

RIDGECREST SOLAR POWER PROJECT (09-AFC-9) DATA ADEQUACY SUPPLEMENT	
Technical Area: Biological Resources	Response Date: October 26, 2009

Following are additional information and/or clarifications in response to the specific issues raised in the CEC staff Data Adequacy review. For each specific area where the questions were raised by CEC staff, the applicable section of the CEC Siting Regulations is identified, followed by the "Information Required to Make AFC Conform with Regulations," followed by the supplemental/clarifying information.

DA-BIO-1. Appendix B (g) (13) (A)

Information Required:

Please provide a map at a scale of 1 inch = 500 feet showing the location of sensitive biological resources on the project site and a one-mile buffer. Specifically, Figures 5.3-4, -6, -7, -8, and -9. Also include any linear facilities such as transmission lines and water lines plus a mile buffer. Please provide maps at 1 inch = 500 feet for the project site and a one-mile buffer for Figures 5.3-5 and 5.3-11.

Response:

Based on guidance provided by California Energy Commission (CEC) staff subsequent to this data adequacy information request, the scale for figures showing sensitive biological resources were revised to 1:24,000; the scale for figures showing State waters/wetland-related features were revised 1:4,800. The CEC confirmed on October 1, 2009 that these 1:24,000 and 1:4,800 scales were sufficient for data adequacy but that information at other map scales might be requested by the CEC at a later date. As required by the CEC, only portions of the project site with the resources of interest are provided at the 1:24,000 or 1:4,800 scales. To enhance the display of data, the revised figures were provided to resource agency staff on October 26, 2009 at the CEC required scales in a map size of 36 inches by 48 inches. These large format revised figures were provided in a separate attachment. These same figures have been reduced to 11"x17" in size and are now provided as Attachment BIO-A at the end of this section in this document.

DA-BIO-2. Appendix B (g) (13) (B) (i)

Information Required:

Please provide maps at 1 inch = 500 feet (1:6000) for the following figures (only the project site and linear facilities plus a one-mile buffer): Fig.5.3-4 Vegetation Communities; Fig 5.3-5 State Waters; Fig 5.3-6 Desert Tortoise Observations; Fig 5.3-7 Mohave Ground Squirrel; Fig 5.3-8 Burrowing Owl Observations; Fig 5.3-9 Kit Fox, Shrike, thrasher; and Fig 5.3-11 Water Flow And Proposed channels.

Response:

Based on guidance provided by California Energy Commission (CEC) staff subsequent to this data adequacy information request, the scale for figures showing sensitive biological resources were revised to 1:24,000; the scale for figures showing State waters/wetland-related features were revised 1:4,800. The

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CEC confirmed on October 1, 2009 that these 1:24,000 and 1:4,800 scales were sufficient for data adequacy but that information at other map scales might be requested by the CEC at a later date. As required by the CEC, only portions of the project site with the resources of interest are provided at the 1:24,000 or 1:4,800 scales. To enhance the display of data, the revised figures were provided to resource agency staff on October 26, 2009 at the CEC required scales in a map size of 36 inches by 48 inches. These large format revised figures were provided in a separate attachment. These same figures have been reduced to 11"x17" in size and are now provided as Attachment BIO-A at the end of this section in this document.

DA-BIO-3. Appendix B (g) (13) (B) (iii)

Information Required:

The figures are at too coarse a scale. Please provide maps of state jurisdictional waters at a scale of 1 inch = 500 feet, for the figures below: Fig.5.3-5 and Fig. 5.3-11.

Response:

Based on guidance provided by California Energy Commission (CEC) staff subsequent to this data adequacy information request, the scale for figures showing sensitive biological resources were revised to 1:24,000; the scale for figures showing State waters/wetland-related features were revised 1:4,800. The CEC confirmed on October 1, 2009 that these 1:24,000 and 1:4,800 scales were sufficient for data adequacy but that information at other map scales might be requested by the CEC at a later date. As required by the CEC, only portions of the project site with the resources of interest are provided at the 1:24,000 or 1:4,800 scales. To enhance the display of data, the revised figures were provided to resource agency staff on October 26, 2009 at the CEC required scales in a map size of 36 inches by 48 inches. These large format revised figures were provided in a separate attachment. These same figures have been reduced to 11"x17" in size and are now provided as Attachment BIO-A at the end of this section in this document.

DA-BIO-4. Appendix B (g) (13) (C)

Information Required:

Please provide survey results and information about the vegetation and wildlife resources along the Project's linear facilities.

Response:

Information about the vegetation and wildlife resources along all the Project's proposed linear features, with the exception of a one-mile segment of the proposed water line route, has already been provided as part of the AFC document submitted on August 31, 2009 (see Section 5.3.2.5 Survey Results). Surveys to identify

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the vegetation and wildlife resources along the remaining one mile of proposed water line were completed on October 7, 2009. The results of that reconnaissance-level survey are presented in a report provided in Attachment BIO-B at the end of this section.

The entire plant disturbance footprint (including portions of the water pipeline route) was subjected to all general and protocol biological surveys as negotiated with the reviewing agencies in March 2009. These surveys included:

- Vegetation Mapping
- Habitat Assessment
- Rare Plant Surveys, including BLM sensitive plants
- Protocol Desert Tortoise (DT) Surveys
- Protocol Burrowing Owl Surveys
- Avian Point Count Surveys
- Jurisdictional Delineations

The remaining area for which protocol-level biological survey data needs to be compiled for the RSPP consists of a 3.6-mile water line segment running east and north from the site parallel to existing roadways. In early October 2009, to supplement the findings of the spring 2009 surveys reported in the AFC, a habitat assessment, vegetation mapping, and a jurisdictional delineation were conducted on the portions of the water line route not previously surveyed. These results, combined with the previously-surveyed findings for the water pipeline disturbance area, are included in Attachment BIO-B at the end of this section.

DT surveys, conducted in accordance with the USFWS 2009 protocol, will be conducted for the additional area in late October. The results of the DT surveys will be submitted to the CEC by the end of November.

Remaining protocol surveys will be conducted as soon as possible in early 2010. The schedule for these remaining surveys is summarized in Table BIO-4 below. Data from these surveys will be added to the BRTR as soon as they are complete.

Table BIO-4 Schedule for Remaining Water Line Biological Surveys

Desert Tortoise Surveys	October, 2009
Rare Plant Surveys	February-July, 2010 ¹
Burrowing Owl Surveys	March and April, 2010
Avian Point Count Surveys	April, 2010

¹ Could be finished in late June depending on rainfall patterns

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DA-BIO-5. Appendix B (g) (13) (D)

Information Required:

Please provide CNDDDB records and field survey forms

Response:

California Natural Diversity Database (CNDDDB) records, field survey forms, and supporting materials (e.g., shapefiles and maps) for all records of each special-status species detected during surveys for the proposed Project are included in the following attachments at the end of this section:

- Attachment BIO-C: Figures 1-5 showing detections of each special-status species recorded during project-level surveys;
- Attachment BIO-D: Species-specific Shapefiles depicting individual records, including UTM coordinates (NAD83 Zone 11N), dates, and the type of detection for each special-status species recorded during project-level surveys;
- Attachment BIO-E: CNDDDB field survey forms for each special-status species recorded during project-level surveys.

DA-BIO-6. Appendix B (g) (13) (D) (iii)

Information Required:

Please provide correspondence indicating that the Jurisdictional Determination was submitted for review to the USACE.

Response:

A revised Jurisdictional Determination Report and associated cover letter was submitted to the U.S. Army Corps of Engineers on October 23, 2009 and is presented in Attachment BIO-F at the end of this section.

DA-BIO-7. Appendix B (g) (13) (F) (ii)

Information Required:

Please identify contacts that have been made regarding desert tortoise habitat compensation, relocation and management.

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Response:

Discussions with the resource agencies concerning biological resources issues began in early 2009. Desert tortoise surveys, impacts, and mitigation were discussed in an interagency meeting held on January 30, 2009 at BLM's Ridgecrest office, in which Ray Bransfield of the US Fish and Wildlife Service (USFWS) participated by phone. These topics were also discussed in a February 11, 2009 interagency conference call that included Julie Vance, Tannika Engelhard of Carlsbad, Kim Nicol of Region 6, and David Hacker (Kern County). of the California Department of Fish and Game (CDFG).

The Solar Millennium management team met with Kevin Hunting and Scott Flint on March 3, 2009 at CDFG Headquarters to discuss CDFG's interest in species present at the Ridgecrest site, CDFG's views of mitigation objectives, and the Project's willingness in opening up broad ranging dialogue about mitigation approaches. This meeting led to several follow-up phone calls and a site visit with David Hacker on April 29, 2009 to discuss sensitive biological resources, including desert tortoise survey results and potential impacts. Another site visit with CDFG representatives occurred on June 25, 2009. This provided an opportunity to review Desert Tortoise occurrence data resulting from Solar Millennium's spring 2009 surveys, view habitat, and discuss state jurisdictional waters on-site. Initial meetings were held in August 2009 with the Desert Tortoise Preservation Committee and the Antelope Valley Conservancy. Also, a site visit with agency staff is planned for November 2009 to discuss desert tortoise and other biological resources issues.

Appendix F, Attachment M "Regulatory Agency Correspondence", included in the September 1, 2009 AFC submittal, provides email correspondence regarding special-status species to be considered during Project evaluation and proposed survey methodologies.

DA-BIO-8. Appendix B (g) (H)

Information Required:

Please provide preliminary correspondence with CDFG, USFWS, USACE and any other appropriate agencies regarding permits that might be required for this project. Appendix F, Attachment M "Regulatory Agency Correspondence" includes only a species list request and an e-mail exchange about proposed survey protocol. Please include correspondence indicating that the Jurisdictional Delineation has been submitted to the USACE for review.

Response:

We have submitted a request for JD to the USACE (see response to DA-BIO-6 above). We do not have specific correspondence with CDFG, USFWS, and USACE in which they have outlined what specific permits are necessary for the RSPP. However, we had discussions regarding what permits might be necessary with CDFG and USFWS during Project site field meetings on January 30 and April 29, 2009. Permitting was also discussed with CDFG during the interagency telephone call on February 11, 2009 with CDFG. Based on these discussions, we believe we need a Biological Opinion (BO) from USFWS to satisfy the Federal Endangered Species Act (ESA), a Section 2081 Incidental Take Permit (ITP) from CDFG to

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satisfy the California ESA, and a Streambed Alteration Agreement (SAA) to satisfy Section 1602 of the California Fish and Game code.

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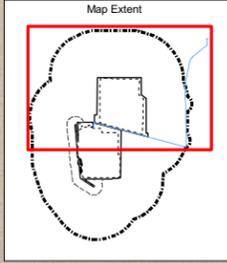
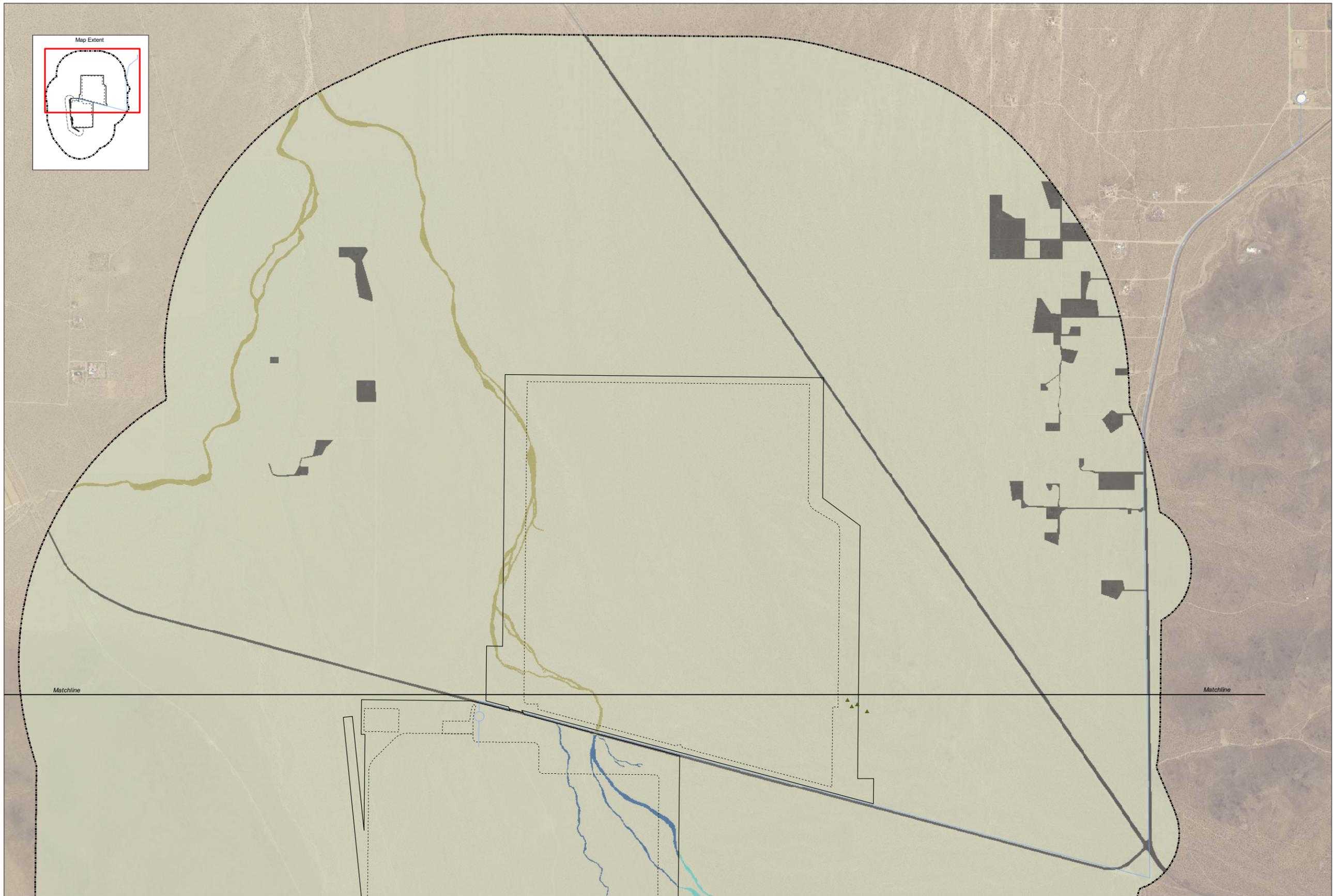
Attachment BIO-A

Revised AFC Biological Resources Figures

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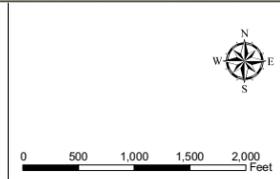
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Response Date: October 26, 2009



- Legend**
- Disturbance Area
 - ⋯ Facility Footprint
 - Possible Water Line Route
 - ⊞ Biological Resources Survey Area (BRSA)¹
 - ▲ BLM Targeted Cactus Observations
 - ▲ Cottontop Cactus
- Vegetation Communities**
- Riparian**
- Mojave Desert Wash Scrub
 - Unvegetated Ephemeral Dry Wash
 - Unvegetated Ephemeral Dry Wash (Presumed)²
- Upland**
- Mojave Creosote Bush Scrub
 - Other
 - Developed

NOTES:
 1. BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.
 2. Due to minimum mapping unit within buffer (1.0 mile), these areas are presumed to be unvegetated.



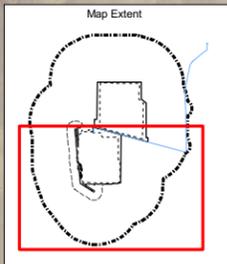
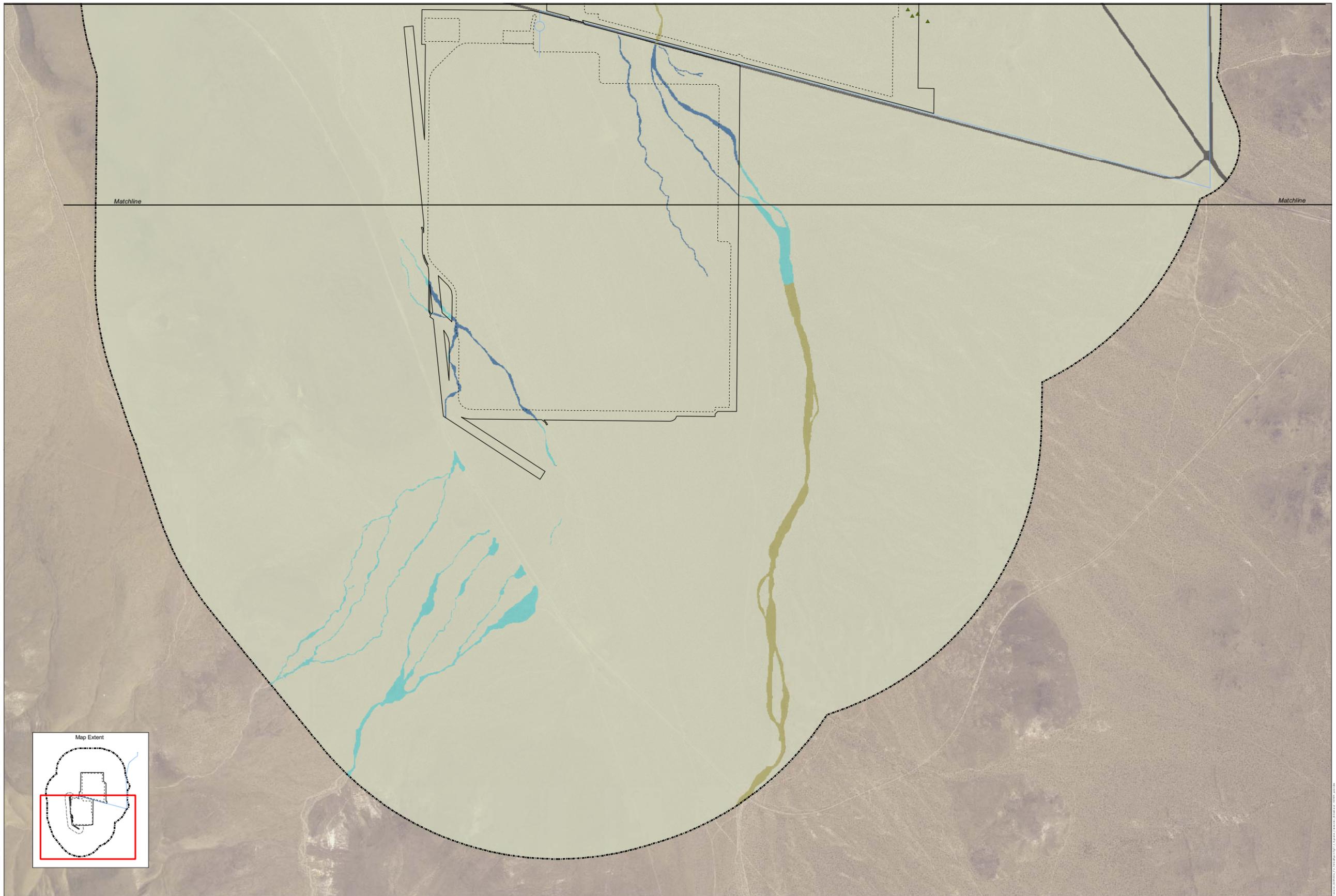
**Ridgecrest Solar Power Project
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**Figure 5.3-4 Revised
 Vegetation Communities and
 BLM Targeted Cactus Observations
 Northern Extent**

Solar Millennium

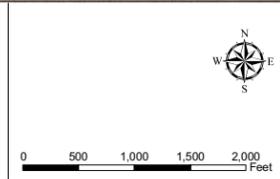
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Date: October 2009



- Legend**
- Disturbance Area
 - Facility Footprint
 - Possible Water Line Route
 - Biological Resources Survey Area (BRSA)¹
 - BLM Targeted Cactus Observations**
 - Cottontop Cactus
- Vegetation Communities**
- Riparian**
 - Mojave Desert Wash Scrub
 - Unvegetated Ephemeral Dry Wash
 - Unvegetated Ephemeral Dry Wash (Presumed)²
- Upland**
- Mojave Creosote Bush Scrub
 - Other
 - Developed

NOTES:
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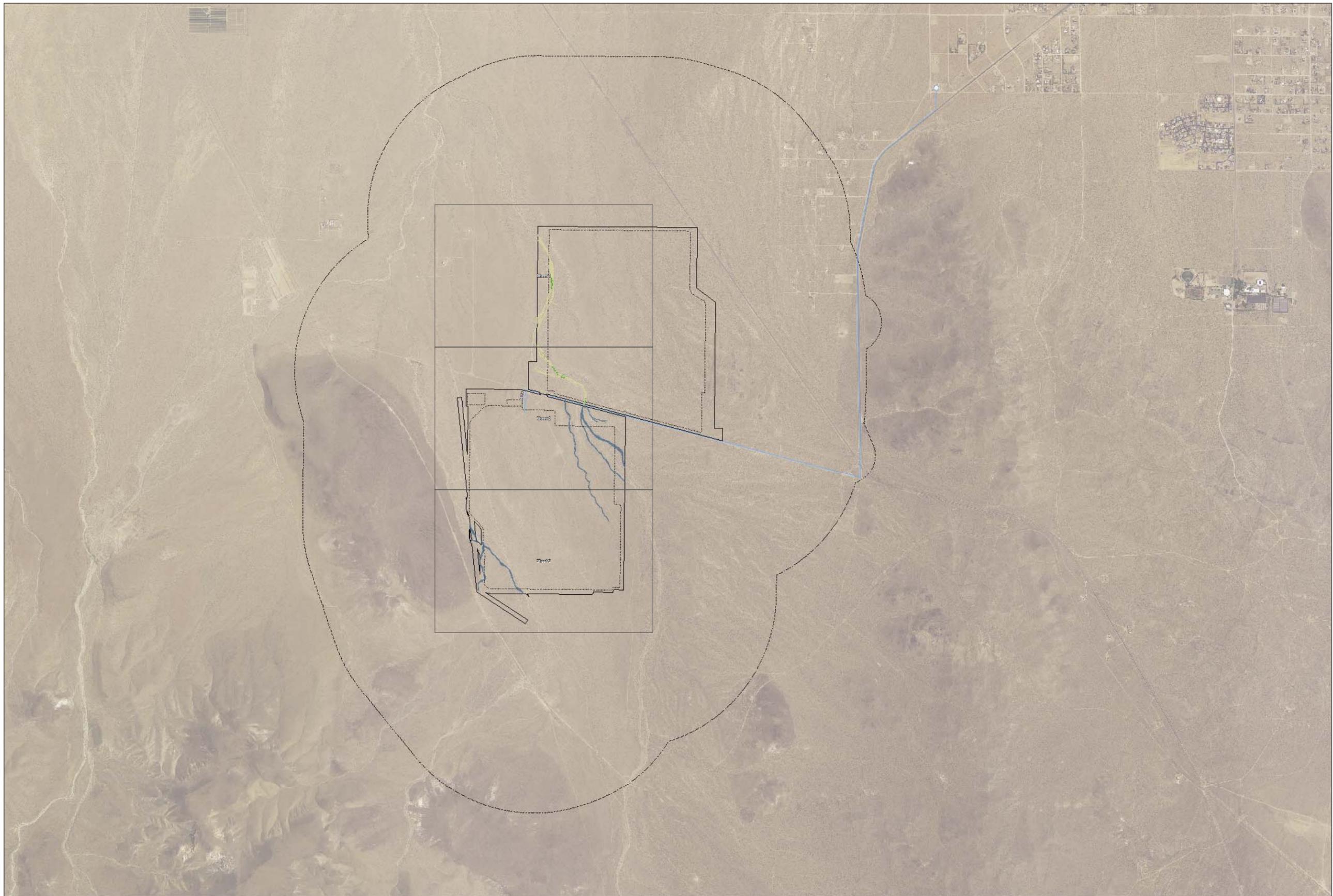
**Ridgecrest Solar Power Project
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**Figure 5.3-4 Revised
 Vegetation Communities and
 BLM Targeted Cactus Observations
 Southern Extent**

Solar Millennium

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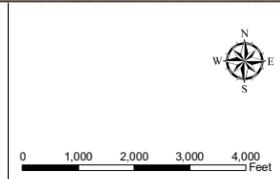
Date: October 2009



- Legend**
- Biological Resources Survey Area (BRSA)¹
 - Facility Footprint
 - Disturbance Area
 - Possible Water Line Route
 - Map Sheet Extent

- Jurisdictional Waters of the State**
- Mojave Desert Wash Scrub**
 - Wash Dependent Vegetation (Subsampled Areas)
 - Vegetated Ephemeral Dry Wash
 - Mojave Desert Wash Scrub**
 - Unvegetated Ephemeral Dry Wash

NOTE:
 1. BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.



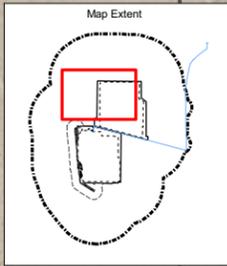
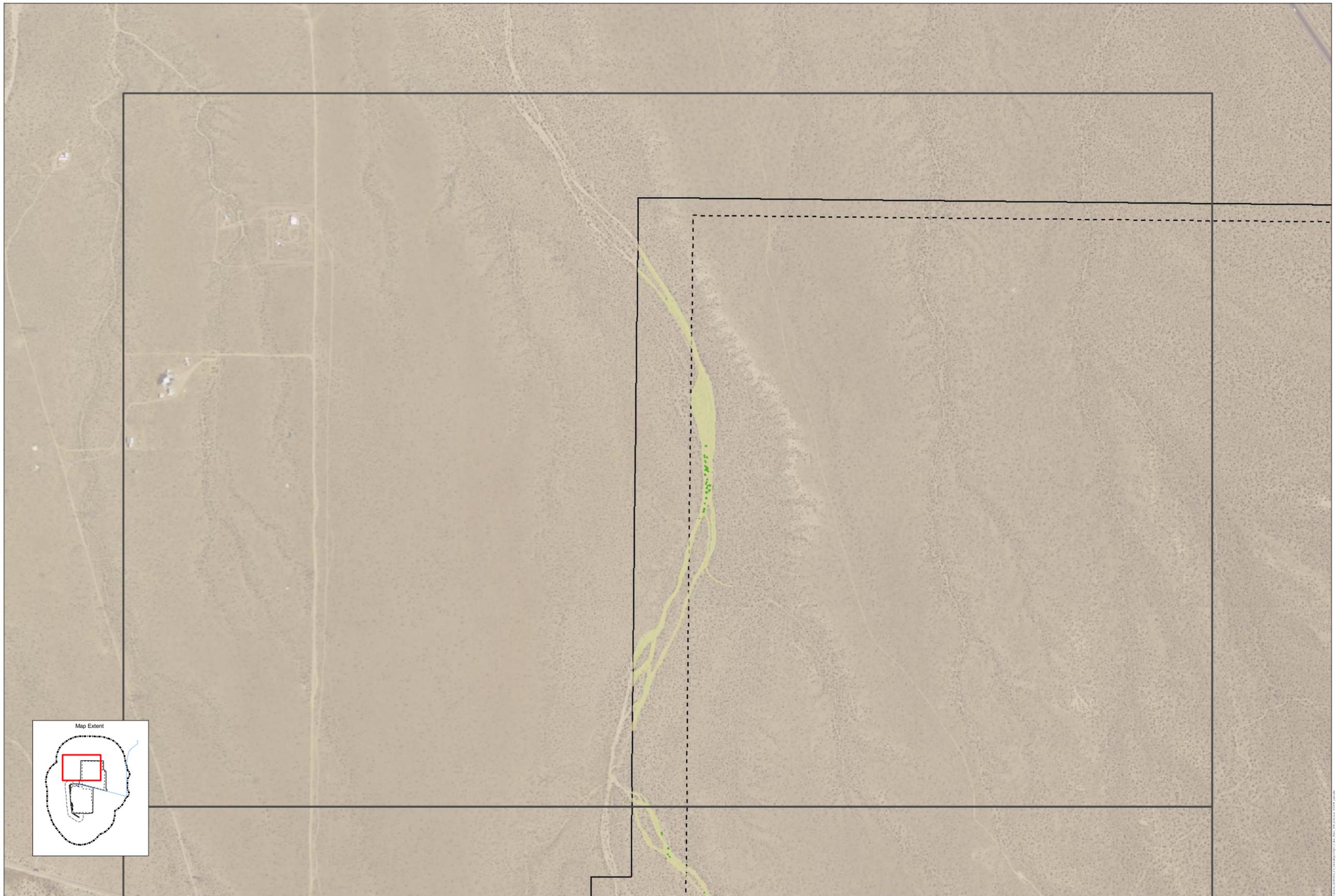
**Ridgecrest Solar Power Project
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**Figure 5.3-5 Revised
 State Jurisdictional Waters
 Overview**

Solar Millennium

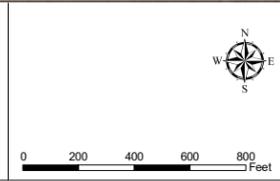
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Date: October 2009



- Legend**
- Biological Resources Survey Area (BRSA)¹
 - Facility Footprint
 - Disturbance Area
 - Possible Water Line Route
 - Map Sheet Extent
- Jurisdictional Waters of the State**
- Wash Dependent Vegetation (Subsampled Areas)
 - Vegetated Ephemeral Dry Wash
 - Unvegetated Ephemeral Dry Wash

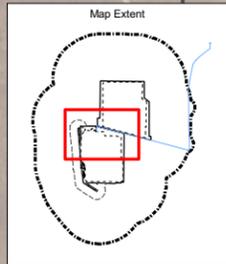
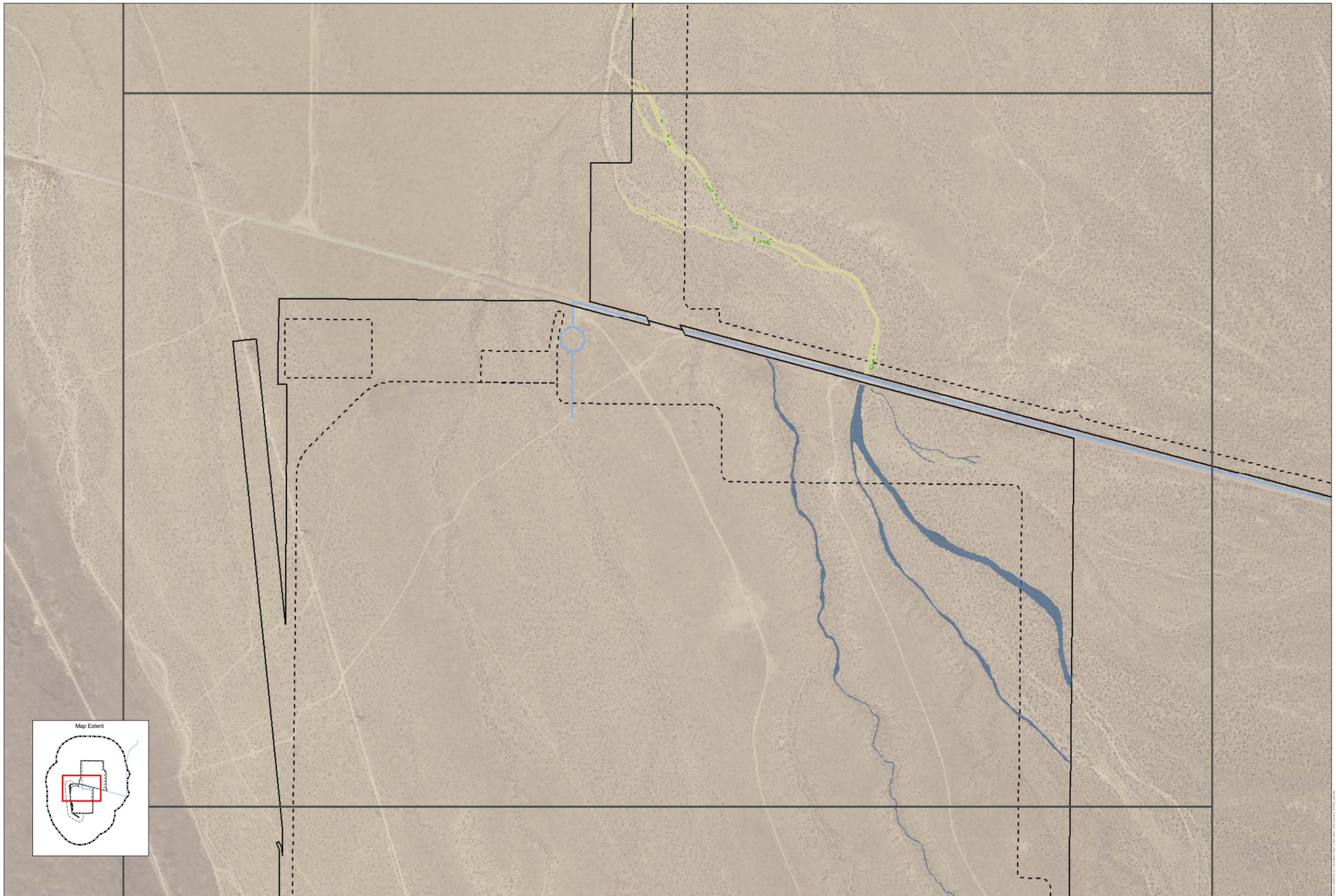
NOTE:
 1. BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.



