, or PCU), which generates electricity. The system consists of a 40-foot-high by 38-foot-wide solar concentrator in a dish structure that supports an array of curved glass mirror facets. These mirrors collect and concentrate solar energy onto the solar receiver of the PCU.
 - 1) Each SunCatcher dish would typically be mounted on a foundation consisting of a hollow single metal pipe approximately 19 feet long and two feet in diameter that is hydraulically driven (vibrated) into the ground. This foundation is preferred because no concrete is required, no spoils are generated, and the foundations can be completely removed when the project is decommissioned.

- 2) When conditions are not conducive to the use of the metal pipe foundation, the foundation would consist of rebar-reinforced concrete constructed below grade. The SunCatcher pedestal on which the SunCatcher dish assembly is secured is approximately 18 feet 6 inches in height and would be an integrated part of the metal pipe foundation or would be a separate structure fastened to the rebar-reinforced concrete foundation at ground level.
 - 3) Solar groups would be arranged as necessary to fit the contours of the site. SunCatchers would be aligned in rows approximately 112 feet apart, with access roads constructed between alternating rows of SunCatchers. Blading for roadways and foundations would be conducted between alternating rows to provide access to individual SunCatchers. Brush trimming would be conducted between the remaining rows and around the SunCatchers and consists of cutting the top of the existing brush while leaving the existing native plant root system in place to minimize soil erosion.
 - 4) Electrical conduit and hydrogen delivery systems will be constructed in trenches connecting the SunCatcher units. Electrical conduit will be installed in trenches that are 24 inches wide and 30 inches deep. The hydrogen pipeline will be installed in trenches that are 4 inches wide and 24 inches deep.
- c) Related structures include a main services complex, which includes a maintenance building, an administration building and assembly buildings, a 230 kV electrical substation, access roads, a 0.4-mile water supply line, and a 4-mile 230 kV transmission line from the on-site substation to the existing Southern California Edison (SCE) Pisgah Substation.
 - d) The solar power generation plant would be located on approximately 6,215 acres of public land administered by the Bureau of Land Management. This area would be fenced around the perimeter of the generation plant for security.
 - e) A 52-acre main services complex, with a laydown/staging area occupying 15 acres of the total area, would be located toward the center of the site along the northern boundary of Phase 1.
 - f) An off-site 6-inch-diameter water supply pipeline would be constructed a distance of approximately 0.4 mile from the well located on private land owned by Tessera Solar, to the main services complex. The pipeline would be buried in a trench, approximately 30 inches deep on private land owned by Tessera Solar and within the project right-of-way.
 - g) A transmission line consisting of a single circuit with parallel conductors will be constructed a distance of 4 miles, with approximately a ¼ mile portion outside the project boundary and inside the SCE ROW, to connect the Project to the SCE Pisgah Substation.

APPENDIX E: PROJECT MAPS AND ILLUSTRATIONS

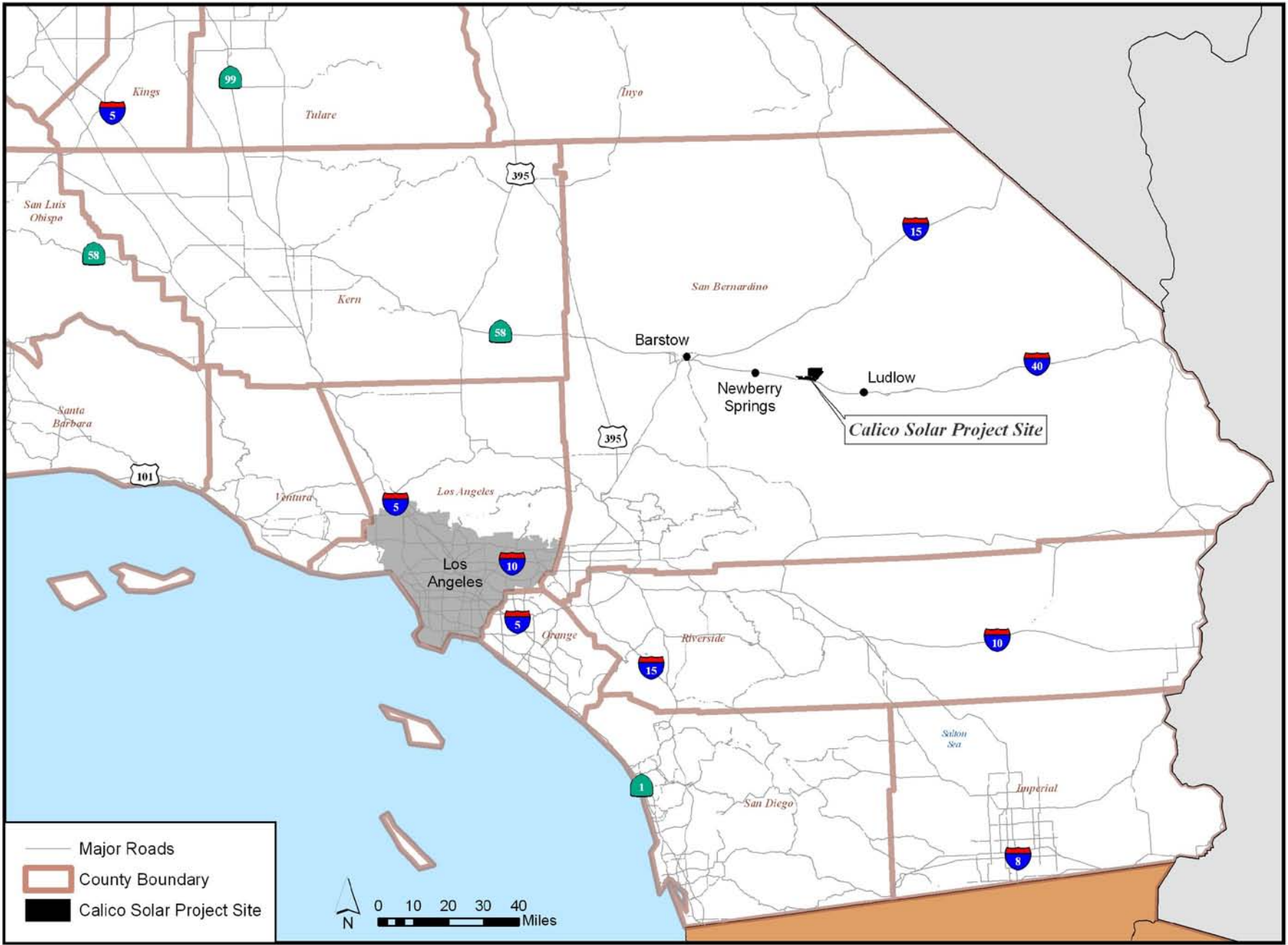
1. Project Vicinity Map
2. Project Overview Map
3. Project Proposed Action/Area of Potential Effect
4. Photograph of SunCatcher Solar Dish Array
5. Illustrated Photograph of SunCatcher Solar Dish Array

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INTRODUCTION - FIGURE 1-1
Calico Solar Project - Project Vicinity

AUGUST 2010

INTRODUCTION

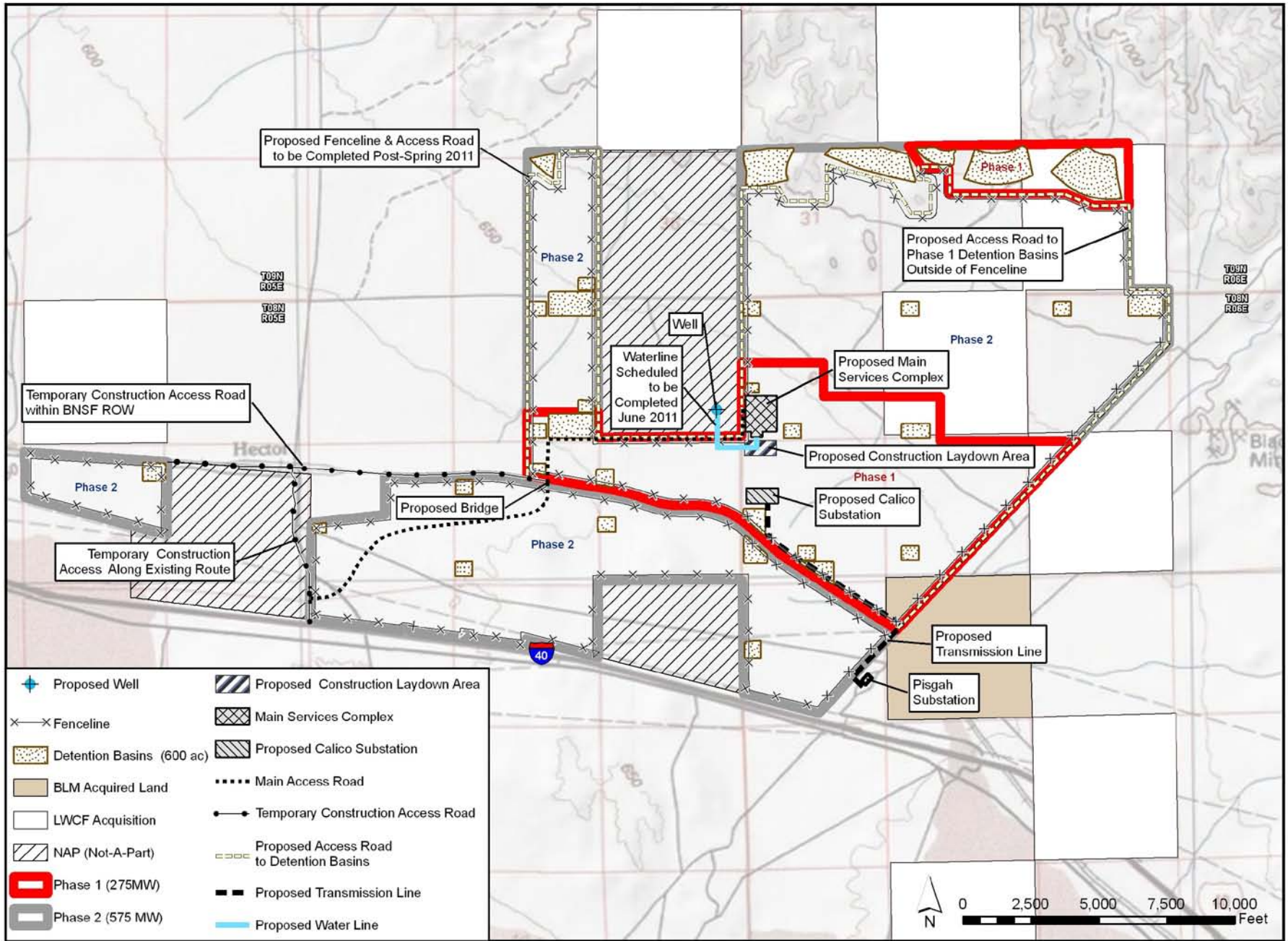


SOURCE: CEC, BLM, ESRI, URS

INTRODUCTION - FIGURE 1-2
Calico Solar Project - Proposed Action

AUGUST 2010

INTRODUCTION



SOURCE: ESRI, Huitt-Zollars, URS, USGS, BLM

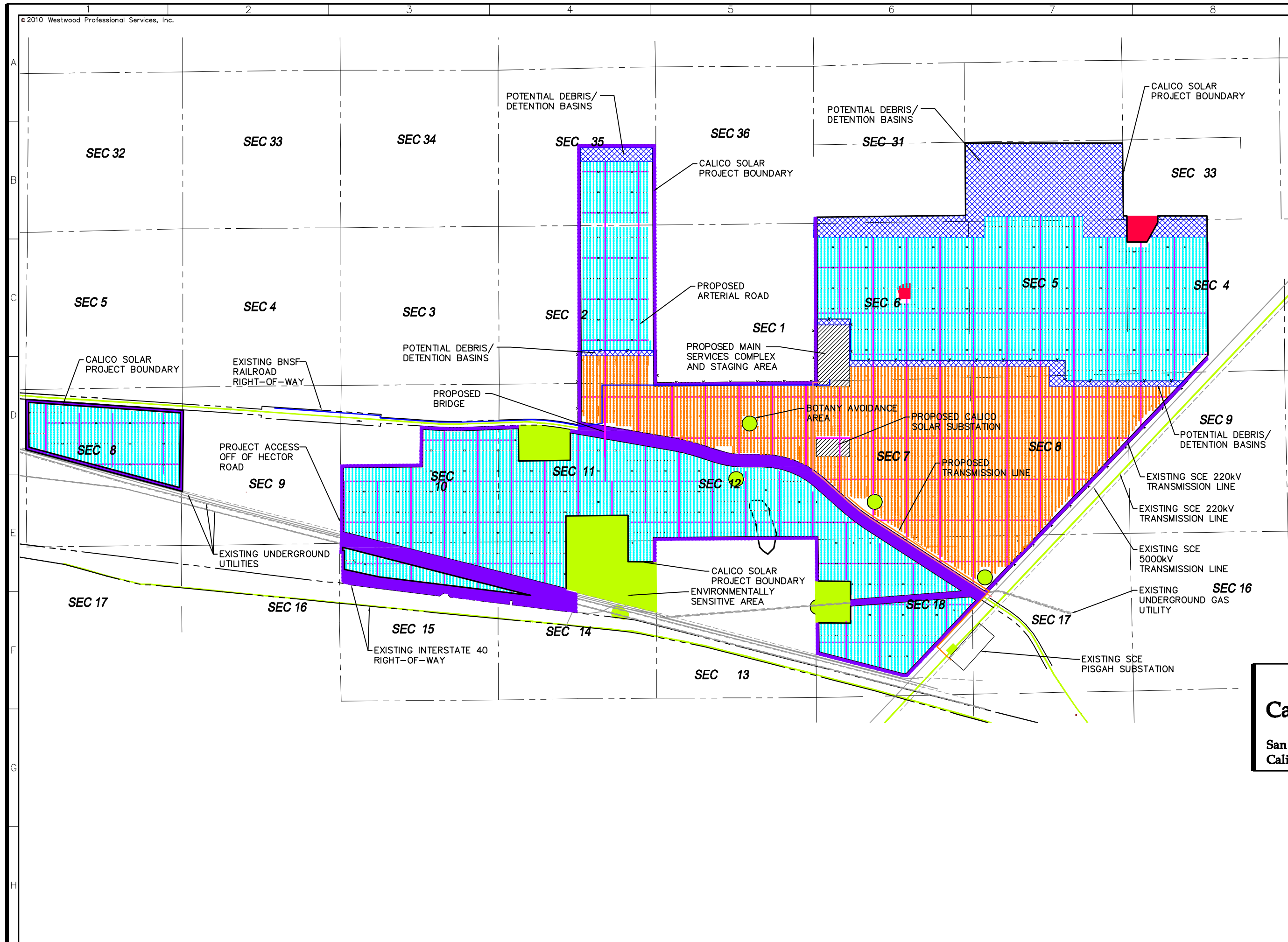
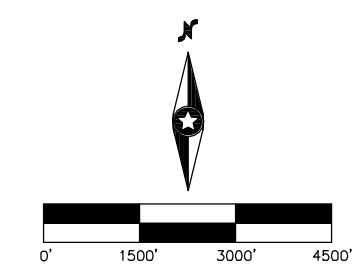
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Checked:	DDB	
Drawn:	ADC	
Record Drawing by/date:		
Revisions:		
#	DATE	DESCRIPTION

Prepared for:

Mortenson
 construction
 700 Meadow Lane
 Minneapolis, MN 55440

LEGEND:

- SUNCATCHER UNIT
- ARRAY-PHASE 1
- SUNCATCHER UNIT
- ARRAY-PHASE 2
- PROPOSED PROJECT FACILITIES
- PROPOSED ARTERIAL ROAD
- POTENTIAL DEBRIS/DETENTION BASIN LOCATION
- ENVIRONMENTALLY SENSITIVE AREAS
- UNBUILDABLE AREA
- PROPERTY SETBACK ZONE
- PROPOSED WATERLINE
- PROPOSED TRANSMISSION LINE
- PROPOSED DISTRIBUTION LINE AND COMMUNICATION ROUTE

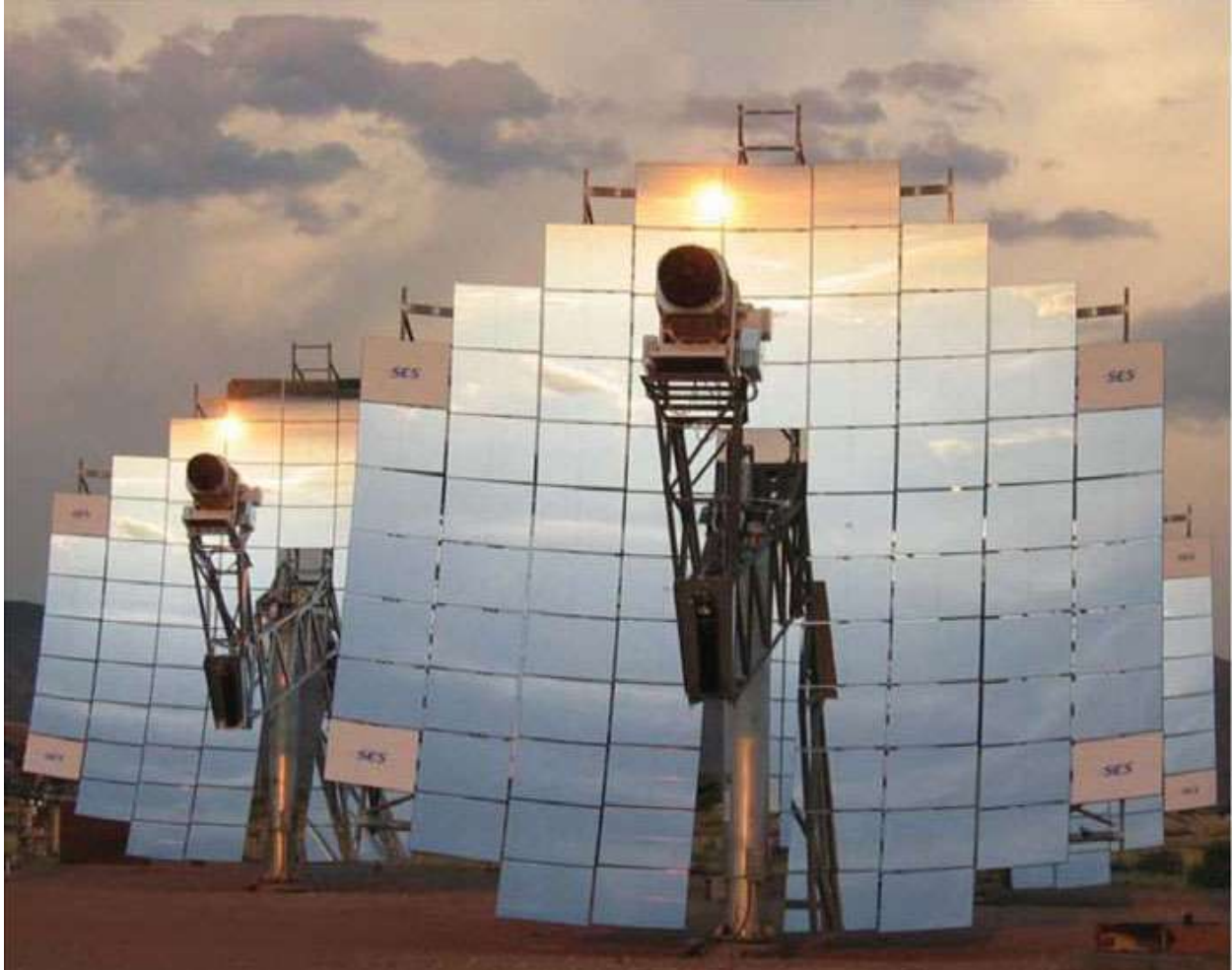


Calico Solar
 San Bernardino County,
 California

**Figure 19 -
 Site Plan**

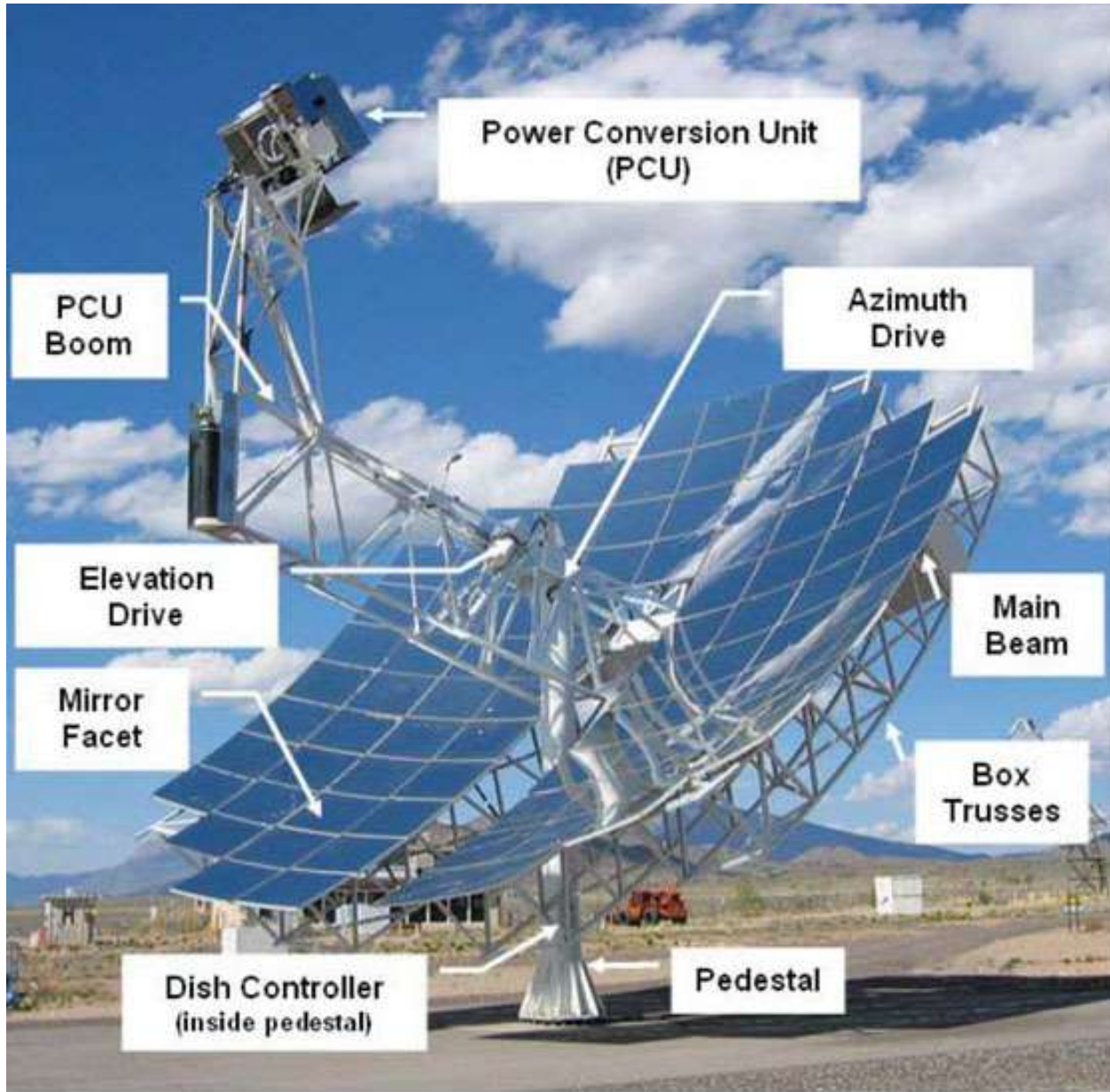
NOT FOR CONSTRUCTION
 Solar Array:
 Suncatcher dated 05/27/10
 Date: 06/02/10
 Sheet: 1 OF 1

Photograph of SunCatcher Solar Dish Array



PROGRAMMATIC AGREEMENT AMONG THE BUREAU OF LAND MANAGEMENT-CALIFORNIA, THE CALIFORNIA ENERGY COMMISSION, CALICO SOLAR, LLC , ANDTHE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER REGARDING THE TESSERA SOLAR - CALICO SOLAR PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA

Illustrated Photograph of a SunCatcher Solar Dish Array



APPENDIX F: SUMMARY OF CULTURAL RESOURCES INVESTIGATIONS

The BLM, in coordination with the Energy Commission, has authorized the Applicant to conduct specific identification efforts for this undertaking including a review of the existing literature and records, cultural resources surveys, ethnographic studies, and geomorphological studies to identify historic properties that might be located within the APE.

i) The Applicant has retained URS Corporation to complete all of the investigations necessary to identify and evaluate cultural resources located within the Area of Potential Effect (APE) for both direct and indirect effects. URS Corporation is authorized to conduct cultural resources investigations on lands managed by the BLM under Cultural Resources Use Permits No. CA-06-01 and CA-06-11 issued by the BLM California State Office and BLM Fieldwork Authorizations CA-670-06-07FA09 and Fieldwork Authorization 680-08-026, issued in July 2008 through December 2009, and renewed again on April 15, 2009 and is in effect through September 2010.

ii) URS Corporation has completed a review of the existing historic, archaeological and ethnographic literature and records to ascertain the presence of known and recorded cultural resources in the APE, has conducted an intensive field survey for all of the lands identified in APE for direct effects for all project alternatives, and has completed intensive field surveys for alternatives on lands that are no longer part of the project. Approximately 8,230 acres of pedestrian survey to identify cultural resources within the APE has been completed. The ROW that BLM would issue encompasses approximately 6,215 acres of land. There are three cultural resources (CA-SBR-1908, RSS-017, and DRK-176/RAN-175/H) that the agency proposed determination eligible for the National Register that are no longer in the project APE because of project re-design.

URS Corporation conducted a records search at the San Bernardino Archaeological Information Center (SBAIC) housed at the San Bernardino County Museum in San Bernardino, California and searched all relevant previously recorded cultural resources site records and previous investigations completed within the project area and a 1-mile search radius around it. Information reviewed included location maps for all previously recorded trinomial and primary prehistoric and historical archaeological sites and isolates; site record forms and updates for all cultural resources previously identified; previous investigation boundaries; and National Archaeological Database citations for associated reports, historical maps, and historical addresses. The literature and records search identified 31 records related to cultural resources investigations conducted within 1-mile of the Project area. Several of these records were for prior projects which overlap the boundaries of the Calico Solar Project APE. The record search also identified approximately 60 previously recorded cultural resources within the APE and extended survey areas.

The Calico Solar Class III intensive field survey was conducted between August 4, 2008 and October 31, 2008. In response to BLM and CEC data requests, additional field work was conducted between October 2009 and March 2010. The additional field work was conducted to develop additional documentation for sites within the APE for the Phase 1

and Phase 2 components of the 850 MW solar energy plant. This work involved re-visiting and updating approximately 118 sites recorded in 2008. Other project-related components included in the APE were also examined during the cultural resources investigations. These included the Pisgah Substation, which is an existing facility. The water pipeline, temporary access road, and transmission line corridors were also surveyed, both within the project site and off-site locations that were known to be associated with the project at the time of the surveys.

The URS team identified a total of 335 cultural resources within the Project APE ; 119 archaeological sites [95 prehistoric, eight historic, and 14 multi-component (include both prehistoric and historic elements), and two indeterminate feature site (lack temporal data)], 206 archaeological isolated finds and 10 historic built environment resources. Based on the proposed development for this Project, 116 (of 119) archaeological sites and one portion of a historic built environment resource are subject to direct effect. The remaining three archaeological sites and nine historic built resources occur within the area of indirect effect. A complete list of cultural resources that are located within the APE for direct effects is provided in Appendix X.

A final draft cultural resources report (*Revised Class III Confidential Cultural Resources Technical Report, Application for Certification (08-AFC-13), SES Calico Solar, LLC*, prepared by URS Corporation, May 7, 2010) has been submitted by the Applicant that presents the results of identification efforts to the BLM. The BLM is currently reviewing all documentation to determine whether the report conforms with the field methodology and site description template required by BLM and the Energy Commission and is adequate to support the determinations and findings the agency's will render pursuant to section 106 of the NHPA.

APPENDIX G: AGENCY FINDINGS AND DETERMINATIONS

The BLM has consulted with SHPO on BLM's determinations of eligibility and findings of effect for the cultural resources that may be affected by this Project. As provided for in Stipulation III of this Agreement, BLM has rendered its determinations of eligibility on resources prior to the ROD and has provided an opportunity for consulting parties and the public to comment on the agency's determinations, prior to submitting final determinations to the SHPO for concurrence. Documentation of the BLM's consultations is provided as part of the Appendix.

DRAFT



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Barstow Field Office

2601 Barstow Road

Barstow, CA 92311

www.blm.gov/ca/barstow



In Reply Refer To:

8100 (P)

CA-47740

CAD0800.34

Milford Wayne Donaldson
State Historic Preservation Officer
California Office of Historic Preservation
PO Box 942896
Sacramento, CA 94926-0001

Dear Mr. Donaldson:

The Bureau of Land Management, Barstow Field Office (BLM) would like to consult with the California State Historic Preservation Office (SHPO) on our agency's determinations and findings for the proposed Tessera Calico Solar project located in an undeveloped area of eastern San Bernardino County, California on public lands in the Central Mojave Desert, approximately 37 miles east of Barstow, California, and north of Interstate Highway 40 (I-40). The Project is located on public land managed by BLM, Barstow Field Office

The Project Area of Potential Effect (APE) originally consisted of approximately 8,230 acres. The project APE has been reduced to 6,215 acres as a result of project redesign to avoid three eligible historic properties which are now outside the proposed project. We are requesting consultation pursuant to Section V.E.2 of the *State Protocol Agreement*¹ which provides for review of evaluations as an element of your oversight role in the *State Protocol Agreement*.

BLM is currently reviewing an application by Tessera Calico Solar, for a right-of-way and approval to construct a solar generation facility on public land. The current proposed solar project covers 6,215 acres. Ground disturbing activities associated with the project include construction of access and/or utility roads, the construction of Sterling engines and a sub-station.

URS San Diego conducted a cultural resources investigation in support of the proposed solar project. The Project APE is an irregularly shaped area north of I-40 and primarily east of Hector Road. The southern Project APE borders I-40; the western Project APE borders open undeveloped BLM land; the eastern and southeastern project APE borders the transmission line, and portions of the eastern and northern project APE borders the base of the Cady Mountains. The Burlington Northern and Santa Fe (BNSF) Railway (formerly the Atlantic and Pacific/Atchison, Topeka, and Santa Fe Railroad [AP/ATSF]) ROW bisects the northern and

¹ *State Protocol Agreement among the California State Director of the Bureau of Land Management and the California State Historic Preservation Officer and the Nevada State Historic Preservation Officer regarding the manner in which the Bureau of Land Management will Meet Its Responsibilities under the National Historic Preservation Act and the National Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers* (October 2007)

southern portions of the Project APE on lands managed by the U.S. Bureau of Land Management (BLM).

The investigation was conducted in two phases: Between August and October 2008, all accessible areas within the Project APE were intensively surveyed and all resources identified were recorded on Department of Parks and Recreation (DPR) forms and mapped into a mobile sub-meter accuracy geographic information system (GIS).