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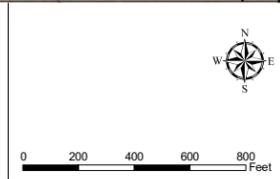
Figure 5.3-5 Revised
 State Jurisdictional Waters
 Sheet 1

Date: October 2009



Legend		Jurisdictional Waters of the State	
	Biological Resources Survey Area (BRSA) ¹		Wash Dependent Vegetation (Subsampled Areas)
	Facility Footprint		Vegetated Ephemeral Dry Wash
	Disturbance Area		Unvegetated Ephemeral Dry Wash
	Possible Water Line Route		
	Map Sheet Extent		

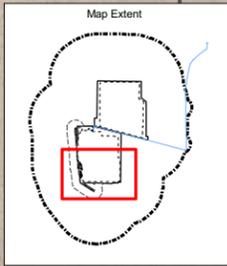
NOTE:
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Figure 5.3-5 Revised
 State Jurisdictional Waters
 Sheet 2

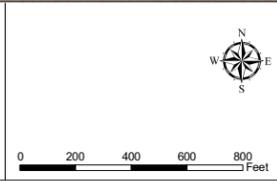
Solar Millennium
 AECOM
 Date: October 2009



- Legend**
- Biological Resources Survey Area (BRSA)
 - Facility Footprint
 - Disturbance Area
 - Possible Water Line Route
 - Map Sheet Extent

- Jurisdictional Waters of the State**
- Mojave Desert Wash Scrub**
 - Wash Dependent Vegetation (Subsampled Areas)
 - Vegetated Ephemeral Dry Wash
 - Mojave Desert Wash Scrub**
 - Unvegetated Ephemeral Dry Wash

NOTE:
 1. BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.



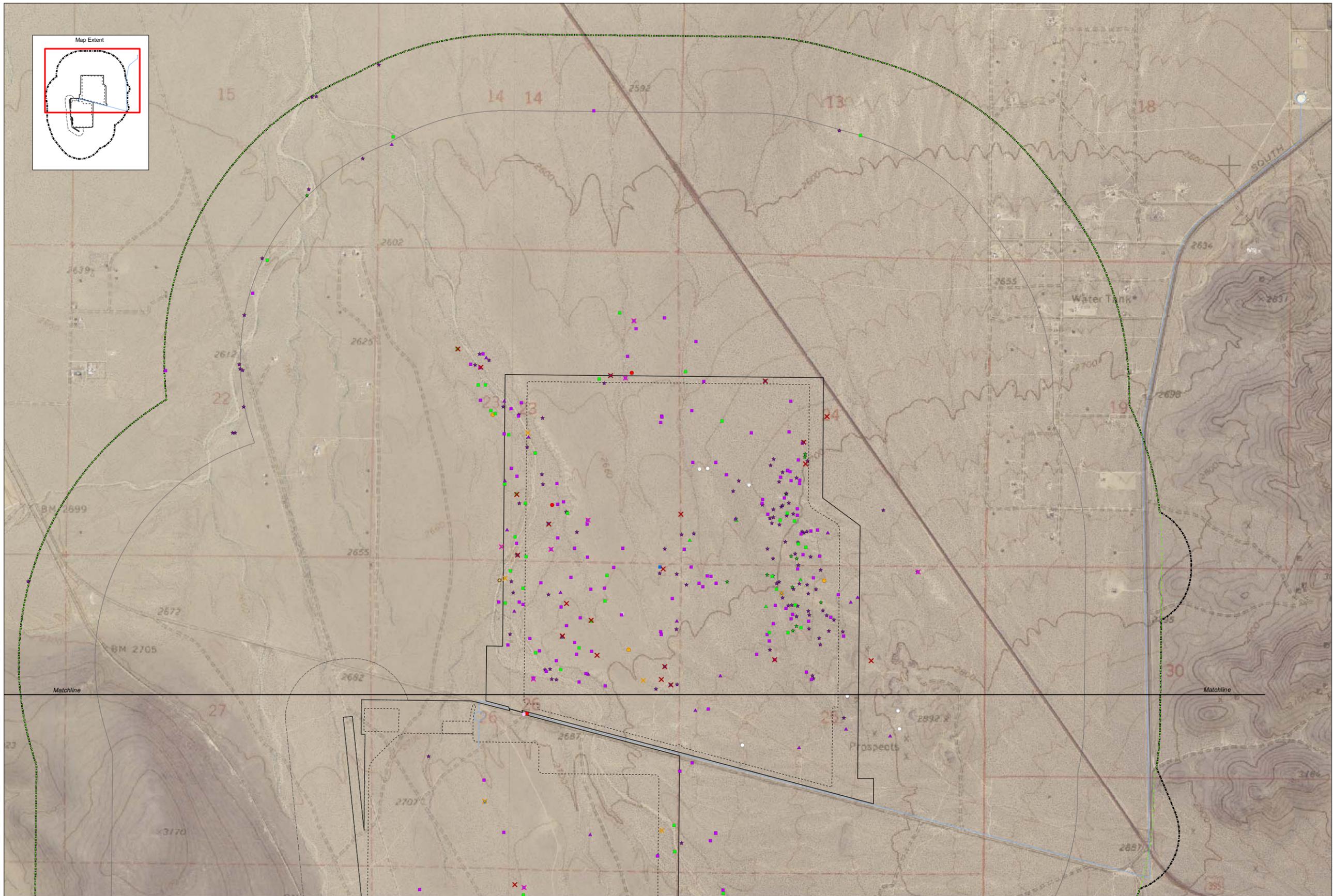
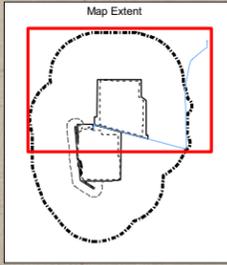
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**Figure 5.3-5 Revised
 State Jurisdictional Waters
 Sheet 3**

Solar Millennium

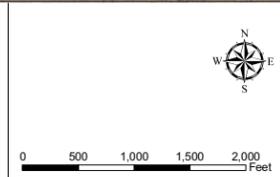
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Date: October 2009



- Legend**
- Disturbance Area
 - Possible Water Line Route
 - Facility Footprint
 - Biological Resources Survey Area (BRSA)¹
 - Desert Tortoise and CEC Buffer Transects
 - 1-mile Transect²
- Desert Tortoise Observations**
- Adult Tortoise
 - Juvenile Tortoise
 - Tortoise (Unknown Age)
 - Tortoise Burrow - Active
 - Tortoise Burrow - Occupied
 - Tortoise Burrow
 - Tortoise Pallet - Active
 - Tortoise Scat
 - Tortoise Scat - Fresh
 - Tortoise Tracks
 - Tortoise Bone Fragments
 - Tortoise Carcass - Adult
 - Tortoise Carcass - Juvenile
 - Juvenile Tortoise - Vehicle Collision

NOTES:
 1. BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.
 2. The 1-mile and 1/4-mile CEC Buffer Transects on the southern side are greater than these distances from the disturbance area due to changes in project design.



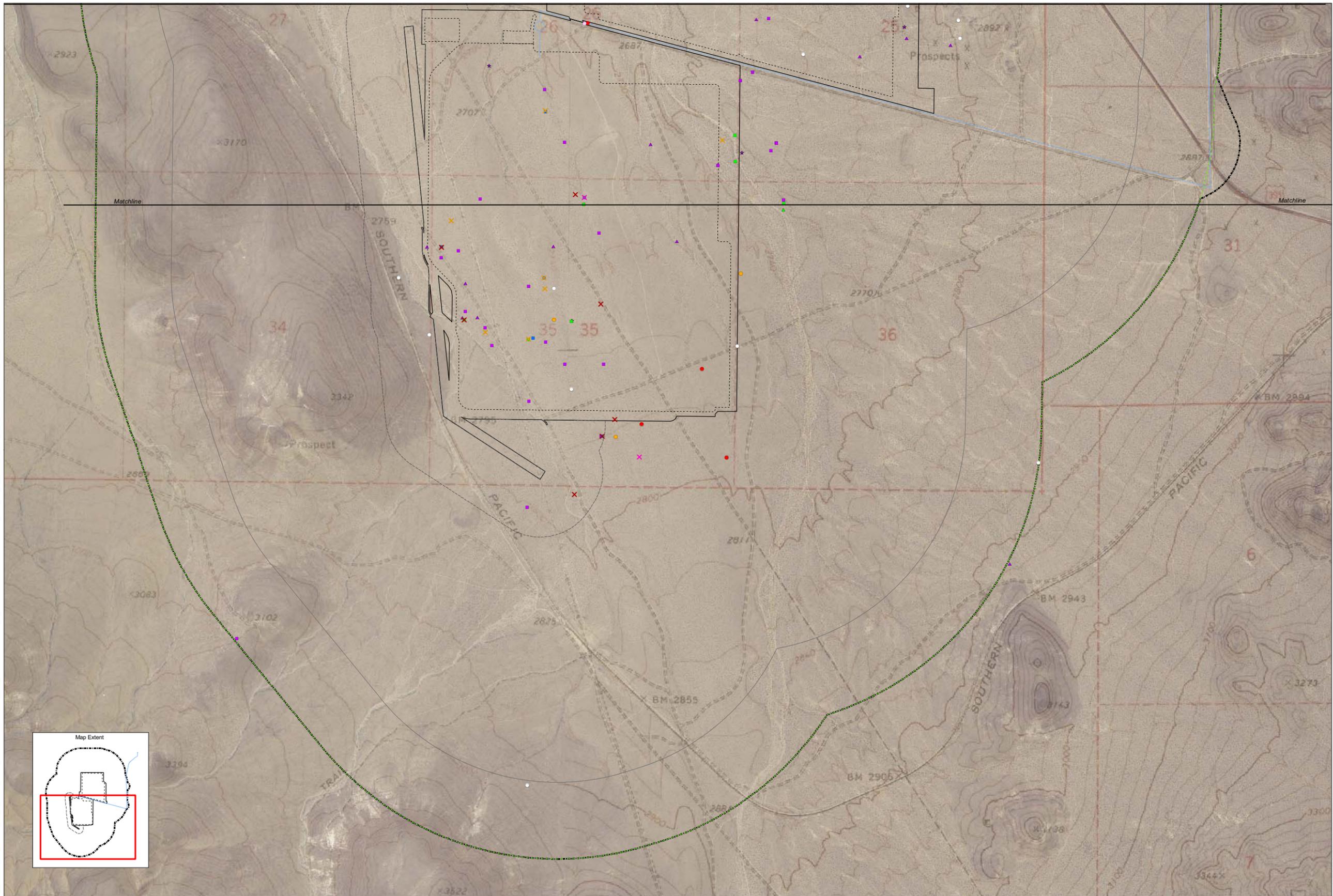
**Ridgecrest Solar Power Project
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**Figure 5.3-6 Revised
 Desert Tortoise Observations
 Northern Extent**

Solar Millennium

AECOM

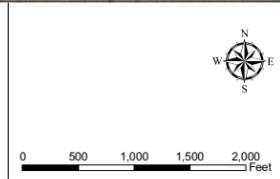
Date: October 2009



- Legend**
- Disturbance Area
 - Facility Footprint
 - Possible Water Line Route
 - Biological Resources Survey Area (BRSA)¹
 - Desert Tortoise and CEC Buffer Transects
 - 1-mile Transect²

- Desert Tortoise Observations**
- 0.75-mile Transect²
 - 1,000-foot Transect (Unsurveyed)
 - Adult Tortoise
 - Juvenile Tortoise
 - Tortoise (Unknown Age)
 - Tortoise Burrow - Active
 - Tortoise Burrow - Occupied
 - Tortoise Burrow
 - Tortoise Pallet - Active
 - Tortoise Scat
 - Tortoise Scat - Fresh
 - Tortoise Tracks
 - Tortoise Bone Fragments
 - Tortoise Carcass - Adult
 - Tortoise Carcass - Juvenile
 - Juvenile Tortoise - Vehicle Collision

NOTES:
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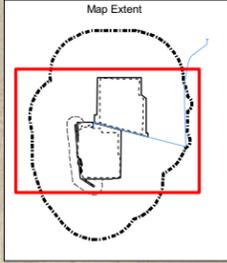
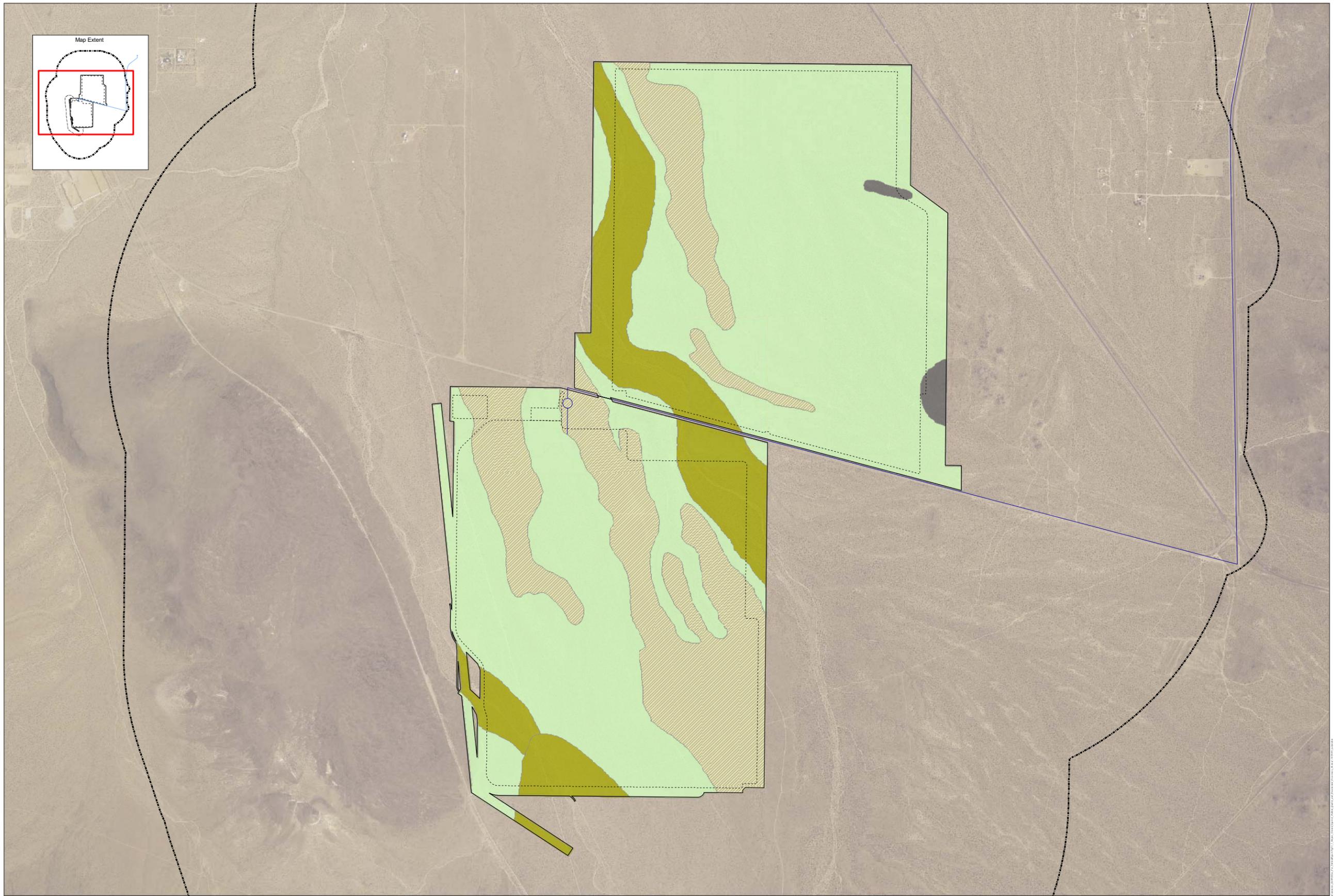
**Ridgecrest Solar Power Project
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**Figure 5.3-6 Revised
 Desert Tortoise Observations
 Southern Extent**

Solar Millennium

AECOM

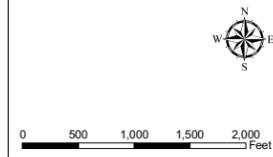
Date: October 2009



- Legend**
- Disturbance Area
 - Facility Footprint
 - Possible Water Line Route
 - Biological Resources Survey Area (BRSA)
 - CNDDDB Occurrence (May 2009)
 - Mojave Ground Squirrel

- Mojave Ground Squirrel Habitat Quality²**
- High - Desert Washes and Adjacent High Diversity Creosote Bush
 - Medium - Low Diversity Creosote Bush
 - Low - Monotypic Creosote Bush
 - Unsuitable - Rocky Terrain

NOTES:
 1. BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.
 2. Vegetation descriptions for the purposes of MGS habitat quality does not correspond to mapped vegetation communities



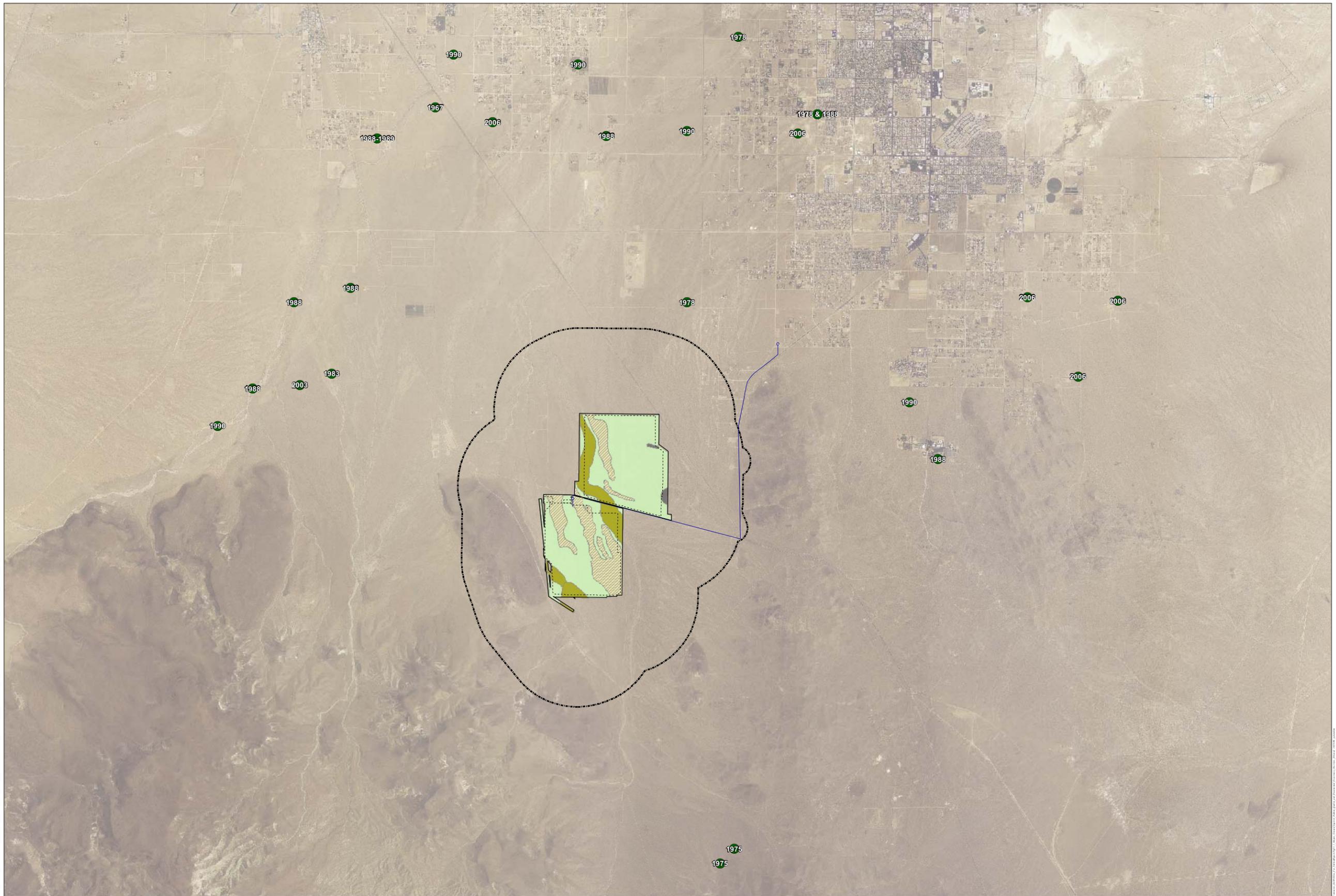
**Ridgecrest Solar Power Project
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**Figure 5.3-7 Revised
 Mojave Ground Squirrel Habitat
 Quality and Documented Occurrences**

Solar Millennium

AECOM

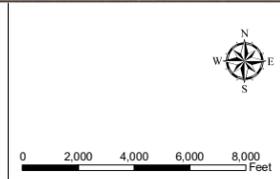
Date: October 2009



- Legend**
- Disturbance Area
 - Facility Footprint
 - Possible Water Line Route
 - Biological Resources Survey Area (BRSA)¹
 - CNDDB Occurrence (May 2009)**
 - Mojave Ground Squirrel

- Mojave Ground Squirrel Habitat Quality²**
- High - Desert Washes and Adjacent High Diversity Creosote Bush
 - Medium - Low Diversity Creosote Bush
 - Low - Monotypic Creosote Bush
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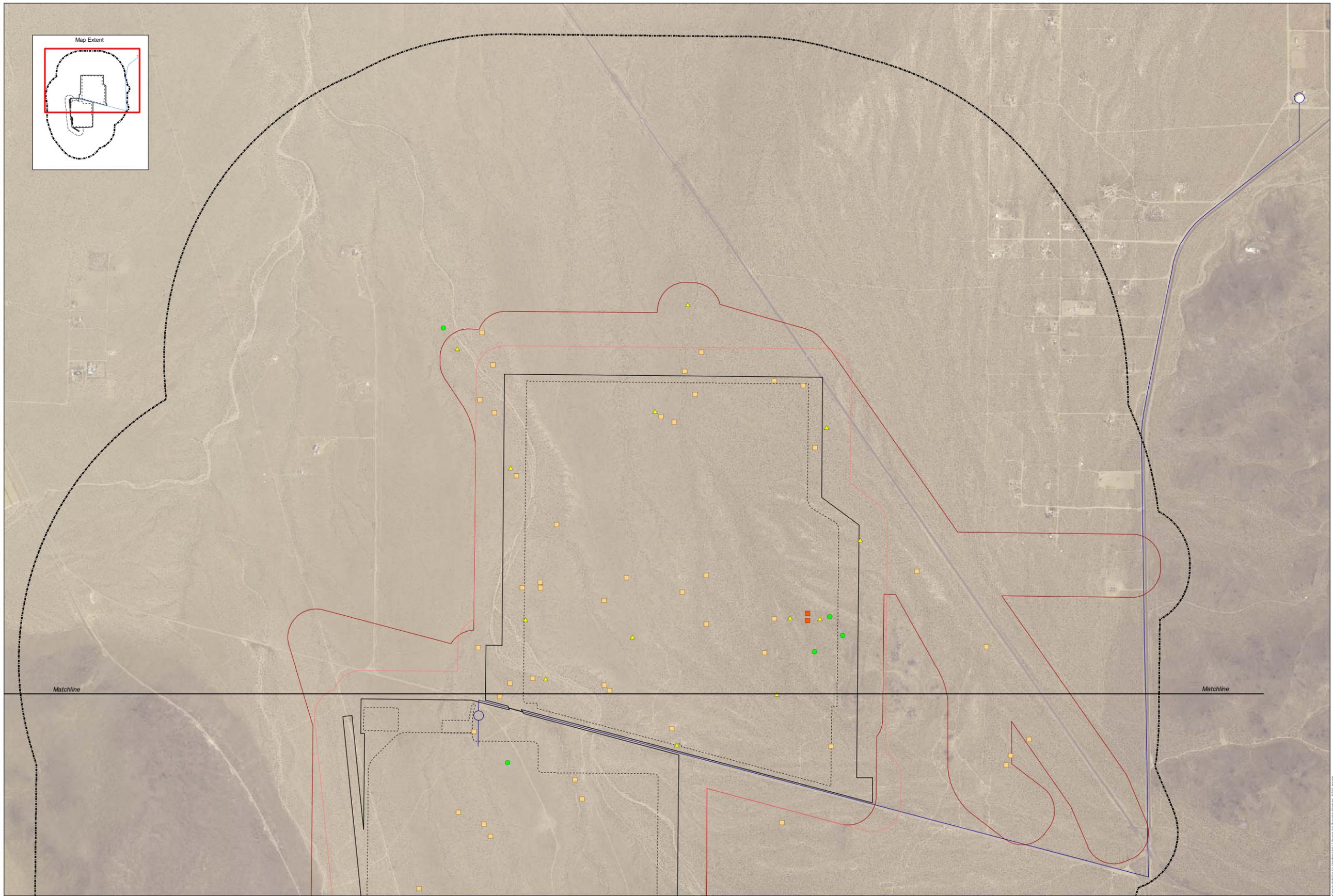
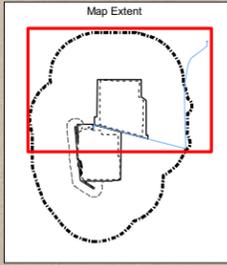
**Ridgecrest Solar Power Project
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**Figure 5.3-7 Revised
 Mojave Ground Squirrel Habitat
 Quality and Documented Occurrences
 Overview**

Solar Millennium

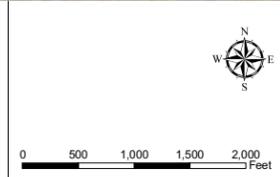
AECOM

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- Legend**
- Disturbance Area
 - Facility Footprint
 - Possible Water Line Route
 - Biological Resources Survey Area (BRSA)¹
- Burrowing Owl Survey Buffer**
- Previous CBOC 492-foot
 - CBOC 492-foot
- Burrowing Owl Observations**
- Active Burrow (Main)
 - Active Burrow (Satellite)
 - ▲ Burrow with Abundant Sign
 - Burrow with Sign

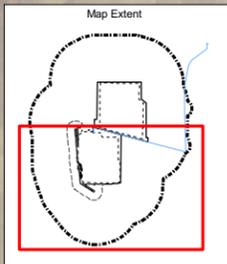
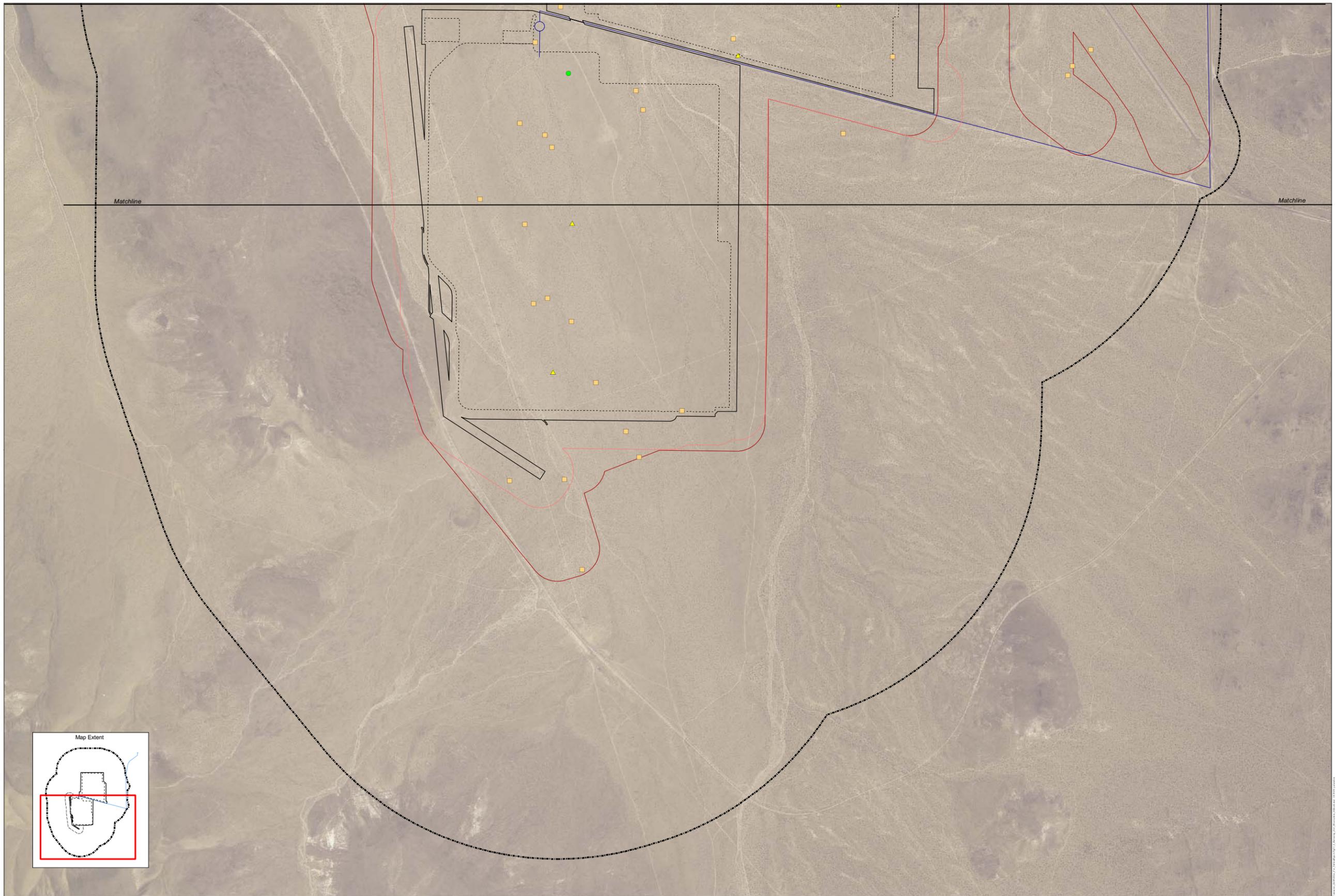
¹NOTE: BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.



Ridgecrest Solar Power Project
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Figure 5.3-8 Revised
Burrowing Owl Observations
Northern Extent

Date: October 2009

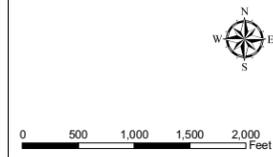


- Legend**
- Disturbance Area
 - Facility Footprint
 - Possible Water Line Route
 - Biological Resources Survey Area (BRSA)¹

- Burrowing Owl Survey Buffer**
- Previous CBOC 492-foot
 - CBOC 492-foot

- Burrowing Owl Observations**
- Active Burrow (Main)
 - Active Burrow (Satellite)
 - Burrow with Abundant Sign
 - Burrow with Sign

¹NOTE:
BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.



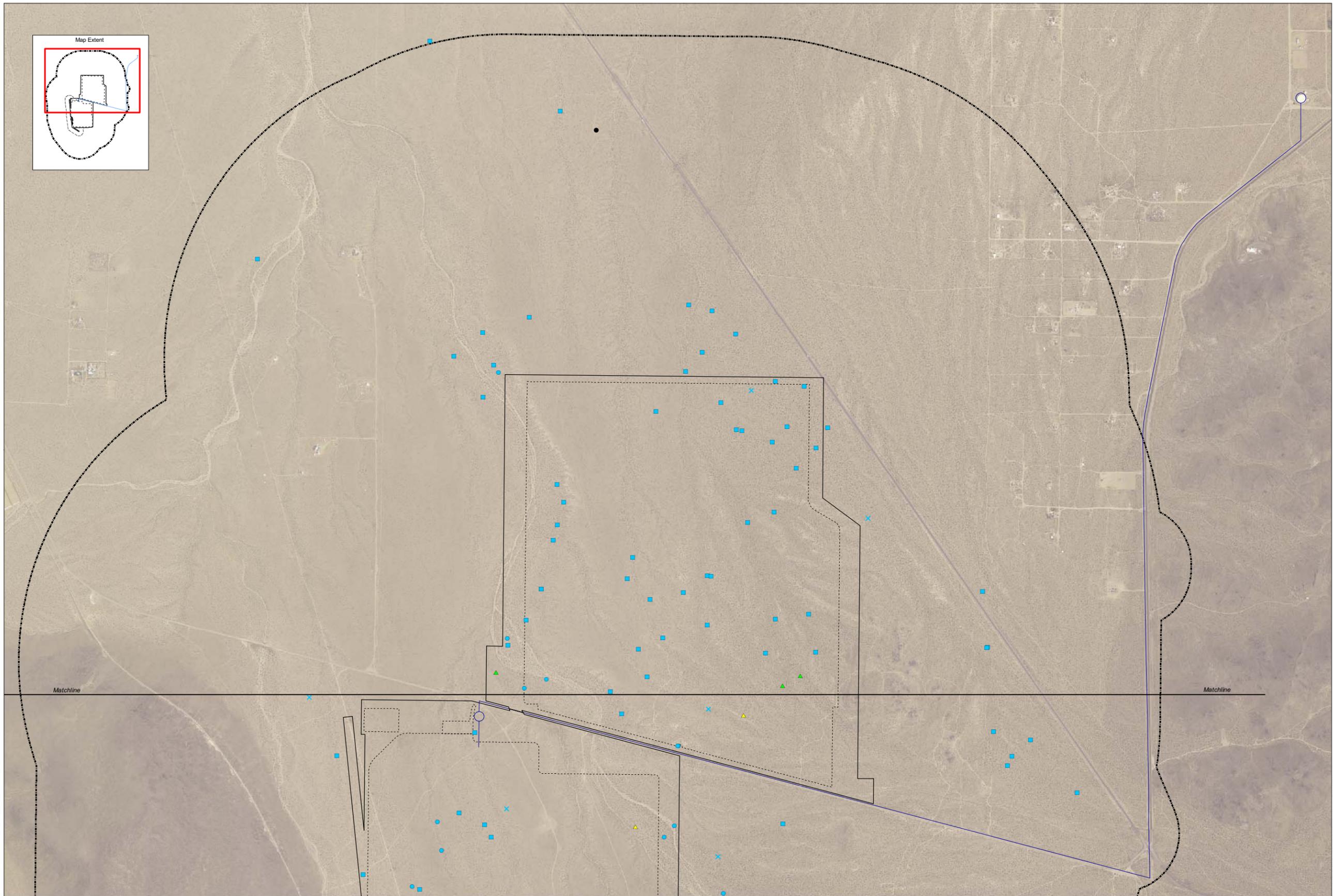
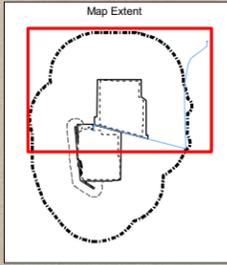
**Ridgecrest Solar Power Project
Application for Certification
Biological Resources**

**Figure 5.3-8 Revised
Burrowing Owl Observations
Southern Extent**

Solar Millennium

AECOM

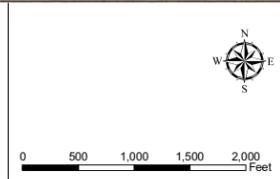
Date: October 2009



- Legend**
- Disturbance Area
 - Facility Footprint
 - Possible Water Line Route
 - Biological Resources Survey Area (BRSA)¹

- Resident Special-Status Wildlife Species Observations**
- Burrow with Badger Claw Marks
 - Kit Fox Burrow
 - Kit Fox Burrow Complex
 - Loggerhead Shrike
 - Le Conte's Thrasher
 - x Active Kit Fox Burrow Complex

¹NOTE:
BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.



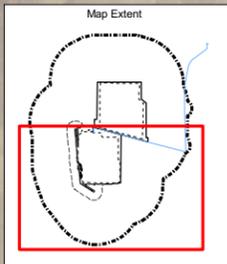
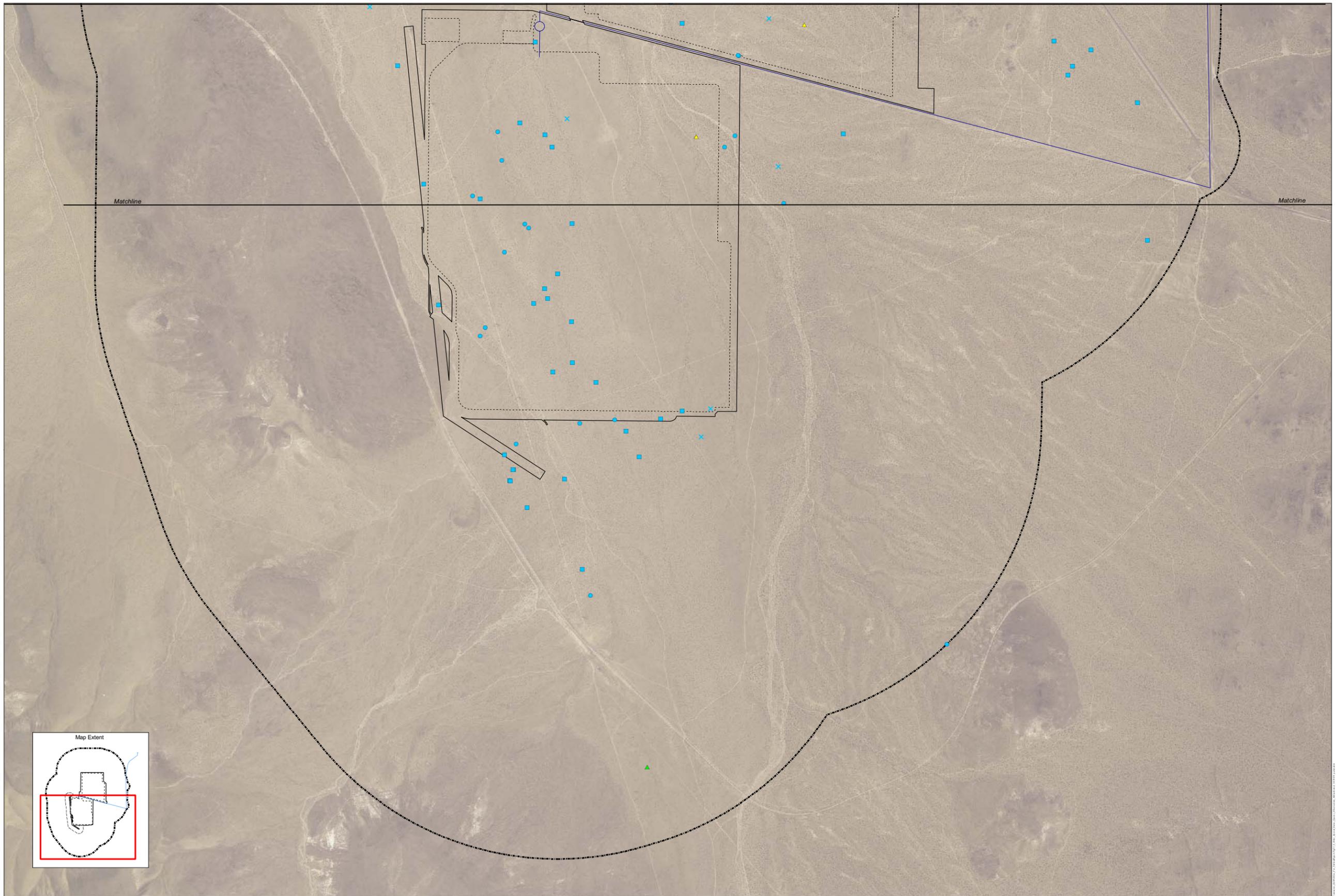
Ridgecrest Solar Power Project
Application for Certification
Biological Resources

Figure 5.3-9 Revised
Other Resident Special Status
Wildlife Species Observations
Northern Extent

Solar Millennium

AECOM

Date: October 2009

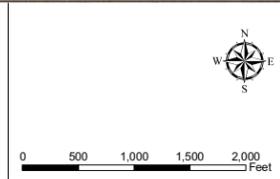


- Legend**
- Disturbance Area
 - Facility Footprint
 - Possible Water Line Route
 - Biological Resources Survey Area (BRSA)¹

- Resident Special-Status Wildlife Species Observations**
- Burrow with Badger Claw Marks
 - × Active Kit Fox Burrow Complex

- Kit Fox Burrow
- Kit Fox Burrow Complex
- ▲ Loggerhead Shrike
- ▲ Le Conte's Thrasher

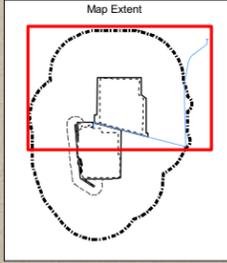
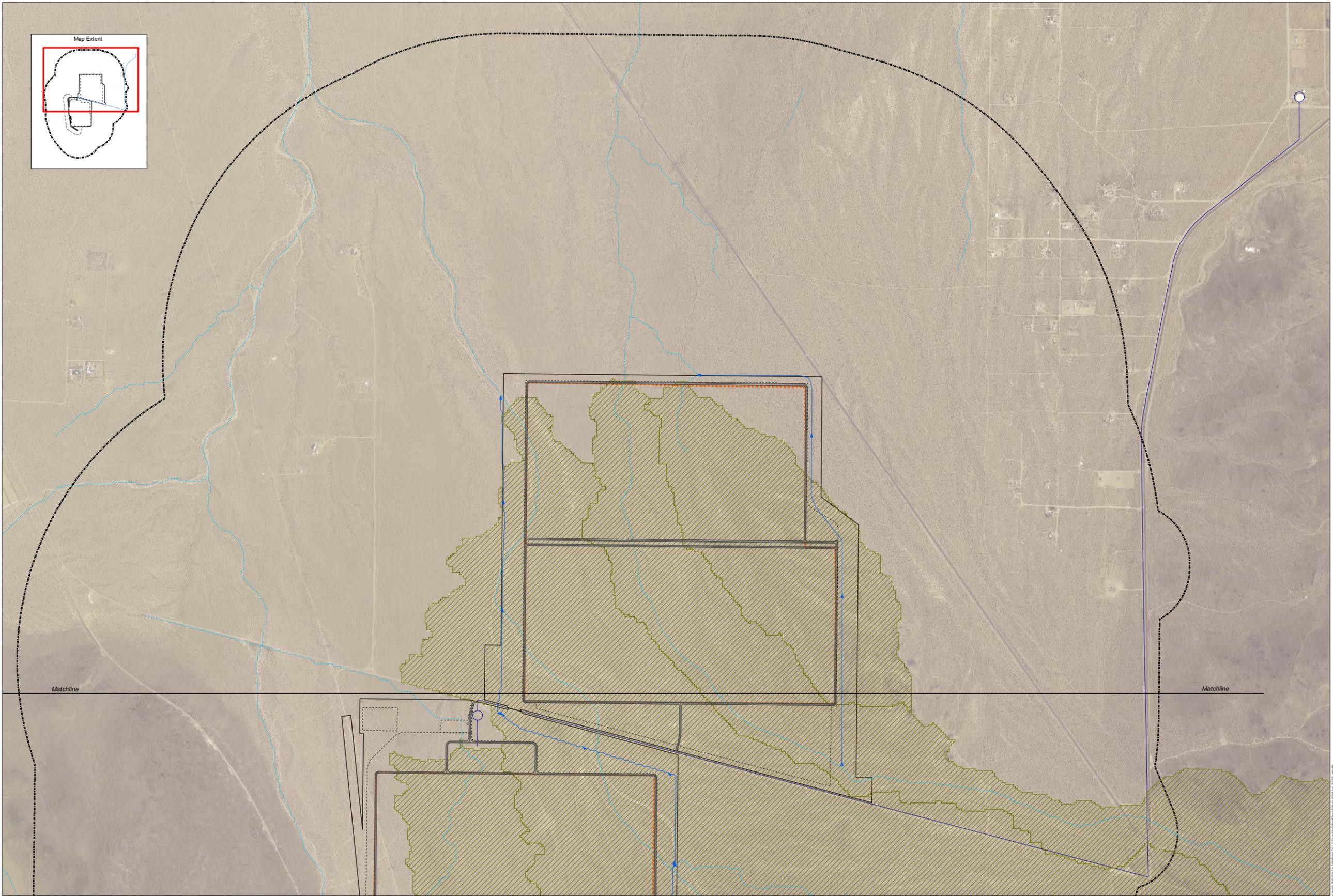
¹NOTE:
BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.



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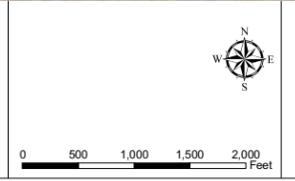
Figure 5.3-9 Revised
Other Resident Special Status
Wildlife Species Observations
Southern Extent

Date: October 2009



Legend		Facilities Layout		Existing Hydrology	
	Disturbance Area		Roads		FlowLine
	Facility Footprint		Solar Unit		Drainage Area
	Possible Water Line Route		Rerouted Drainages		
	Biological Resources Survey Area (BRSA)				

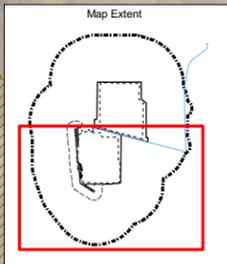
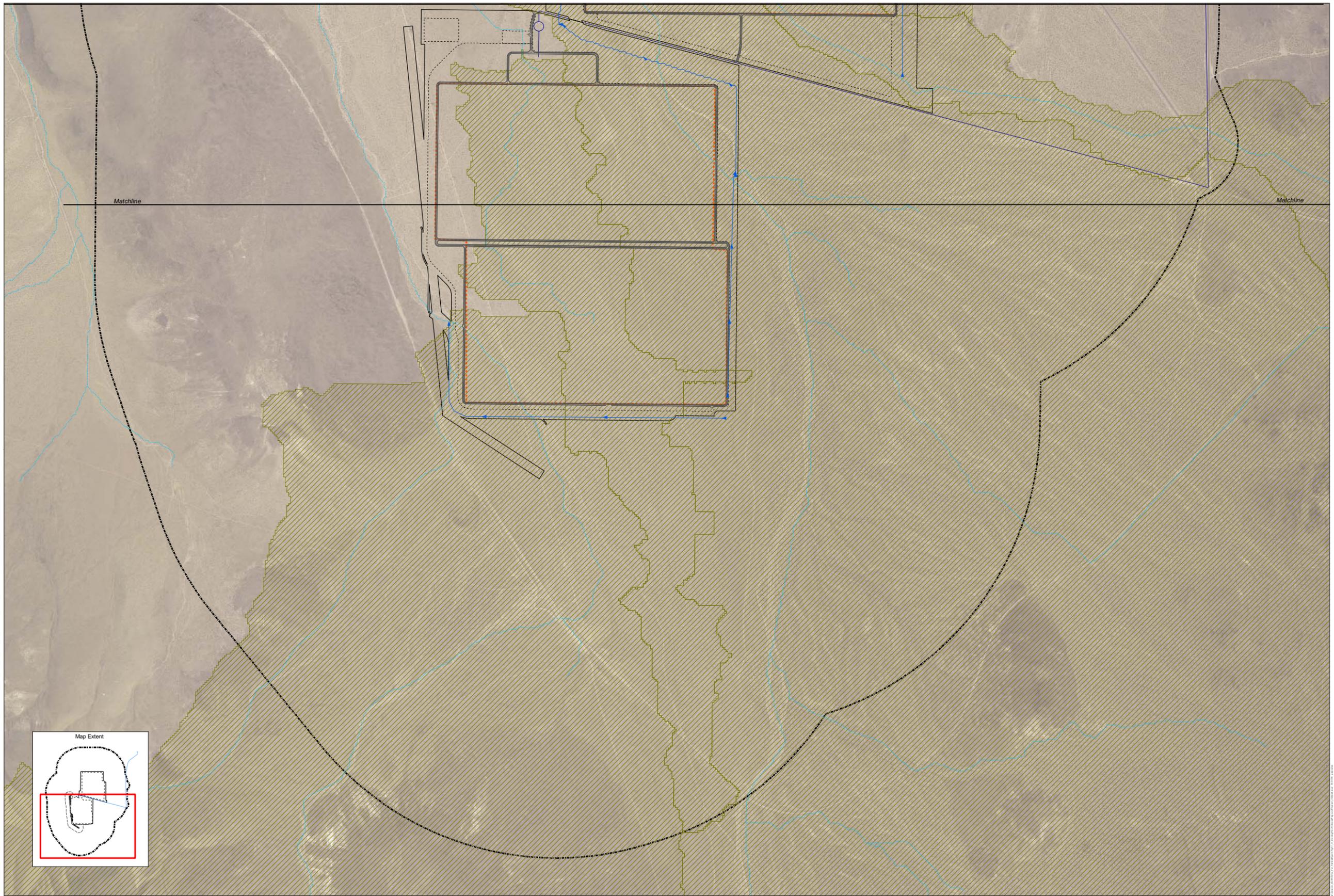
¹NOTE:
 BRSA includes 1-mile buffer around the disturbance area and
 1000-foot buffer for linear features. Some linear features are no longer
 a part of the project.



**Ridgecrest Solar Power Project
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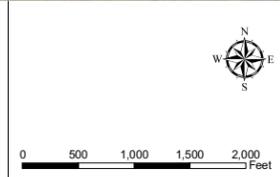
**Figure 5.3-11 Revised
 Existing Flow Paths and
 Proposed Channels
 Northern Extent**

Date: October 2009



Legend		Facilities Layout		Existing Hydrology	
	Disturbance Area		Roads		FlowLine
	Facility Footprint		Solar Unit		Drainage Area
	Possible Water Line Route		Rerouted Drainages		
	Biological Resources Survey Area (BRSA)				

¹NOTE:
BRSA includes 1-mile buffer around the disturbance area and 1000-foot buffer for linear features. Some linear features are no longer a part of the project.



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Figure 5.3-11 Revised
Existing Flow Paths and
Proposed Channels
Southern Extent

Date: October 2009

**RIDGECREST SOLAR POWER PROJECT (09-AFC-9)
DATA ADEQUACY SUPPLEMENT**

Technical Area: Biological Resources

Response Date: October 26, 2009

Attachment BIO-B

Water Pipeline Biological Resources Survey Report

ATTACHMENT BIO-B

Ridgecrest Solar Power Project

Supplemental Biological Resources Survey Report

Executive Summary

This report presents additional information regarding survey results and impacts to biological resources that could result from construction of a proposed water pipeline for the Ridgecrest Solar Power Project. The investigation focuses on special-status species and sensitive habitats, including jurisdictional waters.

The proposed alignment for the approximately 5-mile water pipeline heads east from the RSPP, runs parallel to Brown Road up to the intersection of Brown Road and China Lake Boulevard, then turns north and runs parallel to China Lake Boulevard (Figure 1). The water pipeline disturbance area is approximately 18.1 acres. A portion of the pipeline route was surveyed in spring 2009. Four miles of the proposed waterline route were subject to a reconnaissance survey/ habitat assessment in spring 2009, of which 1.4 miles was included in the focused survey for special-status species and sensitive habitats along with the remainder of the project disturbance area, reported in the Project AFC (AECOM 2009). The subject of this supplemental report is the results of a reconnaissance level survey conducted in October 2009 for the one mile of route for which a habitat assessment had not previously been completed. For the 3.6 miles of route not already subject to focused survey, protocol surveys are expected to be completed in spring 2010.

The water pipeline disturbance area includes suitable habitat for special-status species including desert tortoise (DT), Mohave ground squirrel (MGS), western burrowing owl (WBO), and desert kit fox. None of these species were detected during the field survey, and generally, habitat quality for these species in the disturbance area is low because of the high level of human disturbance.

Vegetation in the water pipeline disturbance area is dominated by Mojave creosote bush scrub, which is a common plant community. Less than 0.1 acre of Mojave Desert wash scrub, a sensitive plant community, was documented in the water pipeline disturbance area evaluated in this supplemental survey report. No other sensitive habitats were documented in the disturbance area or buffer during the field survey.

It is anticipated that the avoidance, minimization, and mitigation measures included in the AFC would reduce potential impacts to special-status species and sensitive habitat to less than significant levels.

Introduction

The purpose of this supplemental biological resources survey report (Supplemental Report) is to present additional information to the California Energy Commission (CEC) and the U.S. Bureau of Land Management (BLM) regarding survey results and impacts to biological resources (vegetation communities, jurisdictional waters, wildlife, and plants) that could result from construction of a proposed water pipeline at the Ridgecrest Solar Power Project (RSPP or Project) site.

This Supplemental Report includes information on the location of the water pipeline, methods used to conduct surveys for the water pipeline, an estimate of potential impacts to biological resources, and an assessment of avoidance, minimization, and mitigation measures in relation to these additional impacts. Results reported reflect conditions observed during spring and fall 2009 surveys of the portion of the Water Pipeline Disturbance Area (defined below) and a 1,000-foot buffer which falls outside of the spring 2009 AFC BRSA (Figure 1).

The proposed RSPP site is located approximately 5 miles southwest of Ridgecrest, approximately 6 miles southeast of Inyokern, and less than 1 mile to the southwest of U.S. Highway 395 in eastern Kern County, California. For a detailed description of the project location and project site see the AFC (AECOM 2009, Sections 5.3.2.1 and 5.3.2.2).

The proposed alignment for the 5-mile water pipeline heads east from the RSPP, runs parallel to Brown Road, then turns north and runs parallel to China Lake Boulevard (Figure 1). The alignment, which is still considered approximate, is proposed to be located entirely within the existing county road right-of-way. For the purpose of this analysis, the area of potential disturbance is assumed to be limited to the area within 30 feet of the north side of Brown Road and 30 feet of the west side of China Lake Boulevard.

The following terms will be referred to throughout this report (see also Figure 1):

- Spring 2009 Protocol Survey Area - includes a 1.4-mile portion of the water pipeline and associated 1,000-foot buffer where focused surveys occurred in spring 2009, which was reported in the AFC. Also included in the Spring 2009 Survey area was an additional 2.6 miles of water pipeline included in the spring 2009 buffer which was subject only to reconnaissance level survey to characterize habitat type.
- October 2009 Reconnaissance Level Survey Area – covers the 1-mile portion of the water pipeline and 1,000-foot buffer not previously surveyed, the results of which were not included in the AFC. Protocol surveys of the 3.6 miles of water pipeline not yet subject to focused studies will be conducted during the appropriate seasonal windows in late 2009 through spring 2010.
- Water Pipeline Disturbance Area – the limits of disturbance associated with construction of the water pipeline. The total Water Pipeline Disturbance Area evaluated in this Supplemental Report is estimated to be 18.1 acres¹.
- AFC Biological Disturbance Area – the total disturbance area reported in the AFC Biological Resources Section, which was reported as 1,738 acres the AFC document. The AFC Biological Disturbance area differed from the total disturbance area provided in other sections of the AFC because the water line disturbance area had not yet been surveyed and thus was not added to the disturbance area.²

¹ This acreage is an estimate based on preliminary design of the pipeline route. The final water pipeline disturbance area, which will be more precisely calculated when the project design and survey are finalized, may vary slightly from this number.

² If the water line disturbance area is added to the AFC Biological Disturbance Area, the total area comes out to 1757 acres, instead of the 1760 acres reported elsewhere. This discrepancy is due to the fact that the AFC Biological Disturbance Area was calculated using a Geographic Information Systems (GIS) shapefile, rather than the Computer Aided Design (CAD) layer that was used to calculate the 1760 acre disturbance area, itself a rounded number, reported elsewhere in the AFC. These minor discrepancies will be reconciled during the detailed design phase of this project.



- Legend**
- Biological Resources Survey Area (BRSA)
 - Facility Footprint
 - AFC Disturbance Area
 - 1-mile Buffer
 - 1,000-ft Buffer (Excluding 1-mile Buffer)
 - Pipeline Disturbance Area
 - Spring 2009 Survey Area
 - Fall 2009 Survey Area

Source: NAD 2005, AECOM 2009, EDNAW 2009



Ridgcrest Solar Power Project
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Figure 1
 Facility Footprint, Disturbance Area,
 and Biological Resources Survey Area

Date: October 2009

- Project Disturbance Area - the total Project disturbance area has been revised to include the Water Pipeline Disturbance Area to the AFC Biological Disturbance Area. The revised Project Disturbance Area is approximately 1,760 acres. This is consistent with the Project Disturbance area reported in other sections of the AFC.
- Biological Resource Survey Area (BRSA) - the total acreage for the BRSA described in the AFC has also been revised to include the additional Water Pipeline Disturbance Area evaluated in this Supplemental Report and associated 1,000-foot survey buffer. The revised BRSA is approximately 9,785 acres (an increase of 473 acres from the BRSA presented in the Biological Resources Technical Report for the AFC [AECOM 2009]).

Survey Methods

During spring 2009, Project biologists completed surveys and assessments within the AFC Biological Disturbance Area and one-mile buffer which encompasses the Spring 2009 Survey Area. Approximately 4 miles of water pipeline and a portion of its 1,000-foot buffer fall within the one-mile buffer as shown on Figure 1. Surveys included the following: vegetation mapping, rare plant surveys, and general wildlife surveys. Biological resource survey methodologies were designed to meet all applicable requirements of the U.S. Fish and Wildlife Service, Bureau of Land Management, California Department of Fish and Game, and California Energy Commission for the buffer. Survey methods utilized for biological resources surveys within the AFC Biological Disturbance Area and one-mile buffer are described in detail in the AFC (AECOM 2009, Section 5.3.2.4).

Prior to beginning the fall 2009 general wildlife surveys, Project biologists consulted the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDDB) (RareFind Version 3.1.0; CDFG 2009) California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2009), and the Natural Resources Conservation Service Web Soil Survey (USDA 2009). These resources along with the Special Animals list (CDFG 2009) and range maps were consulted to determine historic occurrence of special-status plant and wildlife species and other natural resources within the Water Pipeline Disturbance Area or buffer.

Fall 2009 field surveys assessing biological resources within the remaining 1 mile of water pipeline and a surrounding 1,000-foot buffer area were conducted on October 6 and 7, 2009. The Fall 2009 Survey Area is shown on Figure 1. Project biologists completed vegetation mapping, surveys for potentially jurisdictional waters, and habitat suitability assessments for special-status plant and wildlife species. Vegetation mapping was conducted within the Fall 2009 Survey Area on October 6 and 7, 2009 by Project botanist Fred Sproul. The field assessment of “waters of the state” within the fall 2009 Water Pipeline Disturbance Area was conducted by Project biologist Joshua Zinn on October 7, 2009. The habitat suitability assessment for special-status wildlife species was conducted within the Fall 2009 Survey Area by Project biologist Shelly Dayman on October 6, 2009.

For the fall 2009 surveys, methods utilized for vegetation mapping and conducting a formal jurisdictional delineation of waters of the U.S. and State within the Water Pipeline Disturbance Area were consistent with those described in the AFC (AECOM 2009, Section 5.3.2.4). The survey methodology for the general wildlife surveys and habitat suitability generally followed the methods and protocols detailed in

the AFC. Protocol-level surveys have not been completed for rare plants, DT, and WBO. Focused rare plant, DT, and WBO surveys are proposed for spring 2010 within suitable habitat identified in the Fall 2009 Survey Area. However, during general wildlife surveys, incidental species sign and/or sightings were recorded and habitat suitability and potential for special status species occurrence was assessed. Field data was collected and mapped using Global Positioning System (GPS) units.

Survey Results

This supplemental report presents findings of the following associated with the Water Pipeline Disturbance Area only:

- Spring 2009 Survey Area
 - Reconnaissance-level surveys for 4 miles of water pipeline, a portion of which (1.4 miles) was also subject to protocol-level surveys for DT and WBO, and results were included in the AFC Biological Disturbance Area in the AFC.
- Fall 2009 Survey Area
 - Reconnaissance-level surveys and assessments conducted in fall 2009 for the 1 mile of the water pipeline and 1,000-foot buffer that was not subject to reconnaissance-level surveys in spring 2009. The results for the flora and fauna include both spring 2009 and fall 2009 survey findings. Protocol-level surveys for DT, WBO, and special status plants for the 3.6 miles of water pipeline not included in either the AFC or this Data Adequacy document are to be conducted within the next appropriate seasonal windows available.