In response to BLM and CEC data requests, additional field work was conducted between October 2009 and March 2010. URS with oversight by LSA, conducted a resurvey of the southern portion of the project area. In October 2009, 25 percent of the total number of sites within the Project APE were revisited and re-recorded. Concurrent with that effort, geo-archaeological studies were completed of areas within the Project APE. Between January and March 2010, the remaining 75 percent of the sites within the Project APE were revisited and re-recorded. Surveys were completed March 1, 2010.

The BLM has completed site determinations for the 116 sites within the APE. There are an additional 3 sites included in the report that are now outside the reduced APE. Tribes requested that these sites be evaluated by the BLM for nomination to the National Register and are included in the site determinations. The BLM had determined that these three sites are eligible but there will be no effect to these properties as they are now outside the project area.

Status of Consultation with Native American Tribes

With the filing of the application for a right-of-way, BLM took the lead for formal tribal consultation pursuant to the National Historic Preservation Act as well as other laws and regulations. We initiated formal government-to-government consultation in the early stages of project planning by letter November 5, 2008 and have followed up with an additional letter and other information since then.

To date, eight tribes have been identified and invited to consult on this project. General informational meetings about the project were held on November 10, 2009. We have responded to four requests for formal meetings with tribes including the San Manuel Band of Mission Indians, Twenty-nine Palms Band of Mission Indians and the Chemehuevi Reservation and Fort Mojave Reservation. We have also received some written comments from tribal governments.

Site Determinations

The BLM has determined that the identification efforts, reports, and the consultant's recommendations for this undertaking are adequate to identify historic properties that may be located within the APE and to support BLM's decision process. Based on the information and analysis, the results of tribal consultation, and the recommendations of the professional consultants, the BLM has made the following determinations regarding eligibility and findings of effect for cultural resources located within the APE for inclusion on the NRHP:

Table 5.3-1: Archaeological Site Determination of Eligibility

Site Designation	Cultural Context	Site Taxonomy	Location within Project APE	Geomorphic Landform	Potential for Buried Deposits Based on Geomorphic Landform	URS/LSA Eligibility Recommendation	Bureau of Land Management Eligibility Determination
CA-SBR-1908/H UPDATE	Multi-Component	Lithic Reduction Scatter, Rock Cluster Features, Historical Refuse, Fire Affected Rocks, and/or Hearths	Phase 2	Erosional Fan Remnant/Inset Fan	Very Low to Low	Rock Features are Recommended Eligible; prehistoric lithic reduction loci are non-contributing	Rock Features are Eligible; prehistoric lithic reduction loci are non-contributing Eligible portion of site removed from project area through project redesign.
CA-SBR-3076 UPDATE (EJK-021)	Prehistoric	Complex Lithic Scatter	Phase 2	Relict Alluvial Flat/ Inset fan/ Axial Channel	Very Low to Moderate	Recommended Not Eligible	Not Eligible
CA-SBR-4558H UPDATE (Logan Mine)	Historic	Historical Refuse, Historical Mining Site, Historical Structure	Phase 1	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-4681/H UPDATE (RAN-102/H)	Multi-Component	Complex Lithic Scatter, Historical Survey/Mapping Features	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-5600 UPDATE (RAN-189)	Prehistoric	Complex Lithic Scatter	Phase 2	Erosional Fan Remnant/ Inset Fan/ Pisgah Lava	None to Low	Recommended Not Eligible	Not Eligible
CA-SBR-5796 UPDATE (DRK-180)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible

CA-SBR-6521 UPDATE (RAN-115)	Prehistoric	Lithic Reduction Scatter, Rock Features	Phase 2	Erosional Fan Remnant/Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-6528 UPDATE (RSS-020)	Prehistoric	Complex Lithic Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Eligible	Not Eligible
CA-SBR-12990 (DRK-001)	Prehistoric	Lithic Reduction Scatter	200-Foot Buffer	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-12991 (DRK-012)	Prehistoric	Lithic Reduction Scatter	Phase 1	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-12992H (DRK-021H)	Historic	Historical Refuse	200-Foot Buffer	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-12993 (DRK-023)	Prehistoric	Lithic Reduction Scatter	Phase 2	Upper Alluvial Fan Piedmont	Low	Recommended Not Eligible	Not Eligible
CA-SBR-12994 (DRK-026)	Prehistoric	Lithic Reduction Scatter	200 Foot Buffer	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13002/C A-SBR-13003/H (DRK-134/DRK-136/H)	Multi-Component	Lithic Reduction Scatter, Historical Refuse, Fire Affected Rocks, and/or Hearths	Phase 2	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13004 (DRK-139)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13005 (DRK-140)	Prehistoric	Complex Lithic Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13006 (DRK-141)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible

CA-SBR-13007 (DRK-142)	Prehistoric	Complex Lithic and Groundstone Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Eligible	Not Eligible
CA-SBR-13008 (DRK-145)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13009 (DRK-150)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13010 (DRK-152)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13011 (DRK-153)	Prehistoric	Complex Lithic Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13012H (DRK-155H)	Historic	Historical Refuse, Fire Affected Rocks, and/or Hearths	Phase 2	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13013 (DRK-160)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant/Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13014H (DRK-163H)	Historic	Historical Refuse	Phase 2	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13015 (DRK-166)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13016 (DRK-167)	Prehistoric	Lithic Reduction Scatter	Phase 2	Axial Channel	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13017H (DRK-168H)	Historic	Historical Refuse	Phase 2	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13020 (DRK-173)	Prehistoric	Lithic Reduction and Groundstone Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible

CA-SBR-13021 (DRK-174)	Prehistoric	Lithic Reduction Scatter and Possible Hearth	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13022/C A-SBR-13024 (DRK-175/DRK-177)	Prehistoric	Complex Lithic Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13025 (DRK-178)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13026 (DRK-182)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant/Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13027 (DRK-184)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13028 (KRM-002)	Prehistoric	Lithic Reduction Scatter	Phase 2	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13029 (KRM-003)	Prehistoric	Lithic Reduction Scatter	Phase 2	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13030 (KRM-008)	Prehistoric	Lithic Reduction Scatter	Phase 2	Upper Alluvial Fan Piedmont/ Lower Alluvial Fan Apron	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13031 (KRM-024)	Prehistoric	Trail	Phase 2	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13032 (KRM-028)	Prehistoric	Trail	Phase 2	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible

CA-SBR-13038/C A-SBR-13040/H (KRM-160/KRM-167/H)	Prehistoric	Lithic Reduction Scatter and Rock Cluster Features	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13039 (KRM-164)	Prehistoric	Lithic Reduction Scatter and Rock Ring Feature	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13041 (KRM-170)	Prehistoric	Complex Lithic Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13042 (LTL-008)	Prehistoric	Complex Lithic Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13044 (LTL-011)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13045 (LTL-012)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13046 (LTL-015)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13047 (LTL-016)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13048 (LTL-017)	Prehistoric	Complex Lithic Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13049 (LTL-018)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13050 (LTL-019)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13051 (LTL-022)	Prehistoric	Lithic Reduction Scatter	Phase 2	Pisgah Lava	None to Very Low	Recommended Not Eligible	Not Eligible

CA-SBR-13052 (LTL-023)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan Pisgah Lava	None to Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13053 (RAN-011)	Prehistoric	Lithic Reduction Scatter	Phase 2	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13054 (RAN-025)	Prehistoric	Lithic Reduction Scatter	Phase 1	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13055 (RAN-101)	Prehistoric	Lithic Reduction Scatter and Rock Cluster Features	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13056 (RAN-108)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13059 (RAN-114)	Prehistoric	Complex Lithic Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13060 (RAN-116)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13061/C A-SBR-13076 (RAN-118/RAN-173)	Prehistoric	Lithic Reduction Scatter, Rock Cluster Features, and Historical Refuse	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13062 (RAN-120)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13063/H (RAN-123/H)	Multi-Component	Lithic Reduction Scatter, Rock Cluster Features, and Historical Refuse	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13064 (RAN-128)	Prehistoric	Lithic Reduction Scatter and Rock Cluster Features	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible

CA-SBR-13065 (RAN-131)	Prehistoric	Lithic Reduction Scatter	Phase 2	Axial Channel	Very Low to Moderate	Recommended Not Eligible	Not Eligible
CA-SBR-13066 (RAN-138)	Prehistoric	Lithic Reduction Scatter and Historical Refuse	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13068 (RAN-146)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13069 (RAN-154)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13070/C A-SBR-13067/H (RAN-155/RAN-139/H)	Multi-Component	Lithic Reduction Scatter, Historical Refuse, Fire Affected Rocks, and/or Hearths	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13071 (RAN-163)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13072 (RAN-168)	Prehistoric	Lithic Reduction Scatter	Phase 2	Axial Channel	Very Low to Moderate	Recommended Not Eligible	Not Eligible
CA-SBR-13073 (RAN-169)	Prehistoric	Complex Lithic Scatter	Phase 2	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13074 (RAN-170)	Prehistoric	Complex Lithic Scatter	Phase 2	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13075 (RAN-171)	Prehistoric	Complex Lithic Scatter	Phase 2	Lower Alluvial Fan Apron Axial Channel	Very Low to Moderate	Recommended Eligible	Not Eligible
CA-SBR-13078 (RAN-177)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible

CA-SBR-13079 (RAN-179)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13080 (RAN-180)	Prehistoric	Lithic Reduction Scatter	Phase 2	Axial Channel	Very Low to Moderate	Recommended Not Eligible	Not Eligible
CA-SBR-13081 (RAN-181)	Prehistoric	Lithic Reduction Scatter	Phase 2	Axial Channel	Very Low to Moderate	Recommended Not Eligible	Not Eligible
CA-SBR-13082 (RAN-183)	Prehistoric	Lithic Reduction Scatter and Rock Cluster Features	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13083 (RAN-186)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13084 (RAN-188)	Prehistoric	Complex Lithic Scatter	Phase 2	Erosional Fan Remnant/Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13085 (RAN-190)	Prehistoric	Lithic Reduction Scatter and Rock Cluster Features	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13086 (RSS-005)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13089 (RSS-009)	Prehistoric	Lithic Reduction Scatter	Phase 2	Axial Channel/Relict Alluvial Flat	Very Low to Moderate	Recommended Not Eligible	Not Eligible
CA-SBR-13091 (RSS-013)	Prehistoric	Lithic Reduction Scatter	Phase 2	Axial Channel	Very Low to Moderate	Recommended Not Eligible	Not Eligible
CA-SBR-13092 (RSS-014)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible

CA-SBR-13093/H (RSS-017/H)	Multi-Component	Complex Lithic Scatter and Rock Cluster Features	Phase 2	Erosional Fan Remnant/Axial Channel/Inset Fan	Very Low to Moderate	Rock Features and Cleared Areas are Recommended Eligible; complex lithic scatters are non-contributing	Rock Features and Cleared Areas are Eligible; complex lithic scatters are non-contributing Eligible portion of site removed from project area through project redesign.
CA-SBR-13094 (RSS-018)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13096 (SGB-013)	Prehistoric	Lithic Reduction Scatter	Phase 1	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13097 (SGB-017)	Prehistoric	Lithic Reduction Scatter	Phase 1	Lower Alluvial Fan Apron	Low	Recommended Not Eligible	Not Eligible
CA-SBR-13104 (SGB-041)	Prehistoric	Lithic Reduction Scatter	Phase 2	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13105 (SGB-097)	Prehistoric	Lithic Reduction Scatter	Phase 2	Rock Outcrop within the Upper Alluvial Fan Piedmont	None to Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13106 (SGB-099)	Prehistoric	Lithic Reduction Scatter and Fire Affected Rocks and/or Hearths	Phase 2	Rock Outcrop within the Upper Alluvial Fan Piedmont	None to Very Low	Recommended Not Eligible	Not Eligible

CA-SBR-13107 (SGB-104)	Prehistoric	Lithic Reduction Scatter	Phase 2	Rock Outcrop within the Upper Alluvial Fan Piedmont	None to Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13111 (SGB-120)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13122 (KRM-165)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13123 (EJK-002)	Prehistoric And Historic	Lithic Reduction Scatter and Historical Refuse	Phase 2	Relict Alluvial Flat/Axial Channel	Very Low to Moderate	Recommended Not Eligible	Not Eligible
CA-SBR-13124/H (EJK-004/H)	Multi-Component	Lithic Reduction Scatter and Historical Refuse	Phase 2	Relict Alluvial Flat/Axial Channel	Very Low to Moderate	Recommended Not Eligible	Not Eligible
CA-SBR-13125/H (EJK-005/H)	Multi-Component	Lithic Reduction Scatter and Historical Refuse	Phase 2	Relict Alluvial Flat	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13126/H (EJK-009/H)	Multi-Component	Complex Lithic Scatter, Rock Cluster Features, and Historical Refuse	Phase 2	Axial Channel/Relict Alluvial Flat	Very Low to Moderate	Recommended Eligible; parts of the site within the APE are non-contributing	Recommended Eligible; parts of the site within the APE are non-contributing
CA-SBR-13349/H (RSS-006/SGB-112/SGB-114/SGB-118/SGB-127/H)	Multi-Component	Complex Lithic, Groundstone Scatter, and Historical Refuse	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13441 (RAN-107/RAN-110)	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible

CA-SBR-13442 (DRK-133/LTL-009)	Prehistoric	Complex Lithic Scatter	Phase 2	Erosional Fan Remnant/Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
CA-SBR-13443/H (DRK-176/RAN-175/H)	Multi-Component	Complex Lithic, Groundstone Scatter, and Historical Refuse	Phase 2	Axial Channel	Very Low to Moderate	Prehistoric Component Recommended Eligible; historic component non-contributing	Prehistoric Component is Eligible; historic component non-contributing Eligible portion of site is outside the project area through project redesign.
CA-SBR-13444 (DRK-170/DRK-171)	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
CA-SBR-13445 (RSS-008/RSS-011)	Prehistoric	Complex Lithic Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
DRK-S1-001H	Historic	Trail	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
MN-S1-001	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
MN-S1-004	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
MN-S1-005	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
MN-S1-009	Prehistoric	Lithic Reduction Scatter	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible
MN-S1-017H	Historic	Historical Refuse	Phase 2	Axial Channel	Very Low to Moderate	Recommended Not Eligible	Not Eligible
NOTR-PRM-S1-002/H	Multi-Component	Lithic Reduction Scatter and Historical Refuse	Phase 2	Erosional Fan Remnant	Very Low	Recommended Not Eligible	Not Eligible

PRM-S1-009	Prehistoric	Lithic Reduction Scatter	Phase 2	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible
PRM-S1-021H	Historic	Rock Cluster Features and Historic Survey/Mapping Features	Phase 2	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible
P36-014578 (RAN-035)	Indeterminate	Rock Cluster Features	Phase 2	Upper Alluvial Fan Piedmont	Very Low	Recommended Not Eligible	Not Eligible
P17P3-1H (RAN-050/H)	Historic	Historical Refuse	Phase I	Axial Channel	Low	Recommended Not Eligible	Not Eligible
SM-S1-001	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible
SM-S1-003	Prehistoric	Lithic Reduction Scatter, Fire Affected Rocks, and/or Hearths	Phase 2	Inset Fan/Erosional Fan Remnant	Very Low to Low	Recommended Not Eligible	Not Eligible
SM-S1-005	Prehistoric	Lithic Reduction Scatter	Phase 2	Inset Fan	Very Low to Low	Recommended Not Eligible	Not Eligible

Finding

CA-SBR-13126 has been determined eligible for the National Register and California Register under criteria D/4. The site extends into the SW boundary of the project area. Subsurface testing was conducted in the portion of the site within the project area. This portion of the site consists of lithic scatter with no subsurface component. It has been determined that the portion of the site within the APE is not a contributing factor to site eligibility.

Three sites, CA-SBR-1908/H, CA-SBR-13093/H, and CA-SBR-13443/H have been determined eligible for inclusion to the National Register under criteria D/4. These three sites are now outside the APE with a 400 ft. buffer through project redesign.

The BLM is issuing a finding of no adverse effect to historic properties.

The BLM is submitting an electronic copy of the final report and site records as for your review of site determinations.

Pursuant to our request for your office to review our evaluations as an element of your oversight role in the *State Protocol Agreement*, BLM is requesting your concurrence in our determinations and findings for this undertaking.

If you have any questions or need additional information about this undertaking, please don't hesitate to contact Jim Shearer, staff archaeologist, at (760) 252-6034 or by email to jshearer@blm.gov. Thank you for your assistance in this matter.

Sincerely,



Roxie C. Trost
Field Manager

Enclosures: Technical report and Appendices on 3 CDs

cc: electronically

Rolla Queen
Charlotte Hunter
Jim Stobaugh

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov



August 25, 2010

Reply to: BLM100721A

Roxie C. Trost
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311

RE: Tessera Calico Solar Project

Dear Ms. Trost:

Thank you for requesting my comments on the above cited undertaking. As noted in your letter the undertaking originally consisted of approximately 8,239 acres but has been reduced to 6,215 acres to avoid adverse effects to three eligible historic properties. I feel this was an important step you made to take the effects of the undertaking to historic properties into account.

You have asked my consensus in your determinations of eligibility and affect even though not required to do so as provided in the Bureau of Land Management (BLM) National Programmatic Agreement as implemented through BLMs 8100 Manual. The manual allows for BLM to make unilateral determinations of eligibility for properties to the National Register of Historic Places,

As a procedural means for addressing your request and as discussed with your staff on August 10, 2010 in Barstow, I recommend that you execute a Programmatic Agreement (PA) for this undertaking to govern its implementation. I feel a PA developed pursuant to the Advisory Council on Historic Preservation's Procedures found at 36 CFR Part 800.14(b)(1) is the best means for taking effects to historic properties into account and addressing any unanswered questions regarding eligibility. It is my understanding your staff has agreed to prepare a draft PA and will circulate it for comment. I know we have a very tight schedule for completing the consultation process and I also am aware that this procedural recommendation is presented late in the process thus I am prepared to work with you in the preparation of the PA to meet your deadlines.

In your request you provided a copy of the URS cultural resources investigation report. In addition you indicate BLM has completed site determinations of eligibility for the 116 sites within the undertakings area of potential effect. You requested my concurrence in these determinations.

I concur with your determinations that historic properties CA-SBR-13126, CA-SBR-1908/H, CA-SBR-13093/H and CA-SBR-13443/H are eligible for the National Register of Historic Places under criterion D. All sites but property CA-SBR-13126 have been removed from the undertakings area of potential effect. The portion of CA-SBR-13126 that extends into the APE

consists of a lithic scatter you archeologically tested with no subsurface component and you correctly determined did not contribute to its eligibility.

For the remaining properties that are located within the undertakings area of potential effect you have concluded all do not meet the criteria for the National Register. I neither agree or disagree with your determination. From surface archeological manifestations I believe you are correct. The only means for these properties to meet the National Register criteria is if a subsurface component with more significant data and complexity than shown on the surface is present.

I have considered a number of criteria for determining which sites would most likely contain such subsurface significant data and the most appropriate means for recovering this information. I note in your staff evaluation, you also provided a similar analysis. One such means might be the use of a method similar to the one outlined in the *California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters*. The problem is that such an approach may not provide an adequate sample to determine if there is sufficient data to fully evaluate the eligibility of the sites in question even if a subsurface component was noted. The excavation conducted for the All American Pipeline project produced very little data given the volume of cultural material excavated and analyzed.

My staff also reviewed and considered a paper recommended by Dr. Dave Whitley representing CURE entitled *Desert Pavement and Buried Archaeological Features in the Arid West: A Case Study from Southern Arizona*. In the closing of the article it notes and I quote "...not enough work has been conducted on some sites located in the desert pavement setting....we recommend that archaeologists, as well as government agencies, keep an open mind to the possibility of buried cultural features and deposits... The next line which states, "We can also note that mechanical surface stripping provides one, and perhaps the only, cost effective means of looking for such cultural remains under desert pavement." It is this conclusion which leads me to the following recommendations. It is my understanding that you will propose the development of a construction monitoring plan and a post review discovery plan which could be the deliverables required in a PA and as such would allow the use of 36 CFR 800.13(a) rather than the procedural requirements for seeking the Advisory Council's comments as provided in 36 CFR 800.13(b).

I am proposing that the monitoring plan provide for systematic stripping of the top 20 cm of soil within the site boundaries of known sites. If no subsurface component of the site is noted, construction monitoring would continue. If a subsurface component is noted, BLM would determine if work stoppage at this location should occur and if additional archeological work is warranted. The plan would then provide a research design and methodology for retrieving such data. The plan would also provide the threshold when the number and type of sites have been subject to these controlled procedures that continuance is either warranted or should be discontinued.


It is my conclusion that while we do not disagree with your determination that the remaining sites are not eligible, it has not been fully demonstrated that the sites in question do not include a subsurface archeological component which might change your eligibility determinations. However, it may be like finding a needle in a haystack to either demonstrate that such data either exist or does not exist. I hope you will give careful consideration to this proposal.

Finally, with regards to Route 66 it is my recommendation that the nine mile segment of roadway that parallels the undertaking retains sufficient integrity of construction and setting

that it would contribute to the significance of a Route 66 National Register eligible district. It appears that if both phases of the undertaking were built, the undertaking would adversely affect this historic property. Based on the topography, it is not as clear what effect would result from construction of phase 1 of the undertaking. Specific simulations were not made to address potential effects to Route 66 much less by phases. It does not appear there is a physical means to mitigate the adverse effect. I am open to your recommendations as to how to take effects into account.

I look forward to continuing consultation. If you propose to proceed with the development of a PA to guide this project, I am prepared to so execute. I hope these comments are helpful. If you have any questions, please contact Dwight Dutschke at 916-445-7010.

Sincerely,



Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

APPENDIX H: DOCUMENTATION OF TRIBAL CONSULTATION

Major Tribal Consultation Events and Contacts: January 2008 through April 2010

Tribal Group or Contact	Date	Subject	Comments
Chemehuevi Reservation: Ms. Irene Anthony, Tribal Administrator	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
Chemehuevi Reservation: Ms. Cara McDonald	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
San Manuel Band of Mission Indians: Ms. Ann Brierty	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
Colorado River Indian Tribe Ms. Mamie Harper	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
Colorado River Indian Tribe Mr. David Harper	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
Mr. Darryl King, Tribal Council Member	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
Chemehuevi Indian Tribe Mr. Darryl King, Tribal Council Member	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
Twenty-nine Palms Band of Mission Indians Mr. Anthony Madrigal, Sr., Cultural Director	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
Chemehuevi Indian Tribe Mr. David Todd, Director	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
Colorado River Indian Tribe Dr. Michael Tsosie, Director	8/20/2007	Desert District Tribal Letter all energy projects	Includes Solar One
Fort Mojave Indian Tribe: Ms. Linda Otero	8/20/2007	Desert District Tribal Letter all energy projects	Letters sent
Colorado River Indian Tribes: Mr. Mike Tsosie	11/5/2008	Sterling Solar One Tribal Consult Invite Letter	Letters sent
Fort Mojave Indian Tribe: Ms. Linda Otero	11/5/2008	Sterling Solar One Tribal Consult Invite Letter	Letters sent
Fort Mojave Indian Tribe: Mr. Timothy Williams	11/5/2008	Sterling Solar One Tribal Consult Invite Letter	Letters sent
Morongo Band of Mission Indians: Mr. Michael Contreras	11/5/2008	Sterling Solar One Tribal Consult Invite Letter	Letters sent
San Manuel Band of Mission Indians: Ms. Ann Brierty	11/5/2008	Sterling Solar One Tribal Consult Invite Letter	Letters sent
San Manuel Band of Mission Indians: Ms.Mr. James Ramos	11/5/2008	Sterling Solar One Tribal Consult Invite Letter	Letters sent
Twenty-nine Palms Band of Mission Indians: Mr. Darrell Mike	11/5/2008	Sterling Solar One Tribal Consult Invite Letter	Letters sent
Chemehuevi Reservation: Mr. Charles Wood	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	No concerns at this time
Chemehuevi Reservation: Ms. Cara McDonald	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	No concerns at this time want copy of cultural report

Tribal Group or Contact	Date	Subject	Comments
Colorado River Indian Tribes: Mr. Mike Tsosie	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	Phone message
Fort Mojave Indian Tribe: Ms. Linda Otero	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	Phone message
Fort Mojave Indian Tribe: Mr. Timothy Williams	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	Phone message
Morongo Band of Mission Indians: Mr. Michael Contreras	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	Phone message
Morongo Band of Mission Indians: Mr. Robert Martin	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	No concerns at this time want copy of cultural report
San Manuel Band of Mission Indians: Ms. Ann Brierty	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	No concerns at this time want copy of cultural report
San Manuel Band of Mission Indians: Ms.Mr. James Ramos	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	Phone message
Twenty-nine Palms Band of Mission Indians: Mr. Darrell Mike	12/16/2008	Sterling Solar One Tribal Consult Follow up Call	Phone message
San Manuel, Soboba, Morongo, 29 Palms, Torres Martinez, Cahuilla	5/20/2009	Sterling Solar One and other energy projects	District meeting with Inter-tribal working group Energy Fast Track Projects
San Manuel Band of Mission Indians: Ann Brierty	11/10/2009	Sterling Solar One and other energy projects	Discussed fast track energy projects
Colorado River Indian Tribes: Mr. Mike Tsosie	3/25/2010	Calico Solar Tribal update letter	Letters sent
Fort Mojave Indian Tribe: Ms. Linda Otero	3/25/2010	Calico Solar Tribal update letter	Letters sent
Fort Mojave Indian Tribe: Mr. Timothy Williams	3/25/2010	Calico Solar Tribal update letter	Letters sent
Morongo Band of Mission Indians: Mr. Michael Contreras	3/25/2010	Calico Solar Tribal update letter	Letters sent
Morongo Band of Mission Indians: Mr. Robert Martin	4/13/2010	Calico Solar Tribal update letter	Letters sent
San Manuel Band of Mission Indians: Ms. Ann Brierty	3/25/2010	Calico Solar Tribal update letter	Letters sent
San Manuel Band of Mission Indians: Mr. James Ramos	3/25/2010	Calico Solar Tribal update letter	Letters sent
Twenty-nine Palms Band of Mission Indians: Mr. Darrell Mike	3/25/2010	Calico Solar Tribal update letter	Letters sent
Twenty-nine Palms Band of Mission Indians: Anthony Madrigal Jr.	3/25/2010	Calico Solar Tribal update letter	Letters sent
Chemehuevi Reservation: Ms. Cara McDonald	3/25/2010	Calico Solar Tribal update letter	Letters sent
Colorado River Indian Tribes: Mr. Mike Tsosie	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
Fort Mojave Indian Tribe: Ms. Linda Otero	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
Fort Mojave Indian Tribe: Mr. Timothy Williams	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
Morongo Band of Mission Indians: Mr. Robert	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent

Tribal Group or Contact	Date	Subject	Comments
Martin			
Morongo Band of Mission Indians: Mr. Michael Contreras	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
San Manuel Band of Mission Indians: Ms. Ann Brierty	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
San Manuel Band of Mission Indians: Mr. James Ramos	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
Twenty-nine Palms Band of Mission Indians: Anthony Madrigal Jr.	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
Twenty-nine Palms Band of Mission Indians: Mr. Darrell Mike	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
Chemehuevi Reservation: Mr. Charles Wood	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
Chemehuevi Reservation: Ms. Cara McDonald	4/13/2010	Calico Solar Tribal PA Invite letter	Letters sent
San Manuel Band of Mission Indians: Ann Brierty	4/29/2010	Calico Solar PA kick off meeting	Discussed Calico Solar PA
San Manuel Band of Mission Indians: Anthony Madrigal	4/29/2010	Calico Solar PA kick off meeting	Discussed Calico Solar PA
San Manuel Band of Mission Indians: Call to Ann Brierty	5/14/2010	Calico Solar Site visit with Elders Logistics	Discussed possible dates
San Manuel Band of Mission Indians: Email from Ann Brierty	5/14/2010	Calico Solar Site visit with Elders Logistics	Discussed possible dates
San Manuel Band of Mission Indians	5/14/2010	Cultural issues with Calico sites	Discussed Calico Solar PA and status of Cultural Report. Also discussed arrangements for site visit with Elders.
Fort Mojave (call to Linda Otero)	5/14/2010	Cultural issues with Calico sites	Discussed Calico Solar PA and status of Cultural Report. Also discussed arrangements for site visit with Elders.
San Fernando Band of Mission Indians	5/19/2010	Calico Solar Site visit with Elders	No answer on cell and home
Chemehuevi	5/19/2010	Calico Solar Site visit with Elders	Left message with receptionist.
San Fernando Band of Mission Indians	5/19/2010	Calico Solar Site visit with Elders	Spoke with John. Said he would attend
San Manuel Band of Mission Indians	5/21/2010	Calico Solar Site visit with Elders	Spoke with Ann Brierty about site visit logistics and possible avoidance of rock feature sites.
San Manuel Band of Mission Indians	5/25/2010	Calico Solar Site visit with Elders Logistics	Discussed dates for visit tentative for June 8, 2010
San Manuel Band of Mission Indians	5/25/2010	Calico Solar Site visit with Elders Logistics	Discussed dates for visit now June 13,2010
San Manuel Band of Mission Indians	5/25/2010	Calico Solar Site visit with Elders Logistics	Discussed dates for visit now June

Tribal Group or Contact	Date	Subject	Comments
			13,2010
San Manuel Band of Mission Indians: Email from Ann Brierty	5/25/2010	Calico Solar Site visit with Elders Logistics	San Manuel Band of Mission Indians: Date set for site visit, 6/13/10
San Manuel Band of Mission Indians	6/2/2010	Calico Solar Site visit with Elders Logistics	Discussed dates for visit now June 13,2010
Twenty-nine Palms Band of Mission Indians (phone call w/Anthony Madrigal)	6/2/2010	Calico Solar Site visit with Elders Logistics	Discussed dates for visit now June 13,2010 Matt and June Laibas will be representing
San Manuel Band of Mission Indians	6/4/2010	Calico Solar Site visit with Elders Logistics	Discussed dates for visit now June 13,2010 hotel, attendees, time, thoughts on no PA and redesign to avoid 3 sites
Fort Mojave (call from Linda Otero)	6/9/2010	Calico Solar Site visit with Elders Logistics	Discussed dates for visit now June 13,2010 hotel, attendees, time, thoughts on no PA and redesign to avoid 3 sites
San Manuel Band of Mission Indians: Ms. Ann Brierty	6/13/2010	On site visit with Elders	Visited proposed eligible sites that Tessera has redesigned project foot print to avoid.
San Manuel Band of Mission Indians: Mr Anthony Madrigal	6/13/2010	On site visit with Elders	Visited proposed eligible sites that Tessera has redesigned project foot print to avoid.
San Manuel Band of Mission Indians: Mr Raymond Oalvan	6/13/2010	On site visit with Elders	Visited proposed eligible sites that Tessera has redesigned project foot print to avoid.
Fort Mojave Tribe Mrs Linda Otero	6/13/2010	On site visit with Elders	Visited proposed eligible sites that Tessera has redesigned project foot print to avoid.
Chemehuevi: Mr. Robert Chavez	6/13/2010	On site visit with Elders	Visited proposed eligible sites that Tessera has redesigned project foot print to avoid.
Chemehuevi: Mr. Domingo C. Esquerra	6/13/2010	On site visit with Elders	Visited proposed eligible sites that Tessera has redesigned project foot print to avoid.
Chemehuevi: Mr. Matthew Leivas Sr.	6/13/2010	On site visit with Elders	Visited proposed eligible sites that Tessera has redesigned project foot print to avoid.
Fort Mojave Indian Tribe: Ms. Linda Otero	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.
Fort Mojave Indian Tribe: Mr. Timothy Williams	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.
Morongo Band of Mission Indians: Mr. Robert Martin	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.
Morongo Band of Mission Indians: Mr. Michael Contreras	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.