Existing Conditions

Vegetation Communities

Four vegetation communities and other cover types were identified within the Fall 2009 Survey Area during vegetation mapping: Mojave creosote bush scrub, Mojave Desert wash scrub, disturbed, and developed land (Table 1, Figure 2). These vegetation communities and other cover types are described in the AFC (AECOM 2009, Sections 5.3.2.5). Mojave Desert wash scrub is considered a sensitive vegetation community by CDFG.

Mojave Creosote Bush Scrub

Approximately 9.1 acres of Mojave creosote bush scrub were mapped within the Water Pipeline Disturbance Area and 409.6 acres were mapped in the 1,000-foot buffer. Mojave creosote bush scrub was the dominant cover type within the survey area. Shrub composition, density, and level of disturbance was similar to that found within the AFC Biological Disturbance Area with the exception of the northernmost 1,200 feet east of China Lake Boulevard where disturbance from off highway vehicle (OHV) activity is more severe and extensive.

Mojave Desert Wash Scrub

Approximately 0.03 acre of Mojave Desert wash scrub was mapped within the Water Pipeline Disturbance Area and 14.1 acres of Mojave Desert wash scrub were mapped within the buffer area. Mojave Desert wash scrub is restricted to the drainage on the east side of China Lake Blvd (Figure 2).

Table 1. Vegetation Communities and Other Cover Types (Acres¹)

Vegetation Communities and Other Cover Types	DA Evaluated in AFC²	DA Evaluated in Supplemental Survey Report³	Subtotal DA	Buffer Area Evaluated in AFC⁴	Buffer Area Evaluated in Supplemental Survey Report³	Subtotal Buffer Area	BRSA
Mojave Desert Wash Scrub	8.2	0.0 ⁵	8.2	50.2	14.1	64.3	72.5
Unvegetated Ephemeral Dry Wash	8.4	0.0	8.4	35.2	0.0	35.2	43.6
<i>Subtotal Riparian</i>	<i>16.6</i>	<i>0.0⁵</i>	<i>16.6</i>	<i>85.4</i>	<i>14.1</i>	<i>99.4</i>	<i>116.1</i>
Mojave Creosote Bush Scrub	1,721.1	9.1	1,730.2	7369.3	409.6	7,778.3	9,509.1
<i>Subtotal Upland</i>	<i>1,721.1</i>	<i>9.1</i>	<i>1,730.2</i>	<i>7,369.3</i>	<i>409.6</i>	<i>7,778.3</i>	<i>9,509.1</i>
Disturbed	0.0	0.0	0.0	0.0	10.6	10.6	10.6
Developed	0.5	9.0	9.5	106.4	31.8	138.2	147.7
<i>Subtotal Other Cover Types</i>	<i>0.5</i>	<i>9.0</i>	<i>9.5</i>	<i>106.4</i>	<i>42.4</i>	<i>148.8</i>	<i>158.3</i>
Total Acres	1,738.2	18.1 ⁶	1,756.3 ⁶	7,561.1	466.1	8,026.5	9,783.5

¹ As a result of rounding, the sum of individual acreage totals may not exactly match subtotal acreages.

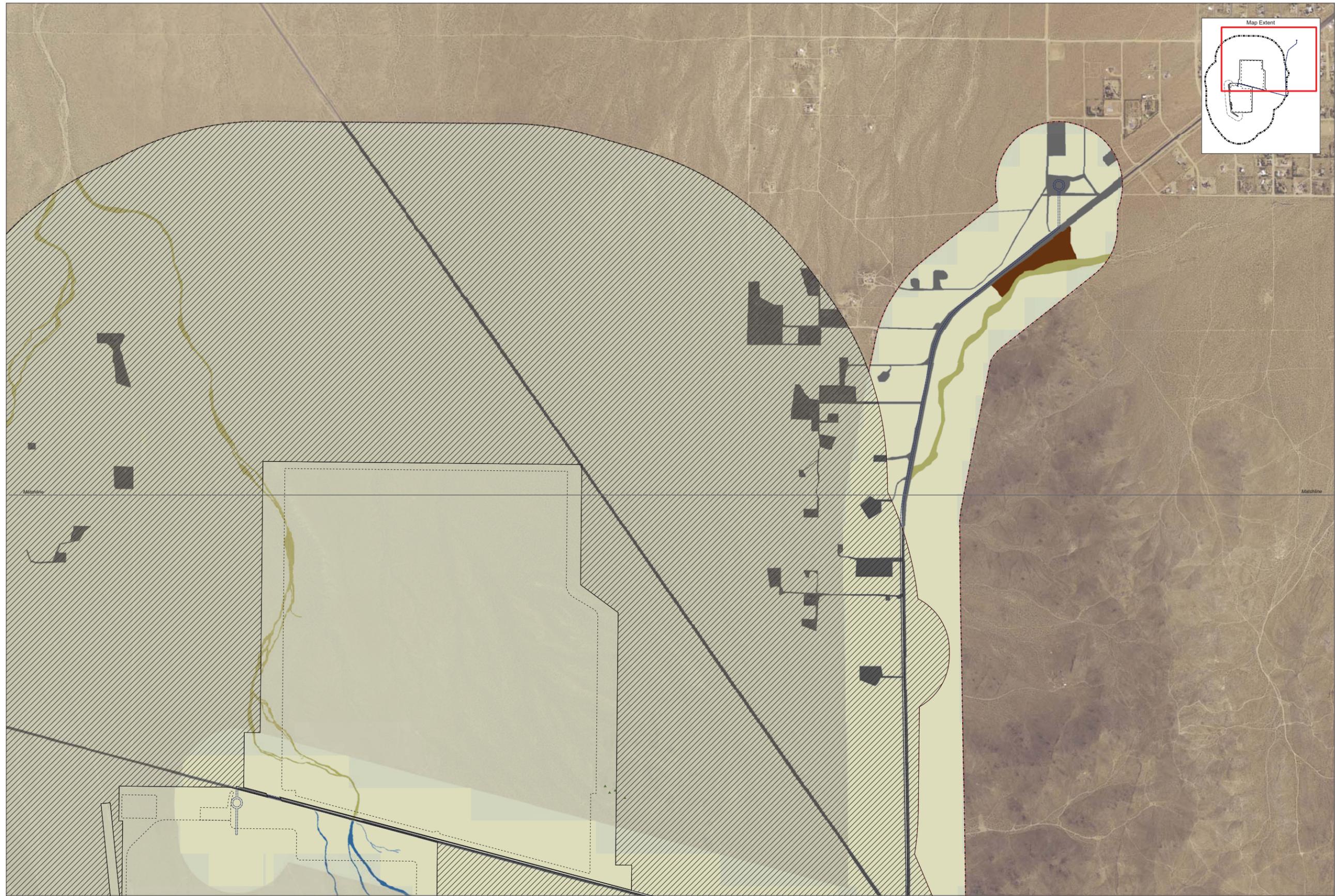
² DA = Disturbance Area

³ Excludes overlap with DA and Buffer Area evaluated in AFC

⁴ The total acreage excludes 12.9 acres of the buffer area evaluated in the AFC which are now represented as part of the DA evaluated in this supplemental survey report. These acres account for less than 0.1 acre of Mojave Desert wash scrub, 5.8 acres of Mojave creosote bush scrub, and 7.1 acres of developed land that were evaluated as part of the buffer area in the AFC and are not shown in this category.

⁵ Less than 0.1 acre of habitat was observed

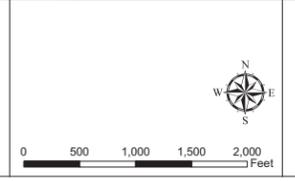
⁶ Acreages differ slightly from those used elsewhere due to different mapping basis used for acreage calculations. See footnote on page BIO-B-3 of this document.



- Legend**
- Biological Resources Survey Area (BRSA)¹
 - Facility Footprint
 - AFC Disturbance Area
 - 1-mile Buffer
 - Water Pipeline Disturbance Area

- 1,000-ft Buffer (Excluding 1-mile Buffer)
 - Cottontop Cactus
- Vegetation Communities**
- Upland
 - Mojave Desert Wash Scrub
 - Unvegetated Ephemeral Dry Wash
 - Unvegetated Ephemeral Dry Wash (Presumed)

- Mojave Creosote Bush Scrub
- Developed Disturbed Habitat



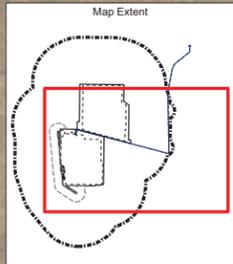
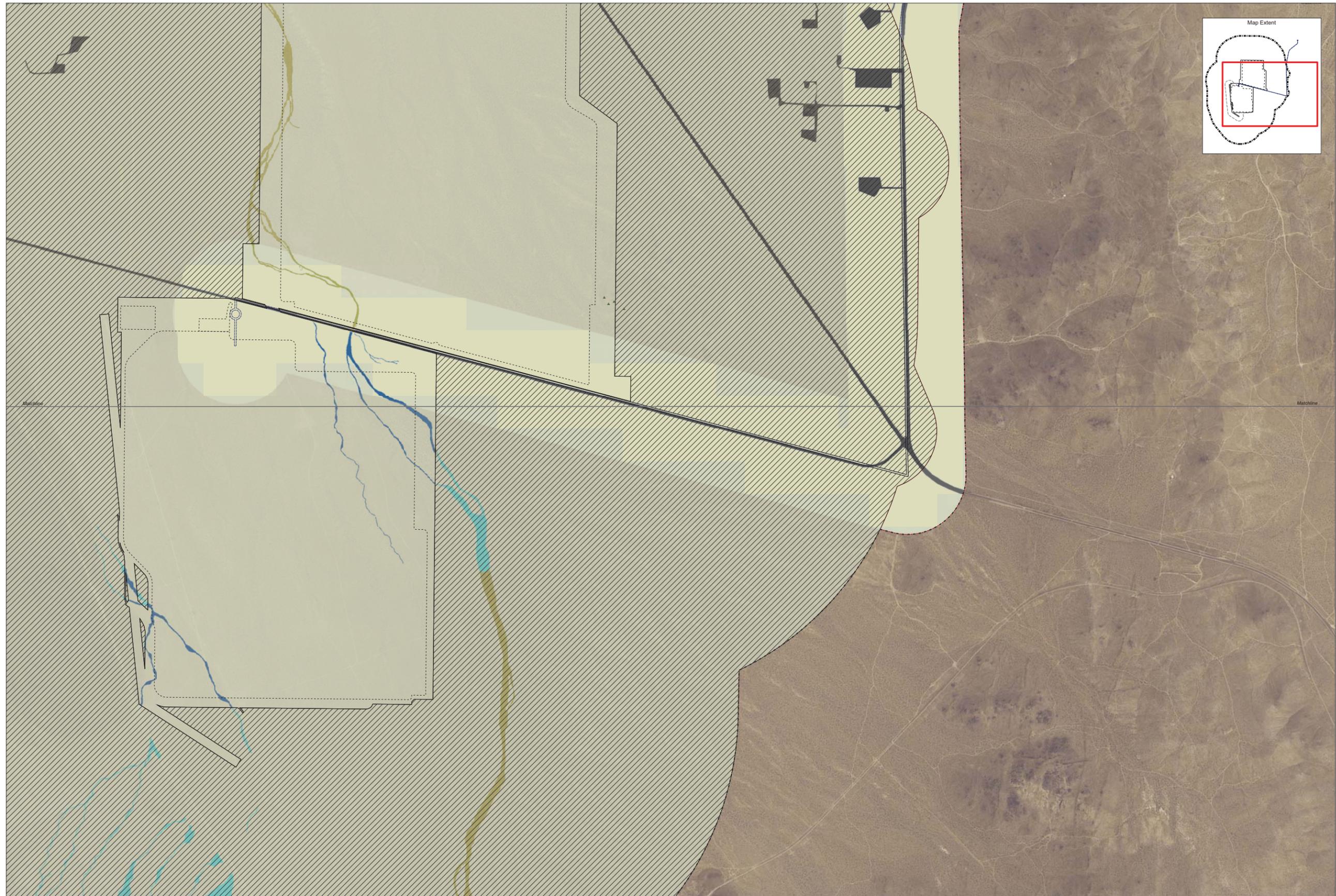
Ridgecrest Solar Power Project
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Figure 2
Vegetation Communities and BLM
Targeted Cactus Observations

Date: October 2009

¹ NOTE:
Only wildlife special status species observations
not reported on in the AFC are displayed.

Northern Extent

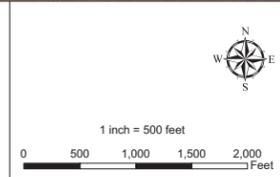


- Legend**
- Biological Resources Survey Area (BRSA)¹
 - Facility Footprint
 - AFC Disturbance Area
 - 1-mile Buffer
 - Water Pipeline Disturbance Area
 - 1,000-ft Buffer (Excluding 1-mile Buffer)
 - Cottontop Cactus

- Vegetation Communities**
- Riparian**
- Mojave Desert Wash Scrub
 - Unvegetated Ephemeral Dry Wash
 - Unvegetated Ephemeral Dry Wash (Presumed)

- Upland**
- Mojave Creosote Bush Scrub
 - Other
 - Developed
 - Disturbed Habitat

¹ NOTE:
Only wildlife special status species observations
not reported on in the AFC are displayed.



**Ridgecrest Solar Power Project
Application for Certification
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**Figure 2
Vegetation Communities and BLM
Targeted Cactus Observations
Southern Extent**

Date: October 2009

Source: NADP 2005, AECOM 2009, EDIAW 2009
 Photo: © 2009 Solar Millennium, Inc. All rights reserved.

Within the majority of the Fall 2009 Survey Area, the level of disturbance in Mojave Desert wash scrub is similar to that found within the AFC Biological Disturbance Area. However, the level of disturbance is higher near the northern terminus of the alignment along China Lake Boulevard where the alignment is adjacent to BLM property that is designated as an OHV use area. This area of relatively high disturbance represents approximately one-third of the total extent of Mojave Desert wash scrub in the survey area.

Disturbed Areas

Approximately 10.6 acres of disturbed area was mapped in the 1,000-foot buffer area. No disturbed areas were mapped within the Water Pipeline Disturbance Area. Disturbed areas include areas where vegetation has been removed or otherwise degraded as part of routine road maintenance, OHV use, and other anthropogenic disturbances.

Developed Areas

Approximately 9.0 acres of developed areas were mapped within the Water Pipeline Disturbance Area and 31.8 acres were mapped in the 1,000-foot buffer. Developed areas within the Water Pipeline Disturbance Area include single family residences, paved roadways, and numerous unpaved dirt roads that traverse the water pipeline alignment.

Jurisdictional Waters

Potential jurisdictional waters of the U.S. and State-delineated in the Water Pipeline Disturbance Area were limited to 0.03 acre of Mojave Desert wash scrub (Figure 3). Aquatic features were not delineated in the buffer to be consistent with methodology as described in the AFC. Please see the AFC and the Jurisdictional Delineation Report included in Attachment C of Appendix F in the AFC for a complete description of waters of the State, including Holland and Cowardin classification descriptions (AECOM 2009, Section 5.3.2.5 and Attachment C of Appendix F).³ The total area of waters of the State delineated in the revised Project Disturbance Area is approximately 16.6 acres as reported in Table 1.

Flora

Focused plant surveys were not conducted during the Fall 2009 Survey Area, but are proposed to occur during spring 2010. No federally-listed, state-listed, or other special-status plant species were observed within the Spring 2009 Survey Area and Fall 2009 Survey Area. Based on the quality of habitat observed, the probability of the occurrence of special-status plants was determined to be similar to that reported in the AFC (AECOM 2009, Section 5.2.3.5). Therefore, the results for the flora have not changed from those reported in the AFC. Please see the AFC for a complete description of results for focused rare plant surveys in the BRSA (AECOM 2009, Section 5.3.2.5).

Fauna

The Water Pipeline Disturbance Area (approximately 18.1 acres) was determined to be suitable habitat for DT (Federal- and State-listed), MGS (State-listed), WBO (CDFG species of special concern), and

³ Through field surveys, and topographical and hydrological investigation and analysis, AECOM determined that the proposed water pipeline route does not support jurisdictional waters of the U.S. A formal determination and documentation of the absence of waters under U.S. Army Corps of Engineers (USACE) jurisdiction occurring within the facility footprint is currently being pursued through a jurisdictional determination process with USACE.

desert kit fox (protected under the CDFG) (Figure 4). The potential habitat within the Water Pipeline Disturbance Area for these species adjoins roadways, is mostly disturbed, and provides lower value than habitat within the AFC Biological Disturbance Area. However, because there is contiguous suitable habitat that is of higher quality directly adjacent to the alignment, the possibility of special-status wildlife species occurring within the Water Pipeline Disturbance Area cannot be dismissed at this time. Protocol-level special-status species surveys are proposed for spring 2010 to further evaluate the potential for these species occurrence.

The 1,000-foot buffer area in the Fall 2009 Survey Area was determined to be potential habitat for the species mentioned above as well as for loggerhead shrike, Bendire's thrasher (CDFG species of special concern), and American badger (CDFG species of special concern).

One WBO was observed outside of the buffer area near the RSPP facility footprint (Figure 4), but no active WBO burrows were located. The quality of habitat for WBO in the Water Pipeline Disturbance Area and associated 1,000-foot buffer in the Fall 2009 Survey Area was determined to be lower than that in the AFC Biological Disturbance Area due to the presence of paved roadways, single family homes, and OHV use.

In the Fall 2009 Survey Area, east of China Lake Boulevard, Mojave creosote bush scrub and Mojave Desert wash scrub habitat is contiguous with a large expanse of intact Mojave creosote bush scrub to the east. Special-status species expected to occur here include DT, MGS, WBO, Bendire's thrasher, loggerhead shrike, American badger, and desert kit fox.

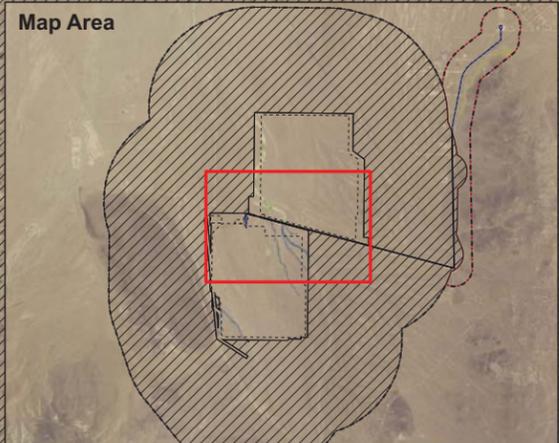
Habitat quality for these species within the buffer area on the eastern side of China Lake Boulevard is low to moderate. Disturbance in this area includes OHV use, one single family residence and mortality associated with China Lake Boulevard.

Habitat quality on the western side of China Lake Boulevard is of lower quality than that on the eastern side for the species mentioned above. There are numerous single family residences, dirt roads, and extensive OHV use. While species that can live alongside human disturbance such as WBO may be present here, domestic predation could be high. Domestic predation is assumed to be lower on the eastern side of China Lake Boulevard as there is only one single family residence.

No suitable habitat for other sensitive wildlife species, including Nelson's bighorn sheep (high amount of human activity within this area), bats (no suitable roosting habitat), and raptors (no suitable nesting habitat), was observed within the Water Pipeline Disturbance Area or the associated 1,000-foot buffer.

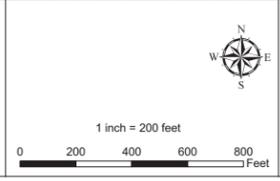
Desert Tortoise

All of the Water Pipeline Disturbance Area is low quality DT habitat. The probability of DTs occupying the Water Pipeline Disturbance Area is lower than within the AFC Biological Disturbance Area. The habitat quality for DT within the Water Pipeline Disturbance Area is lower than the habitat quality of the AFC Biological Disturbance Area and is also lower than the 1,000-foot buffer surrounding the water pipeline. A low DT population density is expected within the Water Pipeline Disturbance Area based on the habitat quality present (single family homes, domestic predators, OHV use, and numerous dirt roads). Focused surveys are proposed for spring of 2010 to determine presence/absence of DT within the Fall 2009 Survey Area.



Legend		Jurisdictional Waters of the State	
	Biological Resources Survey Area (BRSA)		Wash Dependent Vegetation (Subsampled Areas)
	Facility Footprint		Vegetated Ephemeral Dry Wash
	AFC Disturbance Area		Unvegetated Ephemeral Dry Wash
	1-mile Buffer		
	Water Pipeline Disturbance Area		
	1,000-ft Buffer (Excluding 1-mile Buffer)		

Source: NAD 2005, AECOM 2009, EDAAW 2009

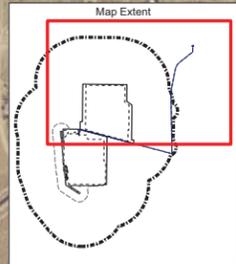


Ridgecrest Solar Power Project
 Application for Certification
 Biological Resources
 Supplemental Report

Figure 3
 State Jurisdictional Waters

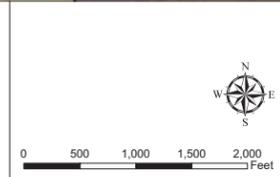
Date: October 2009

Photo: © 2009 AECOM. All rights reserved.



- Legend**
- Biological Resources Survey Area (BRSA)
 - Facility Footprint
 - Water Pipeline Disturbance Area
 - AFC Disturbance Area
 - 1,000-ft Buffer (Excluding 1-mile Buffer)
 - 1-mile Buffer
 - Burrowing Owl Observation (Oct 7, 2009)¹
 - Suitable Habitat for Burrowing Owl and Desert Tortoise
 - Unsuitable Habitat for Burrowing Owl and Desert Tortoise

¹ NOTE:
Only wildlife special status species observations
not reported on in the AFC are displayed.

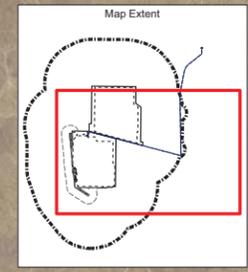
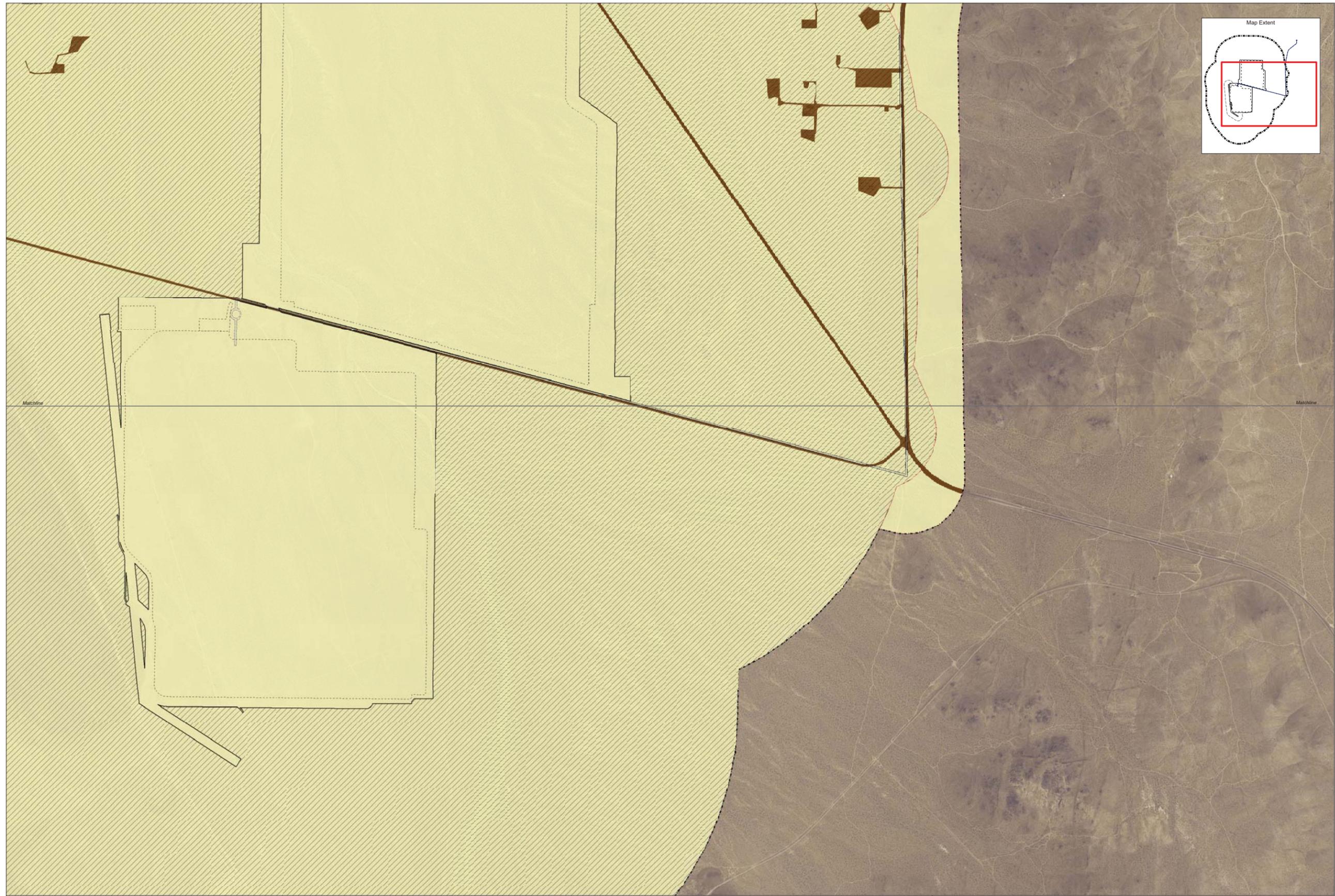


Ridgecrest Solar Power Project
Application for Certification
Biological Resources
Supplemental Report

Figure 4
Suitable Habitat and
Special Status Species Observed

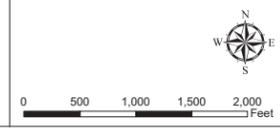
Date: October 2009

Northern Extent



- Legend**
- Biological Resources Survey Area (BRSA)
 - Facility Footprint
 - Water Pipeline Disturbance Area
 - AFC Disturbance Area
 - 1,000-ft Buffer (Excluding 1-mile Buffer)
 - 1-mile Buffer
 - Burrowing Owl Observation (Oct 7, 2009)¹
 - Suitable Habitat for Burrowing Owl and Desert Tortoise
 - Unsuitable Habitat for Burrowing Owl and Desert Tortoise
- Source: NAD 2005, AECOM 2009, EDAAW 2009

¹ NOTE:
Only wildlife special status species observations
not reported on in the AFC are displayed.



Ridgecrest Solar Power Project
Application for Certification
Biological Resources
Supplemental Report

Figure 4
Suitable Habitat and
Special Status Species Observed

Date: October 2009

Southern Extent

Photo: © 2009 Solar Millennium, Inc. All rights reserved. Aerial imagery provided by Google Earth.

Mohave Ground Squirrel

All of the Water Pipeline Disturbance Area is low quality suitable habitat for this species. The habitat quality here is low because of disturbance including development (single family homes), domestic predators, OHV use, and numerous dirt roads. If present, it is expected that this species would be present in low population densities.

Western Burrowing Owl

All of the Water Pipeline Disturbance Area is low quality WBO habitat. There is a large amount of human disturbance within the area (single family homes, domestic predators, OHV use, and numerous dirt roads). A low population density is expected to occur. The density within the water pipeline is expected to be lower than the density observed within the AFC Biological Disturbance Area.

One WBO was observed outside of the buffer area near the Ridgecrest facility footprint (Figure 4), but no active WBO burrows were located. The quality of habitat for WBO in the Water Pipeline Disturbance Area and 1,000-foot buffer area in the Fall 2009 Survey Area was determined to be lower than that in the AFC Biological Disturbance Area due to the presence of paved roadways, single family homes, and OHV use.

Bendire's thrasher

Low quality habitat for Bendire's thrasher is present in the Water Pipeline Disturbance Area. This species, if present, occurs at extremely low population densities because of the high amount of human disturbance in the area.

Loggerhead shrike

All of the Water Pipeline Disturbance Area is low quality loggerhead shrike habitat. There is a large amount of human disturbance within the area (single family homes, domestic predators, OHV use, and numerous dirt roads). A lower population density is expected to occur within the water pipeline than the density observed within the AFC Biological Disturbance Area.

American badger

All of the Water Pipeline Disturbance Area is low quality American badger habitat. There is a large amount of human disturbance within the area (single family homes, domestic predators, OHV use, and numerous dirt roads). If present, this species is expected to occur at low densities within the Water Pipeline Disturbance Area. American badger population density is expected to be lower within the Water Pipeline Disturbance Area than that observed within the AFC Biological Disturbance Area.

Desert kit fox

All of the Water Pipeline Disturbance Area is of low quality desert kit fox habitat. Due to the human disturbance (including single family homes, OHV use, dirt roads, and domestic predators) there is a lower probability of desert kit fox using the Water Pipeline Disturbance Area than the AFC Biological Disturbance Area. If present, this species is expected to occur at low population densities.

Nelson's bighorn sheep

The habitat quality for Nelson's bighorn sheep within the Water Pipeline Disturbance Area and the 1,000-foot buffer is extremely low and no direct impacts to this species are anticipated.

Construction Impacts

This section addresses potential impacts to vegetation communities and special status plant and wildlife species due to construction of the water pipeline. Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are discussed in detail in the Section 5.3.3 of the AFC (AECOM 2009). Direct and indirect impacts associated with water pipeline are expected to be permanent.

Vegetation Communities

The majority of the Water Pipeline Disturbance Area supports disturbed Mojave creosote brush scrub, a vegetation community that is considered nonsensitive. Impacts to 9.1 acres of this vegetation community would not be significant. Construction of the pipeline is expected to only require excavating a narrow trench along existing roadways. The pipeline would be buried, but impacts to vegetation would be considered permanent.

Jurisdictional Waters

Impacts to jurisdiction waters would be limited to the potential permanent loss of up to 0.03 acre of Mojave Desert wash scrub.

Flora

No special-status plant species were observed within the Water Pipeline Disturbance Area and the potential for their occurrence is considered low; therefore, no impacts to special-status plants are expected to result from water pipeline construction.

Wildlife Species

Direct impacts to special-status wildlife species, such as MGS, DT, and WBO include the loss of low to moderate quality potential habitat. Habitat directly impacted would include an increase of approximately 18.1 acres in the total acres of MGS, DT, and WBO habitat described in the AFC. No substantial impacts to other special-status wildlife species are anticipated.

Because the water pipeline route runs predominantly through disturbed habitat adjacent to existing roads, substantial impacts related to habitat fragmentation, edge effects, and dust pollution are not anticipated.

Operational and Maintenance Impacts

The proposed water pipeline runs along existing roads, will be situated entirely within the existing county road right-of-way, and will be buried following construction; therefore, no impacts associated with water pipeline operation or maintenance are anticipated.

Cumulative Impacts

The addition of the water pipeline would not result in any substantial increase to cumulative impacts discussed in detail in Section 5.3.3.3 of the AFC (AECOM 2009).

Avoidance, Minimization, and Mitigation Measures and Significance Conclusion

Applicable avoidance, minimization, and mitigation measures outlined in the AFC (AECOM 2009, Sections 5.3.4.1) would be implemented as part of water pipeline construction. Potentially significant impacts to sensitive biological resources would be reduced to less-than-significant through implementation of these measures.