Tribal Group or Contact	Date	Subject	Comments
San Manuel Band of Mission Indians: Ms. Ann Brierty	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.
San Manuel Band of Mission Indians: Mr. James Ramos	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.
Twenty-nine Palms Band of Mission Indians: Anthony Madrigal Jr.	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.
Twenty-nine Palms Band of Mission Indians: Mr. Darrell Mike	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.
Chemehuevi Reservation: Mr. Charles Wood	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.
Chemehuevi Reservation: Ms. Cara McDonald	6/18/2010	Calico Solar Tribal PA letter	Letters w/ Draft PA/ report summary/ proposed site determinations sent.
Fort Mojave Indian Tribe: Ms. Linda Otero	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
Fort Mojave Indian Tribe: Mr. Timothy Williams	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
Morongo Band of Mission Indians: Mr. Robert Martin	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
Morongo Band of Mission Indians: Mr. Michael Contreras	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
San Manuel Band of Mission Indians: Ms. Ann Brierty	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
San Manuel Band of Mission Indians: Mr. James Ramos	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
Twenty-nine Palms Band of Mission Indians: Anthony Madrigal Jr.	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Anthony suggested 500 ft. buffer or possible NRHP nomination
Twenty-nine Palms Band of Mission Indians: Mr. Darrell Mike	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
Chemehuevi Reservation: Mr. Charles Wood	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
Chemehuevi Reservation: Mr Matt Levas	6/28/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Will have new cultural person contact me.
Twenty-nine Palms Band of Mission Indians: Anthony Madrigal Jr.	6/30/2010	Calico Solar Tribal PA letter follow up call	Informed Anthony that Tessera agreed to fence site and have consultant do NRHP registration
San Manuel Band of Mission Indians: Ms. Ann Brierty	7/1/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.

Tribal Group or Contact	Date	Subject	Comments
San Manuel Band of Mission Indians: Mr. Anthony Madrigal	7/1/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
Twenty-nine Palms Band of Mission Indians: Anthony Madrigal Jr.	7/1/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message. Discussed actual project boundry distance
Chemehuevi Reservation: Mr. Charles Wood	7/1/2010	Calico Solar Tribal PA letter follow up call	Follow up call: Discussed fencing of site, boundry distances, and NRHP nomination
Morongo Band of Mission Indians: Mr. Michael Contreras	7/2/2010	Calico Solar Tribal PA letter follow up call	Follow up Call: Out of office, did leave message.
San Manuel Band of Mission Indians: Mr. Anthony Madrigal	7/2/2010	Calico Solar Tribal PA letter follow up call	Follow up call: Discussed fencing of site, boundry distances, and NRHP nomination
San Manuel Band of Mission Indians: Ms. Ann Brierty	7/2/2010	Calico Solar Tribal PA letter follow up call	Follow up call: Discussed fencing of site, boundry distances, and NRHP nomination. Ann will coordinate with other tribes.-
Twenty-nine Palms Band of Mission Indians: Anthony Madrigal Jr.	9/1/2010	Calico Solar Tribal meeting request	Phone call requesting a meeting with Tesera, URS and BLM with tribes
Fort Mojave Indian Tribe: Ms. Linda Otero	9/1/2010	Request for Calico Tech Report	Phone message requesting copy of Calico Solar Tech Report
Fort Mojave Indian Tribe: Ms. Linda Otero	9/1/2010	Request for Calico Tech Report	Follow up Call: Out of office, did leave message. Copy of Tech Report sent by URS
Twenty-nine Palms Band of Mission Indians: Anthony Madrigal Jr.	9/2/2010	Calico Solar Tribal meeting request reurn call	Phone call requesting a meeting with Tesera, URS and BLM with tribes scheduled for September 24, 2010

APPENDIX I: EXAMPLE MONITORING AND DISCOVERY PLAN

**DRAFT EXAMPLE
MONITORING AND DISCOVERY PLAN**

**IMPERIAL VALLEY SOLAR PROJECT
IMPERIAL COUNTY, CALIFORNIA**

Submitted to:

Bureau of Land Management

1661 South 4th Street

El Centro, CA 92243

Prepared by:

LSA Associates, Inc.

703 Palomar Airport Road Suite 260

Carlsbad, California 92011

(760) 931-5471

May 26, 2010

And

Supplemented by AECOM

1420 Kettner Boulevard, Suite 500

San Diego, CA 92101

(619) 233-1454

August 13, 2010

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- A Specific Field and Analytical Methods
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INTRODUCTION

Tessera Solar is proposing to construct the Imperial Valley Solar Project (IVSP or Project) in Imperial County on lands under the jurisdiction of the Bureau of Land Management (BLM), and cultural resources have been documented in the Project's area of potential effects (APE). Efforts are being made to design the Project to avoid known cultural resources eligible for listing in the National Register of Historic Places (NRHP) and/or the California Register of Historic Resources (CRHR). The following will be discussed in this Monitoring and Discovery Plan:

- The measures necessary to avoid potential impacts to recorded cultural resources, including Environmentally Sensitive Areas (ESAs)
- Professional standards
- Monitoring plan
- Discovery plan
- Avoidance/protection procedures
- Cultural resources training
- Curation

The entire surface of the APE of the proposed Project has been surveyed. Multiple prehistoric and historic resources have been identified.

PROJECT DESCRIPTION

The IIVSP will construct a proposed 750-megawatt (MW) solar energy plant on approximately 6,500 acres of public lands in California administered by BLM California Desert District and the El Centro Field Office. Imperial Valley Solar will use existing roads and construct new roads in the Project area.

The Project is located in western Imperial County, California, immediately east of the town of Ocotillo, west of the town of Seeley, and north and south of Interstate 8 (I-8). The Project will utilize the SunCatcher technology of Stirling Energy Services. Each SunCatcher consists of a 25-kilowatt solar power electric-generating system. The system is designed to track the sun automatically and to focus solar energy onto a Power Conversion Unit, which generates electricity. The system consists of an approximate 38-foot-high by 40-foot-wide solar concentrator dish that supports an array of curved glass mirror facets. The 300-MW Phase I of the Project will consist of approximately 12,000 SunCatchers. The 450-MW Phase II portion of the Project will include approximately 18,000 SunCatchers.

The Project will include the construction of a new 230-kilovolt (kV) substation approximately in the center of the Project. A Main Services Complex, where key buildings and parking areas will be located, will be constructed at the northeastern end of

the Phase I Project. Main roads will be constructed with a combination of roadway dips and elevated sections across the dry washes on the Project.

The full Phase II expansion of the Project will require the construction of the 500-kV Sunrise Powerlink transmission line that San Diego Gas & Electric (SDG&E) has proposed. A 230-kV transmission line that will be built for Phase I will parallel the current transmission line corridor for the Southwest Powerlink transmission line within the existing right-of-way (ROW). The main entry for truck traffic to the Project during construction will be from I-8 to the Project entrance on Evan Hewes Highway. During Project operation, the secondary and emergency access will be from Dunaway Road.

REGULATORY CONTEXT

The proposed Project requires authorization and issuance of an ROW grant by BLM. The proposed Project is a federal undertaking. Therefore, compliance with 36 Code of Federal Regulations (CFR) Part 800, regulations implementing the National Historic Preservation Act (as amended), is required. In addition, BLM and the California Energy Commission (CEC), together, have prepared the *Staff Assessment and Draft Environmental Impact Statement and Draft California Desert Conservation Area Plan Amendment, SES Solar Two Project, and Application for Certification (08-AFC-5) Imperial County (2010)* to identify Project alternatives for purposes of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), and have comparatively examined the relative effects of the alternatives on known historic properties. Therefore, cultural resources on the Project are evaluated subject to criteria of both the federal NRHP and CEQA CRHR. As the Project may have an adverse effect on historic properties (resources eligible for or listed in the NRHP and/or CRHR), BLM prepared a Programmatic Agreement (PA) stipulating measures that will be implemented prior to construction. The preparation of a Monitoring and Discovery Plan is stipulated in the PA.

PROFESSIONAL QUALIFICATIONS

BLM shall ensure that all work is under the supervision of personnel meeting the *Secretary of the Interior's Standards and Guidelines* (as amended and annotated), *Professional Qualifications Standards*. The requirements are those used by the National Park Service, and have been previously published in the Code of Federal Regulations (36 CFR Part 61). The qualifications define minimum education and experience required to perform identification, evaluation, registration, and treatment activities. BLM shall obtain résumés of prospective consultants and verify credentials of supervisory personnel and staff, as necessary.

ARCHAEOLOGY

The minimum professional qualifications for supervisory personnel in archaeology shall be a graduate degree in archaeology, anthropology, or closely related field plus the following:

- At least 1 year of full-time professional experience or equivalent specialized training in archaeological research, administration, or management;
- At least 4 months of supervised field and analytic experience in general North American archaeology; and
- Demonstrated ability to carry research to completion.

In addition to these minimum qualifications, a professional in prehistoric archaeology shall have at least 1 year of full-time professional experience at a supervisory level in the study of archaeological resources of the prehistoric period. A professional in historic archaeology shall have at least 1 year of full-time professional experience at a supervisory level in the study of archaeological resources of the historic period.

KEY PERSONNEL

Personnel involved in the archaeological monitoring, testing, and data recovery efforts will be responsible primarily for conducting the monitoring; archaeological fieldwork and laboratory analysis; report preparation; and (as necessary) coordination with BLM, construction contractors, and Native American consultants. The responsibilities of key personnel are outlined below.

PRINCIPAL INVESTIGATOR/CULTURAL RESOURCES SPECIALIST

The Principal Investigator (PI)/Cultural Resources Specialist (CRS) will have overall responsibility for the testing and data recovery investigations and will be the primary point of contact between the archaeological consultant and BLM for these programs. The PI will also be responsible for the analysis and the overall quality of the technical report of these investigations. The PI will meet the Secretary of the Interior's Qualification Standards for Archaeologists and be on the BLM Cultural Resources Use Permit.

MONITORING SUPERVISOR

The Monitoring Supervisor will have overall responsibility for the cultural resources monitoring program and will be the primary point of contact between the archaeological consultant and BLM for this program. The Monitoring Supervisor will also be responsible for the content and the overall quality of the monitoring report. The Monitoring Supervisor will meet the Secretary of the Interior's Qualification Standards for Archaeologists.

FIELD MONITORS

Field monitors will conduct the daily archaeological construction monitoring and will be responsible for making the initial discoveries, subsequent initial notifications, equipment diversions, preparing daily monitoring notes and logs, and recording and mapping for initial discovery documentation.

FIELD DIRECTOR

The Field Director will be responsible for the day-to-day activities of the testing and data recovery investigations, including management of field personnel and coordination of crews. The Field Director will also be responsible for compiling and ensuring the quality of the field data on a daily basis. Additionally, the Field Director will coordinate the work of subconsultants or other contractors participating in the archaeological field investigations, and will be responsible for implementing the requirements of the Health and Safety Plan, including daily safety briefings. The Field Director will also meet the Secretary of the Interior's Qualification Standards for Archaeologists and be on the Cultural Uses Permit.

CREW CHIEFS

The Crew Chiefs will, in consultation with the Field Director, be responsible for implementing the field strategies at individual sites. The Crew Chief will direct field crew, lay out excavations, and compile collections and field documentation on a daily basis. Additionally, the Crew Chief will be responsible for implementing on-site safety procedures.

FIELD CREW

Field crew members will conduct surface examinations and hand excavations, and monitor mechanical test investigation excavations. Each crew member will operate under the direct supervision of the Crew Chief and will conduct basic documentation of field operations, including completing excavation-level records, bag labeling, and trench monitoring forms.

LABORATORY DIRECTOR

The Laboratory Director will be responsible for directing all phases of laboratory processing of the data recovery collections, including check-in, cleaning, sorting, cataloguing, analyzing, distributing special samples, and preparing for curation. The Laboratory Director will coordinate closely with the PI and Monitoring Supervisor to ensure that the appropriate data are documented and compiled.

1.5 DEFINITION OF RESOURCE TYPES

Below are examples of archaeological site types that might be encountered in the Project APE during construction or additional surveys.

PREHISTORIC

HABITATION SITES. Sites have, at a minimum, flaked stone tools and evidence of food processing and fire affected rock/hearths. Sites contain a wide variety of artifacts and materials. Habitation sites within the IVSP area may include flakes, tools, groundstone, ceramics, fire-affected rocks, midden, rock features (domestic and storage), and human remains.

- Temporary camp: flaked stone tools, evidence of food processing, fire affected rock/hearths
- Long-term: multiple artifact categories, evidence of use of fire, midden

RESOURCE EXTRACTION/PROCESSING SITES. Sites contain artifacts associated with specific resource extraction or processing activities. Processing/extraction sites within the IVSP include the following:

- Plant processing: Associated artifacts include groundstone, manos, metates, pestles, bedrock storage facilities, and bedrock milling features. Groundstone was also used to process fish, small animals, and pigments, and for hide-tanning. Flaked lithics were also used for cutting/harvesting plants prior to grinding or for preparing vegetal construction materials.
- Animal processing: associated artifacts include lithics, fish traps, and faunal bone
- Lithic reduction: associated artifacts include lithic tools, flakes, debitage, cores, and blanks
- Lithic processing: evidence of heat treatment; associated artifacts include flakes, debitage, and/or cores
- Groundstone production: associated artifacts or features include sandstone and granite outcrops, basalt boulders, etc.

TRAVEL SITES. Trails/footpaths, including trail markers.

CERAMICS SITES. These sites can include both scatters of ceramics and single pot locales or “pot drops.”

ROCK FEATURES SITES. These sites contain cairns, rock alignments, rock rings, and/or cleared circles.

OTHER. All other prehistoric sites that do not fit into the above categories.

HISTORIC

HABITATION SITES. In addition to food-related refuse, these are sites that contain evidence of domestic activity. Features may include tent pads, cleared areas, campfire rings, foundations, or other evidence of more than casual use.

HISTORIC REFUSE. These sites contain primary or secondary refuse deposit or concentrations of debris.

- Food containers: primarily cans

- Beverage containers: bottles and cans

- Mixed domestic: in addition to food and beverage containers, a variety of materials such as crockery, glassware, buttons, wire, toys, etc.

- Construction: cement, milled lumber, nails, paint, tile, etc.

- Target practice: shell casings, fragmentary bullets, etc.

GRAVEL EXTRACTION/MINING. These sites are characterized by pits, scraping scars, rock piles, and/or access roads.

SURVEYING. These sites consist of trash piles associated with surveying activities and historic survey markers.

TRANSPORTATION. These sites are linear features designed to facilitate the transportation of people.

– Roads: unpaved

– Trails: wagon trails and footpaths

MILITARY. Any site associated with military activities.

ROCK FEATURES. Cairns, rock alignments, and/or rock rings.

WATER CONVEYANCE. Any subsurface feature or device constructed to transport water over a distance (irrigation canals, ditches, flumes, pipes, etc.) not associated or addressed as part of the built environment.

OTHER. All other sites that do not fit into the above categories.

BUILT ENVIRONMENT

HABITATION. Standing residential buildings.

INDUSTRIAL. Standing processing or manufacturing plant.

TRANSPORTATION. Existing linear feature designed to facilitate the transportation of people.

– Roads: paved

– Railroads: with intact crossties and rails

WATER CONVEYANCE. Any existing feature or device constructed to transport water over a distance: irrigation canals, ditches, flumes, pipes, etc.

2.0 AVOIDANCE AND PRESERVATION

Avoidance of all cultural resources is preferred and is the goal of BLM. If cultural resources are discovered during construction and they are determined eligible for listing in the NRHP and/or the CRHR, implementation of a data recovery program may be necessary. If avoidance and minimization alternatives are not feasible, then data recovery through archaeological excavation may be warranted. Archaeological sites are most often determined eligible for the NRHP under Criterion D (“have yielded or may be likely to yield, information important in prehistory or history”), and/or the CRHR under Criterion 4 (“potential to yield information important to the prehistory or history of the local area, California or the nation”). The important information can often be characterized by the physical data, the artifacts, and features in the ground. Archaeological excavations may recover this information. This form of mitigation is called data recovery and includes scientific analyses and the preparation of a technical report. The purpose of conducting excavation as mitigation is to recover, analyze, and document in written form the important information contained within an archaeological site. The report must meet professional standards discussed later in this plan.

As stated above, avoidance of cultural resources during construction is preferred. Whenever practicable, an archaeological site that is determined eligible for listing in the NRHP and/or CRHR should be left in place and preserved from damage. Avoidance and minimization alternatives should be also considered as the first option for sites not evaluated. Avoidance measures may include limiting the size of the undertaking to reduce the effect, modifying the undertaking through redesign, and monitoring ground-disturbance activities to record significant archaeological remains if they are encountered.

2.1 ENVIRONMENTALLY SENSITIVE AREAS

Newly discovered and previously known prehistoric and historic archaeological sites located within the Project’s APE shall be designated as ESAs. Construction personnel will be instructed on how to avoid ESAs.

All construction personnel will be trained regarding the recognition of possible buried cultural remains, including prehistoric and historic resources during construction, prior to the initiation of construction or ground-disturbing activities. BLM will complete training for all construction personnel. Training will inform all construction personnel of the procedures to be followed upon the discovery of archaeological materials, including Native American burials.

2.2 PLAN OF ESA ESTABLISHMENT AND DESIGNATION

1. The archaeological consultant shall flag and/or fence cultural resources.
 2. The lead Construction Manager and all supervisory personnel shall be informed by the BLM archaeologist and/or its representative of the presence and location of all ESAs within the Project area and the need to maintain integrity of the ESAs.
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3. The BLM archaeologist and/or its representative shall convey the archaeological sensitivity of the resource to the construction personnel.
4. Construction personnel shall be informed that ESAs are strictly off-limits to construction, and entrance is not allowed at any time. ESAs shall not be described as archaeological sites. The exact location of cultural resources will be confidential.
5. For prehistoric resources, the BLM archaeologist shall consult with interested Native American tribes regarding the sensitivity of the area and any new discoveries. BLM shall make a reasonable and good faith effort to address concerns. BLM shall consider the role of Native Americans regarding supporting the monitoring of significant Native American resources within and adjacent to Project impact areas.
6. Archaeological monitors shall maintain flagging/staking for ESAs to identify these as areas where no ground-disturbing activities are to take place. Results of this effort shall be presented in the monitoring report for the Project.
7. Archaeological monitors shall immediately report all violations to BLM.

If a resource cannot be avoided, then the resource will be evaluated for eligibility for listing in the NRHP and/or CRHR.

TRAINING

BLM will provide a background briefing for supervisory construction personnel describing the potential for exposing cultural resources, the location of any potential ESA, and procedures to treat unexpected discoveries. An IVSP training document has been prepared and will be provided to construction personnel in support of the on-site training described below. The training document provides prehistoric, historic, and regulatory contexts, the roles of BLM and the archaeological monitors, the responsibilities and authority of the monitors, an outline of discovery protocols, and examples of artifacts. The cultural resources training shall include the following:

1. A summary of the archaeological and cultural sensitivity of the area.
 2. The regulatory context and BLM protocols.
 3. Project roles and responsibilities for the BLM archaeologist and the archaeological monitors.
 4. Authority of archaeological monitors to halt work.
 5. Basic artifact recognition.
 6. The understanding that if construction personnel observe cultural material or what appears to be a cultural resource, the BLM archaeologist and/or representative shall be contacted immediately. Construction personnel shall have the requisite contact information.
 7. The explicit understanding that cultural resources and human remains are not to be disturbed.
 8. The procedures to follow if cultural material or human burials are observed:
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- Work halts immediately.
- The location is secured and made off-limits to ground-disturbing activities.
- The construction foreman and BLM archaeologist are called immediately.
- Work does not re-commence until authorized by the BLM archaeologist.

3.0 MONITORING PLAN

3.1 MONITORING

A consultant will be retained to provide archaeological monitors. An archaeological monitor or monitors will be present during construction. Additionally, monitoring of ground-disturbing activities within 50 feet of a known cultural resource is required. Monitors are to ensure that ESAs are properly (and adequately) marked and protected. A Native American monitor is required at all sensitive prehistoric resource locations. Safety is paramount, and all monitors will undergo safety briefings and abide by all Occupational Safety & Health Administration (OSHA) and Project safety requirements. Monitors have the authority to halt work. BLM will maintain a record of the safety briefings and require that all monitors participate. The following list outlines the qualifications and responsibilities of the archaeological monitors.

1. The qualifications of monitors shall be confirmed by BLM. The consultant shall provide résumés and references. The monitors must be familiar with the types of historic and prehistoric resources within the study area.
 2. Monitors shall maintain a daily work log (see Appendix B) that includes the following:
 - a. Date and time of work
 - b. Area of work
 - c. Type of work and equipment present
 - d. Construction activities performed
 - e. Monitoring activities performed (e.g., protection of ESA)
 - f. Cultural resources present
 - g. Name of Native American monitor (if present)
 3. Color digital photographs shall be taken, as appropriate, to document monitoring activities. All ESAs, at a minimum, shall be photographically documented prior to, during, and after construction in their vicinity. If previously unknown or inadequately documented cultural resources are encountered during monitoring, BLM and the monitors shall follow the procedures presented in the section titled *Discovery Treatment Plan*.
 4. Monitors shall provide daily updates to the Monitoring Supervisor, who shall provide a summary to the BLM archaeologist. Written memo updates shall be provided weekly. The weekly memos shall identify the monitors present, dates worked, and their locations for that week. The memo shall present the results of monitoring for that week. Once monitoring is complete, a monitoring report shall be drafted for review and approval by the BLM archaeologist. The monitoring report shall present the following:
 - a. All monitoring activities
 - b. Location of monitoring
-

- c. Dates of monitoring
- d. Personnel participating and their qualifications
- e. Resources (ESAs) satisfactorily protected
- f. Damaged resources, including the effects and the significance
- g. Discovered resources and their significance (if any)
- h. Management and treatment measures implemented

The report shall be reviewed and approved by the BLM archaeologist and shall be prepared per *Archaeological Resources Management Reports (ARMR): Recommended Contents and Format* guidelines (OHP 1990).

- 5. Monitors shall maintain the flagging and staking to make sure that all ESAs are avoided and protected. This includes verification that the current conditions of known significant resources do not change as part of this Project. If protected sites exhibit physical changes, then protection measures need to be immediately changed and improved under direction from the BLM archaeologist. Earthmoving within 50 feet of a significant resource may be halted.
- 6. If individual artifacts are exposed during monitoring, they shall be mapped in situ with a submeter accuracy, global positioning system (GPS) unit, collected, analyzed in the consultant's laboratory, cataloged, and curated. A curation agreement shall be established with a curation facility that meets federal standards.
- 7. If a feature (cluster of in situ artifacts, intact hearth, historic foundation, etc.) is exposed during monitoring, construction activities shall be diverted briefly until the Monitoring Supervisor has had the opportunity to assess the find and make appropriate recommendations. Consultant recommendations shall be provided to BLM and in accordance with the *Discovery Treatment Plan* provided later in this document. Avoidance is preferred and, if a resource cannot be avoided, then it first must be evaluated. If the resource is significant, then avoidance must be considered. If a significant resource cannot be avoided, then treatment measures (including possibly data recovery) must be implemented prior to recommencing construction. The details of this process are also discussed in the *Discovery Treatment Plan* provided later in this document. During the field implementation of archaeological studies, earthmoving within 50 feet may be halted.

After mitigation of site impacts are complete, and if additional cultural material is exposed by grading in the same site, additional hand-excavation will not be required unless the additional material represents a new kind of data not recovered during previous data recovery at that site. Such new data would consist of artifact classes and features not recovered during previous mitigation. Features may include hearths, refuse pits, and burials. Even if no additional hand-excavation is required, the newly exposed material shall be mapped and collected.

8. If human remains are encountered, a course of action following the requirements set forth in 43 CFR 10 and the BLM Native American Graves Protection and Repatriation Act (NAGPRA) as presented in the NAGPRA Plan of Action shall be followed. This includes stopping work in the exclusion area for a period of no more than 30 days while the consultation requirements of NAGPRA are completed. Work on the undertaking can proceed outside of the exclusion area. Should these BLM NAGPRA protocols not be followed, a violation of NAGPRA and the Archaeological Resources Protection Act (ARPA) may take place. The ARPA allows the government to assess civil fines and to proceed with criminal prosecution depending on the nature of the violation.

9. Notification Procedures

When a potential discovery not involving human remains is made during construction monitoring, the cultural resources monitor shall temporarily halt or redirect the work at that location and create a temporary exclusion area (Table 1). The monitor shall then notify the on-site Native American monitor (if not present) if the find is prehistoric (or potentially prehistoric) and the Monitoring Supervisor, who shall inspect the find and perform an initial assessment. If the find appears to represent a potentially significant cultural resource, the Monitoring Supervisor shall notify BLM. BLM shall then notify the Construction Manager, who will issue a temporary stop work order for the location of the find. A list of contact information is provided in Appendix C.

If human remains or fragmentary bones that are suspected to be human are encountered during construction activities, work at that location shall be suspended. The archaeological monitor shall notify BLM and the Native American monitor on-site (if not present at the discovery location) immediately. This notification will be the initial step in the consultation procedures under the NAGPRA. The remains shall be left in place and exclusionary fencing shall be placed in a 50-foot radius around the discovery. Decisions regarding additional identification procedures and the continuation or permanent suspension of work at the discovery location shall then be made by BLM.

Table 1 Discovery Notification Procedures

Resource Type	Definition (in a 25 m ² area)	Procedure
Isolated find	Fewer than three artifacts	Monitor to record, photograph, map with GPS
Archaeological site	Three or more artifacts; feature	Monitor to redirect construction, contact Monitoring Supervisor, erect exclusionary flagging/fencing, and record; Monitoring Supervisor to assess

Potentially human remains		Monitor to redirect construction, and contact BLM, Native American monitor (if not present), and Monitoring Supervisor; erect exclusionary flagging/fencing
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4.0 DISCOVERY PLAN

4.1 PLAN OF TREATMENT OF DISCOVERIES

This Discovery Plan addresses the actions to be taken should discoveries occur during Project implementation. Potential discoveries in the IVSP area are divided into two categories, each requiring distinct management procedures: treatment of previously unknown artifacts, features, site components, or sites; and treatment of human remains discoveries. The procedures to be followed should such discoveries be made during the treatment program or during Project implementation are reviewed below.

If human remains are encountered, the course of action will follow the requirements set forth in 43 CFR 10 and the BLM NAGPRA Protocols. This includes stopping work in the exclusion area while the consultation requirements of NAGPRA are completed. Work on the undertaking can proceed outside of the exclusion area. Should these BLM NAGPRA Protocols not be followed, a violation of the NAGPRA and ARPA may take place. The ARPA allows the government to assess civil fines and to proceed with criminal prosecution depending on the nature of the violation.

Whereas the protocols below apply to all discoveries, specific management and treatment measures may vary according to the resource type discovered, the discovery location within the Project area, and anticipated Project effects. Specific field and laboratory methods are presented in Appendix A.

MANAGEMENT OF PREVIOUSLY UNKNOWN SITES, SITE COMPONENTS, OR FEATURES

Previously unknown artifacts, features, site components, or even sites may be encountered during archaeological monitoring. The spatial distribution of features and their functional types are important aspects of the research design, both in terms of intrasite structure and spatial organization, and in the distribution of features associated with the desert cultural landscape. Some potential for buried remains occurs within depositional environments present within the APE.

Recovery and documentation of cultural materials will, at minimum, include mapping the discovery location and may also include one or more of the following: photographs; illustrations of artifacts, features, or soil profiles; surface artifact collection; and test or data recovery excavations. The procedures outlined below will be adhered to should there be archaeological discoveries during construction monitoring for the Project. A discussion of the disposition and

curation of recovered artifacts is presented later in the section titled *Data Management and Curation*.

Guidelines for the treatment of new discoveries within the Project area are as follows:

- The archaeological monitor shall have the authority to halt work in discovery vicinities and redirect heavy equipment away from the discovery site.
- All ground-disturbing activities that would adversely impact a newly discovered cultural resource shall be halted. The horizontal and vertical limits of the resource within the impact area shall be determined. The resource shall be protected by physical barriers and the presence of monitors to ensure that further disturbance to the resource is avoided and to minimize impacts.
- BLM shall apply the criteria for listing in the NRHP:
 - (A) It is associated with events that have made a significant contribution to the broad patterns of history and cultural heritage;
 - (B) It is associated with the lives of persons important in our past;
 - (C) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; and/or
 - (D) It has yielded, or may be likely to yield, information important in prehistory or history.

Properties found eligible for the NRHP are assumed to be eligible for the CRHR.

- If the cultural resource is determined by BLM to be a historic property (eligible for the NRHP), consultation shall take place to determine the appropriate treatment measures.
 - BLM shall consult with Native American groups or other interested parties regarding the treatment of the find.
 - As needed, a data recovery plan shall be developed by the consultant under direction and in coordination with BLM and to recover the significant values contained by newly discovered resources. Recovered data shall be processed, analyzed, and reported concurrent with other sites addressed during the treatment program. Refer to the specific field and laboratory methods in Appendix A.
 - If individual non-diagnostic artifacts are exposed during monitoring or construction, they shall be mapped in situ. If diagnostic artifacts are exposed, they shall be mapped using a sub-meter accuracy GPS unit, collected, analyzed in the consultant laboratory, catalogued, and curated.
 - If a feature (e.g., cluster of in situ artifacts, intact hearth, or foundation) is exposed during monitoring, construction activities shall be diverted until the find can be assessed and appropriate recommendations made. If excavation is required, it shall be accomplished expediently. Features shall be exposed and recovered using standard excavation techniques,
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with care taken to maintain the provenance of the feature as a distinct unit. The feature shall be photographed and mapped in place prior to recovery. Samples shall be recovered for special analyses (e.g., radiocarbon, macrobotanical, palynological, or faunal) as appropriate to the character of the feature. Artifacts collected shall be analyzed in the consultant's laboratory, cataloged, and temporarily curated.