References

- AECOM 2009. Ridgecrest Solar Power Project Application for Certification. Prepared for Solar Millennium. August.
- California Department of Fish and Game (CDFG). 2009. California Department of Fish and Game. RareFind 3 computer program. Biogeographic Data Branch. California Natural Diversity Database (CNDDDB) Search for plants within Solar Millennium Biological Resource Survey Area. California Department of Fish and Game. Special Animals List (901 taxa). State of California Resources Agency. Sacramento, California. March.
- California Native Plant Society (CNPS). 2009. Inventory of Rare and Endangered Plants of California, California Native Plant Society, Sacramento, California.
- U.S. Department of Agriculture (USDA). 2009. Natural Resources Conservation Service Web Soil Survey. Available at <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

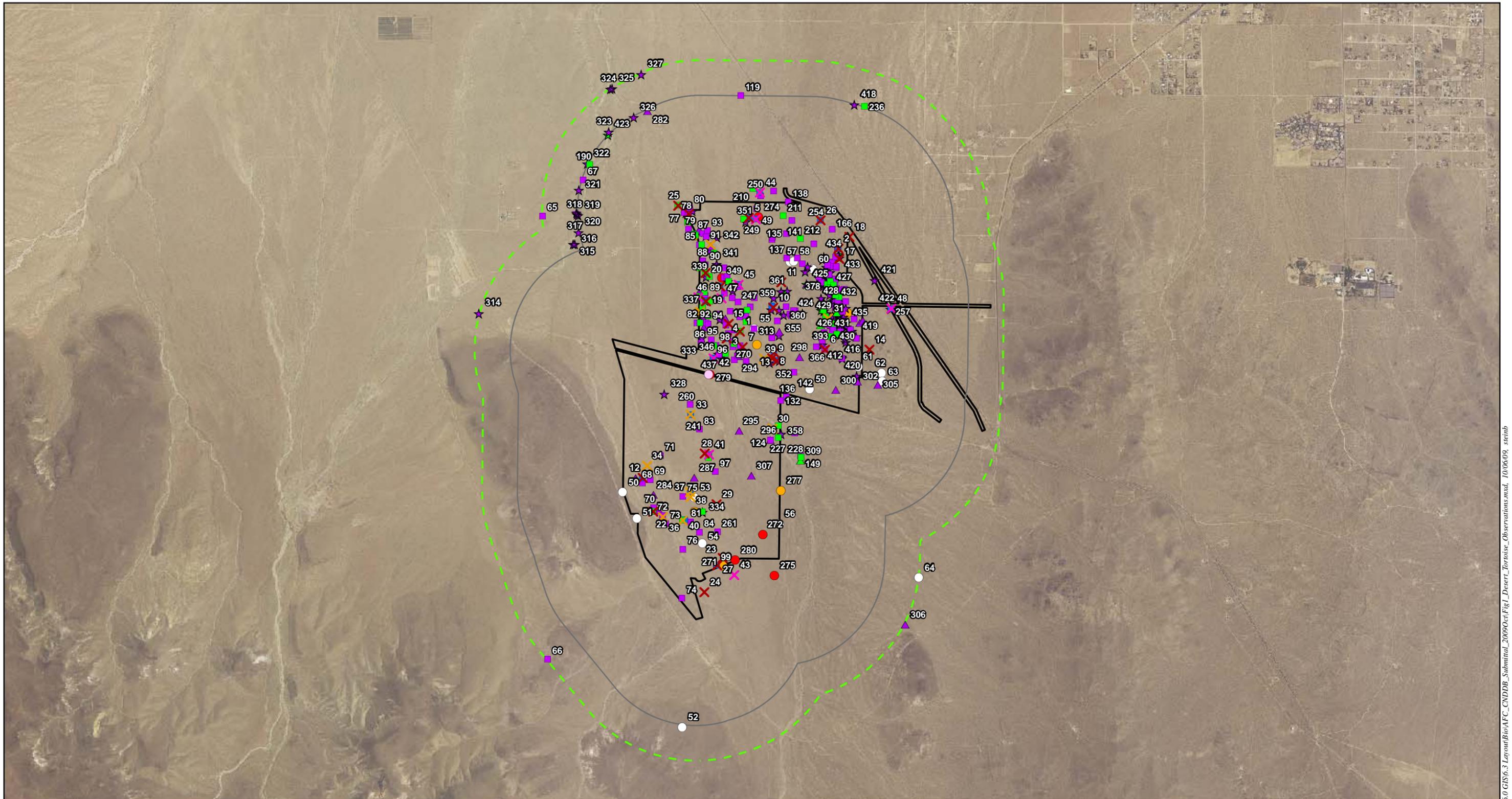
**RIDGECREST SOLAR POWER PROJECT (09-AFC-9)
DATA ADEQUACY SUPPLEMENT**

Technical Area: Biological Resources

Response Date: October 26, 2009

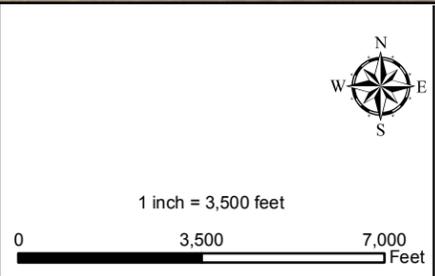
Attachment BIO-C

California Natural Diversity Database Figures



Legend	
Survey Area	Desert Tortoise Observations
1-mile Transect	Adult Tortoise
0.75-mile Transect	Juvenile Tortoise
	Tortoise (Unknown Age)
	Tortoise Burrow - Active
	Tortoise Burrow - Occupied
	Tortoise Burrow
	Tortoise Pallet
	Tortoise Pallet - Active
	Tortoise Scat
	Tortoise Scat - Fresh
	Tortoise Tracks
	Tortoise Bone Fragments
	Tortoise Carcass - Adult
	Tortoise Carcass - Juvenile
	Juvenile Tortoise - Vehicle Collision

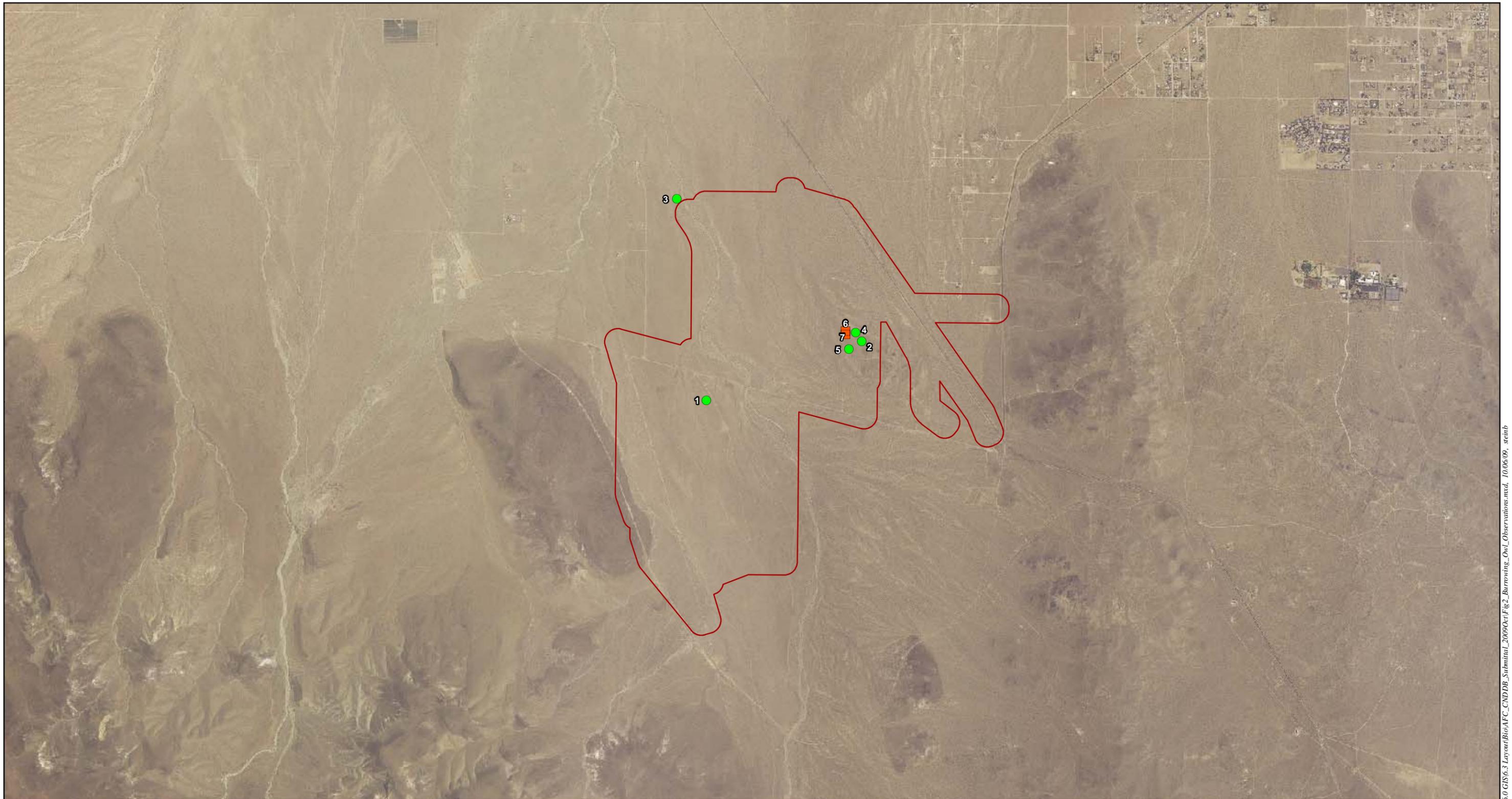
Source: NAIP 2005; CNDDDB 2009; AECOM 2009; EDAW 2009



Ridgecrest Solar Power Project
 CNDDDB Data Submittal

Figure 1
 Desert Tortoise Observations

Date: October 2009



Legend

Survey Area

Burrowing Owl Observations

- Active Burrow (Main)
- Active Burrow (Satellite)

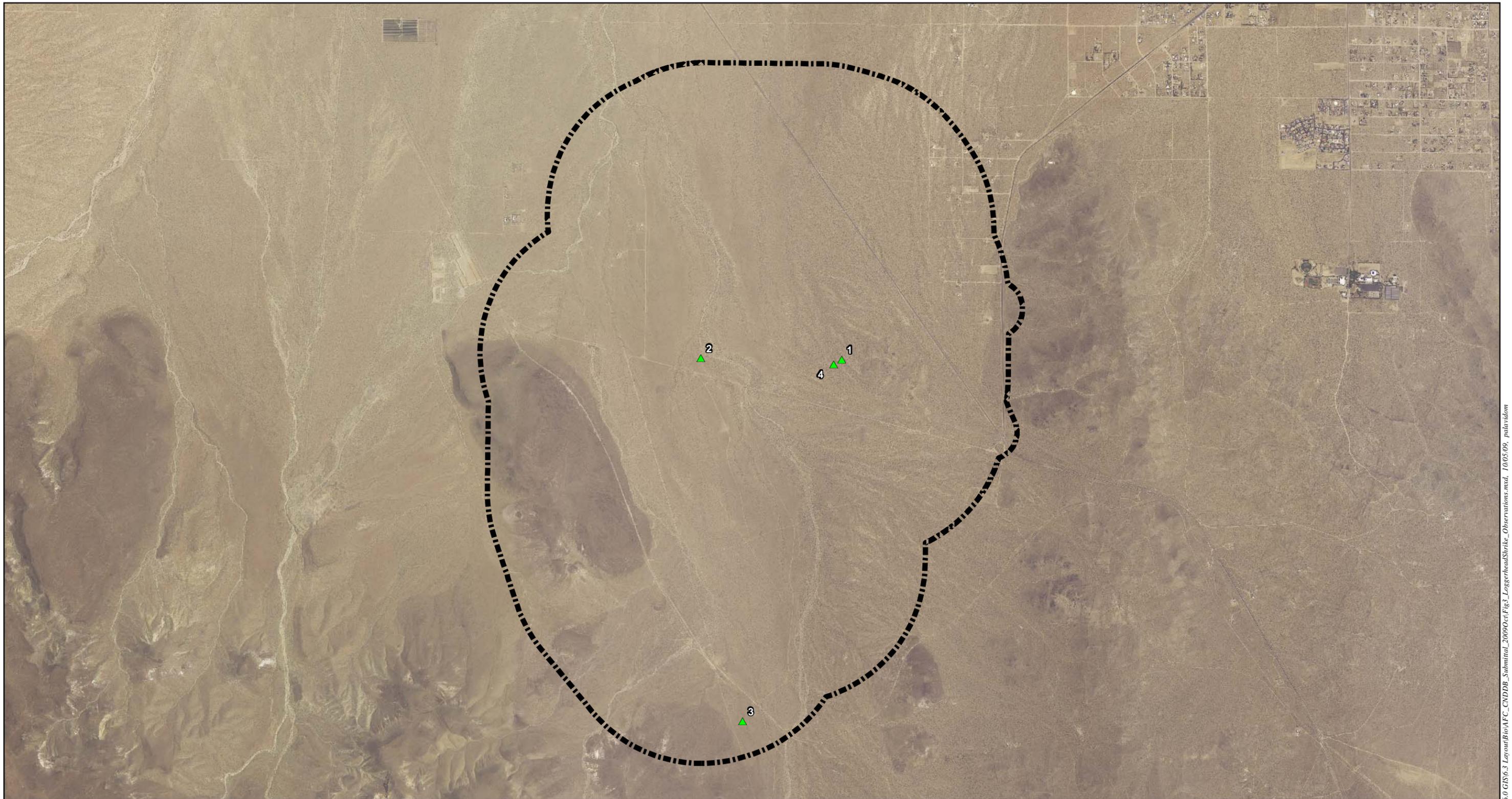
Source: NAIP 2005; AECOM 2009; EDAW 2009

**Ridgecrest Solar Power Project
CNDDDB Data Submittal**

**Figure 2
Burrowing Owl Observations**

Date: October 2009

Path: P:\2009\09080880\Sol Mill\Ridgecrest\Sol Mill\Ridgecrest\0.0 GIS\6.3 Lopard\Bio\AFC_CNDDDB_Submittal_200909\Fig2_Burrowing_Owl_Observations.mxd, 10/06/09, scinb



Legend

 General Biological Resource Survey Area  Loggerhead Shrike

Source: NAIP 2005; AECOM 2009; EDAW 2009



1 inch = 3,500 feet

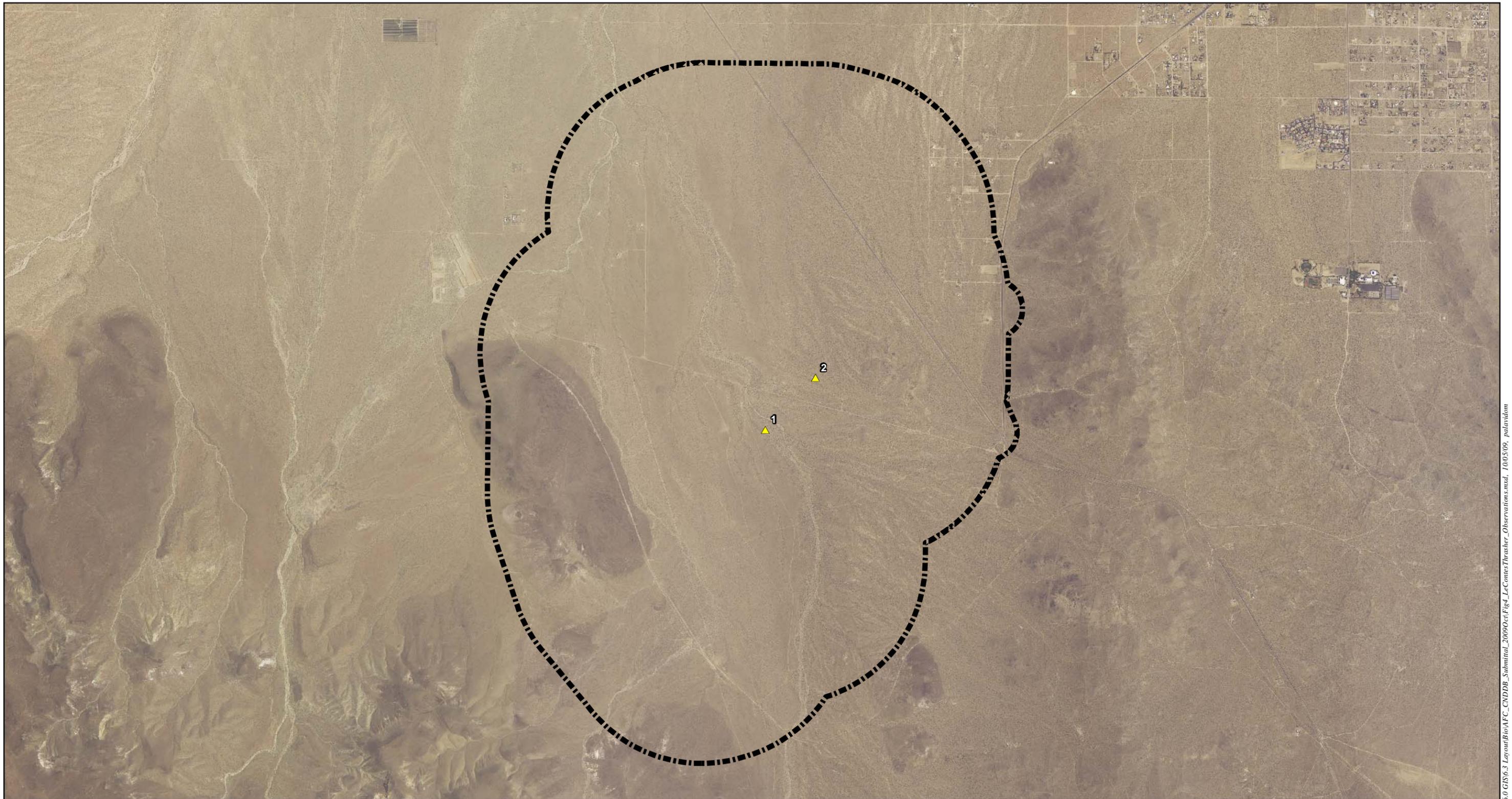


**Ridgecrest Solar Power Project
CNDDDB Data Submittal**

**Figure 3
Loggerhead Shrike Observations**



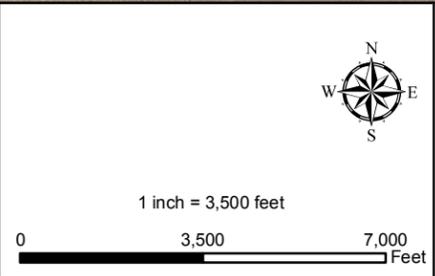

Date: October 2009



Legend

 General Biological Resource Survey Area  Le Conte's Thrasher

Source: NAIP 2005; AECOM 2009; EDAW 2009



**Ridgecrest Solar Power Project
CNDDDB Data Submittal**

**Figure 4
Le Conte's Thrasher Observations**




Date: October 2009

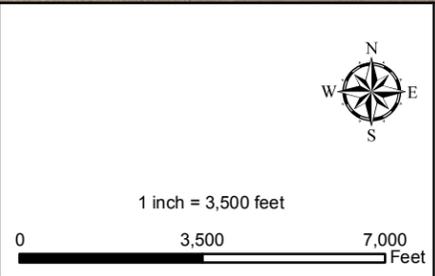


Legend

 General Biological Resource Survey Area

 Burrow with Badger Claw Marks

Source: NAIP 2005; AECOM 2009; EDAW 2009



**Ridgecrest Solar Power Project
CNDDDB Data Submittal**

**Figure 5
American Badger Observations**




Date: October 2009

**RIDGECREST SOLAR POWER PROJECT (09-AFC-9)
DATA ADEQUACY SUPPLEMENT**

Technical Area: Biological Resources

Response Date: October 26, 2009

Attachment BIO-D

California Natural Diversity Database Shapefiles

**RIDGECREST SOLAR POWER PROJECT (09-AFC-9)
DATA ADEQUACY SUPPLEMENT**

Technical Area: Biological Resources

Response Date: October 26, 2009

CNDDDB Shapefiles

Please refer to the CD-ROM.

**RIDGECREST SOLAR POWER PROJECT (09-AFC-9)
DATA ADEQUACY SUPPLEMENT**

Technical Area: Biological Resources

Response Date: October 26, 2009

Attachment BIO-E

California Natural Diversity Database Forms

For Office Use Only

Source Code _____ Quad Code _____
 Elm Code _____ Occ. No. _____
 EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 02/14/2009

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Taxidea taxus

Common Name: American Badger

Species Found? Yes No Only sign of species detected
 If not, why? _____

Total No. Individuals 0 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.
 Yes, Occ. # _____

Collection? If yes: _____
 Number _____ Museum / Herbarium _____

Reporter: Shelly Dayman / EDAW AECOM

Address: 1420 Kettner Blvd, Suite 500
San Diego, CA 92101

E-mail Address: Shelly.Dayman@aecom.com

Phone: (619) 233-1454

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
<input type="checkbox"/>				
wintering	breeding	nesting	rookery	burrow site
				other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Kern Landowner / Mgr.: Bureau of Land Management

Quad Name: Ridgecrest South Elevation: ~ 2,600 ft

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S GPS Make & Model Garmin GPSMap 60 Csx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy variable, generally <10m meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: See attached shapefiles for record, coordinates, and date of detection.

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Dominant habitat near observation was Mojave creosote bush scrub.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Undeveloped land, recreational use, urban development (City of Ridgecrest).

Visible disturbances: Off-highway vehicle (OHV) use in some areas, trash dumping, evidence of target shooting in some areas.

Threats: OHV use, development.

Comments: This observation is the result of protocol-level surveys for desert tortoise conducted for a proposed solar power project on BLM land.

Determination: *(check one or more, and fill in blanks)*

Keyed (cite reference): _____

Compared with specimen housed at: _____

Compared with photo / drawing in: _____

By another person (name): _____

Other: Qualified biologists conducting protocol-level surveys for several taxa.

Photographs: *(check one or more)*

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Toxostoma lecontei*

Common Name: Le Conte's Thrasher

Species Found? Yes No If not, why? _____

Total No. Individuals 3 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Steve Henderson / EDAW AECOM

Address: 870 Emerald Bay Road, Suite 400
South Lake Tahoe, CA 96150

E-mail Address: Steve.Henderson@aecom.com

Phone: (530) 543-5100

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

3
adults # juveniles # larvae # egg masses # unknown
 wintering breeding nesting rookery burrow site other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Kern Landowner / Mgr.: Bureau of Land Management

Quad Name: Ridgecrest South Elevation: ~ 2,600 ft

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S GPS Make & Model Garmin GPSMap 60 Csx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy variable, generally < 10m meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: See attached shapefiles for individual records, coordinates, and associated dates of detections.

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):

Habitat throughout area surveyed was dominated by Mojave creosote bush scrub, with elements of Mojave Desert wash scrub and unvegetated ephemeral dry wash along washes.

Behaviors observed: perching and calling.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Undeveloped land, recreational use, urban development (City of Ridgecrest).

Visible disturbances: Off-highway vehicle (OHV) use in some areas, trash dumping, evidence of target shooting in some areas.

Threats: OHV disturbance, development.

Comments: These observations are the result of avian point counts, and protocol-level surveys for western burrowing owl and desert tortoise conducted for a proposed solar power project on BLM lands. Observations of Le Conte's thrasher reported on this form occurred between 05/08/2009 and 05/22/2009.

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: Qualified biologists conducting focused/protocol surveys.

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Lanius ludovicianus*

Common Name: Loggerhead Shrike

Species Found? Yes No _____ If not, why? _____
Total No. Individuals 4 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____
Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Steve Henderson / EDAW AECOM
Address: 870 Emerald Bay Road, Suite 400
South Lake Tahoe, CA 96150
E-mail Address: Steve.Henderson@aecom.com
Phone: (530) 543-5100

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

4
adults # juveniles # larvae # egg masses # unknown
 wintering breeding nesting rookery burrow site other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Kern Landowner / Mgr.: Bureau of Land Management
Quad Name: Ridgecrest South, Inyokern Southeast Elevation: ~ 2,600 ft
T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS
T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S GPS Make & Model Garmin GPSMap 60 Csx
DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy variable, generally < 10m meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)
Coordinates: See attached shapefiles for individual records, coordinates, and dates of detections.

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
Habitat throughout area surveyed was dominated by Mojave creosote bush scrub, with elements of Mojave Desert wash scrub and unvegetated ephemeral dry wash along washes.
Animal behaviors observed: perching and foraging.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor
Immediate AND surrounding land use: Undeveloped land, recreational use, urban development (City of Ridgecrest).
Visible disturbances: Off-highway vehicle (OHV) use in some areas, trash dumping, evidence of target shooting in some areas.
Threats: OHV disturbance, development.
Comments: These observations are the result of avian point counts, and protocol-level surveys for western burrowing owl and desert tortoise conducted for a proposed solar power project on BLM lands. Observations of loggerhead shrike reported on this form occurred between 04/30/2009 and 06/12/2009.

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: Qualified biologists conducting focused/protocol surveys.

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Athene cunicularia*

Common Name: Western Burrowing Owl

Species Found? Yes No _____
If not, why? _____

Total No. Individuals 8 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Steve Henderson / EDAW AECOM

Address: 870 Emerald Bay Road, Suite 400
South Lake Tahoe, CA 96150

E-mail Address: Steve.Henderson@aecom.com

Phone: (530) 543-5100

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

5 # adults 3 # juveniles _____ # larvae _____ # egg masses _____ # unknown _____
 wintering breeding nesting rookery burrow site other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Kern Landowner / Mgr.: Bureau of Land Management

Quad Name: Ridgecrest South, Inyokern Southeast Elevation: ~2,600 ft

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S GPS Make & Model Garmin GPSMap 60 Csx

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy variable, generally <10m meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: See attached shapefile for records, coordinates, and associated dates of observations.

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):

Habitat throughout area surveyed was dominated by Mojave creosote bush scrub, with elements of Mojave Desert wash scrub and unvegetated ephemeral dry wash along washes.

Owl behaviors observed: crouching inside burrow, standing outside burrow, perching on shrub near burrow, calling.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Undeveloped land, recreational use, urban development (City of Ridgecrest).

Visible disturbances: Off-highway vehicle (OHV) use in some areas, trash dumping, evidence of target shooting in some areas.

Threats: OHV disturbance, development.

Comments: These observations are the result of protocol-level surveys for western burrowing owl and other project surveys conducted for a proposed solar power project on BLM lands. Observations of western burrowing owl reported on this form occurred between 03/24/2009 and 06/15/2009. Minimum of 8 burrowing owls (including at least two nesting pairs), including a minimum of 3 juveniles, were confirmed.

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: Qualified biologists conducting protocol-level surveys.

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Gopherus agassizii*

Common Name: Desert Tortoise

Species Found? Yes No _____ If not, why? _____
Total No. Individuals 50 Subsequent Visit? yes no
Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____
Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Shelly Dayman / EDAW AECOM
Address: 1420 Kettner Blvd, Suite 500
San Diego, CA 92101
E-mail Address: Shelly.Dayman@aecom.com
Phone: (619) 233-1454

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

<u>29</u>	<u>12</u>			<u>9</u>
# adults	# juveniles	# larvae	# egg masses	# unknown
<input type="checkbox"/>				
wintering	breeding	nesting	rookery	burrow site
				other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Kern Landowner / Mgr.: Bureau of Land Management
Quad Name: Ridgecrest South, Inyokern Southeast Elevation: ~2,600 feet
T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS
T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S GPS Make & Model Garmin GPSMap 60 Csx
DATUM: **NAD27** **NAD83** **WGS84** Horizontal Accuracy variable, generally < 10m meters/feet
Coordinate System: UTM Zone 10 UTM Zone 11 **OR** Geographic (Latitude & Longitude)
Coordinates: See attached shapefile for individual records, coordinates, and dates of observations.

Habitat Description (plants & animals) plant communities, dominants, associates, substrates/soils, aspects/slope:

Animal Behavior (Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):
Habitat Description: Mojave creosote bush scrub (creosote bush, burroweed, cheesebush) and Mojave Desert wash scrub (scale-broom, creosote bush, spiny senna, cheesebush, burroweed) both with understory of Erodium cicutarium, red brome (Bromus madritensis), cheatgrass (Bromus tectorum).

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: Undeveloped land, recreational use, urban development (City of Ridgecrest).

Visible disturbances: Off-highway vehicle (OHV) use in some areas, target shooting in some areas.

Threats: OHV use, shooting, collection, development, road-related mortality, raven predation.

Comments: Site is being evaluated for solar energy development. Without development of this site, the population is likely viable long-term as the disturbance activities within the area have been occurring for some time. These reported observations are the result of protocol-level surveys for desert tortoise, as well as other project-level surveys conducted 3/7/09 to 5/28/09 as part of a proposed solar power project.

Determination: (check one or more, and fill in blanks)

Keyed (cite reference): _____
 Compared with specimen housed at: _____
 Compared with photo / drawing in: _____
 By another person (name): _____
 Other: Qualified biologists. No other species in area could be mistaken for G. agassizii.

Photographs: (check one or more)

Slide	Print	Digital	
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

May we obtain duplicates at our expense? yes no

**RIDGECREST SOLAR POWER PROJECT (09-AFC-9)
DATA ADEQUACY SUPPLEMENT**

Technical Area: Biological Resources

Response Date: October 26, 2009

Attachment BIO-F

Jurisdictional Delineation Cover Letter to USACE

EDAW Inc
1420 Kettner Boulevard, Suite 500, San Diego, California 92101
T 619.233.1454 F 619.233.0952 www.edaw.com

October 23, 2009

Mark Durham, Branch Chief, South Coast
U.S. Army Corps of Engineers
USACE Regulatory Division
915 Wilshire Blvd, Los Angeles, CA 90017-3401

Subject: Ridgecrest Solar Power Project Kern County, California Jurisdictional Determination for Isolated Nonjurisdictional Waters of the U.S.

Dear Mr. Durham,

Please accept this letter and the attached Ridgecrest Solar Power Project Jurisdictional Delineation Report (RSPP JDR) (Attachment A) in support of issuing a Jurisdictional Determination (JD) that all formally delineated aquatic features occurring within the proposed footprint of the Ridgecrest Solar Power Project (RSPP) are nonjurisdictional (i.e., are not waters of the United States under the regulatory administration of the U.S. Army Corps of Engineers [USACE]).

The RSPP JDR provides a description of the proposed project, delineation methodology, results, and figures. The Approved JD Form is included as Attachment 2 to the RSPP JDR. The RSPP JDR has been assembled as a JD package for review by the USACE and the U.S. Environmental Protection Agency. The RSPP JDR documents 16.63 acres of aquatic features (composed of 8.23 acres of xeric riparian extent [Mojave Desert wash scrub] and 8.40 acres of ephemeral channel [unvegetated ephemeral dry wash]).

As the RSPP JDR and attached Approved JD Form demonstrate, the aquatic features occurring within the proposed project footprint of the RSPP are isolated ephemeral channel and adjacent nonwetland riparian scrub which do not present a "significant nexus" to a "traditional navigable waterway" (TNW) or support a significant physical, chemical, or ecological connection to a TNW.