- A determination shall be made as to whether a new discovery is part of an existing site or a previously unknown cultural resource. Based on that determination, either new Department of Parks and Recreation (DPR) forms will be created or the existing DPR forms shall be updated to include the discovery. The potential significance of newly discovered sites or site components shall be evaluated relative to the research design.
 - If a new site or significant component of a previously recorded site is discovered, construction activities will be halted in the area until an assessment of the find can be made. If it is determined that the site has the potential to yield important data that can address research questions, a sample of the site area shall be hand-excavated using the standard archaeological procedures described in Appendix A. BLM shall be informed by the consultant as to the estimated time necessary for an NRHP/CRHR eligibility determination. The assessment shall include mapping the locations and elevations of new discoveries. To the extent possible, boundary definition, assessment of content and integrity, and assessment of eligibility shall be accomplished with shovel test pit (STP) excavations. At minimum, the evaluation shall include recording, excavating, and reporting major features or artifact concentrations uncovered, and recovery/curation of a sample of uncovered artifacts where practicable.
 - Construction activities in the discovery area shall not resume until the site evaluation is completed. The consultant shall prepare a brief report of the findings and eligibility evaluation, and propose avoidance measures and provisions to minimize impacts specific to that discovery. This shall be submitted to BLM for review and concurrence. If further disturbance cannot be minimized, then the cultural resources contractor shall provide justification and recommendations for data recovery to BLM. If BLM determines that disturbance is justified, then recommendations for data recovery shall be reviewed by BLM for adequacy and to evaluate the cost of treatment versus the cost of Project redesign. Interested Native American community members shall be consulted if the resource contains a Native American context. Only after BLM review and approval of a site-specific data recovery plan shall such excavation be performed. Data recovery shall collect a representative sample of the deposits that would be destroyed.
 - The discovery of human remains during Project implementation shall require special procedures, as discussed below.
 - If additional cultural material is exposed by construction, after mitigation of site impacts has been performed per the Discovery Treatment Plan, additional hand-excavation will not be required unless the material represents a new type of data. Such new cultural material would consist of artifact classes and features not recovered in previous excavations. However, even if no additional excavation is required, the newly exposed material shall be mapped and collected.
 - Discoveries and their treatment relative to the research shall be reported in the final monitoring report for the Project. A separate report of findings and interpretation relative to a research design shall be prepared if data recovery excavations are employed for mitigative site treatment.
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MANAGEMENT AND TREATMENT OF HUMAN REMAINS

Human remains may be discovered in situ during the field excavation program, which includes the test unit excavations. Additionally, human remains may be discovered during the laboratory processing and analysis phases of the treatment program. Archaeological monitoring both within and outside site areas is also planned, during which isolated or disarticulated human remains may be uncovered. One of the objectives of archaeological monitoring is to identify such remains while they are still in place so they and their context can be managed in a manner that is sensitive to the Native American community or other ancestors and to address existing regulations.

If human remains are encountered, the course of action will follow the requirements set forth in 43 CFR 10 and the BLM NAGPRA Protocols as presented in the NAGPRA Plan of Action. This includes stopping work in the exclusion area for a period of no more than 30 days while the consultation requirements of the NAGPRA are completed. Work on the undertaking can proceed outside of an exclusion area defined by BLM. Should these BLM NAGPRA Protocols not be followed, a violation of the NAGPRA and ARPA may take place. The ARPA allows the government to assess civil fines and to proceed with criminal prosecution depending on the nature of the violation.

While it is hoped that human remains will not be encountered during the treatment program, the possibility exists that such a discovery can occur, and procedures are included herein to address such an event. When skeletal remains that may be human are encountered, the following steps will be taken:

- For Project construction activities (as described in the Monitoring Section), if definite or suspected human remains are encountered, the archaeological monitor shall halt work in the discovery vicinity and redirect heavy equipment away from the discovery site to avoid ground-disturbing activities that could adversely impact the remains. The monitor shall also immediately contact/notify the on-site Native American monitor, the consultant Monitoring Supervisor, and BLM. BLM shall then direct the procedures for identification and/or verification of the remains as human. The horizontal and vertical extent of occurrence of the remains within the impact area shall be determined. The remains shall be protected by physical barriers and the presence of monitors to ensure that further disturbance to the remains is avoided. Subsequent to verification of the remains, as previously indicated, the course of action shall follow the requirements set forth in 43 CFR 10 and the BLM NAGPRA Protocols.
 - For archaeological investigations, activities in the discovery area shall cease and the field supervising archaeologist shall notify the on-site Native American monitor and the Principal Investigator, who shall notify BLM. As with a discovery during construction, BLM shall then
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direct the procedures for the identification and/or verification of the remains as human. Subsequent to verification of the remains, as previously indicated, the course of action shall follow the requirements set forth in 43 CFR 10 and the BLM NAGPRA Protocols.

- Human remains shall be treated with respect and dignity, with care taken to limit disturbance and maintain the association of the remains with any accompanying funerary items and their physical setting. Archaeological investigations or Project development work shall not resume in the discovery area until the appropriate recovery and management actions have been completed.
- The specific location of the discovery shall be withheld from public disclosure, as will the location of any reburial site.
- No excavation of human remains shall be put on public display in any manner, nor photographed, except for the purpose of scientific documentation. No photographs of human remains shall be distributed to the public or published.

For laboratory situations, where small bone or fragments may be identified as sensitive, similar notification and management procedures to field discovery will be followed, and strict provenance controls will be maintained. As with the field, the initial step is expert identification which shall proceed as directed by the BLM. Subsequent to verification of the remains, the course of action will follow the requirements set forth in 43 CFR 10 and the BLM NAGPRA Protocols, including consultation with tribes and preparation of a written plan for management of the remains.

5.0 DATA MANAGEMENT AND CURATION

5.1 TECHNICAL REPORT PREPARATION AND DISSEMINATION

Reports regarding training, monitoring, consulting, evaluating, and data recovery (if necessary), will be responsive to contemporary professional standards. This will include the *Secretary of Interior's Standards for Archaeological Documentation* (NPS 1983).

A comprehensive technical report may be required that will present the results of monitoring, evaluation, and treatment programs completed in relation to the Imperial Valley Solar Project. The production and dissemination of the technical report is the final step in treatment. The consultant is responsible for technical report preparation, with BLM oversight and final document approval. The technical report and ancillary studies will also be responsive to contemporary professional standards and consistent with *ARMR* (OHP 1990). Precise locational data may be provided in a separate appendix if it appears that its release could jeopardize archaeological sites.

The draft report(s) will contain cultural background; the results of Native American consultation; a description of the physical environment; research design, methods, and results sections; and a discussion of meaning (interpretation). Results of laboratory and specialized analyses will be given along with a discussion of spatial and temporal distributions, as appropriate to the individual report. At a minimum, final technical report(s) resulting from actions pursuant to this treatment plan will be provided by BLM to the South Coastal Information Center.

5.2 CURATION IN PERPETUITY

Following completion of cataloging and analytical procedures, Project collections will be prepared for permanent curation according to Smithsonian Institution guidelines and the requirements of the permanent curatorial facility. Materials to be curated include archaeological specimens and samples, site catalogs, field notes, field and analysis forms, feature and burial records, maps, plans, profile drawings, photo logs, photographic negatives, consultants' reports or special studies, and two copies of the final technical report. These materials will be curated at a facility that meets federal standards as promulgated at 36 CFR Part 79, *Curation of Federally Owned and Administered Archaeological Collections*.

REFERENCES

National Park Service (NPS)

1983 *Secretary of Interior's Standards for Archeological Documentation*. Washington, DC.

Office of Historic Preservation (OHP)

1990 *Archaeological Resources Management Report (ARMR): Recommended Contents and Format*. California Office of historic Preservation, Sacramento, CA.

APPENDIX A
SPECIFIC FIELD AND ANALYTICAL METHODS

ATTACHMENT A

SPECIFIC FIELD AND ANALYTICAL METHODS

Standard archaeological field, laboratory, and analysis methods that are consistent with current scientific and regional procedures will be used for the Imperial Valley Solar Project (IVSP or Project). This appendix addresses newly discovered sites that cannot be avoided by Project construction. Upon unanticipated discovery of intact cultural deposits, including features, these resources will be evaluated for listing in the National Register of Historic Places (NRHP) and/or the California Register of Historic Resources (CRHR).

Strategies will include controlled excavations, which consist primarily of Shovel Test Pits (STPs) that measure 0.5 by 1 meter (m), Test Excavation Units (TEUs) that measure 1 by 1 m, and/or larger block exposures that are hand-excavated with strict provenance controls using shovels, trowels, picks, and other tools. Supervised mechanical excavations may also be used, where appropriate, as well as remote sensing surveys.

Archaeological resources are normally determined eligible under NRHP Criterion D or CRHR Criterion 4, potential for important information. The resource must clearly demonstrate the potential and must exhibit the requisite physical integrity. The presence of diagnostic (datable) material and/or artifacts allowing the opportunity to date the site is imperative. Resources in disturbed contexts with no opportunity to be dated are often ineligible for the NRHP. If a resource is eligible and cannot be avoided by construction, the Bureau of Land Management (BLM) may decide to conduct data recovery and excavate a representative sample of the site employing the excavation strategies below.

FIELD METHODS

SURFACE SCRAPES

Surface scrapes are employed in areas of dense vegetation and involve scraping the ground with a shovel in large units to expose the surface for examination.

SHOVEL TEST PITS

STPs are preliminary tests for the presence of subsurface cultural deposits. It is expected that they will be used to delineate the boundaries of previously unknown sites, site components, or large diffuse features, should they be discovered during archaeological fieldwork or monitoring. STPs normally measure approximately 35 centimeters (cm) in diameter and are excavated in incremental 10-cm levels. The number and distribution of STPs depend on the size and geomorphic setting of each site. Each STP is excavated to bedrock or to soil strata that are clearly not of a culturally relevant age, with the ground surface serving as reference for depth

measurements. Excavated soil is reduced by dry-screening through ¼-inch mesh hardware cloth, and recovered artifacts are collected and bagged by level, with reference numbers assigned and typical labeling information provided. Stockpiled dirt is returned to the STP upon completion; shovel test forms are completed for each unit.

TEST EXCAVATION UNITS

Manually excavated TEUs afford larger subsurface exposures than STPs and are used to recover representative samples of subsurface artifacts with controlled depth information. In general, TEUs measure 0.5 square meter (0.5 by 1 m) to 4 square meters (2 by 2 m); however, dimensions may vary according to circumstances, and adjacent units may be excavated in various configurations to develop block exposures. For example, site depth is a determinant for defining unit size. Unit depths greater than 1.5 m (5 feet) require the opening of an adjacent unit for health and safety issues, as well as for facility of excavation and recording. Also, additional exploration and exposure of a feature that extends beyond the boundaries of a TEU may be necessary. Excavation proceeds by 10-cm arbitrary contour levels unless natural or cultural strata are present; then, levels are subdivided to maintain these distinctions. Contour levels are maintained by measuring depth from the existing surface. An excavation level record is completed for each level. As appropriate, other records are completed, including plan views, profiles of test units, and descriptions of features. In addition, test units are selectively photographed during excavation to show artifact and/or stratigraphic associations, profiles, features, or other data.

Test units will be numbered by a sequential designation. The highest corner of each test pit is designated the unit's datum for elevation control. This corner will be marked with a pin flag labeled with the test unit's number. Depths of units are determined by empirical site stratigraphy. In alluvial or aeolian deposits, units can range up to several meters below the surface of the site. Whenever possible, units will be excavated to bedrock or to sediments that are clearly not of a culturally relevant age.

Hand-excavation of test units will normally be accomplished using shovels, trowels, breaker bars, and picks, depending on the composition of the soil and the nature of the cultural deposits. In feature contexts, trowels, brushes, and other small implements may be most appropriate. Special methods are used in the excavation of features, including sample collections suitable for special study. Charcoal (for radiocarbon assay) is collected when present. Depending on excavation context and research design issues, other samples that may be collected include bulk sediment for humate analysis and/or chemical analysis, pollen and/or phytolith, and flotation. Excavated soils are typically dry-screened through ¼-inch mesh to reduce sediment volume and bagged and tagged as previously described.

AUGER EXCAVATION

Auger excavations are used to define soil stratigraphy, to locate bedrock, or to test for the presence of cultural remains at greater depth, including potentially buried deposits. With extension handles, this procedure can accurately locate and trace soil strata at depths of several meters. Augers can be placed in the bottom of STPs or other excavation units to further test for depth of deposit when additional excavation is otherwise impossible. However, the small volume of most auger borings limits the usefulness of this procedure for mapping the absence of subsurface cultural deposits with certainty. Auger excavations may or may not proceed using arbitrary levels (e.g., 10 cm or 20 cm), depending on the circumstances. Augered soils are typically screened through ⅛-inch mesh to recover cultural remains. On each site, auger tests are sequentially numbered, and recovered materials are bagged, labeled, transported, and processed in the same manner as other excavated materials. Reference log numbers are assigned to each provenance unit, and an auger form is completed. Auger test locations are plotted on the site plan views, and auger holes are covered upon completion with the dirt available from the initial screening reduction.

TRENCHING

Where trenching is conducted, an archaeologist and/or geoarchaeologist will direct backhoe operation. The duties of this person include selecting trench locations and their dimensions, monitoring the backhoe while in operation, and examining profiles. Depths of trenches are determined by the site context. For safety, trenches deeper than 1.5 m (5 feet) should be double width or shored. This is an Occupational Safety & Health Administration (OSHA) requirement. Trench walls are photographed and profiled, and stratigraphic units are described. To facilitate accurate sketching, elevation-control stakes are placed at 20-m intervals along the excavated portions of the trench. Trench profiles will be cleaned and examined at least every 5 m. The depth of stratigraphic boundaries is measured from the surface, with strata boundaries extrapolated between mapping points. Standard sedimentary and soil variables are recorded for each stratum. Recorded variables may include (1) description of contacts; (2) soil color; (3) textures; (4) boulder and gravel content; (5) large clast angularity (gravel size and larger); (6) large clast lithology; (7) soil structure, consistency, and plasticity; (8) root content and form; (9) sedimentary structure; (10) disturbance; and (11) organic content. Standard data on soils and sediments are recorded on the Soil Worksheet. As warranted, diagnostic artifacts and special samples may be collected from trench profiles. These collections will be point provenanced and assigned individual numbers.

Back dirt from the trenches will be sample screened at no less than 5-m intervals through ⅛-inch mesh. All features encountered will be exposed by hand. Features will be recorded and mapped on feature forms and photographically documented.

Each trench is marked with a wooden stake labeled with the trench designation. A master list of trenches with their locations, dimensions, and general observations is maintained, and trench locations are included on the site map. Backfilling of trenches is done by backhoe after manual excavations on a site are complete. The wooden stakes marking trench locations will be left in place for mapping.

FEATURE EXCAVATION

Features will be exposed in plain view. If necessary, additional excavation units will be opened as a block. All feature components will be mapped and photographed. If appropriate, the feature will be bisected and profiled, and soil samples will be collected to allow the studies discussed below.

GEOMORPHOLOGY

The use of geomorphology in archaeological excavations has increased substantially over the last decade. A trained geomorphologist/geoarchaeologist will determine and discuss landform context and site formation processes, including the issue of disturbance, and will profile select trenches and excavation units. The geomorphologist will also help determine where trenches should be placed to obtain the best cross-section of the site stratigraphy.

REMOTE SENSING

There are several types of remote sensing techniques that are useful to locate buried features and other anomalies on archaeological sites. These techniques are noninvasive and, when used in combination with hand-excavation, can greatly increase the efficiency of the latter by indicating areas worthy of investigation. Such techniques may be employed in circumstances where they can provide information not otherwise obtainable.

Ground Penetrating Radar (GPR). GPR is a geophysical method that has been developed over the past 30 years for shallow, high-resolution, subsurface investigations of the ground. GPR uses high-frequency pulsed electromagnetic waves to acquire subsurface information. Energy is propagated downward into the ground and is reflected back to the surface from boundaries where there are electrical property contrasts. GPR is a method that is commonly used for environmental, engineering, archeological, and other shallow investigations.).

Resistivity Survey. Another method, soil-resistivity survey, uses an electrical current introduced into the soil to locate anomalies. The ease or difficulty with which this current flows within the soil is then measured, and resistant areas are mapped. Results are useful when the resistivity contrasts between the archaeological record and the surrounding soil matrix.

Magnetic-Field Gradient Survey. Magnetic-field gradient survey consists of mapping deviations from the uniformity of Earth's magnetic field.. This technique is based on the magnetic field gradient being consistently zero, with deviations from this uniformity indicating archaeological features. Magnetic-field gradient surveys are particularly useful in detecting remnant magnetization that originates from heating iron oxides found in most soils in features such as hearths, fire pits, and ceramic concentrations.

MAPPING METHODS

Point Provenance Method. The point provenance method is employed to map the locations of diagnostic artifacts, tools, and other items or significant features prior to collection or excavation, or to collect the surface of low-density sites. The Global Positioning System (GPS) units with sub-meter accuracy are used for point provenance mapping of monitoring finds, surface scatters of artifacts, and collecting isolated diagnostic cultural materials. Monitors and field mapping personnel will use hand-held GPS units to map finds and to collect surface materials. Materials collected will be assigned sequential reference numbers that are logged on GPS recording forms for the location of each item or feature documented. The reference number is used to prepare a site or item location map and in the presentation of tabled data and artifact illustrations provided in the technical report.

Electronic Distance Measurer Method. During testing and data-recovery program, where provenance accuracy is critical for meaningful interpretation of cultural resources, the electronic distance measurer (EDM) method is typically used. The EDM method provides precise locational data in three dimensions. Because each mapping shot records the vertical azimuth, distance, and bearing, site topography can also be easily documented. To make maximum use of the precision afforded by this mapping technique, data are linked to AutoCAD and geographic information system (GIS) software data and downloaded or entered into an electronic mapping program for output. When the mapping data are plotted, the result is a precise scaled map.

An electronic total station is used for the EDM method, and a single primary mapping station is located in a central area of each property. Sub-data are established, as needed, especially on large sites or those with diverse topography. Stations are established with a well-embedded 9-inch-long nail, and demarked with black-and-pink striped surveyor's flagging. Station labeling includes the station number, site number (permanent designation if available, field number if not), research organization, and date. At large properties, secondary mapping data can be established, keyed to the primary datum, and properly labeled to facilitate recordation of cultural, topographic, and other data.

PHOTOGRAPHS AND ILLUSTRATIONS

Photographic documentation will include color digital photographs taken throughout the monitoring program and during all phases of individual site treatment activities such as testing and/or data recovery. Photographs taken during monitoring will be used to document the activities monitored and the initial recordation of any discoveries or finds made. During testing and/or data recovery activities, photographs will include site overviews to show a site's physiographic and environmental setting, hand and mechanical excavations in action, and features and unit wall profiles. Photographs will be recorded on standard photographic logs identifying the frame, day, month, year, time, subject, and direction of view. Illustrative photographs will be included in the draft technical report.

Sketches or illustrations of unique features and artifacts are also beneficial in depicting details that are sometimes not evident in photographs. These techniques will be used, as determined necessary, and also included in the draft technical report.

CATALOGING AND ANALYTICAL METHODS

Collected artifacts will be inventoried and organized during and following fieldwork and prior to sorting and detailed attribute recording. The Reference Number Log (bucket/bag log) that is completed in the field is submitted to the laboratory with the bagged and labeled residues. The Reference Number Log is the primary inventory document and serves as the list against which artifacts and forms are crosschecked when transferred to the laboratory. Checking assures that (1) collections and data forms are present; (2) the provenance designations (e.g., site, test unit, depth) on each collection bag match those on the data forms and in the Reference Number Log; and (3) other required data sheets (e.g., feature records or special sample forms) are present, accurate, and complete. Data sheets with incomplete or unclear information and those that contradict other data sheets for the same property are returned to the appropriate field personnel (e.g., crew chief, field monitor) for correction.

CLEANING

Prior to cataloging and analysis tasks, most artifacts and specimens will be cleaned and stabilized, either at the wet-screening station or in the laboratory. Specimens that will *not* be cleaned include (1) wood or fiber; (2) fragile/friable bone, antler, or shell; (3) selected groundstone (for possible pollen wash or immunological analysis); (4) selected lithic tools (for blood residue analysis); and (5) possible baked clay or ceramic items.

For other artifacts, adhering dirt will be removed by washing or dry brushing. Flaked stone, groundstone, and shell are typically cleaned using water. Depending on its condition, bone may be either dry brushed or quickly immersed in water, gently brushed, and then quickly rinsed. To

prevent accidental contamination between provenances, artifacts from a single provenance will be cleaned and/or stabilized at the same time, and washing should proceed one unit at a time. Once dry, individual artifacts from each provenance will be placed in clean polyethylene bags along with identification tags produced on archivally stable cardstock. Radiocarbon samples will be placed in either aluminum foil pouches or in glass vials, which will then be placed in clean polyethylene bags. Flotation, pollen, sediment, and other bulk samples will be left in double polyethylene bags until they are processed.

SORTING AND CATALOGING

Sorting and cataloging methods will follow the requirements of the curation standards for a facility that will meet minimum federal requirements as published in 36 Code of Federal Regulations (CFR) Part 79. Specific curation requirements at the facility selected to curate the Project materials will also be ascertained and followed.

Recovered data are separated hierarchically into material class, artifact type, material, quantity, and weight. Material class separates artifacts and other data into such major categories as stone, ceramic, bone, shell, glass, metal, and others. The second ordering variable (artifact type) places the artifact into a category such as debitage, biface, mano, or awl. Material is sorted by toolstone (e.g., chalcedony, obsidian, volcanic, quartzite, or granite), bone, shell, etc.

This information is recorded on the master catalog form with the following additional data: count, weight, locus, unit coordinates, depth/level, unit type, unit designation, and curation box number. Stone, bone, and shell artifacts are counted; unmodified shell, bone, and charcoal are not. Special samples and ecological data (ecofacts) are recorded on the same catalog form, with the same information required for artifacts. Where appropriate, feature number, sampling stratum designation, soil stratum (stratigraphic) designation, and screening mesh size are also included for each catalog entry. Attributes for cores, debitage, flaked stone tools, groundstone, bifaces or projectile points, and prehistoric ceramics are recorded on the corresponding sub- or detail catalogs.

After the information has been recorded, an artifact is given a three-part catalog number, with each part separated by a dash. The first part of the catalog number is the site number, the second part is the year excavated, and the third part is assigned consecutively in the order of entry. After assigning catalog numbers, the artifacts will be placed in clean polyethylene bags with the catalog number and provenance written with archival-quality black ink markers. Identification tags will be generated on adhesive archival-quality labels and applied to the interior of the bags. The tags will include, at a minimum, catalog number, artifact type, and provenance information. Each tag will show the catalog number along with other pertinent

information, such as site number and selected provenance information. Bagged artifacts are stored in 6-inch-square boxes, which are incorporated into the temporary boxing system. The catalog will be entered into the computerized data management system for ease in sorting and manipulating data within and between sites.

TEMPORARY CURATION METHODS

Processed artifacts will be physically organized by artifact type and grouped using archival bags and boxes. The boxes will be temporarily stored at the AECOM processing facility until transfer to the designated curation facility. The boxing system is set up by site, class, and project number. After cataloging, the artifacts are placed in appropriately sized boxes. These boxes will be labeled with the box number and the item type (e.g., debitage, groundstone, bone, soil samples). Smaller archival-quality boxes or plastic film canisters may be used for small or unusual artifacts that need further protection. The boxed artifacts are then placed in a 12- by 15- by 10-inch archival banker's box. The boxes are recorded on an Inventory Spread Sheet.

For a discussion of long-term curation and artifact disposition, refer to the chapter *Data Management and Curation*.

ARTIFACT AND ECOFACT ANALYSES METHODS

Following initial processing and interim curation, artifact and sample analyses will proceed. The recovered chipped and groundstone assemblages, bone and shell artifacts, shell and faunal assemblages, and other items will be subject to a variety of morphological, functional, technological, and typological analyses as appropriate to the data class and research goals. Brief overviews of standard analysis methods are provided in the following sections.

Chipped Stone. The analysis of chipped stone items is directed toward developing classes (and types) of artifacts that are based on morphological, functional, and technological attributes.

Bifaces. Finished bifacial tools include such formal items as points, knives, and drills. The trajectory of biface reduction yields progressively smaller flakes and an objective piece that becomes thinner and takes on a planned form. The objective piece can include the original cobble/core or any detached flake modified using the bifacial strategy. At any point in the production sequence, an incomplete or broken biface can be used as a tool. Bifaces are classified according to the stage of manufacture represented. Biface reduction/production is recognized as a continuum, and the stages reflect arbitrary divisions within this continuum. Biface reduction can be performed on flakes, cobbles, or split cobbles, and can result in cores, tools, and rejected items.

The following data will be recorded for analyzed bifaces: manufacturing stage; lithic material; color, condition, and portion present; overall shape; base shape; transverse cross-section; longitudinal cross-section; and maximum dimensions (length, width, and thickness). The stages of biface manufacture include the following:

- *Stage 1: Edging.* Deep and wide cortical removals originate from natural lateral surfaces. Twenty percent or more of the cortex is retained. The cross-section is irregular or blocky. The width-to-thickness ratio is greater than 3:1.
- *Stage 2: Primary Thinning.* Primary thinning includes second-row and some third-row flaking, loss of natural surface platform angles, prepared platforms, straightened edges, and the most prominent masses and ridges removed. Minimal cortex is retained by the end of Stage 2. The biface begins to form an ovate shape, but the cross-section is rectangular, trapezoidal, or very thick lenticular. The width-to-thickness ratio is less than 3:1.
- *Stage 3: Secondary Thinning.* Overlapping flake scars form opposing lateral margins, no cortex remains, and the biface assumes the desired shape. The cross-section is becoming more lenticular, and the width-to-thickness ratio is about 4:1. Often, change to soft hammer percussion techniques takes place during this stage.
- *Stage 4: Shaping to Preform Tool.* Shaping results in regular flake removals and uniform lateral edges. The cross-section is very lenticular, and optimal width-to-thickness ratios are reached (between 4:1 and 5:1). Optionally, a change to pressure flaking may be made for tool shaping.
- *Stage 5: Finishing.* The preform is finished by notching or fluting, basal grinding, or minor retouch and shaping, if necessary, accomplished through pressure flaking. Stage 5 bifaces can be further subdivided into morphological types.
- *Stage 6: Tool Maintenance and Resharpener.* Continued use of the tool results in dulled edges. Resharpener by pressure flaking reduces the size of the tool and produces a characteristic S-shaped edge cross-section.

Projectile Points. Projectile points are finished bifaces and are a morphologic variation of this chipped stone category. Points exhibit a wide range of styles that are chronologically and culturally diagnostic and are, therefore, treated in greater detail. Typological analysis of projectile points provides diagnostic artifact characteristics to the items and increases their importance for chronological, settlement, subsistence, and technological research.

Projectile points are well-shaped (although not always symmetrical) thin bifaces with uniform cross-sections, regular and non-sinuous edges, little to no cortex, and minute edge alteration and retouch. They often have a deliberately prepared haft element oriented near the center of one end. From the distal to proximal ends, attributes of points include the tip, blade, and stem, but reflect considerable morphological variability in tip form, blade edges,

shoulder/barb configurations, notch location and orientation, stem shape, tang morphology, and base configuration.

The attribute stage of analysis recognizes three subclasses: “dart” points/shafted knives, “arrow” points, and indeterminate points. Points are further classified into named types (where possible). The attributes recorded for projectile points include lithic material, condition and portion present, blade edge form, blade shape, base shape, shoulder form, stem form, presence of serration, presence of basal notching, presence of side notching, cross-section, actual maximum dimensions (length, width, and thickness), length at longitudinal axis, actual width, position of maximum width, maximum blade width, basal width, maximum stem width, position of maximum stem width, shoulder height, proximal shoulder angle, distal shoulder angle, notch opening, side notch width, basal notch width, side notch depth, and basal notch depth.

Cores. This class of artifacts refers to bulky objective pieces used in the preparation of chipped stone tools. Most of these items are pieces representing a wide range of lithic reduction strategies, with the main goal oriented toward testing the quality of material or producing large serviceable flakes suitable for use or for modification into formal tools. Cores can be minimally described by core type, maximum dimensions (length, width, and thickness), lithic material, total observable flake removals, and percentage of cortex.

Cores can be separated into the following categories:

- Test blocks largely reflect the morphology of the original cobble and have a high percentage of cortex. They are characterized by a minimum amount of flaking (usually fewer than five flake scars), which was used to assess the texture and knapping quality of the stone and to determine whether vugs or impurities are present. Test blocks tend to represent rejected materials (i.e., those excluded from tool production trajectories).
- Split cobble/pebbles are the result of splitting cobbles or pebbles into half sections for further reduction. A minimum number of flake scars may be present. The specimens are not shaped and have thick, irregular cross-sections approaching plano-convex. Cortex covers more than 50% of the dorsal surface. Some secondary flaking may occur around the perimeter of the split edge, but the modification has not substantially changed the morphology of the split sections. The edges may or may not be sinuous.
- Biface cores are virtually indistinguishable from Stage 1 and 2 bifaces, described previously.

- Unidirectional cores primarily have a single striking platform from which a series of flakes has been detached. The flake removal can reflect direct percussion or bipolar technique, but the vast majority of flakes should originate from the single platform.
- Bipolar cores resemble single platform cores, but differ in the existence of a second platform on the opposite end of the core. The orientation of flake removal is from both ends of the core along a single axis.
- Bidirectional cores are similar to bipolar cores, but differ in the location of the second striking platform. In bidirectional cores, the platforms are not in opposable locations.
- Multidirectional (also labeled amorphous or unpatterned cores) have multiple platforms and flake scar orientation that may either coincide with the ridges on the original cobble or lens geometry or utilize appropriate edge angles from previous flake scar removals. The flake scar removal patterning may appear haphazard and random.

Unifaces. Unifaces are shaped tools or incidentally shaped flakes or blades that have been retouched or display continuous modification along one or more edges of one face. Flakes with modification along different edges on alternate faces are also regarded as unifaces. Edge modification can occur on the dorsal or ventral surfaces. During analysis, unifaces will be typed according to existing morphological categories (e.g., keeled scraper, beaked scraper, or concave scraper). In addition, the following observations may be recorded for each specimen: material, shape, cross-section, longitudinal cross-section, condition, location of worked edge(s), maximum dimensions (length, width, and thickness), and edge angle. Unifaces can be subdivided into the following subclasses:

- Formally shaped unifaces are tools with extensive retouching that has substantially modified the morphology of the tool. The retouching consists of a continuous series of flake scars knapped from the edge and extend from at least one-quarter to the entire face of the tool. The tool morphology may or may not be symmetrical, but the modification is relatively extensive and clearly patterned.
- Informally shaped unifaces are tools with incidental edge modification or retouching not substantially modifying the outline morphology of the flake. These items are regarded as expedient tools selected for their natural morphology or edge characteristics and are believed to have been used for a limited number of tasks. The shape of the original flake is largely evident. Edge modification is restricted to a series of five or more continuous flake scars along the edge. Discontinuous nicks randomly occurring along the edge are not regarded as modified flake tools.