Please do not hesitate to contact me if you have any questions regarding this Jurisdictional Determination Package for the RSPP.

Sincerely,



Joshua Zinn
Ecologist

Attachment A: RSPP JDR (Including a completed Approved JD Form)

**RIDGECREST SOLAR POWER PROJECT
JURISDICTIONAL DELINEATION REPORT
FOR REGULATED WATERS OF THE U.S. AND STATE**



Prepared for:

Solar Millennium, LLC
1625 Shattuck Avenue
Berkeley, California 94709

Prepared by:

EDAW, Inc.
1420 Kettner Boulevard, Suite 500
San Diego, California 92101
Phone: (619) 233-1454
Fax: (619) 233-0952
Point of Contact: Joshua Zinn

September 2009
Revised October 2009

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ATTACHMENTS

- 1 Figures
- 2 Approved JD Form
- 3 Field Data and Subsampling Method

ATTACHMENT 1 – FIGURES

- 1 Regional Map
- 2 Facility Footprint and Disturbance Area
- 3 Facility Footprint
- 4 Vegetation Communities and BLM-targeted Cactus Species Observations
- 5 Hydrologic Areas
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NOTE TO READER

This report was revised in October 2009 to reflect the addition of a 5.2-mile water pipeline corridor for the proposed Ridgecrest Solar Power Project (RSPP). In spring 2009, EDAW AECOM initially performed a formal jurisdictional delineation for the RSPP disturbance area, which included a 4-mile portion of the water pipeline corridor disturbance area. However, field findings for the amount and type of jurisdictional waters occurring within the delineated 4-mile portion of the water pipeline corridor disturbance area were not included in the August 2009 version of this jurisdictional delineation report (JDR), although it was referenced as having been formally delineated (including in the figures) in the August 2009 JDR.

The original water pipeline corridor disturbance area was redesigned in October 2009. A new route composed of an additional 1.2 mile water pipeline corridor disturbance area has been added to the original route. EDAW AECOM conducted a formal jurisdictional delineation for the additional 1.2 miles of the water pipeline corridor disturbance area on October 6, 2009. This revised report includes the field findings for a collective 5.2-mile water pipeline corridor as part of the overall RSPP disturbance area and are no longer distinguished as a separate disturbance/survey area for the remainder of this report.

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I. SUMMARY

EDAW AECOM (EDAW) performed biological resources studies for Solar Millennium, LLC who is the Applicant for the proposed Ridgecrest Solar Power Project (Project or RSPP). The Project is proposed on public lands managed by the Bureau of Land Management (BLM) in Kern County, California, and the Applicants have submitted an application to BLM for a right-of-way (ROW) grant. The RSPP will be a 250-megawatt (MW) solar thermal electricity-generating facility using parabolic trough technology. The Project would be located in northeastern Kern County approximately 5 miles southwest of the City of Ridgecrest, California (Figures 1 and 2 [all figures referred to herein are included in Attachment 1]). The primary solar energy facilities and associated construction and operations footprint are located within an approximate 1,760-acre disturbance area (Figure 3).

As a component of the needed biological resources work, a formal jurisdictional delineation for regulated waters was conducted to obtain baseline information for potential jurisdictional waters of the U.S. and State occurring within the disturbance area in support of the California Energy Commission/BLM combined environmental review and permitting process. The purpose of this jurisdictional delineation is to identify boundaries and acreages of potential regulated waters of the U.S. and State (including wetlands) occurring within the approximate 1,760-acre disturbance area. The Applicants are requesting a Jurisdictional Determination (JD) of isolated waters (nonjurisdictional waters of the U.S.) from the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA) (Attachment 2), and the verification of the location, type, size, and extent of jurisdictional waters of the State under regulatory administration by the California Department of Fish and Game (CDFG).

This jurisdictional delineation report (JDR) summarizes the methodologies employed in conducting a formal jurisdictional delineation of waters of the U.S. and State, the results of the fieldwork, and the existing conditions of the surveyed portions of the disturbance area where potential jurisdictional waters occur. For this project, it was determined that there are no potential jurisdictional waters of the U.S. (0.0 acre)¹ and 16.6 acres that would be considered potential jurisdictional waters of the State exclusively² that occur within the surveyed portion of the disturbance area.

¹ Final acreages of jurisdictional waters of the U.S. will be based upon the Jurisdictional Determination (JD) process per the March 30, 2007, U.S. Army Corps of Engineers Jurisdictional Determination Form Guidebook; the June 5, 2007, Approved JD Form; the June 5, 2007, Joint Guidance Memorandum; the December 2, 2008, Guidance Memorandum; or Regulatory Guidance Letter (RGL) 08-02 (if RGL 08-02 is deemed applicable and appropriate [i.e., the permit applicant, or other “affected party” can decline to request and obtain an Approved JD and elect to use a Preliminary JD instead]).

² Relevant to CDFG permitting only.

II. INTRODUCTION

A. Project Location

The proposed RSPP is located in the southern edge of the Indian Wells Valley and north of the El Paso Mountains in northeastern Kern County, California, approximately 5 miles southwest of the City of Ridgecrest. Elevation within the disturbance area ranges from approximately 2,600 to 2,800 feet above sea level (USGS 1972, 1973). From the intersection of US-395 and South China Lake Boulevard turn southwest onto Brown Road and continue northwest for approximately 1.90 miles to reach the BLM ROW and proposed RSPP disturbance area (Figures 2 and 3).

B. Description of Project

The Applicant is proposing to construct a commercial solar thermal electric power generating project. The RSPP would be located in the high northern Mojave Desert in northeastern Kern County, California, approximately 5 miles southwest of Ridgecrest, California. The Project would be located on a 3,920-acre ROW owned by the Federal government and leased by the Applicant from BLM. The Project facilities would occupy approximately 1,760-acres of the ROW (referred to as the facility footprint). In addition to solar fields and a main power generating facility (power block), the site would include a main office building and parking lot, a main warehouse with laydown area, onsite access roads, a tie-in switchyard, an underground water pipeline, and a bioremediation area.

The Project would have a nominal output of 250 MW. The Project would utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is heated to high temperature (750° F) as it circulates through the receiver tubes. The heated HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high-pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced.

The Project would include two solar fields, each occupying roughly 700 acres and composed of piping loops arranged in parallel groups connected to supply and return header piping. The power block would be located south of Brown Road, just north of the southern solar field. The power block would be composed of its own administration, control, warehouse, maintenance, and lab buildings; an HTF pumping and freeze protection system; steam generator; propane-fired auxiliary boiler; one steam turbine generator; an air-cooled condenser; generator step-up

transformer, transmission lines and related electrical system; and auxiliary equipment (i.e., water treatment system, diesel-powered emergency generator, and firewater system). A new 12-inch-diameter, approximately 5-mile-long water pipeline would be installed within the Brown Road and China Lake Boulevard ROWs to connect the Project with the Indian Wells Valley Water District supply. Designs for this new water line have not been finalized (see below). A new 230-kilovolt (kV) transmission line from the turbine generator to a new nearby switchyard would interconnect with Southern California Edison's existing 230-kV Inyokern/Kramer Junction transmission line passing west of the Project site. The transmission line would be approximately 0.5 mile long and located within the disturbance area. The 5.2-mile underground water pipeline would run east from the RSPP parallel to the north side of Brown Road up to the intersection of Brown Road and China Lake Boulevard. At the northwest intersection of Brown Road and China Lake Boulevard, the water pipeline would turn north and run parallel to the west side of China Lake Boulevard. The alignment, which is still considered approximate, is proposed to be located entirely within the existing county road right-of-way.

Access to the RSPP would be provided by a new 700-foot-long, 24-foot-wide paved access road from Brown Road, located approximately 2.25 miles west of the intersection of Brown Road with U.S. Highway 395. Only a small portion of the overall disturbance area would be paved, primarily the site access road, the service road to the power blocks, and portions of the power block. The remaining portions of the power block would be gravel surfaced. In total, the area of the power block area would be approximately 18 acres, with approximately 6 acres of paved area. The solar field would remain unpaved and without a gravel surface to prevent rock damage from mirror wash vehicle traffic. A dust suppression coating would be used on the dirt roadways within and around the solar field. The Project solar field and support facilities perimeter would be secured with chain-link metal-fabric security fencing. Along the north and south sides of the facility, the fence would be 8 feet tall, with 1-foot barbed wire or razor wire on top. Thirty-foot tall wind fencing, comprised of A-frames and wire mesh, would be installed along the east and west sides of each solar field. Controlled access gates would be located at the site entrance.

Project construction is scheduled to begin in late 2010 and continue into 2013.

III. REGULATORY FRAMEWORK

Jurisdictional waters (including wetlands and other aquatic environments/habitats) occurring within the United States and California are regulated under the following Federal and State laws, as applicable to the Project.

A. Federal Regulations

Pursuant to Section 404 of the Clean Water Act (CWA), USACE is authorized to regulate any activity that would result in the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 Code of Federal Regulations (CFR) 328.3 (Definitions). USACE, with oversight by USEPA, has the principal authority to issue CWA Section 404 Permits.

Pursuant to Section 401 of the CWA, the Regional Water Quality Control Board (RWQCB) certifies that the discharge will comply with State water quality standards. RWQCB, as delegated by USEPA, has the principal authority to issue a CWA Section 401 water quality certification or waiver.

B. State Regulations

Pursuant to Section 1600 et seq. of the California Fish and Game Code (CFG), CDFG is authorized to regulate any activity that would alter the flow, bed, channel, or bank of streams and lakes. Jurisdictional waters of the State include the channel bed and bank of a lake, river, or stream. In practice, CDFG usually extends its jurisdictional limit to the top of the bank of a stream or lake, or to the continuous outer edge of its riparian extent, whichever is wider.

Pursuant to Section 13000 et seq. of the California Water Code (the 1969 Porter-Cologne Water Quality Control Act), RWQCB is authorized to regulate activity that would result in discharges of waste and fill material to waters of the State, including “isolated” waters and wetlands (e.g., vernal pools and seeps) and groundwater within the boundaries of the State.

C. Purpose of Assessment

The purpose of performing a formal jurisdictional delineation is to identify, verify, and determine potential boundaries, acreages, and types of regulated waters of the U.S. and State (including wetlands) occurring within the approximately 1,760-acre disturbance area, which USACE,³ CDFG, RWQCB, and the State will assert jurisdiction over.⁴ The proposed RSPP has the potential to result in the loss of jurisdictional waters. This JDR will be suitable for support and agency documentation in the process of obtaining the following:

³ Verification of the presence or absence of Federal waters by USACE will be based on the findings in this JDR and the JD process (Attachment 2).

⁴ Federal and State jurisdictions may overlap but will remain distinct for authorization/permitting requirements.

1. Certification of compliance under Section 401 of the CWA (as regulated by RWQCB),
2. Review of regulatory administration and/or authorization under Section 404 of the CWA (as regulated by USACE), and
3. Permitting under Section 1600 et seq. of the CFGC (as regulated by CDFG).

IV. PROJECT SETTING

In addition to the delineations described in this report, EDAW conducted plant community mapping and other biological surveys within the disturbance area and ROW (EDAW 2009). A summary of the parameters relevant to the presence and extent of potential jurisdictional waters in the form of wetlands (vegetation, hydrology, and soils) is provided below.

A. Xeric Riparian Plant Communities

The field delineation used the Holland Code Classification System for vegetation communities (Holland 1986) for identifying xeric riparian vegetation associated with all washes occurring within the disturbance area (Table 1). Only wash-dependent plant species were mapped (Table 2). Where vegetation contains a mixture of upland and wash-dependent indicator species from two or more Holland vegetation communities, the indicator species that appears with the greatest vegetation coverage (absolute dominance based on percent cover) was used to identify the vegetation community. The minimum mapping unit (MMU) for xeric riparian vegetation communities used for the field delineation was 0.10 acre.

Table 1
Xeric Riparian Plant Communities Occurring within the Survey Area^a

Xeric Riparian Plant Communities	Acres
	Disturbance Area ^b
Mojave Desert Wash Scrub (Holland Code 63700)	8.2
Grand Total	8.2

^a Acreage of the plant communities occurring within the survey area was determined by utilizing the Geographic Information System (GIS) program ArcGIS. All acreages are rounded to the nearest tenth.

^b Disturbance area is based on the October 2009 Project design.

Table 2
Wash-Dependent Plant Species Observed within the Survey Area^a

Scientific Name	Common Name	Region 0 (California) Indicator Status ^a
Shrub Species		
<i>Lepidospartum squamatum</i>	scale-broom	Not Listed (NL)
<i>Senna armata</i> ^b	spiny senna	NL

^a Based on *National List of Vascular Plant Species That Occur in Wetlands* (Reed 1988). If a species does not occur in wetlands in any region, it is not on the National List.

^b Spiny senna was observed to be incidental and of low occurrence and was not included in the subsampling (see below).

The plant community mapping for the disturbance area project is provided in Figure 4. Although the xeric riparian, upland, and other cover types are displayed in Figure 4, only the xeric riparian plant communities are the focus of the following discussion. The one xeric riparian vegetation community occurring within the disturbance area has been identified as Mojave Desert wash scrub (Holland Code 63700). Although Mojave Desert wash scrub is a nonhydrophytic (nonwetland) plant community, it is still relevant to potential jurisdictional waters and thus is discussed in this JDR.

Mojave Desert Wash Scrub (Holland Code 63700)

Mojave Desert wash scrub can be described as a low scrubby, remarkably diverse scrub, often characterized by claw acacia (*Acacia greggii*), desert willow (*Chilopsis Linearis*), California jointfir (*Ephedra californica*), New Mexico privet (*Forestiera neomexicana*), Desert barberry (*Berberis haematocarpa*), and smoke tree (*Psoralea argemone*) (Holland 1986; CDFG 1988). Mojave Desert wash scrub is similar to southern alluvial fan scrub (Holland Code 63330) and desert dry wash woodland (Holland Code 62200) but lacking the conspicuous microphyllous trees of desert dry wash woodland (this vegetation community does experience winter frost, which appears to keep out the fabaceous trees).

Mojave Desert wash scrub is distributed along the larger drainages of the southeastern Mojave Desert south through the Sonoran Desert into Mexico (USDA 1980). This vegetation community occupies dry, sandy, or gravelly washes and arroyos of the lower Mojave and Sonoran deserts, which usually occur below 5,000 feet. These washes and arroyos typically have braided channels that substantially rearrange with every surface flow event. Mojave Desert wash scrub is typically an open to moderately dense, broad-leaved phreatophytic evergreen scrub that attains a height of 3 to 6 feet. The open understory areas are typically dominated by ruderal herbaceous species (native and nonnative) usually associated with grassland communities (Holland 1986). The time

required for desert wash habitats to progress through successional stages is not known but probably depends on water availability (e.g., precipitation, groundwater). Stand/canopy development and density are variable and depends on water supply and other site characteristics. In very dry areas, stands may persist as underdeveloped stages (e.g., medium tree/shrub stage) rather than progressing to the large tree stage (CDFG 1988).

Within the disturbance area the dominant and indicator plant of this community is scale-broom which occurs in monotypic patches throughout the El Paso Wash (the primary drainage feature occurring within the disturbance area). Scale-broom is also intermixed with creosote bush (*Larrea tridentata*), spiny senna (*Senna armata*), cheesebush (*Hymenoclea salsola*), burroweed (*Ambrosia dumosa*), brittlebush (*Encelia virginensis*), and rayless goldenhead (*Acamptopappus sphaerocephalus*).

B. Hydrology

The disturbance area occurs within the 2020-square-mile Indian Wells-Searles Valleys Watershed (HUC: 18090205) and is located within the RWQCB Region 6, South Lahontan Hydrologic Basin Planning Area, Indian Wells Hydrologic Unit (624.00), China Lake Hydrologic Area (624.20) (Figure 5). The rainfall pattern is bimodal with a rainy season in both summer and winter (December through March and July through September [the commonly wetter of the two]). Average annual rainfall for the disturbance area (China Lake Hydrologic Area) is approximately 3.7 inches (Table 3) (NOAA 2009b).

Table 3
Survey Area Annual Precipitation Data from Base Weather Station 2008^a

Time Period	Historical Average^b (inches)	Past Year^b (inches)
June	0.03	0.00
July	0.27	0.45
August	0.64	1.75
September	0.44	0.43
October	0.20	0.00
November	0.20	0.51
December	0.48	2.36
January	0.50	0.00
February	0.43	0.53
March	0.34	0.00
April	0.10	0.00
May	0.04	0.00
Annual Total	3.67	6.03

^a Western Regional Climate Center 2008

^b National Oceanic & Atmospheric Administration, National Climatic Data Center 2008, 2009a, 2009b.

Surface hydrology of the disturbance area is influenced by the surrounding mountain ranges during storm events. The disturbance area is located on the southern edge of the Indian Wells Valley and north of the El Paso Mountains. The general stormwater flow pattern is from the higher elevations in the mountains located approximately 6 miles south to the lower elevations in Indian Wells Valley to the north. The stormwater from the disturbance area flows northeast and eventually to China Lake, which is a depression in the Indian Wells Valley with no identifiable outlet. Storm flows generated by the existing site itself generally sheet to washes in the northeast and northwest directions (Figure 6). Offsite hydrology drains a combined set of distinct watersheds totaling approximately 37 square miles, which generally drains from local topographic highs located south of the disturbance area northward to relatively more gradually-sloped areas at the southern and northern solar fields.

Although there are several large swales that drain the disturbance area the major watercourse in the project area is El Paso Wash, which is an ephemeral wash that drains approximately 20 square miles from the El Paso Mountains and exits the mountains to the south of the site. Flows from El Paso Wash and adjacent unnamed watersheds are conveyed over the proposed Southern Solar Field, over the surface of South Brown Road and then over the Northern Solar Field, ultimately to China Lake. El Paso Wash drains 22 square miles upstream of the disturbance area and runs approximately through the center of the disturbance area. This wash drains water from the south hills and crosses Brown Road inside the property boundary. Currently, El Paso Wash flows over Brown Road at a low point in the road and continues sloping in a northwest direction along the project site (Figure 6). Drained water crosses U.S.-395 at several points in both east-west and west-east directions, hydraulically connecting all the catchments in this drainage area. The railroad grade interrupts several natural drainage paths concentrating flows to several water courses that cross the railroad grade through pipes, concrete culverts, and timber bridges, which have altered existing flow patterns in the disturbance area drainage area and water crossings beneath U.S.-395 (AECOM 2009) (Figure 7).

Ephemeral stream channels are commonly linear features that are straight to slightly meandering (Whitford 2002; High and Picard 1973). As they flow eastward from the base of the El Paso Mountains, the ephemeral channels generally convert from sparsely vegetated slightly meandering to an anastomosed morphology, presented as semibraided beds with regular incised compound channels and multiple relic channels. Compound channels are considered the most common channel types in arid regions and are characterized by a single, low-flow meandering channel inset into a wider braided channel network (Tooth 2000; Graf 1988). These channels are highly susceptible to widening and avulsions (i.e., rapid changes in channel position and/or

channel relocation) during moderate to high discharges, reestablishing a low-flow channel during subsequent low flows (USACE 2008).

The ephemeral washes occurring within the disturbance area present themselves as micro-floodplains with compound channels, which is a common arid stream system (USACE 2008). With any compound/anastomosing ephemeral stream system in arid regions, the riparian corridor can be populated and lined with adapted riparian vegetation, unvegetated areas such as recently created swales and terraces (interfluves), or a mosaic of these types (Bendix and Hupp 2000). Within the disturbance area extended portions, the ephemeral drainage features are composed of very shallow compound channels with noncohesive sandy banks. The sandy substrate is composed of entisols and presents a high infiltration rate (see Section C [Soils] below). Surface hydrology can vary from perennial to intermittent and, after a flooding event, water tables can drop quickly to low levels due to the permeability of the sandy substrate (Environmental Laboratory 2008).

As rainfall in arid regions is the primary source of water for the majority of the rivers and streams existing within these climactic regions, river and stream complexes are intermittent or ephemeral in character, flowing only during storm events and remaining dry for most of the year. As a result, the analysis of streamflow and changes in compound channel morphology in arid fluvial systems emphasizes flood events (Graf 1988). Flood events and the resulting channel avulsion that occur within arid river systems generally consist of four types:

1. Flash floods,
2. Single peak events,
3. Multiple peak events, and
4. Seasonal floods.

These flood events are partly scale dependent, with flash floods occurring on smaller stream systems (tributaries) and seasonal floods characteristic of large through-flowing rivers (Graf 1988). In arid fluvial systems, flood events are the physical factors that convert usually single, meandering channels to a compound/anastomosing morphology (semibraided [with regular incised channels and multiple relic channels]) (Dunne and Leopold 1978). In several arid regions, large storm events have been responsible for changing the dominant channel configuration from meandering to braided in watersheds of varying sizes (Bendix and Hupp 2000).

Because compound channel fluvial systems, such as the ephemeral washes occurring within the disturbance area, are subject to very wide fluctuations in discharges over a short period of time, their channels can frequently change configuration to accommodate large variations in surface flow as a result of storm events. As a result, arid fluvial systems usually exhibit long periods of little morphologic change interspersed with short-term dramatic changes in channel configuration. Therefore, arid stream geometry is more likely to be influenced strongly by a large event of low recurrence frequency (Allen 1999). The ephemeral washes do not support wetland hydrology because, outside of (remote) flooding events, the hydrology for the ephemeral washes occurring within the disturbance area is generally predictable (AECOM 2009) (Figure 7). The portion of the disturbance area within El Paso Wash presents a 1 percent chance of flood hazards, with unknown Base Flood Elevations (FEMA Flood Zone Designation A). The remainder of the disturbance area is outside the 0.2 percent annual chance floodplain (FEMA Flood Zone Designation X) (FEMA 2009).

C. Soils

The Arid West region is dominated by watersheds that have a high frequency of intermittent and ephemeral dry washes, such that many aquatic resources within the watersheds actually lack the three characteristic features of a wetland (see below). Due to arid climatic conditions and the uneven distribution of precipitation events over time, hydric soils rarely develop (Boettinger 1997; USACE 2007). No detailed soil survey exists for the disturbance area (NRCS 2009a, 2009b). The California Soil Resources Lab mapped two soil complexes occurring within the disturbance area (U.C. Davis 2009a):

1. Cajon-Wasco-Rosamond, and
2. Trigger-Sparks-Rock Outcrop

The two soil complexes are generally mapped having a shared boundary. The Cajon-Wasco-Rosamond complex occupies most of the disturbance area. The Trigger-Sparks-Rock Outcrop complex is located only in the southwestern portion of the disturbance area, in association with the taller rock outcroppings. The Cajon-Wasco-Rosamond complex covers all remaining areas of the disturbance area, which are associated with a large, alluvial fan (Figure 8). Among these two complexes, eight soil series are listed as hydric on the National Hydric Soils List (NRCS 2009c).

Only soils that are listed as hydric, have diagnostic hydric properties and/or features, have hydric inclusions, meet the criteria and/or definition for a hydric soil, or have the potential for being hydric by definition are addressed herein. The National Technical Committee for Hydric Soils (NTCHS) defines a hydric soil as “a soil that formed under conditions of saturation, flooding or

ponding long enough during the growing season to develop anaerobic conditions in the upper part” (NRCS 2009b). The NTCHS definition identifies general soil properties that are associated with wetness. Additionally, specific criteria that identify those estimated soil properties unique to hydric soils have been established by NTCHS (1995). Therefore, hydric soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

Hydric soil definitions and NTCHS approved hydric soil criteria are used to generate hydric soil lists (Environmental Laboratory 2008). The National Hydric Soils List (NRCS 2009c), primarily used as an offsite assessment tool, contains a listing of soils that have a probability of being hydric. Hydric soil indicators are primarily morphological indicators used for field identification of hydric soils and/or soils meeting the hydric soil definition. These hydric soil indicators are a subset of the NTCHS *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 6.0* (USDA 2006). Hydric soil indicators are not intended to replace or relieve the requirements contained in the definition of a hydric soil. Therefore, a soil that meets the definition and/or criteria of hydric can be considered hydric whether or not it exhibits diagnostic field indicators (e.g., the presence of mottles or gleying [redoximorphic features]) at the point of subsurface investigation.

Six soils listed as hydric by the National Hydric Soils List (NRCS 2009c) occurring within the survey area are within the entisol soil order. Entisols are young soils primarily originating from sediments and alluvium that show little alteration of the parent material from which they were derived, and that exhibit little pedogenesis (soil formation process) (Brady 1990). Since entisols are associated with fluvial processes, they are by nature dynamic and do not have the ability to develop buried soil horizons, which in turn contribute to *in situ* development of redoximorphic features when conditions are hydric over the appropriate temporal frame. Two soils listed as hydric by the National Hydric Soils List (NRCS 2009c) occurring within the survey area are within the aridisol soil order. Aridisols are the product of extreme xeric conditions, and can form a nearly impervious pavement that facilitates surface sheet flow of stormwater. However, the two aridisols discussed below are well-drained, sandy, alluvial soils associated with depositional events and alluvial features within the disturbance area. One soil series (the Neuralia Series) is only considered hydric when complexed with soils other than the ones present within the disturbance area.

The National Hydric Soils List (NRCS 2009c) lists the following soil series as being associated with the general region but not the disturbance area; primarily, these soils are listed in association with Antelope Valley, the Mojave River, and western portions of Inyo and San

Bernardino counties. This hydric soils list does not include any series from northeastern Kern County. Although not mapped in detail, the eight listed hydric soils occurring within the disturbance area are typically associated with drainage features and are described below.

Arizo Soil Series

The Arizo series are sandy-skeletal, mixed, hyperthermic Typic Torriorthents. They consist of very deep, excessively drained soils that formed in mixed alluvium. Arizo soils are on recent alluvial fans, inset fans, fan apron, fan skirts, stream terraces, floodplains of intermittent streams, and channels. They occur on slopes ranging from 0 to 15 percent. The mean annual precipitation for these soils is approximately 7 inches. Arizo gravelly loamy sand, 0 to 5 percent slopes and Arizo loamy fine sand, 0 to 2 percent slopes are on the National List of Hydric Soils (NRCS 2009a, 2009c, 2009d).

Cajon Soil Series

The Cajon series are loamy, mixed, thermic Typic Torripsamments. They consist of very deep, somewhat excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Cajon soils are found on alluvial fans, fan aprons, fan skirts, inset fans and river terraces. The mean annual precipitation for these soils is less than 6 inches. Cajon loamy sand, 0 to 2 percent slopes and Cajon loamy sand, loamy substratum, 0 to 2 percent slopes are on the National List of Hydric Soils (NRCS 2009a, 2009c, 2009d).

Manet Soil Series

The Manet series are sandy, mixed, thermic Typic Torrifluents, They consist of deep, well-drained soils that formed in alluvium derived mainly from mica-rich, dark-colored minerals. Manet soils are on alluvial fans and have slopes of 0 to 9 percent. The mean annual precipitation for these soils is about 4 inches. Manet cobbly coarse sand, 2 to 9 percent slopes and Manet loamy sand, loamy substratum, 0 to 2 percent slopes are on the National List of Hydric Soils (NRCS 2009a, 2009c and 2009d).

Rosamond Soil Series

The Rosamond series are fine-loamy, mixed, superactive, calcareous, thermic Typic Torrifluents. They consist of deep, well drained soils that formed in material weathered mainly from granitic alluvium. Rosamond soils are on the lower margin of the alluvial fans between the sloping fans and the playas and have slopes of 0 to 2 percent. The mean annual precipitation for

these soils is about 5 inches. Multiple Rosamond soils are on the National List of Hydric Soils (NRCS 2009a, 2009c, 2009d).

Rositas Soil Series

The Rositas series are mixed, hyperthermic Typic Torripsamments. They consist of very deep, somewhat excessively drained soils formed in sandy eolian material. Rositas soils are on dunes and sand sheets. A typical Rositas pedon is composed of fine sand rangeland. Slope for this soil ranges from 0 to 30 percent with hummocky or dune micro relief. The mean annual precipitation for this soil is approximately 4 inches (NRCS 2009c). Rositas silty clay loam, wet, 0 to 2 percent slopes is on the National List of Hydric Soils (NRCS 2009a, 2009c, 2009d).

Sunrise Soil Series

The Sunrise series are fine-loamy, carbonatic, thermic Typic Haplocalcids. They consist of deep, well-drained soils that formed in material from mixed alluvium. Sunrise soils are on floodplains and in basins and have slopes of 0 to 9 percent. The mean annual precipitation for these soils is about 5 inches. Multiple Sunrise soils are on the National List of Hydric Soils (NRCS 2009a, 2009c, 2009d).

Tray Soil Series

The Tray series are coarse-loamy, mixed, superactive, thermic Typic Haplargids. They consist of very shallow and shallow, somewhat excessively alkaline soils that formed in alluvium from rhyolite and related volcanic rocks. Tray soils are on alluvial fans and hills. A typical Tray pedon is composed of extremely gravelly sandy loam rangeland. Slopes for this soil range between 1 to 15 percent. The mean annual precipitation for this soil is approximately 7 inches (NRCS 2009a, 2009d). Multiple Tray soils are on the National List of Hydric Soils (NRCS 2009a, 2009c, 2009d).

Wasco Soil Series

The Wasco series are coarse-loamy, mixed, superactive, nonacid, thermic Typic Torriorthents. They consist of very deep, well-drained soils on recent alluvial fans and floodplains. These soils formed in mixed alluvium derived mainly from igneous and/or sedimentary rock sources. Slope is 0 to 5 percent slopes. The mean annual precipitation is about 6 inches. Multiple Wasco soils (usually in complexes) are on the National List of Hydric Soils (NRCS 2009a, 2009c, 2009d).

V. METHODOLOGY

This jurisdictional delineation applied presurvey investigations and field surveys to determine the presence (type, area, and extent) or absence of jurisdictional waters of the U.S. and State.

A. Presurvey Investigations

Prior to conducting the field delineation, EDAW ecologist Joshua Zinn reviewed and identified areas with topographical configurations and vegetative signatures occurring within the disturbance area that may suggest the potential or presence of jurisdictional waters. This information was evaluated by consulting the following available sources:

- 7.5 U.S. Geological Survey (USGS) InyoKern Southeast (1972) and Ridgecrest (1973) topographic quadrangles,
- 2005 Aerial Maps of the Biological Resource Study Area (BRSA) (USDA 2005),
- The National Wetlands Inventory (NWI) Interactive Wetlands Mapper (USFWS 2009),
- The California Environmental Resources Evaluation System California Wetlands Information System Wetland Databases and Inventories (CERES 2009),
- California Online Soil Survey Manuscripts (NRCS 2009a),
- The Natural Resource Conservation Service Web Soil Survey (NRCS 2009b),
- The National List of Hydric Soils (NRCS 2009c),
- The California Soil Resource Lab (U.C. Davis 2009a),
- The Information Center for the Environment (ICE) (U.C. Davis 2009b),
- The California Watershed Network (CWN 2009),
- The California Watershed Portal (CalEPA 2009),
- The Office of Water Programs Water Quality Planning Tool (CSU Sacramento 2009),
- The Digital Watershed (USEPA 2009), and
- The National Weather Service Climate Office (NOAA 2009a)

B. Field Survey

EDAW ecologists Jason Phillips, Lindsay Teunis, and Joshua Zinn, and AECOM Environment ecologist Jessica Wilson conducted field assessments and surveys for 6 days (19 person-days) from March 6 through March 11, 2009 and October 6, 2009 (Table 4), to formally delineate all

potential jurisdictional waters of the U.S. and State (jurisdictional waters)⁵ occurring within the disturbance area.⁶

Table 4
Survey Dates and Personnel Conducting Jurisdictional Delineations

Date	Survey Personnel	Survey Activity
03-06-2008	Jason Phillips and Joshua Zinn	Site reconnaissance and field delineation
03-07-2008	Jason Phillips, Lindsay Teunis, Jessica Wilson, and Joshua Zinn	Field delineation and vegetation subsampling
03-08-2008	Jason Phillips, Lindsay Teunis, Jessica Wilson, and Joshua Zinn	Field delineation and vegetation subsampling
03-09-2008	Jason Phillips, Lindsay Teunis, Jessica Wilson, and Joshua Zinn	Field delineation and vegetation subsampling
03-10-2008	Jason Phillips and Joshua Zinn	Field delineation and groundtruthing features
03-11-2008	Jason Phillips and Joshua Zinn	Field delineation and groundtruthing features
10-06-2009	Joshua Zinn	Field delineation and groundtruthing features for the additional 1.2-mile portion of the water pipeline corridor disturbance area that was not previously surveyed in March 2009.