Debitage. This category of artifacts refers to unmodified, discarded knapping residues resulting from the production and maintenance of chipped stone tools. Represented are a wide range of remains, including complete and broken flakes, angular waste, and heat spalls and potlids from errors in heat treatment. The attributes recorded for debitage include lithic material, manufacturing stage, completeness, presence and percentage of cortex, evidence

of heat treatment, and size. Debitage generally can be defined within the following six categories:

- Core flakes have definable dorsal/ventral surfaces and predominantly unfaceted platforms with steep platform/dorsal edge angles. The dorsal surface flake scar patterns may have unidirectional or multidirectional orientations. Flake cross-sections may be thick, angular, and irregular. Cortex commonly occurs on platforms and/or dorsal faces of these specimens.
- Biface flakes have definable dorsal/ventral surfaces and predominantly faceted platforms, acute platform/dorsal edge angles, and dorsal surface flake scar patterns with mostly multidirectional orientations. Flake cross-sections tend to be thin and concave/convex. Cortex does not occur on platforms and is rarely present on dorsal faces of these specimens. Biface reduction may have resulted in cores or tools.
- Unidentified flakes are flakes or flake fragments that possess insufficient characteristics to be classified as either core or biface flakes. They have definable dorsal and ventral orientations, but platforms are generally absent. This subclass is a general “catch-all” category for non-diagnostic flakes.
- Blades are a special form of long, relatively thin flakes characterized by unidirectional flake scar patterns on the dorsal face and a length-to-width ratio in excess of 2:1.
- Angular waste consists of irregular pieces of knapping debris that do not possess sufficient morphological attributes to permit classification into a specific flake category. Most are angular and blocky without discernible platforms or dorsal/ventral surface orientations.
- Heat spalls and potlid flakes are derived from thermal damage and are morphologically distinct from knapping debitage. Heat spalls are often characterized by crazed exterior surfaces and sometimes thermally discolored lithic materials. Typically, the dorsal surface of heat spalled debris displays cortex or compression rings from previous flake removals. Potlids are plano-convex spalls, where the planar surface is the dorsal side and the convex surface is the ventral. Potlids and heat spalls are formed from differential expansion/contraction of stone materials under extreme thermal conditions; they characteristically lack the compression rings of force. This type of debris is usually derived from failed attempts at heat treatment or accidental exposure to fire.

Because debitage is generally the most frequent artifact class on prehistoric sites, and because minimal additional key conclusions can be obtained using size data on numerous individual specimens, size sorting of debitage can be accomplished. Debitage analysis is also useful for determining whether heat treatment was a phase in tool production. Characteristic heat treatment attributes or damage such as differential luster and crazed surfaces will be recorded during debitage analysis.

Groundstone. Groundstone is defined as lithic material whose shape is modified by repeated friction of stone against stone, as opposed to chipping. Groundstone is recorded using simple

morphological and technological attributes based on size and shape. For groundstone specimens, type, lithic material, number of ground surfaces, and maximum measurements (length, width, thickness, and weight) are recorded. In addition, evidence of formal shaping, rejuvenation, secondary use, and the presence and distribution of peck marks, polish, and striations can be recorded.

Common groundstone artifacts include the following:

- Milling stones or metates are large, tabular pieces of stone that exhibit flat to concave ground surfaces on one or both faces. They served as the surface against which materials were ground. They are separated into slab, block, and amorphous forms based on thickness and cross-section. Those that have rectangular cross-sections and are 6 cm or less in thickness are termed slab milling stones. Those with rectangular cross-sections but are greater than 6 cm in thickness are termed block metates. Milling stones with irregular, long cross-sections, without consideration of their thickness measurements, are termed amorphous. Surfaces may be classified as Type A (planar) or Type B (concave).
- Handstones or manos are handheld grinding stones used to mill food grains or other items against a metate. Typically, they are slabs or cobbles of a size to fit in one or two hands and exhibit a flattened, ground surface on one or more of their faces. Type 1 manos include amorphous to subrectangular handstones with no indication of intentional shaping. Type 2 manos are those that have been shaped into a regularized form. This type is further subdivided on the basis of size into one-handed and two-handed varieties, with two-handed manos defined as those greater than 15 cm along their longest axis.
- Mortars are deeply concave stones in which material was ground and/or pounded. They may be either bowl or bedrock forms.
- Pestles are handheld grinding stones used to press against and into a mortar. They are typically long, cylindrical, and rounded at one or both ends.
- Discoidals/cogstones are thick circular items that served an unknown function, but are associated with the Milling Stone tradition in California archaeological contexts.
- Abrading stones show parallel striations oriented longitudinally (rather than transversely) on one or more faces. Battering may also be present.
- Pendants/gorgetts are extensively ground on both surfaces and may have evidence of a biconically drilled hole.
- Unidentified groundstone are fragments that are too small to distinguish morphology or function. These have one or more ground/faceted surfaces, but the remaining portion is too small to infer artifact type.

Hammerstones. Typically, these artifacts are unmodified cobbles, initially reduced cores, or broken cores that exhibit battering on one or more edges. Three subclasses may be defined, two indicating the state of reduction of the artifact and the third indicating the degree of wear. The first subclass includes cobbles that lack signs of modification except for obvious battering at one

or more points on the cobble surface. The second subclass is cores that show battering on one or more previously flaked edges. The third subclass is pecking stones: pebbles or cobbles with lighter and more localized wear, often on a pointed projection of the cobble. For these specimens, lithic material, number of modified surfaces, and maximum measurements (length, width, thickness, and weight) can be recorded.

FAUNAL ANALYSES

A minimum number of individuals indexed will be developed for the vertebrate sample. The purpose of vertebrate faunal analysis is twofold: (1) to identify the variety of fauna present in the local environment over a long period of time, and (2) to identify the species of animals and birds that were included in the human diet, and their ratios diachronically. Both aspects—environmental change and subsistence base—are integral to understanding prehistoric adaptations and historic uses of the area. Special attention to the possibility of faunal remains related to the Anza expedition will be included in the analysis.

SPECIAL STUDIES

Special studies to be completed for the treatment program, as data facilitate, include the following:

- *Radiometric Analysis.* Selected charcoal and shell samples and other remains containing carbon (e.g., organics and bone) from key contexts will be submitted for radiocarbon assay. Approximately 10 samples will be submitted to establish the chronology of paleolandscapes for the paleoenvironmental reconstruction historic context, and another 10 will be submitted to date the chronology of sites and site components should sufficient data be recovered during the treatment program.
- *Obsidian Sourcing Analyses and Hydration.* Obsidian sourcing analysis is used for providing an idea of the regional exchange system within which prehistoric site occupants operated. Obsidian hydration analysis by source is useful for assigning relative chronological ages to the sites and associated materials.
- *Flotation, Pedological, and Chemical Analyses of Sediments.* Flotation analysis of cultural features, including subsequent macrobotanical identification, as necessary, is an important aspect of the evaluation program. Data can be used to address subsistence, site function, seasonality of occupation, internal site structure, and settlement type. Pedological and chemical analyses are useful for geomorphic studies, paleoenvironmental reconstructions, and postformation processes.
- *Ceramic Analyses.* Ceramic thin sectioning (sourcing).
- *Other Analyses and Assays.* Other types of artifact analyses and sample assays may be performed if sufficient data are recovered during the treatment program. These include (1) blood residue (immunological) analysis of selected lithic tools, (2) microscopic use/wear analysis of the edges of selected lithic tools, and (3) stable carbon isotope assay of bone samples from various taxa.

ATTACHMENT B
DAILY MONITORING LOG

IMPERIAL VALLEY SOLAR PROJECT
DAILY ARCHAEOLOGICAL MONITORING LOG

DATE: _____

ARCHAEOLOGICAL MONITOR: _____

FACILITY: _____

ARRIVAL: _____ LUNCH: _____ DEPARTURE: _____

PROJECT AREA(S): (Location) _____

TYPE OF WORK AND EQUIPMENT: _____

SUMMARY OF CONSTRUCTION ACTIVITIES PERFORMED: _____

MONITORING ACTIVITIES PERFORMED (e.g., protection of ESA): _____

CULTURAL RESOURCES PRESENT: _____

NATIVE AMERICAN MONITOR (If present): _____

NON-COMPLIANCE: _____

COMMENTS: _____

LOG FILED WITH MONITORING SUPERVISOR: _____

ATTACHMENT C
CONTACT LIST

CONTACT LIST

AFFILIATION	TELEPHONE	EMAIL	NAME
Bureau of Land Management Cultural Resources			
California Energy Commission			
Tessera			
Construction Manager			
Monitoring Supervisor			
Principal Investigator			
Imperial County Coroner			

APPENDIX J: EXAMPLE NAGPRA PLAN OF ACTION

**DRAFT EXAMPLE
NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT
PLAN OF ACTION:**

**A WRITTEN PLAN OF ACTION
FOR THE TREATMENT OF
INTENTIONALLY EXCAVATED OR INADVERTENTLY DISCOVERED
HUMAN REMAINS, FUNERARY OBJECTS, SACRED OBJECTS,
OR OBJECTS OF CULTURAL PATRIMONY
FOR THE IMPERIAL VALLEY SOLAR PROJECT IN CALIFORNIA DESERT DISTRICT OF THE
BUREAU OF LAND MANAGEMENT CALIFORNIA**

Prepared For:

Bureau of Land Management
1661 South 4th Street
El Centro, CA 92243

Prepared By:

LSA Associates, Inc.
703 Palomar Airport Road, Suite 260
Carlsbad, CA 92011
(760) 931-5471
May 28, 2010

and

Supplemented by AECOM
1420 Kettner Boulevard, Suite 500
San Diego, CA 92101
(619) 233-1454

August 13, 2010

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- A Upon The Discovery of Human Remains, Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony
- B List of Native American Tribal Contacts

Introduction

This Plan of Action (POA) describes the procedures for the treatment and disposition of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony (hereinafter, cultural items) for inadvertent discoveries during construction of the Imperial Valley Solar Project (IVSP or Project) located in the California Desert District (CDD) of the Bureau of Land Management (BLM), California. This POA complies with the requirements of the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S. Code (USC) 3001 et seq. and its implementing regulations as set forth in 43 Code of Federal Regulations (CFR) Part 10 (specifically §10.5[e]), and the Archaeological Resources Protection Act (ARPA), 16 USC 470aa-mm., with its implementing regulations (43 CFR Part 7).

Planned Action

The IVSP would construct a 750-megawatt (MW) solar energy plant on approximately 6,500 acres of public lands in California administered by BLM CDD and the El Centro Field Office. The Project would use existing roads and construct new roads in the Project area.

The Project is located in western Imperial County, California, immediately east of the town of Ocotillo, west of the town of Seeley, and north and south of Interstate 8 (I-8). The Project will use the SunCatcher technology of Stirling Energy Services. Each SunCatcher consists of a 25-kilowatt solar power electric-generating system. The system is designed to track the sun automatically and to focus solar energy onto a Power Conversion Unit, which generates electricity. The system consists of an approximate 38-foot-high by 40-foot-wide solar concentrator dish that supports an array of curved glass mirror facets. The 300-MW Phase I of the Project will consist of approximately 12,000 SunCatchers. The 450-MW Phase II portion of the Project will include approximately 18,000 SunCatchers.

The Project will include the construction of a new 230-kilovolt (kV) substation approximately in the center of the Project. A Main Services Complex, where key buildings and parking areas will be located, will be constructed at the northeastern end of the Phase I Project. Main roads will be constructed with a combination of roadway dips and elevated sections across the dry washes on the Project. The full Phase II expansion of the Project will require the construction of the 500-kV Sunrise Powerlink transmission line that San Diego Gas & Electric (SDG&E) has proposed. A 230-kV transmission line that will be built for Phase I will parallel the current transmission line corridor for the Southwest Powerlink transmission line within the existing right-of-way (ROW). The main entry for truck traffic to the Project during construction will be from I-8 to the Project entrance on Evan Hewes Highway. During Project operation, the secondary and emergency access will be from Dunaway Road.

Consultations

Based on previous consultation, the Campo Band of Kumeyaay Indians, the Cocopah Indian Tribe, the Fort Yuma Quechan Indian Tribe, the Ewiiapaayp Band of Kumeyaay Indians, the Jamul Indian Village, the Kwaaymii Laguna Band of Indians, the La Posta Band of Kumeyaay

Indians, the Manzanita Band of Kumeyaay Indians, the San Pasqual Band of Diegueno Indians, and the Santa Ysabel Band of Diegueno Indians (tribes) have been contacted for the IVSP and have indicated that the project is within ancestral territory. Additionally, sensitive areas have been identified in association with relic shorelines of ancient Lake Cahuilla. Should remains subject to NAGPRA be discovered during the course of construction, BLM will continue to consult with the interested tribes. These groups have been consulted with and have received a copy of this plan.

BLM's duty to consult with tribes does not include any obligation, implied or expressed, to fund or pay tribes or tribal members for their participation to consult or confer with BLM.

1) Objects to be considered as cultural items:

For the purpose of this plan, the objects considered as cultural items are defined in 43 CFR 10.2 (d) and are as follows:

1. *Human remains* means the physical remains of a human body of a person of Native American ancestry. The term does not include remains or portions of remains that may reasonably be determined to have been freely given or naturally shed by the individual from whose body they were obtained, such as hair made into ropes or nets or individual teeth. For the purposes of determining cultural affiliation, human remains incorporated into a funerary object, sacred object, or object of cultural patrimony, as defined below, must be considered as part of that item (43 CFR 10.2[d][1]).
2. *Funerary objects* means items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at the time of death or later with or near individual human remains. Funerary objects must be identified by a preponderance of evidence as having been removed from a specific burial site of an individual affiliated with a particular Indian tribe or Native Hawaiian organization, or as being related to specific individuals or families or to known human remains. The term *burial site* means any natural or prepared physical location, whether originally below, on, or above the ground, into which, as part of the death rite or ceremony of a culture, individual human remains were deposited, and includes rock cairns or pyres that do not fall within the ordinary definition of a gravesite. For purposes of completing the summary requirements in §10.8 and the inventory requirements of §10.9 (43 CFR 10.2[d][2]), funerary objects can be further defined as follows:
 - (i) Associated funerary objects means those funerary objects for which the human remains with which they were placed intentionally are also in the possession or control of a museum or Federal agency. Associated funerary objects also means those funerary objects that were made exclusively for burial purposes or to contain human remains.
 - (ii) Unassociated funerary objects means those funerary objects for which the human remains with which they were placed intentionally are not in the possession or control of a museum or Federal agency. Objects that were displayed with

individual human remains as part of a death rite or ceremony of a culture and subsequently returned or distributed according to traditional custom to living descendants or other individuals are not considered unassociated funerary objects.

Funerary objects found in prehistoric burials in the Colorado Desert include, but are not limited to, arrowheads, shell beads, pendants, ceramic pots, and arrow shaft straighteners.

3. *Sacred objects* means items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents. While many items, from ancient pottery sherds to arrowheads, might be imbued with sacredness in the eyes of an individual, these regulations are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and that have religious significance or function in the continued observance or renewal of such ceremony. *Traditional religious leader* means a person who is recognized by members of an Indian tribe or Native Hawaiian organization (43 CFR 10.2[d][3]) as follows:

- (i) Being responsible for performing cultural duties relating to the ceremonial or religious traditions of that Indian tribe or Native Hawaiian organization, or

- (ii) Exercising a leadership role in an Indian tribe or Native Hawaiian organization based on the tribe or organization's cultural, ceremonial, or religious practices.

4. *Objects of cultural patrimony* means items having ongoing historical, traditional, or cultural importance central to the Indian tribe itself, rather than property owned by an individual tribal or organization member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by an individual tribal or organization member. Such objects must have been considered inalienable by the culturally affiliated Indian tribe or Native Hawaiian organization at the time the object was separated from the group (43 CFR 10.2[d][4]).

2) Specific information to determine custody:

In the event of the removal of NAGPRA material on Federal lands, the following specific information will be used to determine custody:

1. Information provided by a lineal descendant(s) that can trace his or her direct relationship, without interruption, between themselves and the deceased by means of the traditional kinship system of the appropriate Indian tribe (43 CFR 10.2[b] and 43 CFR 10.14[b]).
2. Information provided by a Native American tribe, people, or culture that is indigenous to the United States and that can establish cultural affiliation by means of a relationship of shared group identity that can reasonably be traced historically or prehistorically between members of a present day Indian tribe and an identifiable earlier group (25 USC 3001[9], 43 CFR 10.2[e] and 43 CFR 10.14[c]).

3. The Federal agency official will determine cultural affiliation between a present-day individual or Indian tribe by a preponderance of evidence based on geographical, kinship, biological, archaeological, anthropological, linguistic, folkloric, oral traditional, historical, or other relevant information or expert opinion (25 USC 3005 [a][4], 43 CFR 10.2[e], and 43 CFR 10.14[e]).
4. Priority order of custody of the cultural materials will be consistent with 43 CFR 10.6 (a) as follows:
 - (1) In the case of human remains and associated funerary objects, in the lineal descendant of the deceased individual as determined pursuant to Sec. 10.14 (b);
 - (2) In cases where a lineal descendant cannot be ascertained or no claim is made, and with respect to unassociated funerary objects, sacred objects, and objects of cultural patrimony:
 - i. In the Indian tribe on whose tribal land the cultural items were excavated;
 - ii. In the Indian tribe that has the closest cultural affiliation with the cultural items as determined pursuant to Sec. 10.14 (c); or
 - iii. In circumstances in which the cultural affiliation of the cultural items cannot be ascertained, BLM is unable to prove a right of possession as defined at 43 CFR 10.10(a)(2), and the materials were excavated or removed from Federal land that is recognized by a final judgment of the Indian Claims Commission or the United States Court of Claims as the aboriginal land of an Indian tribe:
 - (A) In the Indian tribe aboriginally occupying the Federal land on which the cultural items were excavated, or
 - (B) If it can be shown by a preponderance of the evidence that a different Indian tribe has a stronger cultural relationship with the cultural items, in the Indian tribe that has the strongest demonstrated relationship with the objects.

BLM intends to repatriate human remains and associated funerary objects when cultural affiliation can be determined.

3) Planned treatment, care, and handling of human remains:

All discovered remains will be treated with respect and dignity. BLM will provide the tribes an opportunity to examine remains prior to removal and to conduct traditional religious activities, if this is feasible without delay that would endanger the remains. While BLM will provide the opportunity to view the remains prior to removal, the tribes are responsible for their travel expenses to and from the location of the discovery.

The IVSP will avoid any unnecessary disturbance, physical modification, or breakage of remains and the transport, inventory, or storage of human skeletal remains in locations separate from their associated funerary objects. Treatment will proceed according to the following provisions:

1. Representatives of the tribes will have the opportunity to be present during the exposure and removal of remains whenever possible. If agreed upon by BLM and the tribes, and if feasible, specific tribes may be designated to take the lead in initially responding to discoveries.
2. Remains will be excavated in accordance with the stipulations of the Monitoring and Discovery Plan approved under the terms of the Project's Programmatic Agreement (PA) for compliance with Section 106 of the National Historic Preservation Act (NHPA).
3. No destructive analyses of remains will be permitted without the written permission from BLM, and only after BLM has consulted with tribes regarding the planned treatment, care, and handling of any recovered human remains, funerary objects, sacred objects, or objects of cultural patrimony.
4. Drawings of remains and the locations of associated funerary objects will be made and may be published with BLM approval unless the claimants determine funerary objects are of a sensitive nature.
5. No pollen or flotation samples will be removed from burial pit fill dirt without the written permission of BLM, and only after BLM has consulted with tribes regarding such removal.
6. Transportation of cultural items will be minimized under all circumstances and will be carefully packed to avoid disturbance or damage. Human remains may be packed separately from their associated funerary objects, but the containers will be kept together at all times.
7. Representatives of the tribes will be afforded the opportunity to view all artifact collections and records resulting from the archaeological investigation to identify funerary objects, objects of cultural patrimony, or sacred objects. If such objects are identified, BLM will be notified by the tribes and consultation will be initiated regarding their consistency with NAGPRA criteria for identification of these classes of objects and their treatment and disposition.

8. IVSP is responsible for ensuring the security of cultural items from vandalism or other disturbance through employment of security personnel, fencing, and other appropriate measures, as needed. If human remains are endangered by exposure or other factors, IVSP's approved cultural resources/archaeological contractor may be authorized by BLM to proceed with removal of the cultural items to their facility to protect the cultural items. Written notice of this action must be provided to the claimants and agencies within 3 days of removal.
9. IVSP will not resume construction in the buffer area surrounding the discovery until it has received written authorization to proceed based on procedures established in the treatment plans as prescribed in the PA. In addition, no news releases, including photographs, videotapes, written articles, or other means of information, shall be released by any party unless approved by BLM and the tribe(s).

4) Planned archaeological recording of the human remains and cultural materials:

All cultural items, as defined in this POA, will be appropriately recorded and described using current standards and following current archaeological practices and methods. The archaeological documentation of human remains will be limited to visually evident characteristics that indicate such things as age, gender, obvious pathologies, and any obvious visual traits that may help to indicate cultural affiliation. Funerary objects will be recorded at a descriptive non-invasive level including measurements, type, and morphology. If human remains and/or cultural items are removed from the site, a catalogue of these items will be maintained.

5) Analysis planned for the human remains and cultural materials:

Initially, only non-destructive analyses will be carried out on the human remains. These can include anthropometric analyses (measurements/weight), mapping, drawing, measuring, weighing, and photo documentation. After consultation with the tribe(s), other tests may be determined appropriate by BLM.

Likewise, only non-destructive analyses will be carried out initially on the associated funerary objects, unassociated funerary objects, sacred items, and objects of cultural patrimony. These can include measuring and weighing, drawing, mapping, photographing, X-raying, and X-ray fluorescence analysis. After consultation with the tribe(s), other tests may be authorized by BLM.

6) Steps to be followed to contact Indian tribe officials at the time of intentional excavation:

In the event of a discovery, IVSP's approved cultural resources contractor/permittee will notify BLM and the appropriate land managing agency within 24 hours and may be authorized to undertake limited additional excavation and examination to assess whether the materials are within the protected classes of remains covered by the PA. The notification will include the following information:

- A. A verbal description of what was found and the context in which NAGPRA items are located
- B. The location of the NAGPRA items
- C. A preliminary assessment of the type of NAGPRA items
- D. An assessment of the complexity of the burial(s), human remains, and/or other NAGPRA items, and the likelihood of disturbance if left in place
- E. Any other pertinent information

BLM shall notify the tribes promptly after the initial discovery of items protected under NAGPRA and provide written confirmation by certified mail, or alternatively Express Mail, of the discovery within 3 working days (see Attachment A and B). The information to be provided to the tribes will include the following:

- A. A verbal and written description of what was found and the context in which NAGPRA items are located
- B. The location of the NAGPRA items
- C. A preliminary assessment of the type of NAGPRA items
- D. An assessment of the complexity of the burial(s), human remains, and/or other NAGPRA items, and the likelihood of disturbance if left in place
- E. A request that the tribe(s) respond within 24 hours if the tribe(s) wish to view the remains or objects in place
- F. Any other pertinent information

BLM will additionally afford the tribes the opportunity to conduct field visits, viewings of the items in question, and appropriate and reasonable ceremonies or rituals related to the items in question. The tribes are responsible for any costs to and from the discovery site.

7) Kind of traditional treatment to be afforded the human remains:

The tribes will be afforded the opportunity to examine the remains prior to and during removal unless the remains are in direct danger of further disturbance or destruction. Tribal representatives will be afforded the opportunity to perform traditional treatments, as needed, to the remains.

8) Nature of reports to be prepared:

A comprehensive report on the results of the archaeological investigation, including the recovery of cultural items, will be prepared and distributed in accordance with the terms of the aforementioned PA, developed in accordance with Section 106 of the NHPA.

9) Planned disposition of human remains pursuant to 43 CFR 10.6:

In the event that discovered NAGPRA items must be removed, BLM will determine, pursuant to 43 CFR 10.6, which Native American tribe will receive custody of the items. BLM intends to repatriate human remains and associated funerary objects when cultural affiliation can be

determined. BLM will provide notification of intent to transfer possession and subsequently return the items to the appropriate tribe within the limitations of 43 CFR 10.15.

Upon determination of a lineal descendant(s) or culturally affiliated tribe that, under Federal regulations, appears to be entitled to custody of the human remains, the agency official will transfer custody of the deceased to that lineal descendant or culturally affiliated tribe in accordance with 43 CFR 10.6(c).

Prior to any such disposition, the agency official will publish a general notice of the proposed disposition in three separate newspapers of general circulation in the areas where interested tribes now reside. The notices will be published at least two times at least 1 week apart, and the transfer will not take place until at least 30 days after publication of the second notice to allow time for any additional claimants to come forward.

If additional claimants do come forward and the agency official cannot clearly determine which claimant is entitled to custody, the agency official will not transfer custody of the deceased until such time as the proper recipient is determined, pursuant to regulations found at 43 CFR 10.

In the event the remains are of Native American descent, but are not claimed by any tribe within the geographical area, they will not leave the custody of the Federal agency. Should custody of remains be transferred to claimant tribes under 10.6, the tribes may request reburial on BLM land. Reburial of NAGPRA items on lands administered by BLM is subject to the provisions found in Instructional Memorandum No. 2007-002. The reburial locations will be determined through consultation with the tribes, and any locational information will be kept confidential to the extent allowed by law.

10) The role of tribal monitors during survey and excavation:

Individuals who are approved tribal monitors on the Project will notify the Principal Investigator(s) about items they feel are funerary objects, sacred objects, and/or objects of cultural patrimony. The Principal Investigator will notify BLM within 24 hours that monitors identified funerary objects, sacred objects, and/or objects of cultural patrimony. The report will include a description of the find(s), photograph(s) or drawing(s) were applicable, artifact(s) numbers or identification were applicable, and a description of the tribal monitor's opinion(s).

11) BLM personnel and tribal representatives involved in this NAGPRA effort:

As a result of tribal consultation, the following parties will be involved in this NAGPRA effort:

Campo Band of Kumeyaay Indians, the Cocopah Indian Tribe, the Fort Yuma Quechan Indian Tribe, the Ewiiapaayp Band of Kumeyaay Indians, the Jamul Indian Village, the Kwaaymii Laguna Band of Indians, the La Posta Band of Kumeyaay Indians, the Manzanita Band of Kumeyaay Indians, the San Pasqual Band of Diegueno Indians, and the Santa Ysabel Band of Diegueno Indians (tribes), and the Ah-Mut Pipa Foundation and Kumeyaay Cultural Repatriation Committee (Tribal Organizations).

The names and addresses of the tribal members are in Attachment B.

Federal Officials

California State Director, Bureau of Land Management Date

California Desert District Manager, Bureau of Land Management Date

Invited Signatories

Date

Date

Date

Date

Date

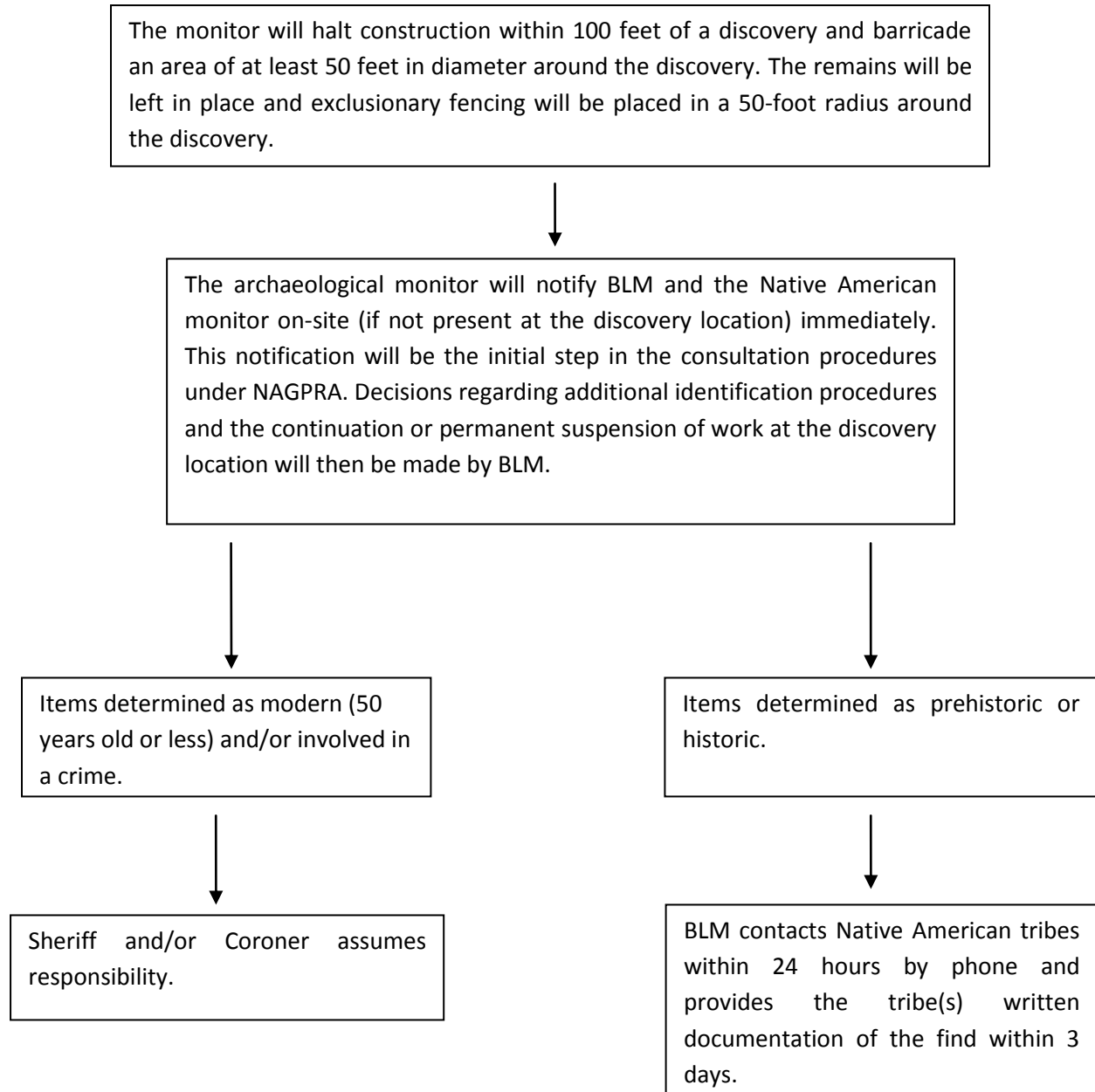
Date

Date

Date

Attachment A

Upon The Discovery of Human Remains, Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony



Attachment B

List of Native American Tribal Contacts

Appendix 4

Environmental and Construction Compliance Monitoring Program

United States Department of the Interior
Bureau of Land Management

Calico Solar Project
San Bernardino County, California
Environmental and Construction Compliance
Monitoring Program

For the

Barstow Field Office
2601 Barstow Road
Barstow, California 92311

October 12, 2010

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Attachment I	Summary of California Energy Commission Conditions of Certification and Bureau of Land Management Monitoring

List of Abbreviations

AFC	Application for Certification
AO	authorized officer
BLM	U.S. Bureau of Land Management
BNSF	Burlington Northern Santa Fe
CEC	California Energy Commission
CPM	compliance project manager
ECCMP	Environmental and Construction Compliance Monitoring Program
FLMPA	Federal Land Policy and Management Act
LLC	Limited Liability Company
MW	megawatt
POD	plan of development
ROD	record of decision
ROW	right-of-way
SCE	Southern California Edison
SES	Stirling Energy Systems

1.0 Introduction

Calico Solar Limited Liability Company (LLC) (Calico Solar), formerly Stirling Energy Systems (SES) Solar Six LLC and SES Solar Three LLC, intends to develop an electric-generating facility with a nominal capacity of 663.5 megawatts (MW) using concentrated solar power. The Calico Solar Project (Project) would be constructed on approximately 4,604 acres of federal land managed by the U.S. Bureau of Land Management (BLM), Barstow Field Office. Construction is scheduled to begin in fall 2010 and end in 2015. The Project site is located in San Bernardino County, California, approximately 115 miles east of Los Angeles, approximately 57 miles northeast of Victorville, and 37 miles east of Barstow.