Field delineation at the site during the March 2009 surveys involved two field teams, each with two ecologists. Field delineation at the site during October 2009 survey involved one ecologist. Teams and individuals recorded the presence (including extents, types, and boundaries) of jurisdictional waters with two Trimble XH sub-foot accuracy Global Positioning System (GPS) units. At the close of each field day, all acquired field data were submitted via the internet to EDAW San Diego’s geographic information systems (GIS) specialists for post-field processing using Trimble GPS Analyst (Version 2.1) GIS software. Post-field analysis to code, define, designate, and edit all acquired GPS field data representing jurisdictional waters occurring within the disturbance area was conducted in tandem with an EDAW GIS specialist and the ecologists who performed the fieldwork.

⁵ Through field surveys, topographical and hydrological investigation, and analysis, EDAW determined that the facility footprint does not support jurisdictional waters of the U.S. A formal determination for the absence of Federal waters occurring within the facility footprint is currently being pursued through documentation (Jurisdictional Determination) with USACE.

⁶ The disturbance area includes the additional 5.2-mile pipeline corridor disturbance area, which was added in October 2009.

Jurisdictional Waters of the U.S.

Jurisdictional waters of the U.S. are defined in 33 CFR. 328.3 (Definitions). The disturbance area has the potential for the presence of, at a minimum, two types of federally regulated waters, warranting the following:

1. Formal delineations for waters of the U.S. in the form of wetlands based on the three-parameter method.⁷ The three-parameter method for identifying and delineating wetlands is outlined in and in accordance with Federal guidance and procedure following the *Corps of Engineers Wetlands Delineation Manual* (Manual) (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (2008 Supplement) (Environmental Laboratory 2008).⁸
2. Formal delineations for other waters of the U.S. to define and identify the jurisdictional lateral extent of nonwetland waters using field indicators of ordinary high water mark (OHWM) as defined by 33 CFR 238.3(e), Federal guidance and procedure outlined in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (USACE 2008),⁹ and other relevant Federal guidance and procedural documents (see below).

This jurisdictional delineation applied two field methodologies in delineating potential jurisdictional waters of the U.S. as described below. All potential waters of the U.S. were delineated to their jurisdictional limits as defined by 33 CFR 328.4 (Limits of Jurisdiction).

Methodology One: To make a determination that an area is a wetland, the Manual requires that under “normal circumstances” a minimum of one primary wetland indicator be confirmed for each of the three wetland parameters (Environmental Laboratory 1987). Pre-field surveys and a detailed field reconnaissance were conducted to ascertain and confirm the presence or absence of any one of the three wetland parameters occurring within the disturbance area (Table 5). Once pre-field surveys and field reconnaissance were completed, it was determined that no hydrophytic vegetation or wetland hydrology occurred within the disturbance area. Therefore, it was determined that a formal delineation for wetlands would not be required, as no potential for jurisdictional waters of the U.S. in the form of wetlands was present within the disturbance area.

⁷ The three-parameter method is the simultaneous presence (co-occurrence) of wetland hydrology, hydric soil, and hydrophytic vegetation.

⁸ The Manual and 2008 Supplement are guidance documents for delineating jurisdictional waters in the form of wetlands only.

⁹ Datasheets from this field delineation manual were used as guidance documents for this delineation and are not included in this JDR.

However, the Arid West region is dominated by watersheds with intermittent and ephemeral dry washes, such as the one occurring within the disturbance area. Consequently, many aquatic resources lack the three characteristic features of a wetland, but they still perform important wetland functions (USACE 2007).¹⁰

Table 5
Survey Results for Potential Jurisdictional Waters of the U.S.
in the Form of Wetlands^a Occurring within the Survey Area

Vegetation Community	Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Potential Federal Waters	Potential State Waters	Comments
Mojave Desert Wash Scrub	No	Likely (soil polygons and mapping are unconfirmed by NRCS)	No	No	Yes	Confirm Federal jurisdictional status with JD

^a As defined by 33 CFR 328.3(b); 40 CFF 230.3(t); the Manual; and the 2008 Supplement.

Methodology Two: OHWM indicators were used to delineate the lateral jurisdictional extent of potential waters of the U.S. Lateral jurisdictional limits were established for all drainage features/channels occurring within the disturbance area in conjunction with field verification for a determination of the OHWM, which provides an acceptable estimate for the lateral jurisdictional limits. The OHWM of the drainage features/channels was identified on the basis of the following:

- Water marks within their respective channel banks established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the banks;
- Scour and shelving, local deposition, distinct and indistinct terraces, and changes in the character of soil;
- The presence of developed longitudinal bars within channel margins;
- Type, abundance, and relative age of vegetation and/or destruction of terrestrial vegetation, and the presence and absence of litter and debris within the channels;

¹⁰ Based upon field reconnaissance. Wetland Determination Data Forms were used as guidance documents for this delineation and are not included in this JDR, as the survey area did not support any one of the three wetland parameters.

-
- Channel configuration, estimated streamflow behavior, and other subtle geomorphic evidence indicative of regular flow levels;
 - Consideration of precipitation patterns and lack of consistent flow;
 - Geomorphic OHWM indicators (e.g., surface relief, cobblebars, benches, crested ripples, particle size distribution, gravel sheets, desert pavement, and dunes); and
 - Pattern and location of relictual channels and discontinuous drainage features.

The criteria for frequency and duration of the OHWM have not been defined under the CWA or under any guidance from USACE for field delineators; therefore, identifiable field indicators and characteristics of OHWM, best professional judgment, interpretation of 33 CFR 328.3(e), and appropriate Regulatory Guidance Letters (RGLs) were applied to determine the potential jurisdictional extent of OHWM within the disturbance area. Arid West channels have recently been described as “ordinary” when they typically correspond to a 5- to 8-year event, and typically have an active floodplain with sparse vegetation cover, shifts in soil texture, and occasional alignment with distinctive bed and bank features (USACE 2007). However, modeling has shown that slightly larger events (5- to 10-year recurrence) may be necessary to engage the active floodplain in arid systems (Lichvar et al. 2006).

OHWM and the limits of jurisdiction are discussed in the Preamble to the USACE November 13, 1986, Final Rule, Regulatory Programs of the Corps of Engineers, Federal Register Volume 51, No. 219, page 41217, which discusses the proper interpretation of 33 CFR Part 328.4 (c)(1) as follows:

Section 328.4: *Limits of Jurisdiction*. Section 328.4 (c)(1) defines the lateral limit of jurisdiction in non-tidal waters as the OHWM provided the jurisdiction is not extended by the presence of wetlands. Therefore, it should be concluded that in the absence of wetlands the upstream limit of Corps jurisdiction also stops when the OHWM is no longer perceptible.

In addition, RGL 88-06, issued June 27, 1988, discussed the OHWM as follows:

OHWM: The OHWM is the physical evidence (shelving, debris lines, etc.) established by normal fluctuations of water level. For rivers and streams, the

OHWL is meant to mark the within-channel high flows, not the average annual flood elevation that generally extends beyond the channel.¹¹

RGL 05-05, issued December 7, 2005, discusses the field practice and practicability of identifying, determining, and applying the OHWM for nontidal waters under Section 404 of the CWA (and under Sections 9 and 10 of the Rivers and Harbors Act of 1899), and states the following:

Where the physical characteristics are inconclusive, misleading, unreliable, or otherwise not evident, districts may determine OHWM by using other appropriate means that consider the characteristics of the surrounding areas, provided those other means are reliable.¹² Such other reliable methods that may be indicative of the OHWM include, but are not limited to, lake and stream gage data, elevation data, spillway height, flood predictions, historic records of water flow, and statistical evidence.

Many stream channels in arid regions are dry for much of the year and, at times, may lack hydrology indicators entirely or exhibit relic OHWM features from exceptional hydrological events. RGL 05-05 further states the following:

When making OHWM determinations, districts should be careful to look at characteristics associated with ordinary high water events, which occur on a regular or frequent basis. Evidence resulting from extraordinary events, including major flooding and storm surges, is not indicative of OHWM. For instance, a litter or wrack line resulting from a 200-year flood event would in most cases not be considered evidence of an OHWM.

Jurisdictional Determination

Determining whether the delineated waters within the disturbance area are in fact jurisdictional waters of the U.S. and under the regulatory administration of USACE (including the final

¹¹ Following RGL 05-06 (Expired RGLs). Unless superseded by specific provisions of subsequently issued regulations or RGLs, the guidance provided in RGLs generally remains valid after the expiration date as discussed in the Federal Register notice on RGLs of March 22, 1999, FR Vol. 64, No. 54, page 13783.

¹² In some cases, the physical characteristics may be misleading and would not be reliable for determining the OHWM. For example, water levels or flows may be manipulated by human intervention for power generation or water supply. For such cases, districts should consider using other appropriate means to determine the OHWM (RGL 05-05).

acreages and types of jurisdictional waters of the U.S.) is primarily based on the procedural changes and Federal guidance outlined by the following:¹³

- a. The May 30, 2007, USACE *Jurisdictional Determination Form Instructional Guidebook* (USACE/USEPA 2007) and the Approved JD Form.
- b. The June 5, 2007, USACE/USEPA Memorandum Re: Jurisdiction Following The U.S. Supreme Court Decision In *Rapanos v. United States* on the interpretation of the *Rapanos* Supreme Court case for making a Jurisdictional Determination (JD) for waters of the U.S. (including wetlands) (USEPA/USACE).^{14,15} This memorandum provides guidance to USEPA and USACE on implementing the *Rapanos* Supreme Court decision.
- c. The June 5, 2007, USEPA/USACE Memorandum for the Field: Coordination on JDs under CWA in light of *SWANCC*¹⁶ and *Rapanos* Supreme Court decisions.¹⁷ This memorandum outlined procedures that replace the coordination procedures contained in the January 2003 USEPA/USACE guidance implementing the *SWANCC* decision (but leaves the remainder of that guidance unaffected) and articulates new coordination procedures for JDs affected by *Rapanos* (USEPA/USACE).¹⁸
- d. The January 28, 2008, Coordination Memorandum. This memorandum outlined the process for coordinating JDs with USEPA and USACE.
- e. The June 26, 2008, USACE RGL 08-02. This RGL explains the differences between Approved JDs and Preliminary JDs, and provides guidance on when an Approved JD is required and when a landowner, permit applicant, or other “affected party” can decline to request and obtain an Approved JD and elect to use a Preliminary JD instead.¹⁹
- f. The December 2, 2008, USACE Guidance Memorandum Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision In *Rapanos v. United States & Carabell v. United States*. This guidance incorporates revisions to the USEPA/USACE

¹³ This delineation followed these procedural guidance documents to ascertain the jurisdictional status of all delineated waters occurring within the facility footprint.

¹⁴ “Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in *Rapanos v. United States & Carabell v. United States*” (June 5, 2007).

¹⁵ 126 S. Ct 2208 (2006). This case was consolidated with *Carabell v. United States*.

¹⁶ *Solid Waste Agency of Northern Cook County [SWANCC] v. United States Army Corps of Engineers* (531 U.S. 159, 121 S Ct 675 [2001]).

¹⁷ “Memorandum for Director of Civil Works and US EPA Regional Administrators” (June 5, 2007).

¹⁸ “Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in *Rapanos v. United States & Carabell v. United States*” (June 5, 2007).

¹⁹ RGL 08-02 outlines that Preliminary JDs cannot be appealed.

Memorandum originally issued on June 6, 2007, after careful consideration of public comments received and based on the agencies' experience in implementing the *Rapanos* decision.

- g. The December 2, 2008, USACE Response To Comments "Clean Water Act Jurisdiction Following The Supreme Court's Decision In *Rapanos v. United States & Carabell v. United States Guidance*" Issued June 5, 2007.
- h. The December 2, 2008, USACE Questions and Answers Regarding the Revised *Rapanos & Carabell* Guidance.

For this JDR, the formal procedure for a JD requires the submittal of an Approved JD Form (Attachment 2) to USACE (Los Angeles District, South Coast Branch) following Federal guidance, as applicable. Based on the results of the delineation and Federal guidance outlined above, this JDR was prepared to provide support to USACE in formal determination of all waters delineated within the disturbance area as isolated waters, and thus not under regulatory administration by USACE for the following reasons:

1. All ephemeral washes delineated within and beyond the disturbance area abate into the landscape north of U.S.-395 and become a discontinuous ephemeral wash.
2. No ephemeral wash delineated within the disturbance area directly connected with the China Lake which is itself a desert sink with no identifiable outlet.
3. The lack of hydrological connectivity of the ephemeral washes into storm drains, culverts, or ditches (no storm drains are present within the disturbance area).
4. The lack of hydrological connectivity (presenting a significant nexus [SNX] to any traditional navigable waterbody [TNW]) for washes occurring within the disturbance area.
5. The evaluation of the ephemeral washes not presenting an SNX to a TNW include the volume, duration, and frequency of the flow of water to a TNW (the Mojave River is approximately 45 miles southwest of the disturbance area).
6. Examination of the flow characteristics and functions of ephemeral washes (which do not support adjacent wetlands) has been determined not to present a significant effect on the chemical, physical, and biological integrity of downstream TNWs.
7. Lack of an ecological connection to TNWs. The ephemeral washes present a low to no potential or capacity to transfer nutrients and organic carbon (vital to support downstream foodwebs [e.g., macroinvertebrates] present in headwater streams or to

convert carbon in leaf litter making it available to species downstream), and do not present habitat services such as providing spawning areas for recreationally or commercially important species in downstream waters.

Jurisdictional Waters of the State

Under Section 1600 et seq. of the CFGC, the CDFG regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFG jurisdiction are defined in CFGC Section 1600 et seq. as the “bed, channel or bank of any river, stream or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit.”²⁰ However, in practice, CDFG usually extends its jurisdictional limit and assertion to the top of a bank of a stream, the bank of a lake, or outer edge of the riparian vegetation, whichever is wider.

Boundaries for xeric riparian waters of the State were determined (and recorded) by the presence of shelving and/or scour resulting in an established bank, bed, and channel of an ephemeral wash feature and its associated riparian areas (where applicable). In specific areas within the ephemeral wash channels, where evidence of shelving or scour was absent, subsurface investigations were undertaken to identify established channel banks. Although some portions of the ephemeral washes present shelving with smooth-toe transitions, these features are composed of friable sand and are evidence of recent sand deposition covering the bank features.

For wetlands and other aquatic habitats occurring in California, CDFG relies on the U.S. Fish and Wildlife Service (USFWS) wetland definition and classification system, which is based on *Classification of Wetland and Deepwater Habitats of the United States* (Cowardin et al. 1979). Therefore, jurisdictional wetland delineations within the disturbance area have been conducted based on the one-parameter²¹ method outlined in CDFG/USFWS guidance documents and classification manual(s) to define presence and State jurisdictional extent. The Cowardin method requires diligence to avoid false positive conclusions (e.g., concluding that an area with no

²⁰ The California Code of Regulations (Title 14 CCR 1.72) defines a stream as: “...a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation.”

²¹ For Federal jurisdictional waters, a determination for the presence of wetland is based on the presence of three parameters occurring simultaneously at the area of investigation and study. These three wetland parameters are 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. Therefore, for State-defined wetlands, only one of these three wetland criteria is required to be present for the State to consider an aquatic feature a wetland.

transitional relation to the aquatic system is a wetland based on presence of vegetation equally likely to be found in wetland or nonwetland circumstances).²²

Based on the CFGC Section 1600 et seq. definition and CDFG regulatory practice, field diagnostic features were used to determine and delineate the presence of two types of jurisdictional waters, which collectively and individually represent the jurisdictional extent, occurring within the disturbance area:

1. Mojave Desert Wash Scrub and
2. Unvegetated Ephemeral Dry Wash.

Mojave Desert Wash Scrub

The jurisdictional limits of Mojave Desert wash scrub was considered, recorded, and mapped for areas within all washes and wash features where the association of wash-dependent vegetation was present and/or where Mojave creosote bush scrub (Holland Code 34100) was not established at more than 5 percent absolute cover. The jurisdictional linear and lateral extent of Mojave Desert wash scrub occurring within the disturbance area is collectively composed of three xeric riparian features:

- i. Wash-dependent vegetation,
- ii. Vegetated ephemeral dry wash, and
- iii. Riparian interfluves.

Wash-Dependent Vegetation

Wash-dependent vegetation was considered, recorded, and mapped for ephemeral washes and Mojave Desert wash scrub occurring within the disturbance area. Subsampling of wash-dependent vegetation occurred for five selected portions (reaches) of the El Paso Wash occurring throughout the disturbance area (Table 6) (Figure 9) (Attachment 3). The MMU used for the wash-dependent vegetation subsampling was 0.01 acre. The wash-dependent vegetation occurring within Mojave Desert wash scrub is composed of one plant species²³: scale-broom (*Lepidospartum squamatum*).

²² Although aquatic features can be delineated and defined as wetlands under the Cowardin Classification System, they are not necessarily *jurisdictional* waters of the U.S. or State.

²³ Spiny senna (*Senna armata*) was observed in the El Paso Wash. However, occurrence was determined to be incidental and of low density. Additionally, the occurrence of spiny senna was less than the MMU (0.01) utilized

Table 6
Primary Ephemeral Wash-Dependent Vegetation Cover Subsampling^a

Subsampling Area	Vegetated ^b Ephemeral Dry Wash (MDWS)	Sampled ^b Wash-Dependent Vegetation (MDWS)	Riparian ^b Interfluvial (MDWS)	Total ^b Subsample Area (ωi)	% Cover Wash-Dependent Vegetation (χi)	(ωi*χi)
1	0.32	0.02		0.06	0.02	0.001
2	1.33	0.05		0.04	0.05	0.002
3	0.61	0.01		0.02	0.01	0.0002
4	0.57	0.04		0.07	0.04	0.003
5	0.29	0.02		0.06	0.02	0.001
<i>SUM(ωi*χi)</i>						0.14
<i>SUM ωi</i>						3.26
Weighted Mean = SUM (ωi*χi)/SUM ωi						0.043

^a A weighted arithmetic mean was calculated where the estimate of absolute cover (χ) equals the sum of each sample of absolute cover (χi) multiplied by the area of each sample, or the weight (ωi), divided by the sum of all weights. The formula used was: $\chi = \frac{\sum \omega_i(\chi_i)}{\sum \omega_i}$ OR $X = \frac{\omega_1(\chi_1) + \omega_2(\chi_2) + \omega_3(\chi_3) \dots}{\omega_1 + \omega_2 + \omega_3 \dots}$

^b In acres.

Using GPS units, field data points were taken for the one wash-dependent plant species occurring within the five designated subsampling areas of the Mojave Desert wash scrub. Their canopy diameters (individuals and mixed/monotypic stands) were recorded for absolute cover. For the five subsample areas within the El Paso Wash, a weighted arithmetic mean of percent cover for wash-dependent vegetation was calculated by dividing the total acres of the subsample area by the acres of mapped wash-dependent vegetation. An overall mean of the five subsample areas was then calculated. This percent cover was extrapolated to estimate total cover of wash-dependent vegetation occurring within Mojave Desert wash scrub of this primary wash.

Several modifications were made to the disturbance area after completion of spring 2009 surveys. The wash-dependent vegetation subsampling areas were initially chosen to obtain a comprehensive ecological perspective, with regard to the composition and distribution of the wash-dependent vegetation (as a component of Mojave Desert wash scrub) occurring within the original disturbance area. Considering the recent project footprint changes that have resulted in avoiding Mojave Desert wash scrub, the latest disturbance area now excludes subsampling area 1 which is located within the northwest portion of the original disturbance area (Figure 9).

for subsampling and thus was not included in determining the weighted average and absolute cover for wash-dependent vegetation occurring within the El Paso Wash.

The now excluded portion of subsampling area 1 was observed to contain densities of wash-dependent vegetation consistent with those present on site. Retaining these data creates a more conservative estimate of the wash-dependent vegetation acreage within the new disturbance area and preserves the statistical integrity of the original subsampling model. This is the rationale for retaining the weighted arithmetic mean depicted in Table 6, despite the aforementioned disturbance area modifications.

Vegetated Ephemeral Dry Wash

Vegetated ephemeral dry washes are desert washes that present an established bed, bank, and channel that support wash-dependent vegetation (see methodology for delineating unvegetated ephemeral dry wash, below).

Riparian Interfluves

Riparian interfluves are islands or terraces populated by wash-dependent vegetation or an intermix of wash-dependent vegetation and Mojave creosote bush scrub that are encompassed by vegetated and/or unvegetated ephemeral dry wash (see below) and Mojave Desert wash scrub (the xeric riparian extent). Riparian interfluves are considered a jurisdictional water (as a component of Mojave Desert wash scrub).

Unvegetated Ephemeral Dry Wash

Unvegetated ephemeral dry washes make up the other component of jurisdictional waters within the disturbance area. They are defined by shelving and/or scour resulting in an established bed, bank, and channel. In areas where evidence of distinct shelving and/or scour was absent, but some indication of past surface waterflow could be observed, it was ascertained that these features were either swales (that support low volume and duration surface flow and/or were low-lying, undefined, relatively linear features in the landscape that are unvegetated or primarily populated exclusively by Mojave creosote bush scrub) or eroded relictual washes (that support sheetflow) during rain events. Unvegetated ephemeral dry wash primarily does not support wash-dependent vegetation. There are sporadic occurrences of scale-broom individuals; however, based on the minimum mapping unit of 0.01 acre, these areas are unvegetated.

Jurisdictional lateral extents of the washes were determined by the farthest extents of the respective established channel bed and banks (including shelving and scouring) of each subchannel. The delineation of unvegetated ephemeral washes collectively includes all respective subchannels of each larger wash into linear ephemeral wash features for jurisdictional waters (see below). Jurisdictional linear extents of the washes were determined by the farthest extents of the established channel bed and banks (including shelving and scouring). When the established channel bed and banks began to transition into less distinct features, such as features that only support sheet flow, and/or features that began to blend into the landscape and/or reflect the features of a swale or relictual channel, jurisdictional linear extent(s) ceased.

All washes occurring within the disturbance area are generally linear. However, the washes are collectively made up of multiple subchannels of varying sizes, which exhibit sinuosity and interface, resulting in compound channel/anastomosed morphology. By virtue of the compound channel/anastomosed morphology occurring within the washes, there are interfluves that have been formed by these multiple subchannels. Within the unvegetated ephemeral dry wash, there are interfluves of Mojave creosote bush scrub habitat between the channels of the dry washes. These interfluves are upland features, encompassed by unvegetated ephemeral dry wash, and are not considered jurisdictional. In some cases channels appear to remain visible on a recent aerial map of the disturbance area (USDA 2005) beyond what was delineated. However, these areas were ground-truthed during spring 2009 to confirm that all evidence of bed, banks, scour, and shelving has abated within or beyond the disturbance area and/or the vegetation associated with swales occurring within the disturbance area is Mojave creosote bush scrub.

VI. RESULTS

A. Jurisdictional Waters of the U.S.

The disturbance area does not support or contain jurisdictional waters of the U.S. (Table 7). A summary of jurisdictional waters of the U.S. delineated within the disturbance area is provided in Table 8.

Table 7
Potential Jurisdictional Waters of the U.S. and State Occurring
within the Survey Area^a

Type of Jurisdictional Waters	Type of Habitat (Holland 1986)	Type of Habitat (Cowardin et al. 1979)	Area of Aquatic Resource in Disturbance Area ^b (ac) ^c
Jurisdictional Waters of the U.S.			
None	N/A	N/A	0.0
<i>Total USACE Waters =</i>			<i>0.0</i>
<i>Subtotal Jurisdictional Waters of the U.S.</i>			<i>0.0</i>
Jurisdictional Waters of the State			
Xeric Riparian Extent	Mojave Desert wash scrub (Holland Code 63700)	Palustrine; Scrub/Shrub, Broad-Leaved, Evergreen, Intermittently Flooded/ Temporary, Well Drained/Fresh, Alkaline	8.2
Ephemeral Channel	Unvegetated Ephemeral Dry Wash (e.g., Nonvegetated Channel [Holland Code 64200])	Riverine; Unconsolidated Bottom, Sand, Intermittently Flooded, Temporary, Well Drained/ Fresh, Alkaline	8.4
<i>Total CDFG Waters =</i>			<i>16.6</i>
<i>Subtotal Jurisdictional Waters of the State</i>			<i>16.6</i>
Grand Total Jurisdictional Waters			16.6

^a Based on the total area of jurisdictional waters delineated within the disturbance area. Final acreages of jurisdictional waters of the U.S. will be based on the JD process undertaken by the USACE/USEPA to confirm the findings of this JDR (see table above). The total area of federally regulated waters may change after the formal JD process.

^b Disturbance area is based on the October 2009 design

^c Acreage of all jurisdictional waters occurring within the disturbance area was determined by using the GIS program ArcGIS. All acreages are rounded to the nearest tenth.

Table 8
Summary of Potential Jurisdictional Waters of the U.S. Occurring
within the Survey Area

Form of Jurisdictional Waters of the U.S.	Federal Regulatory Authority	Type of Habitat	Acres within the Survey Area		
			Disturbance Area ^a	Surveyed, No Longer a Part	Total Survey Area
None	N/A	N/A	0.0	0.0	0.0
Total			0.0	0.0	0.0

^a Disturbance area is based on the October 2009 Project design.

B. Jurisdictional Waters of the State

All Mojave Desert wash scrub and unvegetated ephemeral dry desert washes within the disturbance area were delineated as waters of the State. Jurisdictional waters were mapped on a current aerial photograph at a scale of 1 inch = 750 feet (Figure 10.); an enlarged map at a scale of 1 inch = 500 feet is also provided (Figure 11). Photo locations occurring within the disturbance area are included in Figure 12. Survey area photos are included in Figures 13 through 18. Waters of the State were not delineated outside of the disturbance area.

There are smaller ephemeral washes occurring within the disturbance area. These ephemeral washes primarily parallel the El Paso Wash and could be considered a component of this large ephemeral wash. Virtually all the ephemeral washes occurring within the disturbance area exhibit a southeast to northeast flow orientation with the El Paso Wash extending up to approximately 17,000 feet. All ephemeral washes occurring within the disturbance area eventually abate (terminate) into the desert landscape. The El Paso Wash is the only feature that supports Mojave Desert wash scrub within the disturbance area. Unvegetated ephemeral dry wash, which is primarily devoid of wash-dependent plant species due to less availability of surface and subsurface hydrology, primarily occurs within the east and southeast portions of the disturbance area.

The total area of all waters of the State delineated within the disturbance area is 16.6 acres (Table 7). A summary of jurisdictional waters of the State delineated within the disturbance area is provided in Table 9. Of the 16.6 acres of jurisdictional waters of the State, 8.2 acres are composed of Mojave Desert wash scrub and 8.4 acres are composed of unvegetated ephemeral dry wash. Based on wash-dependent vegetation subsampling for the primary wash (4.3 percent absolute cover [0.4 acre wash-dependent vegetation]) the 8.2 acres of Mojave Desert wash scrub occurring within the disturbance area is composed of 0.4 acre of wash-dependent vegetation (Attachment 3). The 0.4 acre absolute cover of wash-dependent vegetation is a separate component of the Mojave Desert wash scrub, which is distributed throughout the 7.8 acres of vegetated ephemeral dry wash occurring (Table 10). No riparian interfluves were mapped within the Mojave Desert wash scrub.

Table 9
Summary of Potential Jurisdictional Waters of the State Occurring
within the Survey Area^a

Form of Jurisdictional Waters of the State	Regulatory Authority	Type of Habitat	Area of Aquatic Resource in Disturbance Area ^b (ac) ^c
Xeric Riparian Extent	CDFG, RWQCB	Mojave Desert wash scrub	8.2
Unvegetated Washes	CDFG, RWQCB	Ephemeral Drainage Features	8.4
Total			16.6

^a Based on the total area of jurisdictional waters delineated within the disturbance area. Final acreages of jurisdictional waters of the U.S. will be based on the JD process undertaken by the USACE/USEPA to confirm the findings of this JDR (see above). The total area of federally regulated waters may change after the formal JD process.

^b Disturbance area is based on the October 2009 Project design.

^c Acreage of all jurisdictional waters occurring within the disturbance area was determined by utilizing the GIS program ArcGIS. All acreages are rounded to the nearest tenth.

Table 10
Components of Jurisdictional Waters of the State Occurring
within the Disturbance Area^a

Type of Jurisdictional Waters	Acres
Unvegetated Ephemeral Dry Wash	8.4
Mojave Desert Wash Scrub	8.2
<i>Wash-Dependent Vegetation</i>	<i>0.4^b</i>
<i>Riparian Interfluve</i>	<i>0.0^b</i>
<i>Vegetated Ephemeral Dry Wash</i>	<i>7.8^b</i>
Total	16.6

^a Disturbance area is based on the October 2009 Project design. Acreage of all components of jurisdictional waters occurring within the disturbance area was determined by utilizing the GIS program ArcGIS. All acreages are rounded to the nearest tenth.

^b Acreage for wash-dependent vegetation occurring within the primary wash was extrapolated based on weighted mean cover obtained through subsampling of 8.2 acres of Mojave Desert wash scrub and multiplying this figure by the 4.3 percent weighted average of wash-dependent vegetation, which resulted in 0.4 acre of wash-dependent vegetation occurring within the disturbance area. The portion of wash-dependent vegetation that was mapped as riparian interfluves or vegetated ephemeral dry wash in the field was deleted from the acreages for riparian interfluves and vegetated ephemeral dry wash to accurately reflect the acreage of the components of Mojave Desert wash scrub. Of the 0.4 acre of wash-dependent vegetation, approximately 0.14 acre was physically mapped as a part of field subsampling, no extrapolated area was subtracted from riparian interfluves since none were present, and the remaining 0.3 acre of extrapolated area was subtracted from vegetated ephemeral dry wash (an expanded methodology is located in Attachment 3).