The Project will use SES SunCatcher technology and includes the construction, operation, and decommissioning of the solar power generating facility and related facilities and infrastructure features. When fully developed, the Project will consist of 26,540 SunCatchers.

Southern California Edison (SCE) operates the existing transmission lines adjacent to the Project site. Calico Solar has signed a Power Purchase Agreement with SCE to purchase a 850MW power output from the Project. The Project will connect to SCE's transmission system at the existing Pisgah Substation and will provide energy, ancillary services, or both to the grid controlled by the California Independent System Operator.

Before construction, Calico Solar will assemble an environmental inspection team to oversee all aspects of Project construction and to provide training to the construction, inspection, and monitoring workforce. Calico Solar's inspection team will include both a construction management team and an environmental management team. These two entities will be responsible for ensuring full compliance with all BLM and California Energy Commission (CEC) requirements contained in the Project's Plan of Development (POD).

In addition, as required of BLM right-of-way (ROW) grants holders, Calico Solar will fund a third-party environmental compliance monitoring team to work under the direction of the CEC and BLM and in close collaboration with other regulatory agencies, as warranted. The third-party compliance monitoring team will focus its efforts on ensuring the requirements of the BLM ROW grant, CEC certificate, and other duties as described below.

1.1 Purpose of this Report

In addition to presenting the objectives of the Environmental and Construction Compliance Monitoring Program (ECCMP) for the Project, this report:

- Describes the ECCMP's organizational, reporting, and communication structure.

- Clarifies the roles and responsibilities of Calico Solar's inspection and construction teams and the third-party monitoring contractor.
- Describes the environmental training requirements.
- Details the compliance reporting and documentation processes and reports.
- Outlines the ECCMP's variance processes and procedures to account for changes from approved mitigation measures or construction procedures.
- Discusses emergency procedures.
- Identifies equipment needs.
- Identifies the threshold for when the third-party compliance monitoring contract should be ended.

1.2 Memorandum of Understanding with the California Energy Commission

In 2007, the BLM and the California Energy Commission (CEC) formalized a Memorandum of Understanding (MOU) for the joint environmental review of solar thermal power plant projects to be located on public lands. In September 2010, that MOU was amended to ensure that the BLM and CEC “. . . share in construction compliance, environmental compliance, design review, plan check, and constructions, maintenance, operation and termination inspection (collectively “compliance review”) of solar thermal power plant projects on public lands, to avoid duplication of staff efforts, to share staff expertise and information, to promote intergovernmental coordination at the state and Federal levels, to develop a more efficient compliance review process, and to meet state and Federal requirements.”

Agency Authority

The BLM has authority to issue ROW grants pursuant to the Federal Land Policy and Management Act (FLMPA). Under FLMPA Title V (Rights-of-Way), the Secretary of the Interior is authorized to grant ROWs for the purpose of allowing systems for generation, transmission, and distribution of electric energy. The BLM is responsible for ensuring that the Project is constructed and operated in compliance with the ROW grant and with the amendment to the *California Desert Conservation Area Plan* as described in the BLM's Record of Decision (ROD). The CEC has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants in California that generate 50 MW or more. The CEC certification is in lieu of any permit required by state, regional, or local agencies and by federal

agencies to the extent permitted by federal law. The CEC would ensure that Calico Solar acts in accordance and complies with all applicable laws, regulations, plans, and policies.

The third-party compliance monitoring team functions as an on-the-ground agent of the BLM and the CEC. The team's role is to observe work activities, bring noncompliance to the attention of the appropriate party, and offer recommendations for preventing and correcting noncompliance. The third-party compliance monitors and the Calico Solar inspection team will work together to ensure timely and effective Project compliance. This will in turn help to expedite Project construction.

If differences of opinion or disagreements about compliance issues arise, the BLM and the CEC will consult with appropriate federal, state, county, and municipal regulatory agencies, as well as other parties, to resolve the issue in question.

2.0 Goals and Objectives

The overall objective of the ECCMP is to conduct inspections of construction activities, evaluate compliance or noncompliance with the project measures and conditions during project construction, and document that compliance or noncompliance. This ECCMP specifically focuses on the construction phase of the Calico Solar Project. A similar program with phase-specific measures and conditions would be developed and implemented during the project operation and decommissioning phases. The contractor hired to implement the ECCMP on behalf of the BLM, referred to in this report as the third-party monitoring contractor, will provide a compliance manager and on-the-ground compliance monitors to meet the ECCMP objectives.

The Project environmental requirements include the following:

- Environmental mitigation measures that were proposed and agreed upon by Calico Solar throughout the planning and permitting phases of the Project
- Terms, conditions, and stipulations of the BLM's ROD, ROW grant, and Notice to Proceed documents
- Construction procedures and mitigation measures included in the approved ROD to which this report is appended
- Stipulations, terms, conditions, and other measures from other authorizing Federal agencies' permits and approvals, including but not limited to the U.S. Fish and Wildlife Service's Biological Opinion, the CEC's Decision for the Application for Certification (AFC) 08-AFC-13, and the California Department of Fish and Game's Streambed Alteration Agreement.

During construction, the compliance monitors will inspect construction activities and required mitigation measures and will provide regular feedback on compliance issues to the BLM and to Calico Solar's environmental inspection team. The third-party monitoring contractor will involve other regulatory agencies (such as the U.S. Fish and Wildlife Service and the California Department of Fish and Game) in the ECCMP to the extent requested by those agencies and authorized by the BLM. Construction progress and environmental compliance will be tracked and documented by the preparation and submittal of Daily and Weekly Monitoring Reports (Section 4.1). The compliance monitors will report directly to the compliance manager. The compliance manager will report directly to the BLM's authorized officer (AO) and any other identified compliance contacts, including the CEC's compliance project manager (CPM).

Other objectives of the ECCMP are as follows:

- Facilitate the timely resolution of compliance-related issues in the field

- Provide continuous information to the BLM and other agencies, as authorized, regarding noncompliance issues and their resolution
- Review, process, and track construction-related changes to Project plans, as described in the variance process (see Section 5.0, Variances)
- Develop and implement a system for storing the information collected during the ECCMP in a format that will allow easy retrieval and search functions

The third-party monitoring contractor will assist with implementation of the variance process in accordance with a predetermined level of decision-making authority granted by the BLM, as described in Section 5.0.

The third-party monitoring contractor shall act as the CEC's delegate to ensure that the BLM-approved conditions of certification contained in the CEC Decision are appropriately implemented and monitored. The third-party monitoring contractor will also be responsible for the design review, plan check, and construction inspection of the foundation, anchorage, and connections for those building and non-building structures, process-related systems and equipment required for power and steam generation, and equipment located either inside or outside of buildings.

3.0 Environmental Compliance Monitoring and Management

3.1 Compliance Checklist

Calico Solar is responsible for correcting all instances of noncompliance initiated by its employees or construction contractors. Before conducting the compliance training, Calico Solar will prepare a detailed compliance checklist listing all individual permitting and mitigation requirements. The checklist will serve as a reference document to ensure that all personnel have a shared understanding of the Project's environmental requirements and to assist inspection, construction, and monitoring staff in recognizing and resolving noncompliance issues. The compliance checklist will be updated by Calico Solar as needed to ensure that all permitting or other requirements are current. The updated checklists will be dated and redistributed to all Project personnel.

3.2 Construction Plan

If the BLM approves the Project, a ROW grant, pursuant to FLPMA Title V, will be issued to Calico Solar, LLC for the Calico Solar (LLC) Project.

The Project will be constructed in three phases. Phase 1a will require approximately 250 acres and will include the construction of the main access road, the waterline, the main services area, the substation area, the installation of 60 SunCatcher pedestals (with SunCatchers to be mounted and brought on-line during Phase 1b), and the temporary at-grade crossing and the permanent bridge spanning the Burlington Northern Santa Fe (BNSF) railroad tracks. Before completion of the temporary at-grade railroad crossing, the existing BNSF crossing and ROW at Hector Road will be used to access the site during Phase 1A. Phase 1b of the Project will include the construction and subsequent operation of 11,000 SunCatchers producing 275 MW on approximately 1,627 acres of land. Phase 2 will include the construction and subsequent operation of an additional 15,540 SunCatchers producing an additional 388.5 MW on approximately 2,737 acres. The project is dependent upon additional transmission upgrades; however, the upgrades for Phase 1b are relatively minor and can be finished by the fourth quarter of 2011 when the first MW's from Calico Solar Phase 1 are ready to come online.

The construction activity for the three phases of the Project is currently planned to occur over a 44-month period with varying numbers of workers and levels of construction delivery and equipment use. Depending on the timing of the SCE transmission line upgrades, construction may pause after Phases 1a and 1b have been completed and would restart once the upgrades

have been completed. The majority of the Project construction activities are anticipated to occur during normal daytime work hours. Possible exceptions may include limited night construction activities that are considered time critical and that may require extension of work hours based on inherent process requirements or material-driven characteristics.

3.3 Organizational Structure and Communication

The organizational structure of the ECCMP is shown in the chart in Attachment A. The ECCMP is organized around the three construction phases and includes Calico Solar's project management, construction management, and environmental management personnel and the third-party compliance monitoring team. A complete list of all program staff and contact information will be compiled and finalized by Calico Solar's project manager before construction and will be attached to this document (Attachment B). Calico Solar's environmental inspection team has primary responsibility for ensuring environmental compliance of the Project. This team reports to Calico Solar and will work with the construction contractors to identify environmental requirements and maintain compliance.

The BLM's third-party compliance monitoring team is responsible for monitoring construction activities on behalf of the BLM and the CEC. The team includes BLM project managers and personnel from the compliance contractor. This monitoring team will work with Calico Solar's environmental inspection team to clarify environmental requirements where needed, to provide guidance on maintaining compliance, and to review and approve variance requests within their given levels of authority.

3.3.1 Calico Solar Inspection Team

Calico Solar's environmental inspection team includes staff to provide project management, construction management, and environmental management functions. This team is responsible for overseeing construction contractors, construction activities, and environmental compliance.

3.3.1.1 Project Management

Calico Solar's project manager is the primary interface between Calico Solar's management and the construction management and environmental management teams. This person will oversee the construction manager, the environmental project manager, and the engineering support contractors. In this capacity, Calico Solar's project manager is responsible for environmental compliance.

3.3.1.2 Construction Management

Calico Solar's construction management team oversees the construction and the construction contractors. This team will ensure that the solar facility and all associated facilities are installed according to specifications.

Construction Manager

The construction manager oversees the construction contractors and the construction inspectors. This position includes the following responsibilities:

- Ensuring compliance with design specifications, permit conditions, construction contracts, and applicable engineering and design codes
- Ensuring expeditious communication of construction plans and Project modifications to appropriate environmental personnel
- Communicating frequently with the project manager and environmental project coordinator to review and evaluate the implementation of environmental requirements
- Reviewing and evaluating variance requests with the Calico Solar project manager, the construction manager, the environmental manager, the BLM AO, and the CEC CPM

3.3.1.3 Environmental Management

Calico Solar's environmental management team has the primary responsibility for Project environmental compliance. This includes acquiring all applicable environmental permits and clearances; communicating with federal, state, and local agencies; and ensuring that all construction work complies with Project-specific environmental permits and agency requirements. This environmental management team includes an environmental project manager, an environmental project coordinator, and environmental inspectors.

Environmental Project Manager

The environmental project manager is responsible for overseeing Calico Solar's environmental compliance staff, including supervising the environmental project coordinator and environmental inspectors. The position includes the following responsibilities:

- Coordinating preconstruction among the compliance monitoring team, regulatory agencies, and Calico Solar's construction and environmental management teams
- Ensuring that all required environmental permits and clearances are secured
- Advising on the interpretation of all environmental permit requirements and mitigation measures

Environmental Project Coordinator

The environmental project coordinator reports to Calico Solar's environmental project manager. This person is responsible for field coordination and oversight of Calico Solar's environmental inspection program, including the activities of environmental inspectors. Specific responsibilities include the following:

- Developing and organizing Project-specific environmental training programs for contractor and company management staff before construction
- Supervising all environmental inspectors
- Managing, reviewing, and processing variance requests
- Managing the oversight and implementation of all agency-mandated environmental permits and mitigation measures
- Establishing and maintaining effective communication with the construction management team
- Communicating and coordinating with the third-party compliance manager and compliance monitors concerning construction schedules, construction activities, and compliance issues
- Reviewing and preparing Daily and Weekly Monitoring Reports
- Establishing and maintaining a systematic library of all field reports, including reports prepared by environmental inspectors, in-field training records of all construction personnel, unanticipated discoveries, and all other pertinent environmental-related Project documentation
- Disseminating the Weekly Monitoring Report to the BLM and any specific Daily Monitoring Report to the compliance manager upon request

- Managing the oversight of all complaint resolutions concerning environmental mitigation problems/concerns during Project construction and restoration
- Preparing and maintaining all environmental training programs for the Project
- Updating and redistributing compliance checklists, as necessary

Environmental Inspector

The environmental inspector has the authority to stop work on activities in which the potential to violate environmental conditions and mitigation measures in the BLM ROD, the CEC certificate, or other authorizing permits or documents exists. Specific responsibilities include the following:

- Participating in or conducting environmental inspection training of new Project hires
- Overseeing the contractors' implementation of all environmental conditions described in applicable permits and approvals for the Project
- Communicating and coordinating with the compliance monitors as needed
- Overseeing any deviations from plans and ensuring that photo documentation occurs before, during, and after restoration
- Overseeing the revegetation and restoration of ROW areas, including reseeding
- Notifying the environmental project coordinator of all needs for supplemental field support personnel (biologists, archaeologists, etc.)
- Conducting on-site environmental training of construction personnel
- Overseeing contractor spill response, including reports listing materials involved
- Attending preconstruction training and studying all Project documents when requested

Supplemental Field Support (as required)

Calico Solar will provide supplemental field support staff as needed to assist with permitting, to perform additional resource surveys required for variance requests, to observe construction activities in sensitive resource areas, and to assist with environmental compliance and restoration requirements. The supplemental field support personnel will report to the environmental project manager and environmental project coordinator and will assist the

environmental inspector with the identification and protection of environmental and cultural resources.

3.3.2 Agency Compliance Monitoring Team

The BLM and the CEC have compliance monitoring responsibilities for the Project associated with the BLM ROW grant and the CEC certificate. Additionally, the BLM and the CEC have primary responsibility for managing the third-party monitoring contractor on this Project, including the compliance manager and compliance monitors.

3.3.2.1 BLM and CEC Project Managers

The BLM and the CEC will have the primary project management responsibilities for compliance monitoring. The BLM AO, as a representative of the lead federal agency for the Project, is recognized to have overall compliance oversight responsibility in relation to the ROW grant across federal land. The CEC CPM will provide compliance oversight for the CEC certificate and the conditions of certification. The BLM AO and the CEC CPM will coordinate with agency points of contact to ensure timely distribution of information.

3.3.2.2 Third-Party Compliance Manager

The third-party monitoring contractor will provide overall management of the ECCMP for the Project as a representative of the BLM and the CEC. The third-party compliance manager will work closely with the BLM AO and the CEC CPM throughout the duration of the ECCMP contract. The compliance manager will regularly communicate with the BLM AO and the CEC CPM on the progress of the ECCMP tasks and deliverables and will resolve issues expeditiously. The compliance manager will be responsible for identifying any potential changes to the third-party contract scope, schedule, or budget as soon as possible and will communicate that information immediately to the BLM AO and the CEC CPM. Guidance from the BLM and the CEC will be followed when preparing all Project-related compliance materials. The compliance manager's responsibilities include the following:

- Reporting directly to and communicating frequently with the BLM AO and the CEC CPM and designated points of contact for other federal, state, and local agencies
- Overseeing field management of the ECCMP
- Preparing BLM's ECCMP materials
- Participating in Calico Solar's preconstruction environmental training program

- Supervising compliance monitoring activities, materials, and schedules
- Supervising compliance monitors
- Providing guidance on the review of compliance issues
- Ensuring that all noncompliance issues are tracked for resolution by Calico Solar
- Providing expeditious review and processing of variance requests
- Reviewing, approving, and distributing correspondence, scope of work, schedule changes, Daily Monitoring Reports, and Weekly Monitoring Reports to the BLM AO and the CEC CPM
- Reviewing compliance monitoring work progress, schedules, and budgets
- Serving as the contact between the BLM, the CEC, and Calico Solar
- Coordinating with the BLM, the CEC, and other agencies as needed to review and approve variance requests
- Working with Calico Solar's environmental project coordinator to ensure environmental compliance

In coordination with the BLM AO and the CEC CPM, the compliance manager will plan and maintain a systematic field presence to assess the overall ROW condition and ensure consistency in compliance monitoring and reporting. In addition to having a planned schedule for field visits, the compliance manager may be called upon to make ad hoc site visits for issue resolution, emergency events, and other occasions as needed.

3.3.2.3 Third-Party Compliance Monitors

The third-party monitoring contractor will provide full-time on-the-ground compliance monitors during construction of the three phases of the Project. The need for full-time compliance monitors may be reevaluated throughout the construction phases, and schedule adjustments may be made as conditions demand.

During construction, many factors can affect the specific deployment of the compliance monitors. These include the activity occurring at specific times of inspection, any noncompliance issues or problem areas documented during previous inspections by the compliance monitors, site-specific conditions at the time of construction, skill levels and attitudes of the contractor crews and crew chiefs, and the number of inspection team members.

The compliance manager will regularly evaluate the effectiveness of the environmental compliance monitoring in consultation with the BLM AO, the CEC CPM, and compliance contacts to ensure adequate staffing. If determined necessary, the third-party monitoring contractor will provide additional adequately trained support staff to act as compliance monitors.

The primary responsibility of the compliance monitors will be to monitor and document Calico Solar's construction and compliance or noncompliance with the Project building, engineering, installation, and environmental requirements. The compliance monitors will also review and approve variance requests, as appropriate to their authority level, for implementation of limited variations from mitigation measures previously agreed to by Calico Solar or stipulated by other regulatory agencies.

Before construction, the compliance monitors will become familiar with the ECCMP, will participate in the BLM's preconstruction meetings, participate in Calico Solar's environmental training program, and will receive additional training from the third-party monitoring contractor. The compliance monitors will become familiar with the structure of the construction methods; the required building codes, fire codes, construction documents, other relevant building standards; environmental reporting responsibilities; and the chain of communication.

At minimum, the compliance monitors will maintain daily contact with Calico Solar's environmental inspection team. Construction activities will be inspected on a daily basis by the compliance monitors, and environmentally sensitive areas will be regularly inspected to ensure protection of the given resource.

The compliance monitors will communicate with Calico Solar's environmental inspectors on a regular basis. This approach will allow the environmental inspectors and the compliance monitors to exchange information on the status of construction and to discuss any significant construction events scheduled for the following 2 or 3 days. The compliance monitors may inspect all activities or independently or with Calico Solar's inspectors. The compliance monitors will have the authority to halt a specific noncompliance activity that is damaging, or has the potential to damage, a sensitive environmental resource or that is not being performed according to building and construction standards.

The compliance monitors will record daily observations, including digital photo documentation, at each location visited. This process will ensure consistent and accurate reporting of site conditions at the time of inspection. Each monitored activity will be assigned a compliance level and documented in the Weekly Monitoring Report.

4.0 Reporting and Documentation

The compliance management and monitoring staff will use a comprehensive weekly summary database reporting system that is posted on an internal Calico Solar Project Web site and available to other jurisdictional agencies. This reporting system will be updated each week and will provide Calico Solar and all applicable agencies with a record of construction progress, photographic documentation, and documentation of compliance with the Project environmental requirements. Specifics of the reporting and documentation to be used for the Project are described below.

4.1 Daily and Weekly Monitoring Reports

Each compliance monitor will compile a Daily Monitoring Report and contact-information documents into a Weekly Monitoring Report. A separate Weekly Monitoring Report will be maintained for the ROW grant issued to Calico Solar for the Project. The compliance monitor will document the construction level in percentage complete (or other identifying method) and the presence of sensitive species or habitat and culturally sensitive sites and will provide a brief description of the activities observed (for example, the number of SunCatchers installed, number of foundations poured). When appropriate, relevant digital photographs will be taken and included in the report. A sample Daily Monitoring Report form is in Attachment C, and a sample Weekly Monitoring Report form is in Attachment D.

Each separate activity monitored and documented in a Daily Monitoring Report will be assigned one of the following compliance levels and recorded in a separate report:

- Communication
- Acceptable
- Problem Area
- Noncompliance
- Serious Violation

4.1.1 Communication Reports

This report will be prepared when necessary to document and track relevant meetings or discussions between the compliance monitor, agencies, company representatives, compliance monitor, inspectors, and contractor personnel.

4.1.2 Acceptable Reports

This report type will be prepared when a compliance monitor determines that an inspected area or activity is in compliance with the Project specifications and that all mitigation measures have been adequately implemented.

4.1.3 Problem Area Reports

The compliance monitor will prepare this report to record a location or activity that does not meet the definition of acceptable but is not considered noncompliant. This report type applies to a range of incidents, locations, and activities, including the following:

- An incident that is accidental or unforeseeable but is not out of compliance with the Project specifications and for which Calico Solar's response is appropriate and timely. An example would be a fuel leak in which Project personnel respond properly by stopping, containing, and cleaning up the spill in accordance with the Project specifications.
- A location where the Project is not out of compliance with the specifications but, in the judgment of the compliance monitor, where damage to resources could occur if corrective actions are not taken. Some examples include the following:
 - A tortoise fence with a buildup of soil or debris
 - A topsoil pile located on the bank of a drainage channel
 - An improperly constructed/located erosion control structure
 - An activity that the compliance monitor determines is an unintentional and isolated departure from the Project specifications with no damage to resources

If a problem area is resolved in a timely manner, it will not be considered a noncompliance issue. If a problem area is found to be a repeat situation or to be multiple instances of a similar nature, is not corrected within the established time frame, or results in resource damage because timely corrective action failed to occur, the compliance monitor may document the problem area as a noncompliance issue.

4.1.4 Noncompliance Reports

This report will be issued when a compliance monitor observes an activity that violates (is not in compliance with) the Project specifications, building codes, or other requirements; results in damage to resources; or places sensitive resources or public or worker safety at unnecessary risk. The following are examples of noncompliance:

- Failure to install or maintain required erosion control devices
- Failure to install or maintain a desert tortoise fence
- Ground-disturbing activities conducted outside the approved ROW limits
- Surface-disturbing activities conducted without an appropriate biological monitor present

The compliance monitor will notify an environmental inspector about a noncompliance activity before issuing a Noncompliance Report. This report will include the name of the inspector and the time of notification. As practicable and as the nature of the noncompliance activity warrants, the inspector will work closely and collaboratively with the compliance monitor to determine the appropriate corrective action.

Resolution of noncompliance activities will involve close coordination with Calico Solar's inspectors, the compliance manager, the BLM AO, the CEC CPM, and the contractor construction supervisory personnel to ensure that the corrective measures are properly understood and implemented. Calico Solar's environmental inspection team is responsible for providing follow-up documentation to the BLM and other agencies with appropriate jurisdiction over the issue, as well as to the compliance manager. Once Calico Solar documents the resolution of a noncompliance activity, the applicable compliance monitor will inspect the area and verify and document that the noncompliance activity has been adequately resolved.

4.1.5 Serious Violation Reports

This type of report will be issued by a compliance monitor immediately upon observing an activity that is not in compliance with the Project specifications and causes substantial harm to resources or poses a serious threat to sensitive resources or worker or public safety. Some examples of serious violations include deliberately conducting an activity that results in disturbance within an exclusion zone for a sensitive resource, repeated or cumulative noncompliance activities that could lead to a substantial impact on resources, and failure to correct previously identified noncompliance activities in an established time frame.

A Serious Violation Report requires that the compliance manager, the BLM AO, and the CEC CPM participate in a conference call or meeting with Calico Solar's environmental inspection manager and environmental manager for the Project to discuss the violation, the proper corrective actions, and possible follow-up enforcement actions that could be imposed. Calico Solar's environmental inspection team will be responsible for providing follow-up documentation to the BLM and other agencies with appropriate jurisdiction over the issue, as well as to the compliance manager. Once Calico Solar documents the resolution of a serious violation, the applicable compliance monitor will inspect the area and verify that the issue has been adequately resolved.

Daily inspections and relevant photo documentation completed by each compliance monitor will be sent electronically to the database server at the end of each workday. The following morning, the separate reports will be compiled into one Weekly Monitoring Report, reviewed by the compliance manager, and posted on the password-protected nonpublic Project Web site. When the reports are posted, the compliance manager will send an e-mail notification to the authorized distribution list. The e-mail will summarize the compliance levels for the reports issued each day and will include the link to the Web site. The BLM, the CEC, the third-party monitoring contractor, and authorized Calico Solar representatives will be included in the distribution for all reports.

4.2 Monthly Summary Reports

Monthly Summary Reports will be compiled to briefly describe construction activities during the reporting period and to summarize, by compliance level, the number of reports completed by the compliance monitors during the reporting period and cumulatively. The Monthly Summary Report will include a table summarizing the Problem Area Reports and Noncompliance Reports (Attachment G) issued by the compliance monitors during the reporting period and the Levels 1, 2, and 3 variance requests approved by the compliance monitors and the compliance manager during the reporting period. The Monthly Summary Report will also include a table summarizing the net acreage of land affected by approved variances on federal and nonfederal land for the reporting period and cumulatively. The third-party monitoring contractor baseline electronic database reporting system will be designed to generate all of the information in the Monthly Summary Report.

The Monthly Summary Reports will be posted on the nonpublic Project Web site. When the Monthly Summary Report is posted, the compliance manager will send an e-mail notification to the authorized distribution list. The e-mail will include the link to the Web site. The BLM, the CEC, the third-party monitoring contractor, and authorized Calico Solar representatives will be included in the distribution for the Monthly Summary Report. A sample Monthly Summary Report is included in Attachment E.

4.3 Nonpublic Project Web site

The third-party monitoring contractor will establish and maintain a password-protected nonpublic Project Web site to display the Weekly Monitoring Reports and the Monthly Summary Reports and the approved Levels 1, 2, and 3 variance requests. The Project Web site may also be used to post meeting minutes, notes from conference calls, and guidance from agencies regarding interpretation of environmental requirements. The BLM, the CEC, and the third-party monitoring contractor representatives will have access to the entire Web site; Calico Solar representatives will have access to portions of the Web site as authorized by the BLM project manager.

5.0 Variances

During construction, unforeseen or unavoidable site conditions can result in the need for changes from approved mitigation measures and construction procedures. Additionally, the need for route realignments, extra workspaces, or changes to the previously approved construction work areas may arise. Changes to previously approved mitigation measures, construction procedures, and construction work areas will be handled in the form of variance requests to be submitted by Calico Solar and to be reviewed and approved or denied by the BLM and the CEC, with some authority delegated to the third-party compliance manager. The variance process can also serve as a good mechanism to clarify discrepancies discovered in Project materials or to distribute information to the entire Project team.

A system of three variance levels (Levels 1, 2, and 3) will be used to categorize and process variance requests. Unforeseen or unavoidable field conditions may occur during construction and will require minor changes in the approved mitigation measures, ROW reconfiguration, and Calico Solar's construction procedures. The need for extra workspaces and minor route realignments may also arise, which may in part require additional landowner concurrence and land management approval. Changes to previously approved mitigation measures, construction procedures, and construction work areas will be conducted in the form of variance requests to be submitted by Calico Solar and reviewed and approved or denied by the BLM and the CEC or by the compliance manager.

To provide consistency, expedite the variance request process, and reduce potential construction delays, a standardized variance request process and a reporting procedure have been established. When a variance is requested, Calico Solar's environmental inspection team members will provide supporting documentation to the compliance monitor or compliance manager, depending on the variance level. The compliance monitoring team is responsible for transmitting the supporting documentation, including a summary of prior environmental analysis and its on-the-ground perspective of the requested variance, to the BLM AO and the CEC CPM. For this purpose, the compliance monitoring team will use a Variance Request Form to track variances.

The variance process will allow Calico Solar's inspection team to submit a variance for approval, depending on the scope of the proposed modification, to the compliance monitor (Level 1 variance) or the compliance manager (Level 2 variance). The BLM AO and the CEC CPM are responsible for approving or denying a Level 3 variance request. The compliance monitoring team is responsible for coordinating with Calico Solar and construction contractors before implementing the variance modifications.

5.1 Variance Request Process

The compliance monitors and the compliance manager will participate in the variance review process, including the review and processing of Variance Request Forms (Attachment F). The type of participation required will depend on the variance level requested: Level 1, 2, or 3. Compliance monitors will also be responsible for documenting variance approvals in the Daily Monitoring Report. In additions, a summary report of Levels 1 and 2 approvals will be posted to the CEC docket on a monthly basis. The BLM AO and the CEC CPM will be notified of any variance requests on lands or facilities under their jurisdictions and will be provided the opportunity to review and comment on such requests. The exception is Level 1 variance requests, which will be noted in the Daily Monitoring Report.

5.1.1 Level 1 Variance (Field Decision)

A Level 1 variance is a site-specific, minor, performance-based change to Project specifications, construction methods, or mitigation measures that provides equal or better protection to environmental resources, improves constructability, does not alter performance-based requirements, or does not violate agency requirements. The affected area must be within the identified site boundary for cultural resources and sensitive species. These minor variance requests can be reviewed and either approved or denied by the compliance monitors in the field during normal construction operations. Level 1 variance may also be used to document and disseminate agency-directed changes to mitigation measures. The following are Level 1 variance examples:

- Modifications to erosion control structure locations to minimize erosion potential
- Minor variations in site-specific plans that reflect difference in site conditions from those that were expected when the plan was developed
- Minor changes to the Project design that are required due to site-specific restrictions

To initiate a Level 1 variance request, the environmental inspector, or other designated Calico Solar representative, will fill out a Variance Request Form and obtain the appropriate signatures. The lead environmental inspector will then contact a compliance monitor to review the proposed change. The lead environmental inspector and the compliance monitor will work together to evaluate the site-specific situation and determine whether the request is appropriate.

The compliance monitor may approve a Level 1 variance request if the results of implementing the change will provide equal protection of the resource or better protection of the resource than the original mitigation measure or if the original mitigation measure is not applicable to that

specific site. If a Level 1 variance request is approved in the field, the compliance monitor will sign the Variance Request Form. A Level 1 variance request can be implemented in the field as soon as it is approved by the compliance monitor. In some cases, the compliance monitor may grant verbal approval and then complete the paperwork.

The compliance monitor will document the variance approval in the Daily Monitoring Report and transmit the approved form to the compliance manager for posting on the Project Web site. If the variance exceeds the compliance monitor's authority level, the compliance monitor will inform the lead environmental inspector that a Level 2 or 3 variance request is required.

5.1.2 Level 2 Variance

A Level 2 variance request exceeds the field-decision authority of the compliance monitor and requires processing by the compliance manager. Before approving a Level 2 variance request on federal land, the compliance manager must consult with the BLM AO and the CEC CPM and other authorized regulatory agency staff. Level 2 variance requests generally involve Project changes that would affect an area outside the previously approved work area but within the corridor previously surveyed for cultural resources and sensitive species. Level 2 variance requests typically require the review of supplemental documents, correspondence, and records. The following are Level 2 variance examples:

- Use of extra workspace outside the previously approved work area but within the previously surveyed ROW area
- Use of existing access roads that have not been previously approved if the use would not be considered "like use" that could be approved as a Level 1 variance
- Modifications to a previously approved erosion control structure in ways not previously identified
- Modifications to the plans that are specifically different than those in the approved POD

To initiate a Level 2 variance request, the lead environmental inspector, environmental project coordinator, or other designated Calico Solar representative will complete a Variance Request Form and prepare the appropriate supporting documentation. The environmental project coordinator or designated Calico Solar representative will obtain the appropriate signatures and then submit the Variance Request Form and supporting documentation by e-mail (scanned copy) or fax to the applicable compliance manager. The compliance manager may also discuss the request with the appropriate compliance monitor. Upon the BLM AO's approval, the compliance manager will process the request.

Before construction activities (that is, during environmental training for each phase), the compliance manager, environmental project coordinator, and project manager will meet with the affected field office and determine what situations warrant additional discussions before Level 2 variances are approved.

If the Level 2 variance request is approved, the compliance manager will sign the Variance Request Form and e-mail the approved form (scanned copy) to the designated Calico Solar representatives; the compliance monitors; the BLM AO and the CEC CPM, if necessary; and other applicable federal and regulatory agency representatives. Verbal approval for Level 2 variance requests will not be granted. The compliance manager will document the variance approval in the Daily and Weekly Monitoring Reports and post the approved variance request form on the Project Web site. The variance may be implemented in the field as soon as the approved variance is received.

5.1.3 Level 3 Variance

A Level 3 variance request generally involves Project changes that would affect an area not only outside the previously approved work area but also outside the corridor previously surveyed for cultural resources and sensitive species, that would change the functional or structural technology required, or that would affect other portions of the Project previously approved in the POD. Level 3 variances have the potential to impact cultural resources, sensitive species, or other sensitive resources and may need to be implemented through an amendment to the ROW grant. Level 3 variance requests must be formally filed with the CEC. All Level 3 variance requests require a formal approval letter from the CEC CPM.

In general, the designated Calico Solar representative will file the variance request, including appropriate supporting materials, with the CEC secretary. The CEC CPM will review the variance request and then issue a formal approval or denial letter. Once the CEC approval is obtained, the variance may be implemented in the field as soon as the approved variance is received. The compliance manager will assist in the review of the request and will post the approval form on the Project Web site. The compliance manager will consult with the affected agency point-of-contact on a case-by-case basis via telephone or e-mail. The compliance manager and will meet with the BLM and determine what situations warrant additional discussions before Level 3 variances are approved.

To initiate a Level 3 variance request, the lead environmental inspector or other designated Calico Solar representative should also first seek comments from the BLM AO or other appropriate agency personnel before filing the variance request with the CEC. The federal agency representative should indicate an approval/disapproval recommendation for review by the CEC CPM. Regarding cultural resources, the process outlined in any Memorandums of Agreement for the Project must be completed before the CEC can approve the variance. If

special-status species, habitat, or both are encountered during the additional surveys, documentation of consultation with applicable regulatory agencies must be provided with the variance request. Landowner approval must be documented as appropriate.

The lead environmental inspector will complete and submit the variance request form and supporting documentation by e-mail (scanned copy) or fax to the applicable BLM AO, with copies sent to the compliance manager. Upon the BLM AO's approval, the compliance manager will process the request.

Level 3 variance request approvals must be signed by the BLM AO in the case of a ROW grant amendment. The variance may be implemented in the field as soon as the approved variance is received. The compliance manager will document the variance approval in the Daily and Weekly Monitoring Reports and post the approved variance request form on the Project Web site.

6.0 Stop-Work Authority

The BLM has the authority to stop construction if any activity is determined to be a deviation from the Project environmental requirements or approved constructed plans. This authority may be delegated to the compliance manager or the compliance monitors, as determined appropriate by the BLM. Any order to stop an activity will be immediately followed by a formal written temporary suspension from the BLM AO.

Calico Solar's construction and management teams, the lead environmental inspector, environmental inspectors, the BLM AO, and the CEC CPM have the authority to stop a construction activity that poses any of the following:

- A safety concern to people or harm to property
- Potential harm to threatened or endangered species or protected cultural or other resources
- A violation of Project or permit specifications and requirements
- A violation of federal or state regulations

A stop-work order may also be issued to address repeated violations of noncompliance. Before a stop-work order is issued, steps will be taken to communicate and coordinate with all appropriate personnel. For agency personnel, the stop-work order will not be issued until the compliance monitor or compliance manager has coordinated with the BLM AO and the CEC CPM. For Calico Solar's inspection team, the stop-work order will not be issued until the environmental inspector has coordinated with the lead environmental inspector, environmental project coordinator, construction inspector, or chief construction inspector.

After a stop-work order has been issued, Calico Solar's environmental project coordinator will notify the representatives of all affected agencies and Calico Solar's environmental project manager and will document the necessary corrective actions to resolve the issue of noncompliance and the time frame for resolution.

Stop-work orders will be documented in Daily and Weekly Monitoring Reports.

7.0 Training and Preconstruction Meeting

The third-party monitoring contractor shall ensure that Calico Solar will prepare and conduct an environmental training program for the environmental inspection team and contractor personnel before construction. The BLM project manager and compliance contacts, the compliance manager, and the compliance monitors will participate in Calico Solar's environmental training program to present an overview of the ECCMP and to become familiar with Calico Solar's environmental inspection program and personnel. The compliance manager or BLM AO will explain the various components of the ECCMP, particularly its objectives. The discussion will focus on the daily activities of the compliance monitors and their interactions with Calico Solar's inspection and construction personnel.

The monitoring and documentation of compliance issues and construction progress will be described. A clear and concise explanation will be presented regarding the compliance monitors' authority to approve or deny Level 1 variance requests in the field. Procedures that may be required to address variance requests will also be presented, as well as the time frame required for decisions to be made before implementation.

Before Calico Solar's training, the third-party monitoring contractor will ensure that the BLM holds a preconstruction meeting, which is required before issuance of the Notice to Proceed. At this meeting, the BLM compliance project manager will discuss the requirements of the ROD, the additional stipulations, and the ROW grant, as well as the requirements of the POD. The compliance manager and one of the compliance monitors will participate in the BLM's preconstruction meeting.

In addition to participating in Calico Solar's training and the BLM's preconstruction meeting, the third-party monitoring contractor will train the compliance monitors in all procedures, duties, responsibilities, reporting requirements, and authorities (including the authority to grant variances) to complete their assigned tasks.

8.0 Equipment

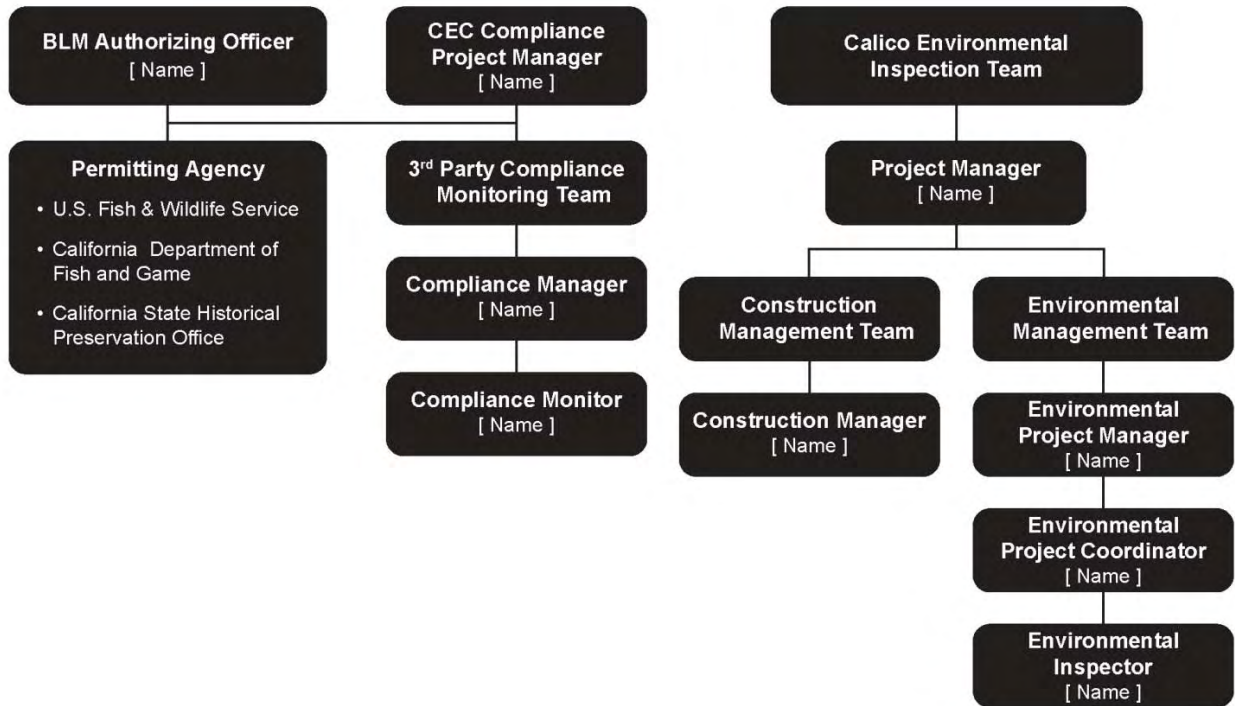
Personnel responsible for monitoring and documenting compliance will require field support equipment. Specifically, each compliance monitor will be equipped with a notebook computer and appropriate software to facilitate the compilation, transfer, and storage of data. Each compliance monitor will also be equipped with a digital camera, cellular phone (smart phone with vehicle charger), and vehicle adapter. A four-wheel-drive vehicle will be provided to each full-time compliance monitor throughout construction to maintain access to all areas of the ROW. Additional equipment may be required and will be supplied as needed.

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Attachment A Environmental and Construction Compliance Monitoring Program Organization

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COMPLIANCE ORGANIZATION CHART



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Attachment B
Environmental and Construction
Compliance Monitoring Program
Staff and Contact Information

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[Will be completed once team has been identified]

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Attachment C

Sample Daily Monitoring Report

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PROJECT: CALICO SOLAR PHASE 1A

COMPLIANCE MONITORING PROGRAM DAILY

MONITORING REPORT COVER PAGE

SAMPLE DAILY MONITORING REPORT (COVER PAGE)

The following report is a compilation of the daily monitoring reports issued by the Compliance Monitors and/or Compliance Manager for activities conducted on [Month] [Day], 20[XX]. Should you have any questions regarding the information contained in this report, please contact MONITOR at (XXX) XXX-XXXX (office) or (XXX) XXX-XXXX (cell phone).

Communication

Acceptable

Problem Area

Noncompliance

Serious Violation

Approved Level 1 Variance

Approved Level 2 Variance pp

Approved Level 3 Variance

Compliance Level

Total Reports

PROJECT: CALICO SOLAR PHASE 1A
ENVIRONMENTAL COMPLIANCE MONITORING PROGRAM
DAILY MONITORING REPORT

Report Number: _____ Date of Report: _____

Compliance Monitor: _____ Compliance Level: _____

Environmental Inspector: _____ Construction Method: _____

Location

Construction Spread: _____ Tract #: _____ Tract #: _____ Tract #: _____

Begin Milepost: _____ End Milepost: _____

Begin Station: _____ End Station: _____

Inspection Notes:

Photos:

Attachment D

Sample Weekly Monitoring Report

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BLM Authorized Officer Weekly Report

Address:
City, State Zip

Phone:
Fax:

Website:

Weekly Project Update

Project:

Week Ending:

Prepared By:

1. Executive Summary of Current Issues

The following construction activities were observed onsite:

General:

Civil:

STG:

BOP Equipment:

Concrete Placement:

BLM Authorized Officer NOTE:

Plan Review Submittal Items

Submittal Type	Description
Received, Review Pending	
Reviewed and Approved / Conditionally Approved	
Reviewed and Correction List Issues	

Inspection:

2. General Activities Occurring at the Project Site

3. Completion Percentage of Overall Construction

WEEK	PERIOD OF PROJECTION	% COMPLETE (PROJECTED)	% COMPLETE (UPDATED)

Table Note 1: The percentage complete is an estimate only and is not derived directly from the project schedule.

Table Note 2: Number of weeks from project CEC Notice to Proceed/Start Date.

4. Compliance Issues with Applicable LORS and Applicable Conditions of Certification (e.g., areas out of compliance, interpretational disagreements, etc.)

5. Issues of Concern with or by the Applicant

6. Status of Interconnections (e.g., Fuel Gas, Water Connections, Electricity to Grid, etc.)

7. Scheduled Activities for Next Week

8. Potential Delays to the Online Date of the Project

9. Project Photographs from Week

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Attachment E

Sample Monthly Monitoring Report

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DEVELOPER: TESSERA SOLAR

PROJECT: CALICO SOLAR PHASE 1A

**Environmental Compliance Monitoring Program
Summary Report for the Period: XX-XX, 20XX**

The following is a summary of the reports issued by the Compliance Monitors and Compliance Manager for activities conducted between XX-XX, 20XX. This report also summarizes Level 1, 2, and 3 variance requests approved during the same period. The environmental compliance monitoring program for the _____ Project is being implemented under the direction of the Bureau of Land Management (BLM). Copies of the daily monitoring reports and approved Level 1, 2, and 3 variance requests are posted and available for review on the environmental compliance monitoring program website.

Should you have any questions regarding the information contained in this report, please contact MONITOR at (XXX) XXX-XXXX (office) or (XXX) XXX-XXXX (cell phone).

SUMMARY OF ACTIVITIES

Between XX-XX, 20XX, the Compliance Monitors and Compliance Manager issued eight daily monitoring reports. A tabular summary of the reports by compliance level is presented below.

PROJECT: Calico Solar Phase 1A

ENVIRONMENTAL COMPLIANCE MONITORING PROGRAM Summary of Daily Monitoring Reports for the Period: XX-XX, 20XX

Compliance Level	Compliance Reports for the Period	Cumulative Compliance Reports for the Project
Communication	X	X
Acceptable	X	X
Problem Area	X	X
Noncompliance	X	X
Serious Violation	X	X
Approved Level 1 Variance	X	X
Approved Level 2 Variance	X	X
Approved Level 3 Variance	X	X
Total Reports	X	X

During this period, three full-time Compliance Monitors conducted daily inspections of project-related activities and documented _____'s compliance with the project documents and permits. The Compliance Monitors continued to coordinate with the Lead Environmental Inspectors (Lead EIs) and other EIs to inspect and discuss areas of concern prior to construction, review areas potentially subject to variance requests, assist with resolution of landowner complaints, and clarify interpretations of the project requirements. The activities of the three Compliance Monitors were directed by the Compliance Manager who continued to coordinate with the BLM as well as with _____'s field management and support staff.

A brief summary of the activities conducted during the reporting period is presented below. Copies of the detailed daily monitoring reports that were used to prepare this summary are posted and available for review on the environmental compliance monitoring program website.

Summary of Activities
<p>A brief text summary of activities that occurred by spread during the reporting period will be provided here</p>

PROBLEM AREAS AND NONCOMPLIANCES

One problem area report and no noncompliance reports were issued by the Compliance Monitors between XX-XX, 200X as shown in the table below. The Compliance Monitors were notified of one noncompliance report issued by _____'s EIs.

SUMMARY OF PROBLEM AREA AND NONCOMPLIANCE REPORTS

Compliance Level/Report Number	Date Issued	Location (Spread/ Milepost)	Description	Corrective Action
Problem Area				
-None-				
Daily Monitoring Report #XX	XX/200X	Spread X – X.X	A construction vehicle was parked outside of the approved right-of-way.	The Lead EI was notified and contacted the foreman to have the vehicle moved back onto the approved workspace.
Noncompliance				
-None-				
It was reported to the Compliance Monitors that the _____ EIs issued one noncompliance report. This noncompliance occurred on Spread X on XX, 200X and was issued to the trenching crew for partially burying the windrowed seedbank with trench spoil for approximately 1,000 feet.				

VARIANCES

One Level 1 variance request was approved during the period. No Level 2 and no Level 3 variance requests were approved between XX-XX, 200X, as shown in the table below. A summary of the acreage of land affected by the approved variance requests is also provided below.

SUMMARY OF APPROVED LEVEL 1, 2, AND 3 VARIANCES

Variance Number	Date Issued	Location (Spread/Milepost)	Brief Description	Net Acreage Affected – Federal Land	Net Acreage Affected – Non-Federal Land
LEVEL 1					
XX-XX-001	X/X/200X	Spread X - X.X	Approved the like-use of an existing gravel road. This road is needed to allow travel around and 8-inch-diameter aboveground waterline that crosses the right-of-way.	X.X	X.X
LEVEL 2					
-None-					
LEVEL 3					
-None-					

SUMMARY OF ACREAGE AFFECTED BY VARIANCES

	Acreage Affected by This Reporting Period	Cumulative Acreage Affected
Federal Land	X.X	X.X
Non-Federal Land with some Federal Jurisdiction	X.X	X.X
Total	X.X	X.X
Includes variances on non-Federal land that are within 300 feet of previously identified cultural resources or listed species or their habitat.		

Attachment F

Variance Request Form

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Variance Request Form			
<div style="border: 1px solid black; width: 80px; height: 80px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> LOGO </div>	COMPANY ADDRESS CITY, STATE ZIP PHONE	Variance: _____ Request No.: _____ Date Submit: _____ Date Approval Needed: _____ Date Agency Received: _____ Agency Approval Reference No.: _____	
Request Prepared by: Spread/ Location (Milepost): Alignment Sheet / Sta. No.: Landowner: Current Land Use/ Vegetative Cover: Nearby Features (Water body, T&E Habitat, Wetland, Noxious Weed) Area, Residence, Cultural Resource Site (distance, etc.):		Net acreage affected: Tract No: In or within 50 feet of a wetland: <input type="checkbox"/> Yes <input type="checkbox"/> No Within 50 feet of a water body: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Variance Level: <input type="checkbox"/> Level 1 <input type="checkbox"/> Level 2 <input type="checkbox"/> Level 3 (To Be Assigned by Designated Representative)			
Variance From: <input type="checkbox"/> Permit <input type="checkbox"/> Plan/Procedure <input type="checkbox"/> Specification <input type="checkbox"/> Drawing <input type="checkbox"/> Mitigation Measure <input type="checkbox"/> Other:			
Detailed Description of Variance: Attachments? <input type="checkbox"/> Yes <input type="checkbox"/> No Photos? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Variance Justification:			
For (Company Name) Use Only			
Additional Surveys Required	Surveyed Corridor Description	Additional Surveys Completed	
Cultural Survey <input type="checkbox"/> Yes <input type="checkbox"/> No T & E Survey <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	
Report Documenting Survey:			
Sign-off (as appropriate)	Name (print)	Approval Signature	Conditions (See Attached)
Contractor Supt. or Env. Coordinator Lead Environmental Inspector Spread Supervisor Environmental Field Manager ROW Agent			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
For BLM Project Manager or Compliance Contact Use Only			
Variance Approved: <input type="checkbox"/> Variance Denied: <input type="checkbox"/>		Date: _____	
Signature: _____			
For Compliance Manager and Monitor Use Only			
Variance Approved: _____ Variance Denied: _____		Date: _____	
Signature: _____			
Stipulations: _____			

Spread:	OPPC Variance Request No.:	
VARIANCE CONDITIONS		
Name:	Title:	Organization:
Conditions:		
Name:	Title:	Organization:
Conditions:		
Name:	Title:	Organization:
Conditions:		

Attachment G Non-Conformity Report

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NON-CONFORMITY REPORT

Company Name

Address:
City, State Zip

Phone:
Fax:

Website:

Inspection Agency:	Date:
Building:	Reference:
Type of Inspection:	Inspected By:

DATE, LOCATION AND ITEMS INSPECTED:

DATE, LOCATION & TESTS PERFORMED:

LIST NON-CONFORMING ITEMS *WITH* CORRECTIONS:

LIST NON-CONFORMING ITEMS *WITHOUT* CORRECTIONS:

LIST AUTHORIZED CHANGES TO THE APPROVED PLAN – *INCLUDE R.F.I. NUMBER*

R.F.I. #	

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Attachment H Amendment to the 2007 Memorandum of Understanding

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**AMENDMENT TO THE 2007 MEMORANDUM OF
UNDERSTANDING
BETWEEN THE BUREAU OF LAND MANAGEMENT and
THE CALIFORNIA ENERGY COMMISSION**

**CONCERNING CONSTRUCTION COMPLIANCE, ENVIRONMENTAL COMPLIANCE,
DESIGN REVIEW, PLAN CHECK, AND CONSTRUCTION INSPECTION OF SOLAR
THERMAL POWER PLANT PROJECTS ON PUBLIC LANDS**

I. BACKGROUND

On August 8, 2007, the Bureau of Land Management (“BLM”) and the California Energy Commission (“Commission”) formalized a Memorandum of Understanding (“2007 MOU”) for joint environmental review of solar thermal power plant projects to be located on public lands. It is in the interest of the Parties to share in construction compliance, environmental compliance, design review, plan check, and construction, maintenance, operation and termination inspection (collectively “compliance review”) of solar thermal power plant projects on public lands, to avoid duplication of staff efforts, to share staff expertise and information, to promote intergovernmental coordination at the state and Federal levels, to develop a more efficient compliance review process, and to meet state and Federal requirements.

II. PURPOSE

The purpose of this Amendment to the 2007 MOU is to ensure that jointly reviewed and approved solar thermal power plant projects, located on public lands, are constructed, operated, maintained, and terminated in conformity with the decisions issued by the BLM and the Commission.

III. ROLES AND RESPONSIBILITIES

Under California State law, the Commission has permitting authority for solar thermal power plants designed to generate over 50 megawatts in California under the California Public Resources Code 25500 et seq. If approved, the Commission’s Decision will contain Conditions of Certification for preconstruction, construction, and operation for the life of the project.

Under Federal law, the BLM has authority to grant rights-of-way over the public lands for generation, transmission, and distribution of electric energy systems under Title V of FLPMA, 43 U.S.C. sec. 1761 et seq. If approved, the BLM will issue a Record of Decision and an accompanying right-of-way grant containing terms and conditions to minimize damage and otherwise protect the environment, require compliance with applicable air and water quality standards, require compliance with state standards for public health and safety, environmental protection, and siting, construction, operation, and maintenance of rights-of-way if those state standards are more stringent than applicable Federal standards, and other requirements. The BLM will grant rights-of-way over the public lands in a manner that protects the natural resources associated with the public lands and adjacent lands, prevents unnecessary or undue degradation to public lands, promotes common use, and coordinates to the fullest extent possible with

state government and others. The right-of-way grant will ensure the protection of public health and safety, preclude unnecessary damage to the environment, and prevent the unnecessary or undue degradation of the public lands. The right-of-way holder (“Holder”) must comply with Title 43 of the Code of Federal Regulations (CFR) Part 2800, and by accepting the grant, is bound to the terms and conditions of the grant.

Under the terms of this Amendment to the 2007 MOU, the Commission will provide primary oversight for the Holder’s compliance with the California Building Standards Code (CBSC), and other applicable state laws, ordinances, regulations, and standards (LORS) to ensure health and safety of the public, and protection of the environment. The BLM will provide primary compliance oversight for the right-of-way terms and conditions that are required by the BLM and that are separate and apart from those for which the primary oversight is being administered by the Commission.

Both the BLM and Energy Commission agree to communicate and cooperate in a manner in order to avoid duplication of efforts and to assist each other in effective implementation of compliance efforts.

Under the terms of this Amendment to the 2007 MOU, the Commission will provide the BLM with access to all relevant documents and records applicable to the Holder’s compliance with State Laws and standards for the construction, operation, maintenance and termination of approved solar thermal power plant projects, if appropriate. Should the Commission seek assistance from the BLM with enforcement of state requirements; requests for assistance will be directed to the BLM’s authorized officer.

Under the terms of this Amendment to the 2007 MOU, the BLM will provide the Commission with access to all relevant documents and records applicable to the Holder’s compliance with requirements of the right-of-way grant for the construction, operation, maintenance and termination of approved solar thermal power plant projects, if appropriate. Should the BLM seek assistance from the Commission with enforcement of federal requirements, requests for assistance will be directed to the Commission’s Certified Building Official.

Under the terms of this Amendment to the 2007 MOU, the respective staff of the BLM and the Commission, working cooperatively on compliance efforts, is encouraged to enter into local operating agreements. These local operating agreements will reflect the principles outlined in this Amendment and further describe the processes and protocols that will be established for communication and cooperation between the BLM and the Commission in conducting compliance review operations.

IV. IMPLEMENTATION AND AMENDMENT

This Amendment to the 2007 MOU becomes effective upon signature by the BLM California State Director and the California Energy Commission Executive Director, and may be subsequently amended or modified through the written agreement of both directors.

V. RESOLVING DISAGREEMENT

If there is disagreement between the Commission staff and the BLM staff regarding the provisions of this Amendment, representatives of each staff will meet to discuss the issue(s) in dispute and shall work in good faith towards resolution of the issue(s). If agreement is not reached within 21 days of this initial meeting, the signatories of this Amendment to the 2007 MOU, or delegate, shall confer to resolve the

disagreement. If resolution is not achieved, the BLM and the Commission may agree to disagree and to resolve the issue under respective principles of Federal or state law.

VI. TERMINATION

This Amendment to the 2007 MOU will remain in effect until satisfied or terminated, or until the 2007 MOU is satisfied or terminated. This Amendment to the 2007 MOU may be terminated in writing by either the BLM or the Commission by providing 30 days written notice of termination to the other party.

VII. SIGNATURES AND EFFECTIVE DATE

The BLM and the Commission have executed, and this Amendment to the 2007 MOU becomes effective as of the date of the last signature shown below.

CALIFORNIA ENERGY COMMISSION

DATED: _____

Melissa Jones, Executive Director
California Energy Commission

BUREAU OF LAND MANAGEMENT

DATED: _____

James W. Abbott, Acting State Director
California Bureau of Land Management

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Attachment I
Summary of California Energy
Commission Conditions of Certification
and Bureau of Land Management
Monitoring

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Appendix 6

Determination of NEPA Adequacy

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The Bureau of Land Management (BLM) is using this Determination of National Environmental Policy Act (NEPA) Adequacy (DNA) Worksheet to evaluate new circumstances and additional information that has become available subsequent to publication of the Final Environmental Impact Statement (FEIS) for the Calico Solar Project to determine whether or not supplemental NEPA analysis is required in conformance with the Council of Environmental Quality regulations found under 1502.9. Use of the DNA Worksheet for this purpose is consistent with guidance in Section 5.1 of the Bureau of Land Management’s (BLM) NEPA Handbook (H-1790-1, 2008).

6.1 Determination of NEPA Adequacy

U.S. Department of the Interior, Bureau of Land Management

BLM Office: Barstow Field Office

Case File/Project Number: CACA 49537, LLCAD08000, L51030000.FX0000, LVRAB109AA03

Proposed Action Title/Type: Calico Solar Project and California Desert Conservation Area Plan Amendment

Location/Legal Description: San Bernardino County, California

Applicant: Calico Solar, LLC

6.2 Description of the Proposed Action

6.2.1 Background

On March 14, 2007, Stirling Energy Systems (SES) Solar Six, Limited Liability Company (LLC) and SES Solar Three, LLC, submitted applications for right-of-way (ROW) grants to the BLM to construct and operate a concentrated solar dish power plant facility on federal public lands in San Bernardino County, California. The two ROW application areas were subsequently combined into one project (SES Solar One) proposed for an 8,230-acre site located immediately north of Interstate 40, approximately 37 miles east of Barstow, California. On December 2, 2008, SES Solar One, LLC (SES Solar Three, LLC and SES Solar Six, LLC) submitted an Application for Certification (AFC) to the California Energy Commission (CEC) to construct and operate the SES Solar One Project. In January 2010, the project name was formally changed to the Calico Solar as

a result of SES Solar Three, LLC, merging into SES Solar Six, LLC, to create Calico Solar, LLC. Calico Solar, LLC, is a subsidiary of Tessera Solar.

6.2.2 Proposed Action

The FEIS Proposed Action is to authorize the construction, operation, maintenance, and decommissioning of a nominal 8,230-acre (13 square mile) 850-megawatt (MW) solar energy facility on BLM-administered land. Approximately 1,180 acres of public land within the proposed project area have been acquired with Land and Water Conservation Funds (LWCF) or have been donated to the BLM (“acquired and donated lands”). The project proposal includes approximately 34,000, 25-kilowatt (kW) solar dish Stirling systems (SunCatchers). Each SunCatcher consists of an approximate 38-foot-high by 40-foot-wide solar concentrator dish that supports an array of curved glass mirror facets. These mirrors automatically track the sun and focus solar energy onto a power conversion unit that generates electricity.

The Calico Solar Project would also include a number of related facilities and infrastructure on the project site, including: a new 230-kilovolt (kV) Calico Substation; approximately 2 miles of single-circuit 230-kV transmission tie line to connect the new Calico Substation to the existing Southern California Edison (SCE) Pisgah Substation; project roads and fencing; an administration building; and a main services complex. Approximately 0.1 mile of the new 230-kV transmission tie line would be outside of the project site to connect the new Calico Substation to the existing SCE Pisgah Substation. The Applicant has a 20-year Power Purchase Agreement (PPA), which it signed with SCE on August 9, 2005. The term of the proposed ROW grant is 30 years.

6.2.3 CDCA Plan Amendment

The BLM is also considering amending the California Desert Conservation Area (CDCA) Plan to accommodate a solar power project on the project site. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not specifically identified in that land use plan be considered through the plan amendment process. If the BLM decides to approve the ROW grant, the BLM will also amend the CDCA Plan as required.

6.2.4 Environmental Documentation

Pursuant to a 2007 Memorandum of Understanding (MOU) between the California BLM and the CEC to conduct joint environmental review of solar thermal projects that are

proposed on federal land managed by the BLM, a joint federal-state environmental analysis review of the Calico Solar project was prepared by the CEC. The joint SA/DEIS Notice of Availability (NOA) was published in the *Federal Register* on April 2, 2010. Subsequent to release of the SA/DEIS, the BLM and CEC decided to each prepare independent subsequent environmental documents, while continuing to coordinate and cooperate in these efforts. The Environmental Protection Agency and BLM published notices of the availability of the Final EIS (FEIS) on August 6, 2010. The CEC published a Supplemental Staff Assessment (SSA) on July 21, 2010, and Part 2 to the SSA on August 9, 2010.

Under the FEIS analysis, the Proposed Action is to authorize the construction, operation, maintenance, and decommissioning of a 8,230-acre solar electric-generating facility, as proposed in Calico Solar LLC's application; and to approve a CDCA Plan amendment in response to the application. The FEIS action alternatives include (1) the Proposed Action (as described above); (2) the Reduced Acreage Alternative, a 2,600-acre project, and (3) the Avoidance of Donated and Acquired Lands Alternative, a 7,050-acre project that avoids the 1,180 acres of donated and LWCF-acquired lands in the project area.

The FEIS for the proposed Calico Solar Project also evaluated an Agency Preferred Alternative (Alternative 1A). This 6,215-acre alternative was developed by the BLM in consultation with federal and state regulatory agencies and the Applicant to reduce impacts to high-value wildlife habitat and provide for east-west corridor movement along the northern portion of the project that is important to federally protected desert tortoise and other sensitive wildlife and plant species. The movement of the northern border fence-line approximately 4,000 feet to the south left a 1,770-acre desert tortoise linkage area between the foothills of the Cady Mountains and the north project boundary. The project boundary of Alternative 1A was also designed to remove from the project 245 acres of cultural resource sites that qualified for listing on the National Register of Historic Places, and identified 6.65 acres of avoidance areas within the project to protect sensitive plant species.

In addition, the FEIS evaluated a No Action Alternative denying Calico Solar LLC use of the lands under application, and two other No Action Alternatives including a land use plan amendment that would both deny the proposed Calico Solar Project, and would amend the CDCA Plan to either 1) approve the project site for future solar development or 2) prohibit future solar development on the project site.

6.2.5 Post-FEIS Information

Since publication of the FEIS by the BLM and the SSA by the CEC, the Presiding Committee of the CEC has conducted evidentiary hearings and has accepted and

docketed additional information concerning the biological and cultural resources of the project site, among other project information. On September 3, 2010, the Presiding Committee issued an order directing Calico Solar LLC to provide review of reduced-acreage project alternatives to reduce impacts to environmental resources, primarily the desert tortoise. On September 8, 2010, the Applicant filed six reduced-acreage scenarios for CEC staff review and discussion. As a result of the CEC staff review and Committee discussions, the Applicant proposed a modification for the Calico Solar Project with BLM in what is known as reduced project footprint acreage scenario 5.5 (Scenario 5.5).

Scenario 5.5 proposes 26,540 SunCatchers on a reduced project site of 4,604 acres by moving the northern project site boundary of the FEIS Agency Preferred Alternative farther to the south, and removing an additional 1,602 acres of high-value desert tortoise habitat from the 6,215-acre Agency Preferred Alternative project site.

On September 25, 2010, the CEC issued the Presiding Member's Proposed Decision (PMPD) that would approve Scenario 5.5, and started a public comment period on the PMPD. In addition to describing the impacts of the reduced acreage Scenario 5.5, the PMPD includes a number of Conditions of Certification that would accompany the CEC's decision. The CEC Committee will accept comments on the PMPD through October 22, 2010. All of the testimony docketed in the CEC proceedings, the SSA issued by the CEC staff, and the PMPD issued by the CEC have been made a part of the Administrative Record for the Calico Solar Project.

In response to the CEC's Proposed Decision, Calico Solar LLC requested that the BLM consider authorizing a smaller, 4,604-acre project that would conform to Scenario 5.5. Through the FEIS, the BLM fully analyzed several action alternatives whose acreages exceeded the reduced-acreage Scenario 5.5, including the 8,230-acre Proposed Action and the Agency Preferred Alternative, which contemplated a 6,215-acre project, and an alternative that was smaller than Scenario 5.5, the Reduced Acreage Alternative, a 2,600-acre project that is similar in many respects to Scenario 5.5.

Modified Agency Preferred Alternative

The BLM proposes to modify the FEIS Agency Preferred Alternative (Modified Agency Preferred Alternative) to conform the proposed CEC Scenario 5.5 for the Calico Solar Project. Modification of the Agency Preferred Alternative to conform to Scenario 5.5 would reduce the disturbed area of the project site described in the FEIS Agency Preferred Alternative from 6,215 acres to 4,604 acres, and would reduce project power production from 850 MW to 663.5 MW. The reduced size would eliminate impacts to the 1,602 acres of high-value wildlife habitat removed from the FEIS Agency Preferred

Alternative, and would eliminate impacts to a total of 3,617 project acres as compared to the FEIS Proposed Action. The reduced footprint of the Modified Agency Preferred Alternative would also avoid approximately 1,088 acres of the 1,180 acres of acquired and donated lands within the FEIS Proposed Action project site. The modification would result in the inclusion of 37 acres of Land and Water Conservation Fund-acquired and 59 acres of donated lands. The total is 96 acres.

CDCA Land Use Plan Amendment

The Modified Agency Preferred Alternative would also include amending the CDCA Plan. The CDCA Plan would be amended to identify the modified project site to authorize the solar energy power facility. The siting amendments to the CDCA Plan to allow or prohibit solar power generation facilities on the Proposed Action project site are analyzed as Alternatives in the FEIS.

Impacts on Biological Resources as a result of the Modified Agency Preferred Alternative

Impacts to biological resources within the FEIS Agency Preferred Alternative are evaluated in Section 4.3 of the FEIS. Section 4.3.2.2 describes the higher value habitats near the foothills of the Cady Mountains that would be avoided if the project boundary were moved to the south of the Proposed Action boundary, and concludes that the 6,215-acre Agency Preferred Alternative, as compared to the 8,230-acre Proposed Action, would greatly reduce the barriers and topographical constraints to east-west movement for desert tortoises along the northern project boundary.

In the hearings on the CEC Scenarios 5.5 and 6, and included in the CEC testimony is the declaration of Patrick J. Mock, PhD. that describes the impacts to biological resources, including wildlife, vegetation, and aquatic resources associated with CEC Scenarios 5.5 and 6. Dr. Mock concluded that, “. . . overall, as compared to the 6,215-acre, 850 MW project analyzed in the SSA (the “850 MW Project”), both Scenarios would substantially lessen overall impacts to biological resources. Most significantly, both Scenarios would result in substantially reduced impacts to the federally and state-listed desert tortoise, Nelson’s bighorn sheep, jurisdictional waters of the State, and native vegetation.” The reduced 4,604-acre project area is likely to reduce the number of desert tortoise that would be subject to translocation efforts. Implementation of Scenario 5.5 is expected to affect an estimated 22 adult and sub-adult tortoises and 56 eggs in comparison to the 6,215-acre project estimated numbers of 107 adult and sub-adult tortoises and 436 eggs. The numbers equate to an 82% impact reduction to desert tortoises, as compared to the Agency Preferred Alternative analyzed in the FEIS. Biological resources on the 1,602 acres proposed to be removed from the project site in

the Modified Agency Preferred Alternative have been analyzed in Section 4.3 of the FEIS.

Dr. Mock also concluded that Scenarios 5.5 and 6.0 would substantially lessen impacts to jurisdictional waters of the State, “. . . because the avoided northern portion of the site supports the highest density of jurisdictional waters, significantly higher than the areas found in the southern portion of the site,” referring to SSA Biological Resources Figure 7. His declaration states that impacts to jurisdictional waters of the State would be approximately 152 acres under Scenario 5.5, approximately 126 acres under Scenario 6, and approximately 282 acres under the FEIS Agency Preferred Alternative. Impacts to jurisdiction waters in the 1,602 acres proposed to be removed from the project site in the Modified Agency Preferred Alternative have been analyzed in Section 4.3.2.2 of the FEIS.

Elimination of Detention Basins as a result of the Modified Agency Preferred Alternative

The Modified Agency Preferred Alternative does not include construction or maintenance of the series of detention basins proposed at the north boundary of the project site. Two detention basins proposed within the project site remain in the Modified Agency Preferred Alternative in the vicinity of the central services complex. The function and the impacts of the construction and maintenance for both the northern boundary and on-site detention basins are analyzed for all build alternatives in Section 4.17 of the FEIS.

On the project site, surface waters occur on discontinuous alluvial fans with areas that exhibit a mixed pattern of sheet flow or shallow concentrated flow across isolated, wide areas of land. The northern boundary detention basins are designed to intercept surface water flows from the four main drainages on the south slopes of the Cady Mountains at points immediately downstream of the mouths of the drainages where flow velocities are highest to reduce flood and sedimentation impacts to the northern portion of the Proposed Action project site. The Modified Agency Preferred Alternative retains the on-site detention basins and other structures that are designed to protect project facilities and off-site areas from flooding and erosion.

The CEC docket contains the report of Howard H. Chang, PhD., P.E. relating to the geomorphology and hydrology of the project as discussed in the FEIS, the hydrologic function of the proposed detention basins, and the effects of not constructing detention basins in Scenario 5.5 (the Modified Agency Preferred Action). Dr. Chang explained that the purpose of the detention basins is to reduce the storm discharge reaching the SunCatcher field.

With regard to the effects of deleting the detention basins on off-site impacts, Dr. Chang states: “The effects of the detention basins change with distance. They have the most important effects on the upper reaches of the washes on the alluvial fan. The effects decrease with distance toward downstream. For washes near the railroad, the effects are of long term nature. No detention basins are being considered for certain washes south of the railroad. As long as no detention basins will be installed on a wash, there should also be no effects.” Section 4.17.2.3 (Figure 1-2) of the FEIS describes the proposed on-site detention basin and storm-water management system for the Reduced Acreage Alternative, a project site configuration similar to that of the Modified Agency Preferred Alternative, with the northern project boundary located to the south, away from the Cady Mountain drainages. The Modified Agency Preferred Alternative would require the construction of an on-site storm-water management system similar to the one analyzed in the FEIS as part of the Reduced Acreage Alternative.

The elimination of the northern boundary detention basins in the Modified Agency Preferred Alternative (CEC Scenario 5.5) also changes the physical parameters of the Calico Solar Project analyzed in the Agency Preferred Alternative in the FEIS by shrinking its size and reducing impacts to on-site ephemeral streams.

Dr. Mock’s declaration indicates that the deletion of debris detention basins from the project area will have beneficial effects on biological resources. His declaration states: “By eliminating sedimentation basins, Scenarios 5.5 and 6 would eliminate the potential for long-term effects to nearby vegetation from modified flow and sedimentation regimes.” The surface hydrology and biological resource benefits of reducing the project footprint are described in Section 4.17.2.2 of the FEIS.

Except for the deleted northern boundary detention basins, all of the proposed on-site detention basins, implementation of BMPs, adoption of a final Drainage, Erosion and Sediment Control Plan (DESCP), a Stormwater Pollution Prevention Plan (SWPPP), and compliance with all applicable erosion and stormwater management mitigation measures described in the FEIS will be required to reduce surface water impacts on and adjacent to the project site. All NPDES requirements, including those necessary to fulfill the monitoring and inspection requirements will be adhered to during construction.

In addition, on September 22, 2010, the CEC staff docketed Updated Soil and Water Conditions of Certification that include, among other provisions, a requirement that Applicant submit Stormwater Control/Flood Protection Design Plans, and conduct a Hydrology Study to determine the erosion and sedimentation impact, if any, on BNSF infrastructure resulting from the project owner’s planned emplacement of SunCatchers, flood control structures and runoff control measures.

Temporary Construction Access

In the FEIS, the action alternatives included a temporary construction access across the BNSF ROW and a separate permanent access route and bridge later in time. This was subsequently modified such that the BNSF would build a temporary at-grade crossing in the same location where the permanent bridge crossing was identified in the FEIS for construction and the Applicant would use the planned permanent access route during construction instead of the temporary construction access. Impacts caused by construction and operation of the revised temporary construction access would be substantially similar to those of the construction access discussed in Agency Preferred Alternative of the FEIS.

Temporary Diesel Generators

In the FEIS, the build alternatives did not include use of diesel generators for construction power. The Applicant has subsequently learned that SCE would not be able to provide electrical power to the project until February 2011, at the earliest. As such, the Applicant has modified its proposal to include two Tier 3 (if available) or Tier 4 diesel generators to provide construction power until the Phase 1 upgrade of the existing SCE Pisgah substation is complete. Impacts to air quality under the Applicant's modified proposal would be substantially the same as for the FEIS Agency Preferred Alternative. The CEC Presiding Members Proposed Decision (PMPD) concludes that, with the required Conditions of Certification in place, "The project will not cause new violations of any NO₂, SO₂, PM_{2.5}, or CO ambient air quality standards. Therefore, the NO_x, SO_x, PM_{2.5}, and CO emission impacts are not significant. The project's NO_x and VOC emissions can contribute to the existing violations of the ozone standards. However, the required mitigation will reduce the project's impact to a level that is less than significant." One of the Conditions of Certification (AQ-SC5) requires that all stationary diesel equipment meet state standards.

Potable Water Supply

In the FEIS (section 2.2.3.2, pg 2-14), the Lavic Basin Well 3 was assumed to not be suitable for potable consumption, requiring the need for potable water to be trucked to the project site. The Applicant has subsequently determined that the water supply from Well 3 would be potable with chlorination and reverse osmosis, eliminating the need for water to be trucked to the site. The incremental use of water for domestic purposes would be an insignificant change in the groundwater pumping volumes, and would have no measurable effect on groundwater. The FEIS says that consumption for potable purposes will be 2.2 acre feet per year, and total water consumption for the project will be 20.4 acre feet per year (FEIS, Table 2-3, Page 2-15). The FEIS (section 4.17.2.1, pg 4-365) concludes that groundwater drawdown will amount to 136 acre feet per year

(construction rates) and will produce drawdown of the aquifer of 4.5 feet within 1,000 feet of the supply well, and will therefore have no effect on other wells or water sources. Therefore, using well water for potable purposes in the reduced acreage project will cause an insignificant effect on water groundwater resources.

Cultural Resources Programmatic Agreement Developed Post-FEIS

To address the CEC's Conditions of Certification for cultural resources with the Calico Solar project, it was determined in consultation with the California State Historic Preservation Officer (SHPO), that a Programmatic Agreement (PA) would be developed. The PA was executed between the BLM and the SHPO (the required signatories) on September 21, 2010.

The purpose of this PA is to provide processes whereby the Bureau of Land Management and the CEC, in consultation with the California State Historic Preservation Officer (SHPO), Indian Tribes, and other consulting parties, shall determine the steps the agencies shall follow to take into account effects on historic properties as required by Section 106 of the National Historic Preservation Act (NHPA) and to satisfy the requirements of the California Environmental Quality Act (CEQA). The CEC believes there is possibility that subsurface components associated with known cultural sites may exist within the project area that may change the eligibility of such resources under Section 106 of the NHPA. Although Historic Route 66 may be considered outside of the project Area of Potential Effects for cultural resources, there will be impacts under NHPA to visual resources looking from the historic route. Those impacts are discussed in Section 4.16.1.3 of the FEIS. The BLM and CEC have agreed to address mitigation measures for such impacts, if any, through the PA.

Benefits of the Modified Agency Preferred Alternative

The benefits of the Modified Agency Preferred Alternative over the FEIS Agency Preferred Alternative would include the following:

- Additional reductions in potential desert tortoise mortality and in numbers of desert tortoises requiring translocation. In the FEIS at pages 4-76, Table 4-11- Desert Tortoise Impacts Summary provides the numbers of directly and indirectly affected tortoises within the Agency Preferred Alternative area. One hundred seven adults and sub-adult tortoises are expected to be directly affected in the 6,215 acre Agency Preferred Alternative project site. In CEC testimony it was discussed that the 5.5 Scenario before the Commission would result in direct impacts to 22 adult and sub-adult tortoises. As such, impacts to desert tortoises in the Modified Agency Preferred Alternative would be substantially reduced, although not entirely

eliminated. Twenty-two adult and sub-adult tortoises and 56 eggs in comparison to the 6,215-acre project estimated numbers of 107 adult and sub-adult tortoises and 436 eggs.

- Retention of 1,602 additional acres of high-value wildlife habitat for desert tortoises, bighorn sheep, and other wildlife along the foothills of the Cady Mountains.
- Additional protection of the hydrologic function of high-value desert washes and associated wildlife habitat by eliminating obstruction of natural drainage patterns on the northern project boundary.
- Avoidance of surface disturbance impacts on approximately 1,084 of 1,180 acres (92%) of donated and acquired lands within the Proposed Action project site.
- Avoidance of surface disturbance of approximately 470 acres that will not be graded for detention basin construction.

The Modified Agency Preferred Alternative would result in fewer impacts to biological, soil and other resources than either the Proposed Action or the FEIS Agency Preferred Alternative.

6.3 Land Use Plan (LUP) Conformance

California Desert Conservation Area Plan Date Approved 1980, as amended

Western Mojave Desert Routes of Travel Designations

(WEMO) (amendment to the CDCA Plan) Date Approved June, 2003

BLM lands in the CDD are governed by the CDCA Plan. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not specifically identified in the CDCA Plan be considered through the Plan Amendment process.

The Calico Project site is currently designated as Multiple-Use Class (MUC) M (Moderate Use) Designation in the CDCA Plan. That classification is intended to provide a controlled balance between higher intensity use and protection of public lands. Public lands classified as Moderate Use provide for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause. The construction and operation of a

solar generating project on the Calico Project site would require the BLM to amend the CDCA Plan to allow wind/solar energy generating activities in the MUC M (Limited Use) on the Calico Project site.

Based on Table 1, Multiple Use Class Guidelines, in the CDCA Plan, Electrical Generation Facilities, wind/solar use types are conditionally allowed in the MUC M designation contingent on NEPA requirements being met for the proposed use. As noted above, Chapter 3, “Energy Production and Utility Corridors Element” of the CDCA Plan specifically requires that new proposed power facilities not already identified in the Plan be considered through the Plan Amendment process. The Calico Project site is not currently identified as a solar site in the CDCA Plan and, therefore, a Plan Amendment is required to include the site with solar uses as a recognized element within that Plan.

Under Federal law, the BLM is responsible for processing requests for ROW grant applications to authorize proposed projects such as renewable energy projects, transmission lines, and other appurtenant facilities on land it manages. Because the Calico Solar Project is a privately initiated venture that would be sited on lands managed by the BLM, the project applicant has applied for a ROW grant from BLM pursuant to United States Department of Interior (DOI) regulations. If the ROW grant is approved by BLM, it will have conditions based on the Final EIS, the Record of Decision (ROD), and other Federal rules and regulations applicable to Federal lands. The applicant would then be able to construct and operate the proposed Calico Project on the project site.

The approval of the CDCA Plan amendment and the ROW grant application by the BLM, for the Calico Solar Project and the project site would be authorized in accordance with Title V of the Federal Land and Management Policy Act (FLMPA of 1976), and 43 Code of Federal Regulations (CFR) Parts 1600 and 2800.

The proposed action (the Calico Solar Project) is in conformance with the applicable LUP because it is specifically provided for in the following LUP decisions:

The 663.5 MW project and the other Build Alternatives would generally conform to the CDCA Plan through the prescribed NEPA compliance, the CDCA Plan amendment process, and the ROW grant application process. The CDCA Plan recognized the potential for future renewable energy development in the CDD. The CDCA Plan requires that site specific location identification occur for solar energy uses through the Plan amendment process. The 663.5 MW project and all the other Build Alternatives would require a Plan amendment to locate the project in the CDCA Plan Area in the CDD. The agreed upon changes would not alter the need for a plan amendment for site identification, nor would they vary the land use plan amendment analysis since no land use change is contemplated by these changes.

6.4 Identify Applicable NEPA Documents and Other Related Documents That Cover the Proposed Action

List by name and date all applicable NEPA documents and Other Related documents that cover the proposed action:

- SA/DEIS published by the CEC and BLM on April 2, 2010
- FEIS published by the BLM on August 6, 2010
- SSA published July 21 and August 9, 2010, as amended
- Presiding Member’s Proposed Decision (PMPD) issued on September 25, 2010
- Biological Opinion issued to the BLM from the U.S. Fish and Wildlife Service

6.5 NEPA Adequacy Criteria

- (1) A. Is the new proposed action a feature of, or essentially similar to, an alternative analyzed in the existing NEPA document(s)? B. Is the project within the same analysis area, or if the project location is different, are the geographic and resource conditions sufficiently similar to those analyzed in the existing NEPA document(s)? C. If there are differences, can you explain why they are not substantial?

Answer: 1.A. Yes, the Modified Agency Preferred Alternative is essentially similar to the Proposed Action analyzed in the FEIS, as well as the Agency Preferred Alternative. The 3,617-acre project footprint is entirely contained within the 8,230-acre analysis area of the Proposed Action and the 4,613-acre analysis of the FEIS Agency Preferred Alternative.

1.B. The Modified Agency Preferred Alternative is located within the same footprint of the Proposed Action and the Agency Preferred Alternative. As such, the geographic and resource conditions are the same as those analyzed in the EIS. The affected environment and the environmental consequences of the 8,230-acre Proposed Action have been fully described and analyzed in the existing NEPA documents, as has the Agency Preferred Alternative. The Modified Agency Preferred Alternative would provide for the construction of fewer (26,540) SunCatchers than the number of SunCatchers for the Agency Preferred Alternative (34,000), and accordingly, would generate less (663.5

MW) energy (versus 850 MW for the Agency Preferred Alternative), and eliminate 470 acres of detention basin construction. The net environmental impacts of the Modified Agency Preferred Alternative would be less than for the FEIS Agency Preferred Alternative, and no impacts not already analyzed in the FEIS are anticipated.

1.C. The elimination of the northern boundary detention basins reduces impacts to the natural drainages on the project site, including reducing the area of State jurisdictional waters affected. Removal of the northern boundary detention basins will not affect off-site flooding or erosion because on-site detention basins and other storm-water control structures remain in the Modified Agency Preferred Alternative. Because of the designed purpose for the northern boundary detention basins, and the relocation of the northern boundary away from the foothills of the Cady Mountains, elimination of the detention basins does not affect project flood control, which remains a BLM mitigation requirement and a CEC Condition of Certification.

- (2) Is the range of alternatives analyzed in the existing NEPA document(s) appropriate with respect to the new proposed action, given current environmental concerns, interests, and resource values?

Answer: Yes, the range of alternatives considered in the FEIS is appropriate with respect to the Modified Agency Preferred Alternative. The Modified Agency Preferred Alternative is substantially similar to the Agency Preferred Alternative of the FEIS and enhances achievement of the resource protection objectives intended to be addressed by the Reduced Acreage Alternative, and by the Avoidance of Acquired and Donated Lands Alternative analyzed in the FEIS.

Alternative 2, the Reduced Acreage Alternative, would reduce impacts to higher biological resource values in the northern project area but not eliminate impacts to cultural resources in similar areas below the railroad grade as the Modified Agency Preferred Action. Therefore, the Modified Agency Preferred Alternative offers greater overall resource protection than FEIS Alternative 2.

Alternative 3, Avoidance of Acquired and Donated Lands, was developed to reduce impacts on acquired and donated lands in order to protect resource values on those lands. The FEIS analysis demonstrates that the lands lying in the northern area of the proposed project site in the foothills of the Cady Mountains contain relatively much higher biological resource values, in terms of both tortoise habitat and California State jurisdictional waters, than other portions of the site, including the acquired and donated lands parcels. The Modified Agency Preferred Alternative offers greater overall protection to biological and hydrological resource protection in the project area than does Alternative 3 or the FEIS Agency Preferred Alternative. A total of approximately 96 acres of donated and acquired land would be adversely affected by the Modified Agency

Preferred Alternative, compared to 1,180 acres in the Proposed Action. The 96 acres of acquired and donated lands that would still be affected by the Modified Agency Preferred Alternative, however, are located outside the areas of highest biological value.

No Action Alternative 4 would deny the Calico Solar Project and not affect the CDCA Plan. Alternative 5 would deny the Calico Solar Project and amend the CDCA Plan to identify the project site as available for solar power development. These alternatives are not similar to the Modified Agency Preferred Alternative inasmuch as the Modified Agency Preferred Alternative would approve the project on site.

- (3) Is the existing analysis valid in light of any new information or circumstances (such as, rangeland health standard assessment, recent endangered species listings, updated list of BLM-sensitive species)? Can you reasonably conclude that new information and new circumstances would not substantially change the analysis of the new proposed action?

Answer: Yes, the existing analysis of the FEIS is valid, particularly in light of additional resource information that has been provided to the CEC through evidentiary hearing testimony and in response to CEC data requests. This information includes the additional information and proposed Scenarios 5.5 and 6.0 submitted by the Applicant to the CEC; the testimony before the CEC including the declaration of Dr. Patrick Mock and the report submitted by Dr. Howard Chang; the SSA published by the CEC staff; and the PMPD and associated Conditions of Certification published by the CEC Committee. This information does not change the analysis of the FEIS, but supplements the detail of the information analyzed in the FEIS, and is consistent with the substance and conclusions of the FEIS regarding project-related impacts of the Calico Solar Project.

- (4) Are the direct, indirect, and cumulative effects that would result from implementation of the new proposed action similar (both quantitatively and qualitatively) to those analyzed in the existing NEPA document?

Answer: Yes, as discussed above, the direct, indirect, and cumulative effects that would result from implementation of the Modified Agency Preferred Alternative are similar to those analyzed in the FEIS. As discussed above, the direct and indirect effects of the modified 4,613-acre Agency Preferred Alternative would be substantially less than those of both the original 8,230-acre Proposed Action and the 6,215 acre FEIS Agency Preferred Alternative. The cumulative effects of the Modified Agency Preferred Alternative would be less with respect to the desert tortoise, State jurisdictional waters,, and desert bighorn sheep, and substantially similar to those of the original Proposed Action and FEIS Agency Preferred Alternative.

- (5) Are the public involvement and interagency review associated with existing NEPA documents adequate for the current proposed action?

Answer: Yes, the public involvement and interagency review associated with the FEIS are adequate for the Modified Agency Preferred Alternative. Public comments received during scoping and the formal SA/DEIS and FEIS comment periods have expressed concern about impacts on biological and cultural resources in the project area. The Modified Agency Preferred Alternative would reduce impacts on those resources. The Modified Agency Preferred Alternative has been developed in consultation with the USFWS, CEC, CDFG and other state and federal agencies to reduce impacts on jurisdictional resources on the project site.

Concerns expressed in comments on the SA/DEIS and the FEIS regarding the hydrological effects of the project on the BNSF Railroad are addressed in revised proposed CEC Conditions of Certification.

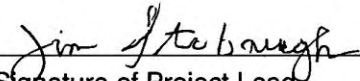
6.6 Conclusion

Based on the review documented above in this DNA, I conclude that the change in circumstances described above conform to the applicable land use plan inasmuch as the process to amend the plan remains the same for any of the action alternatives, and that the NEPA FEIS documentation fully covers the change in circumstances described above and as reflected in the BLM identified Modified Agency Preferred Alternative and no supplementation under NEPA is required.

Note: The signed Conclusion on this Worksheet is part of an interim step in the BLM's internal decision process and does not constitute an appealable decision.

Conclusion (*If you found that one or more of these criteria is not met, you will not be able to check this box.*) [See following page.]

Based on the review documented above in this DNA and consistent with the Council on Environmental Quality guidelines at Part 1502.9, I conclude that the change in circumstances described above conform to the applicable land use plan inasmuch as the process to amend the plan remains the same for any of the action alternatives, and that the modifications are consistent with the project NEPA documentation for the 663.5 MW project and the other Build Alternatives, and no supplementation under NEPA is required.



Signature of Project Lead



Signature of NEPA Coordinator



Signature of the Responsible Official:



Date

Note: The signed Conclusion on this Worksheet is part of an interim step in the BLM's internal decision process and does not constitute an appealable decision.



**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

Docket No. 08-AFC-13

For the CALICO SOLAR (Formerly SES Solar One)

**PROOF OF SERVICE
(Revised 8/9/10)**

APPLICANT

Felicia Bellows
Vice President of Development
& Project Manager
Tessera Solar
4800 North Scottsdale Road,
#5500
Scottsdale, AZ 85251
felicia.bellows@tesseractosolar.com

INTERESTED AGENCIES

California ISO
e-recipient@caiso.com

Jim Stobaugh
BLM – Nevada State Office
P.O. Box 12000
Reno, NV 89520
jim_stobaugh@blm.gov

California Unions for Reliable
Energy (CURE)
c/o: Loulena A. Miles,
Marc D. Joseph
Adams Broadwell Joseph
& Cardozo
601 Gateway Boulevard, Ste. 1000
South San Francisco, CA 94080
lmiles@adamsbroadwell.com

CONSULTANT

Angela Leiba
AFC Project Manager
URS Corporation
1615 Murray Canyon Rd.,
#1000
San Diego, CA 92108
angela_leiba@URSCorp.com

Rich Rotte, Project Manager
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
richard_rotte@blm.gov

Defenders of Wildlife
Joshua Basofin
1303 J Street, Suite 270
Sacramento, California 95814
e-mail service preferred
jbasofin@defenders.org

APPLICANT'S COUNSEL

Allan J. Thompson
Attorney at Law
21 C Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

Becky Jones
California Department of
Fish & Game
36431 41st Street East
Palmdale, CA 93552
dfgpalm@adelphia.net

Society for the Conservation of
Bighorn Sheep
Bob Burke & Gary Thomas
P.O. Box 1407
Yermo, CA 92398
cameracoordinator@sheepsociety.com

Ella Foley Gannon, Partner
Bingham McCutchen, LLP
Three Embarcadero Center
San Francisco, CA 94111
ella.gannon@bingham.com

INTERVENORS

County of San Bernardino
Ruth E. Stringer,
County Counsel
Bart W. Brizzee,
Deputy County Counsel
385 N. Arrowhead Avenue,
4th Floor
San Bernardino, CA 92415-
bbrizzee@cc.sbcounty.gov

Basin and Range Watch
Laura Cunningham &
Kevin Emmerich
P.O. Box 70
Beatty, NV 89003
atomicoadranch@netzero.net

INTERVENORS CONT.

Patrick C. Jackson
600 N. Darwood Avenue
San Dimas, CA 91773
e-mail service preferred
ochsjack@earthlink.net

Gloria D. Smith, Senior Attorney
***Travis Ritchie**
Sierra Club
85 Second Street, Second floor
San Francisco, CA 94105
gloria.smith@sierraclub.org
travis.ritchie@sierraclub.org

Newberry Community
Service District
Wayne W. Weierbach
P.O. Box 206
Newberry Springs, CA 92365
newberryCSD@gmail.com

Cynthia Lea Burch
Steven A. Lamb
Anne Alexander
Katten Muchin Rosenman LLP
2029 Century Park East,
Ste. 2700
Los Angeles, CA 90067-3012
Cynthia.burch@kattenlaw.com
Steven.lamb@kattenlaw.com
Anne.alexander@kattenlaw.com

ENERGY COMMISSION

ANTHONY EGGERT
Commissioner and Presiding Member
aeggert@energy.state.ca.us

JEFFREY D. BYRON
Commissioner and Associate Member
jbyron@energy.state.ca.us

Paul Kramer
Hearing Officer
pkramer@energy.state.ca.us

Lorraine White, Adviser to
Commissioner Eggert
e-mail service preferred
lwhite@energy.state.ca.us

Kristy Chew, Adviser to
Commissioner Byron
e-mail service preferred
kchew@energy.state.ca.us

Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Steve Adams
Co-Staff Counsel
sadams@energy.state.ca.us

Christopher Meyer
Project Manager
cmeyer@energy.state.ca.us

Jennifer Jennings
Public Adviser
e-mail service preferred
publicadviser@energy.state.ca.us

DECLARATION OF SERVICE

I, Darin Neufeld, declare that on October 22, 2010, I served and filed copies of the attached Bureau of Land Management's Record of Decision – Compilation of Appendices. 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: [www.energy.ca.gov/sitingcases/solarone].

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;
- by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date 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. 08-AFC-13
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, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Darin Neufeld