C. Discussion

Within the disturbance area, 16.6 acres of jurisdictional waters of the State have been delineated. For any activity proposing to adversely impact and discharge waste that could affect waters of the State, but do not affect Federal waters, issuance of the following permits by the requisite State resource agencies are required:

1. CFGC Section 1602 Lake and Streambed Alteration Agreement. CDFG regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. As conditional to this permit, mitigation will be required. Mitigation for unavoidable permanent impacts to jurisdictional waters within the disturbance area could be mitigated via a combination of methods. The mitigation could occur in the form of approved mitigation bank credits, an approved in-lieu fee program, conservation easement(s), and/or jurisdictional habitat creation-restoration (that results in a net increase in jurisdictional habitat acreage), enhancement, or creation-restoration combined with enhancement; however, the mitigation could not result in a net loss of jurisdictional habitat or wetland functions and values. Project compliance with State policy, i.e., California Wetlands Conservation Policy (EO W-59-93), provides for “no overall net loss” of wetlands and achieving a “long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California.” Therefore, a minimum 1:1 creation-restoration ratio would be applied toward any impacts to jurisdictional waters. Project-specific mitigation ratios would be developed in consultation with CDFG.

As a requirement of the 1602 permit application, the development of a conceptual mitigation, maintenance, and monitoring plan would be required for the mitigation, which is a requirement of both the State 1602 permit applications. This plan should include details regarding site preparation (e.g., grading), planting specifications, and irrigation design, as well as maintenance and monitoring procedures. The plan should outline yearly success criteria and remedial measures should the mitigation effort fall short of the success criteria. Any riparian mitigation that cannot be achieved through onsite creation-restoration and enhancement should be performed off site, typically per agency guidance within the same hydrologic unit (watershed) where impacts occur. Alternatively, the mitigation obligations may also be satisfied by participating in a fee-based mitigation program through a wetland mitigation bank. The proposed mitigation is subject to the resource agencies’ review and discretion; thus, the mitigation obligations for the impacts to jurisdictional wetland habitats may change from those recommended here.

-
2. CWC Section 13000 et seq. (Porter-Cologne) Waste Discharge Requirement (WDR). RWQCB regulates the “discharge of waste” to waters of the State.²⁴ The definition of the waters of the State is broader than that for waters of the U.S. in that all waters are considered to be a water of the State regardless of circumstances or condition. The term “discharge of waste” is also broadly defined in Porter-Cologne, such that discharges of waste include fill, any material resulting from human activity, or any other “discharge” that may directly or indirectly impact waters of the State. As conditional to this permit, Best Management Practices (BMPs) will be required to ensure compliance with State water quality standards. BMPs can also be specified by RWQCB, based on the report of waste discharge (ROWD) (filed with RWQCB by the applicant), which is authorized to regulate discharges of waste and fill material to waters of the State (including “isolated” waters and wetlands), through the issuance of a WDR.²⁵ WDRs are commonly issued based on the threshold of allowable pollutants into waters of the State.

Under Porter-Cologne, all applicants proposing to discharge waste that could affect the quality of waters of the State, other than into a community sewer system, shall file with the appropriate RWQCB an ROWD containing such information and data as may be required by RWQCB.²⁶ RWQCB will then respond to ROWD by issuing a WDR in a public hearing, or by waiving WDRs (with or without conditions) for that proposed discharge. RWQCB has a statutory obligation to prescribe WDRs, except where RWQCB finds that a waiver of WDRs for a specific type of discharge is in the public interest.²⁷ Therefore, all parties proposing to discharge waste that could affect waters of the State, but do not affect Federal waters (which requires a CWA Section 404 permit and CWA Section 401 Certification) must file an ROWD with the appropriate RWQCB prior to issuance of the WDR.²⁸

²⁴ “Waters of the State” is defined in CWC Section 13050(e).

²⁵ Section 13263 of Porter-Cologne. “Waters of the State” is defined in CWC Section 13050(e).

²⁶ CWC Section 13260(a).

²⁷ CWC Section 13269.

²⁸ CWC Section 13260.

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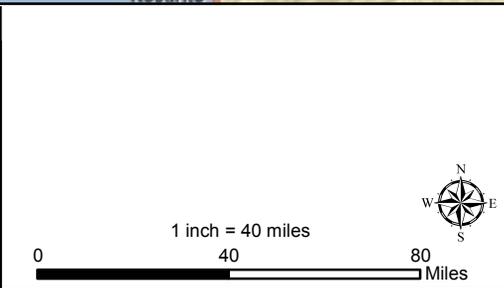
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ATTACHMENT 1

FIGURES

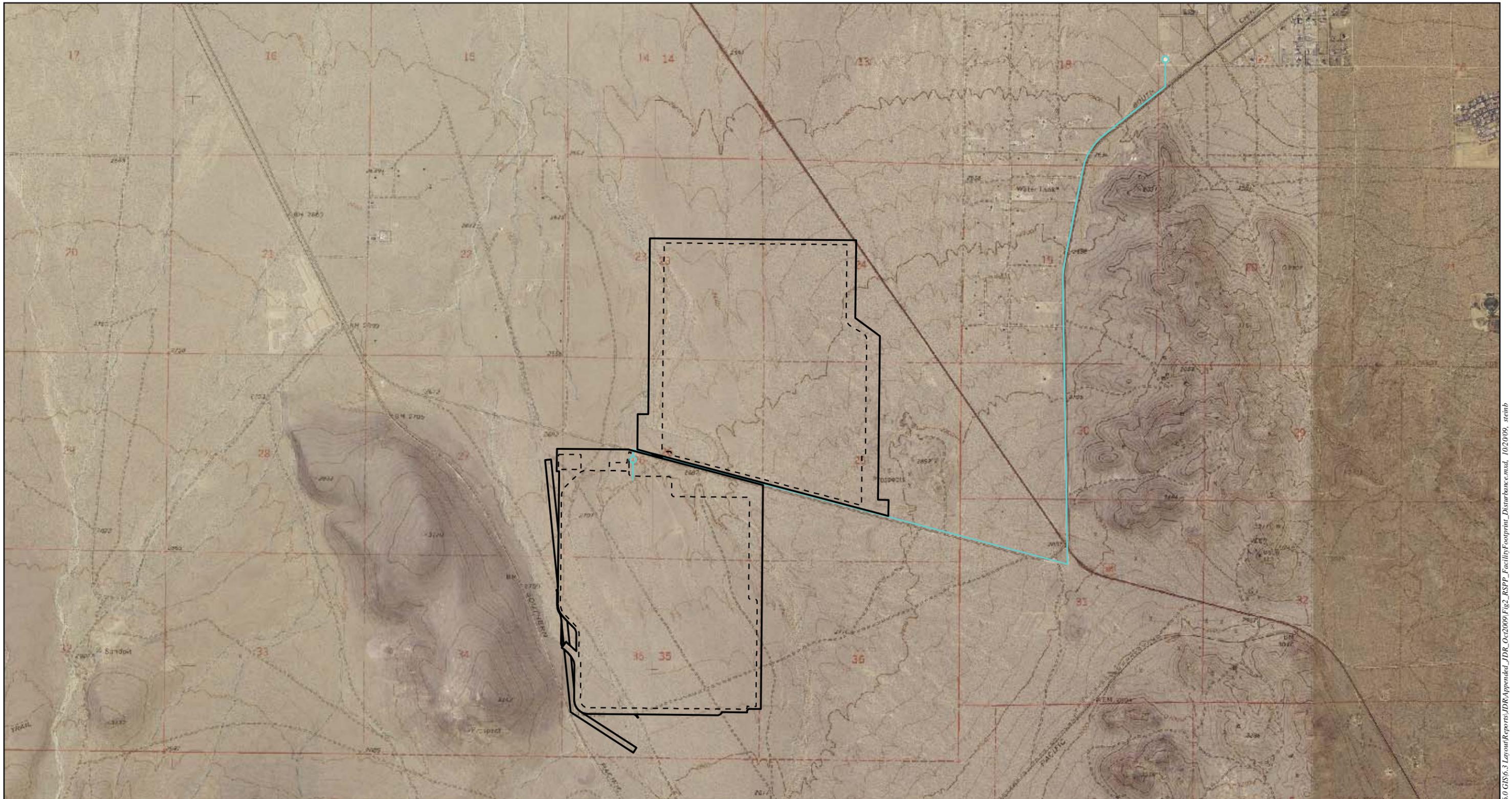


**Ridgecrest Solar Power Project
Jurisdictional Delineation Report**

**Figure 1
Regional Map**

Source: ESRI; AECOM 2009

Date: October 2009



Legend

Disturbance Area

- AFC Disturbance Area
- Water Line Corridor
- Facility Footprint

Source: USGS; NAIP 2005; AECOM 2009

N
W E
S

1 inch = 2,500 feet

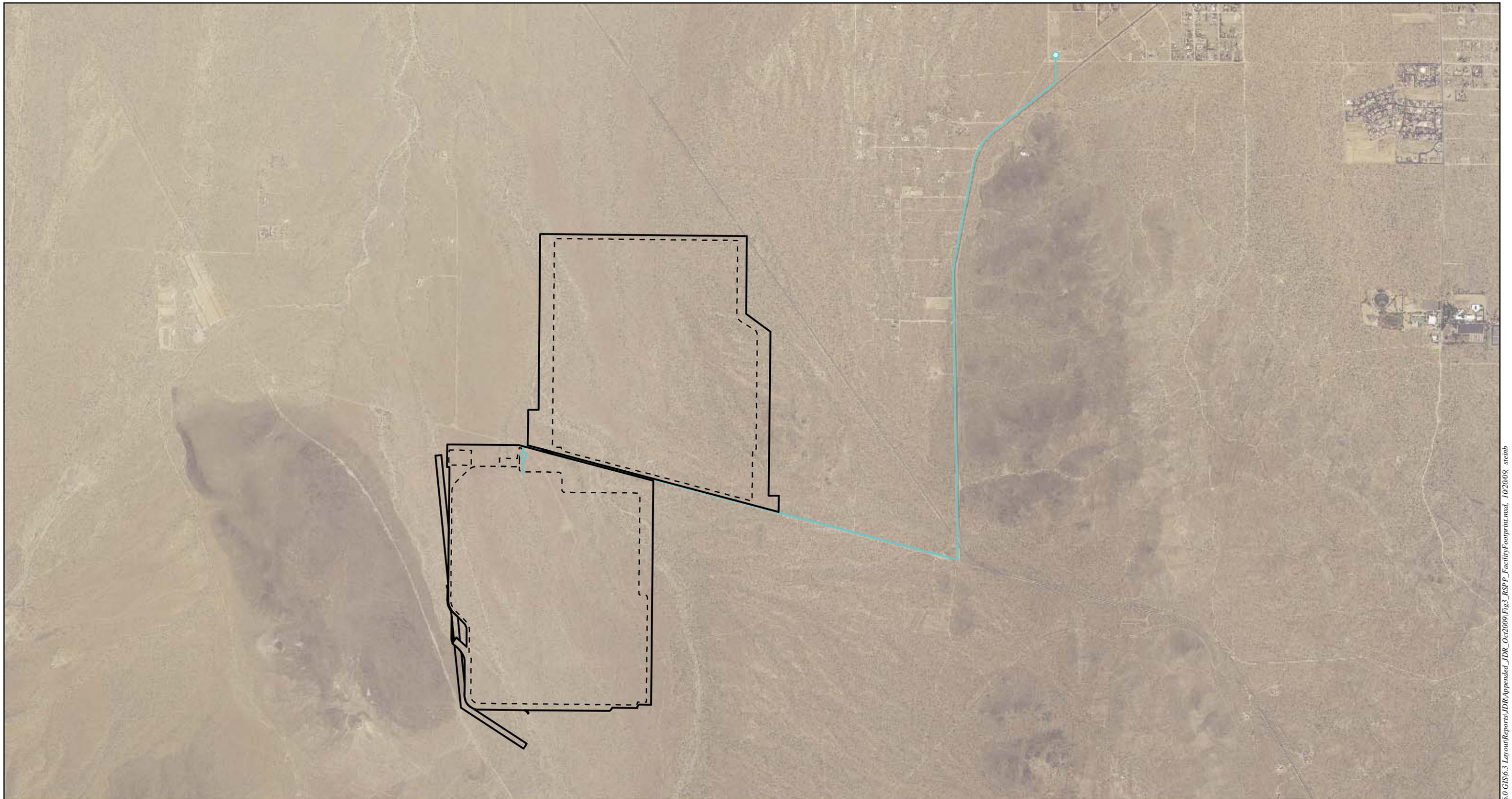
0 2,500 5,000 Feet

**Ridgecrest Solar Power Project
Jurisdictional Delineation Report**

**Figure 2
Facility Footprint and
Disturbance Area**




Date: October 2009



Legend

- AFC Disturbance Area
- Water Line Corridor
- Facility Footprint

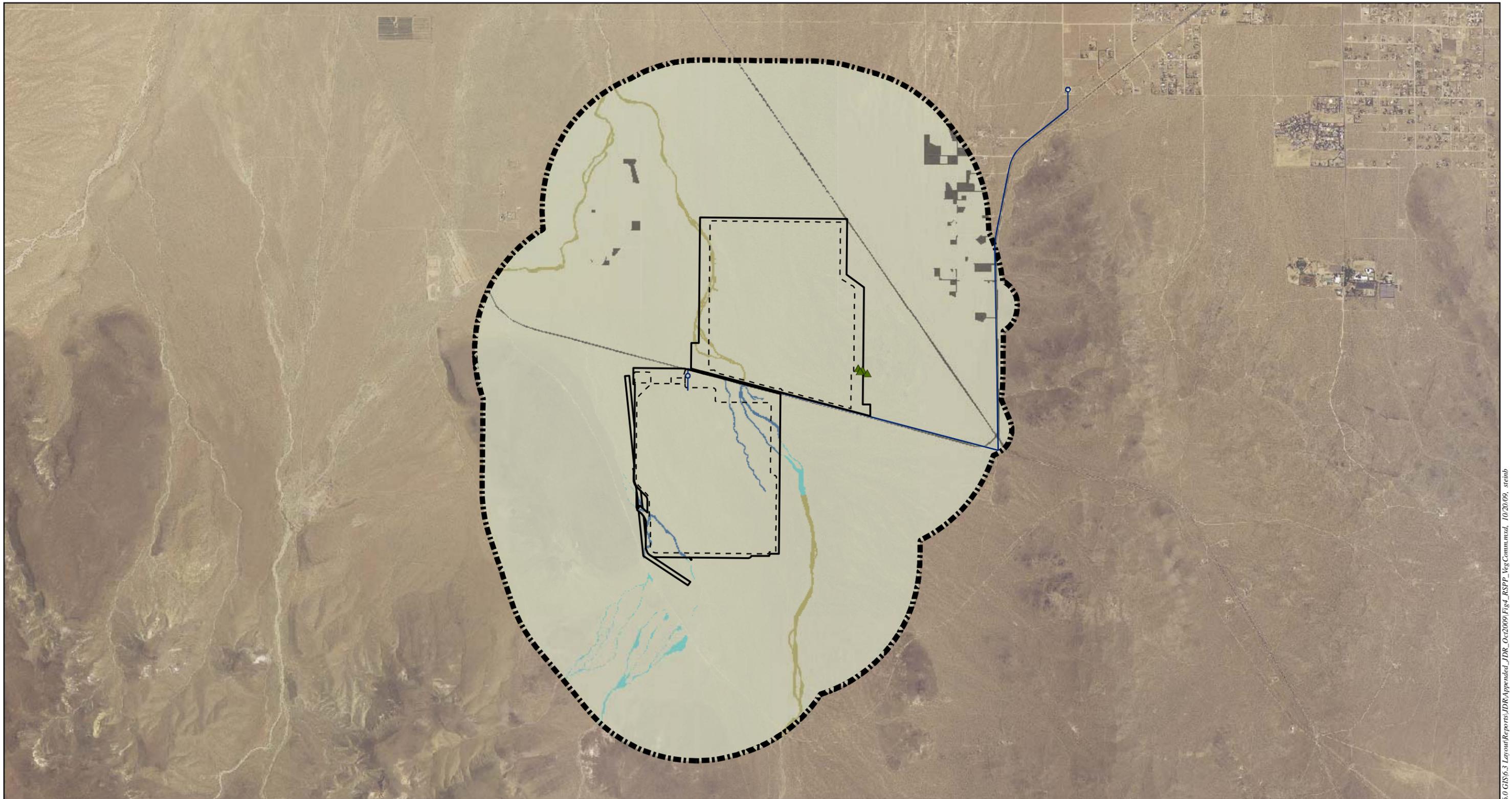
Source: NAIP 2005; AECOM 2009

1 inch = 2,500 feet

**Ridgecrest Solar Power Project
Jurisdictional Delineation Report**

**Figure 3
Facility Footprint**

Date: October 2009



Legend

- AFC Disturbance Area
- Water Line Corridor
- Facility Footprint
- Biological Resources Survey Area (BRSA)
- ▲ BLM Targeted Cactus Observations
 - ▲ Cottontop Cactus

Source: NAIP 2005; CNDDDB 2009; AECOM 2009; EDAW 2009

Vegetation Communities

Riparian

- Mojave Desert Wash Scrub
- Unvegetated Ephemeral Dry Wash
- Unvegetated Ephemeral Dry Wash (Presumed)¹

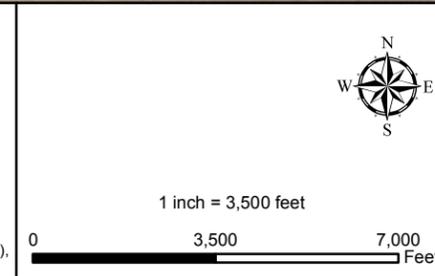
Upland

- Mojave Creosote Bush Scrub

Other

- Developed

¹ NOTE:
Due to minimum mapping unit within buffer (1.0 mile), these areas are presumed to be unvegetated.



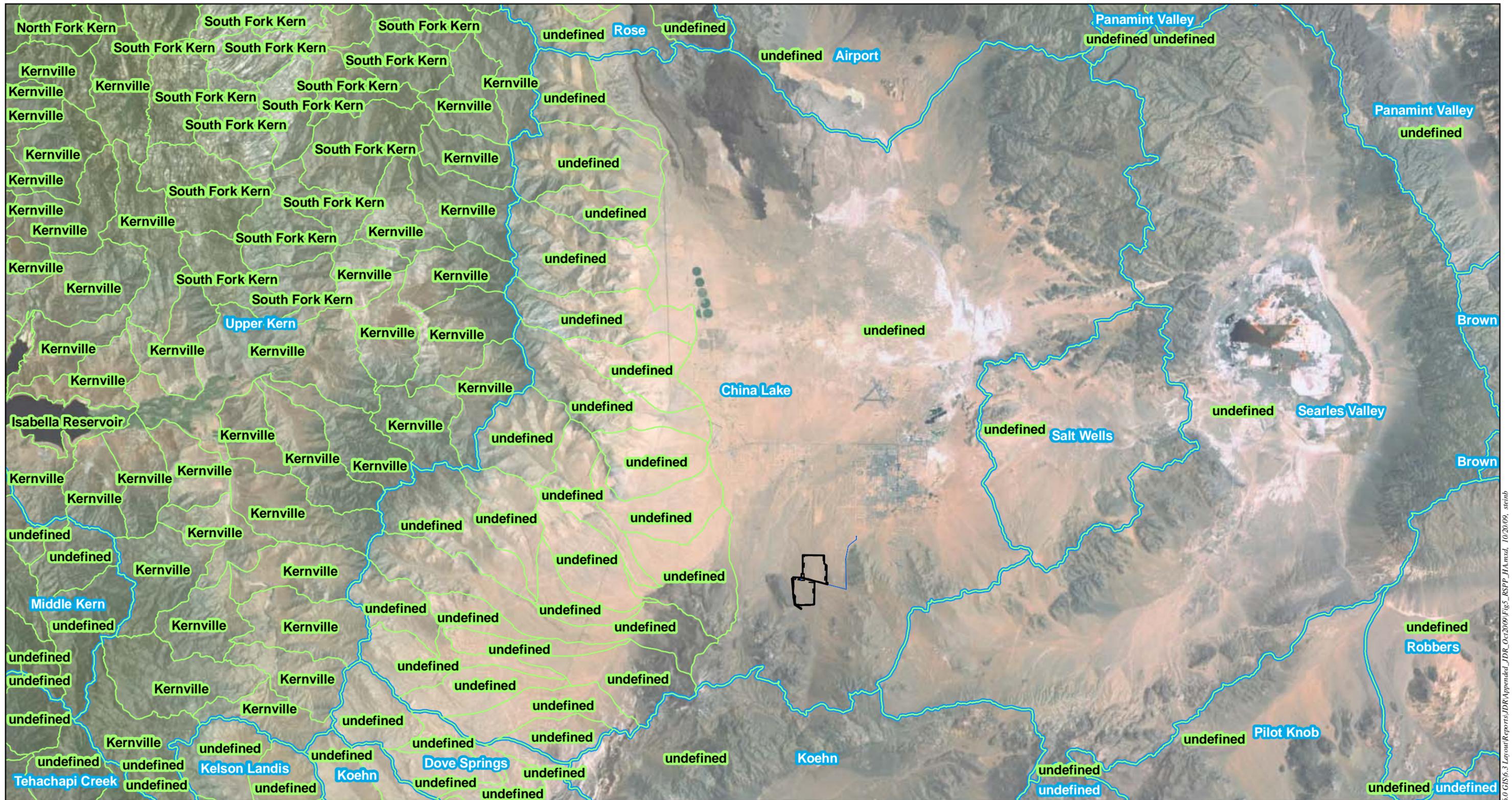
**Ridgecrest Solar Power Project
Jurisdictional Delineation Report**

**Figure 4
Vegetation Communities**

Solar Millennium

AECOM

Date: October 2009



Legend

- AFC Disturbance Area
- Hydrologic Areas (CDFG)
- Facility Footprint
- Hydrologic Subareas (CDFG)
- Water Line Corridor

Source: NAIP 2005; CDFG; AECOM 2009; EDAW 2009

1 inch = 24,000 feet

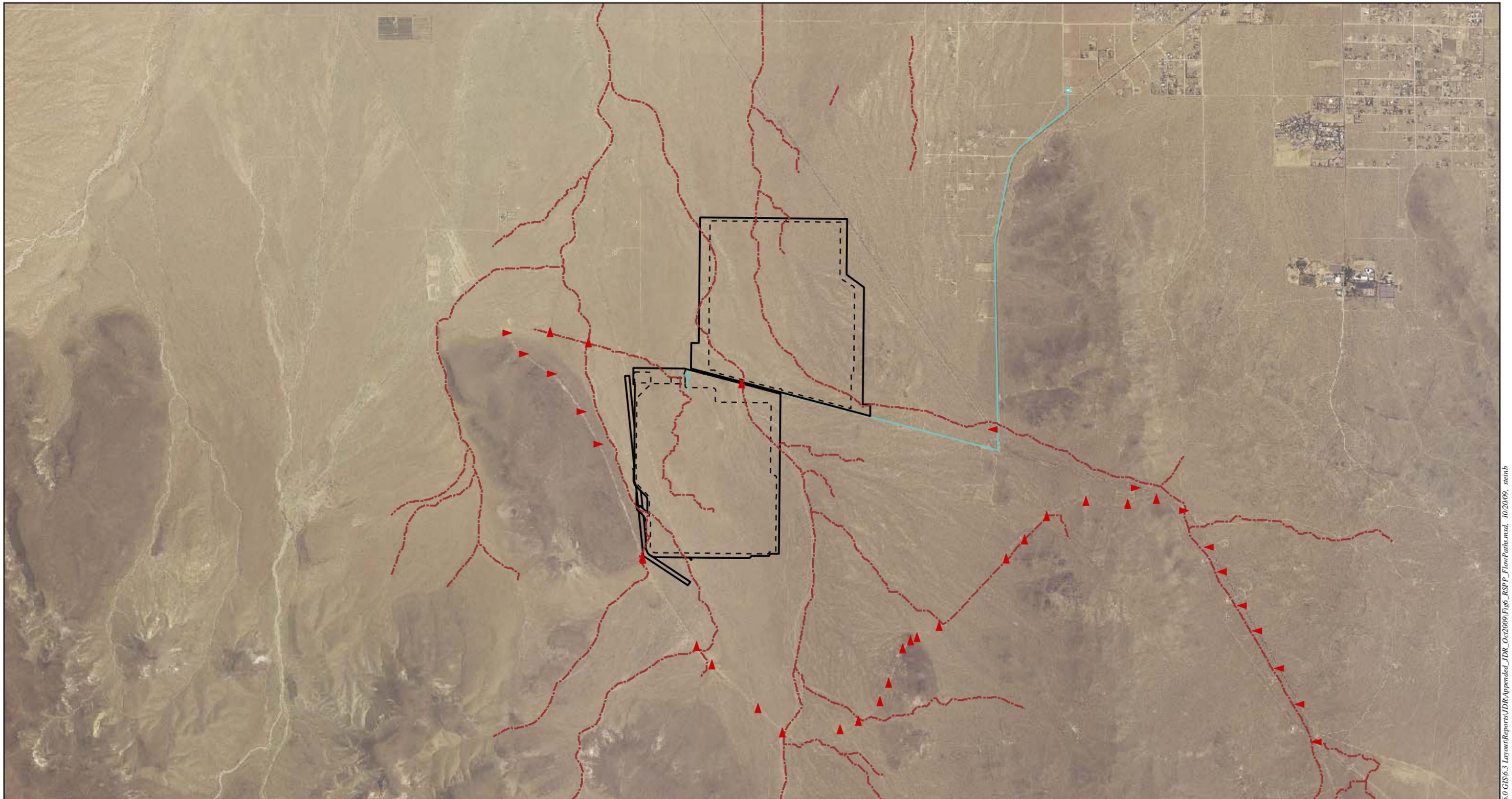
0 24,000 48,000 Feet

**Ridgecrest Solar Power Project
Jurisdictional Delineation Report**

**Figure 5
Hydrologic Areas**

Date: September 2009

Part 5: P:\2009\09080880 GIS\5.3 Layout Reports\DR\Appendix\DR_092009\Fig5_RSPP_HA.mxd, 10/20/09, steinh



Legend

Disturbance Area

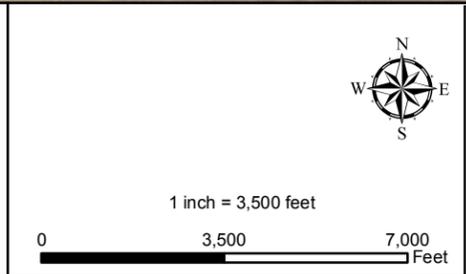
- AFC Disturbance Area
- Water Line Corridor
- Facility Footprint

Flow Line

Flow Direction

- - - Flow Line
- ▲ Northward
- ▶ Eastward
- ◀ Westward

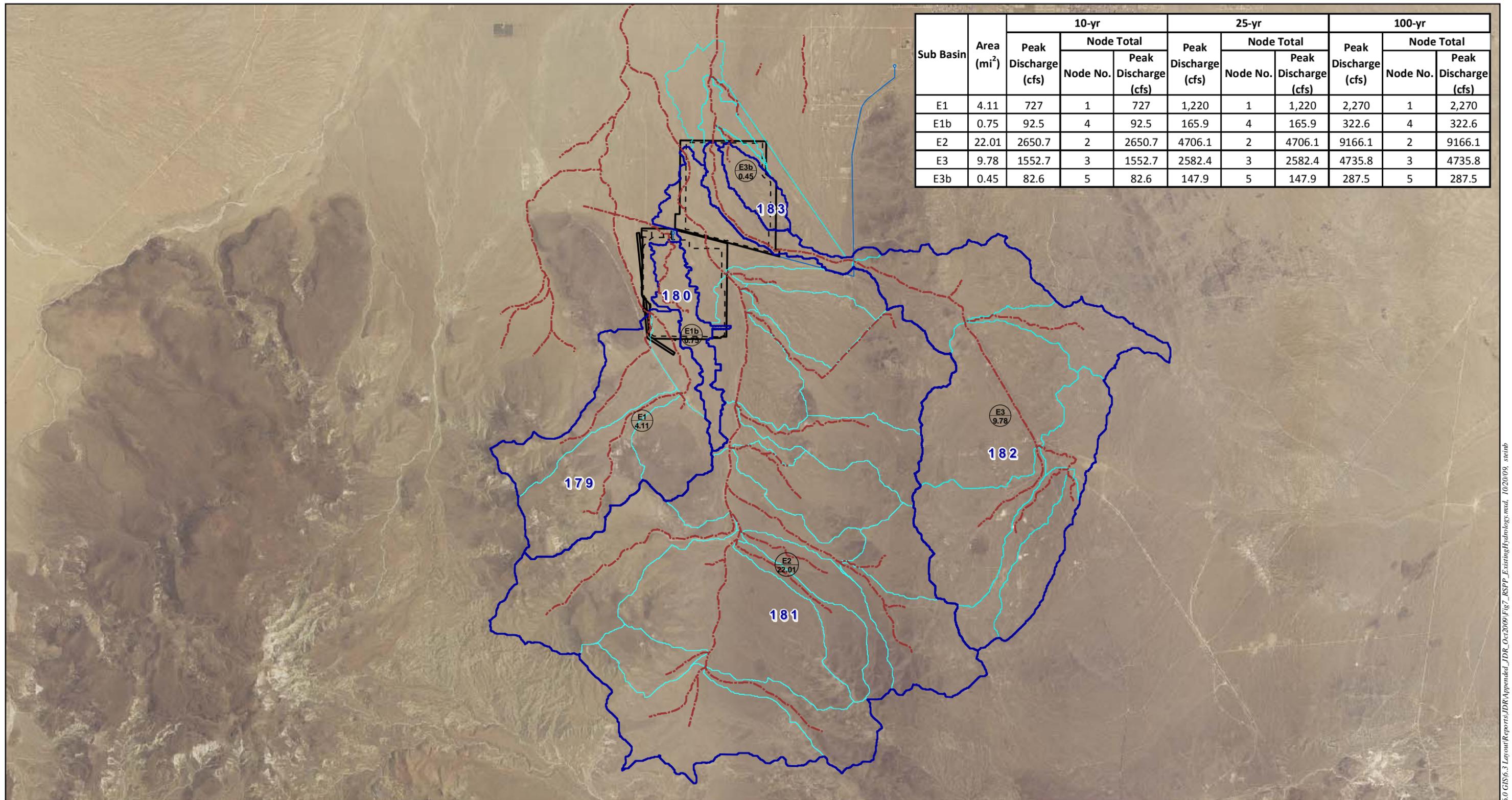
Source: NAIP 2005; AECOM 2009



Ridgecrest Solar Power Project
Jurisdictional Delineation Report

Figure 6
Flow Paths

Date: October 2009



Legend

- Disturbance Area**
 - AFC Disturbance Area (dashed black line)
 - Water Line Corridor (solid blue line)
 - Facility Footprint (dashed black line)
- Flow Line** (dashed red line)
- Existing Subwatersheds (Drainage Areas)** (solid blue line)

Source: NAIP 2005; AECOM 2009

EA 15.35 — DRAINAGE AREA NAME
— AREA (SQ. MILES)

NODE NUMBER 01 — Q = 100 YEAR DISCHARGE
— V = 100 YEAR VOLUME

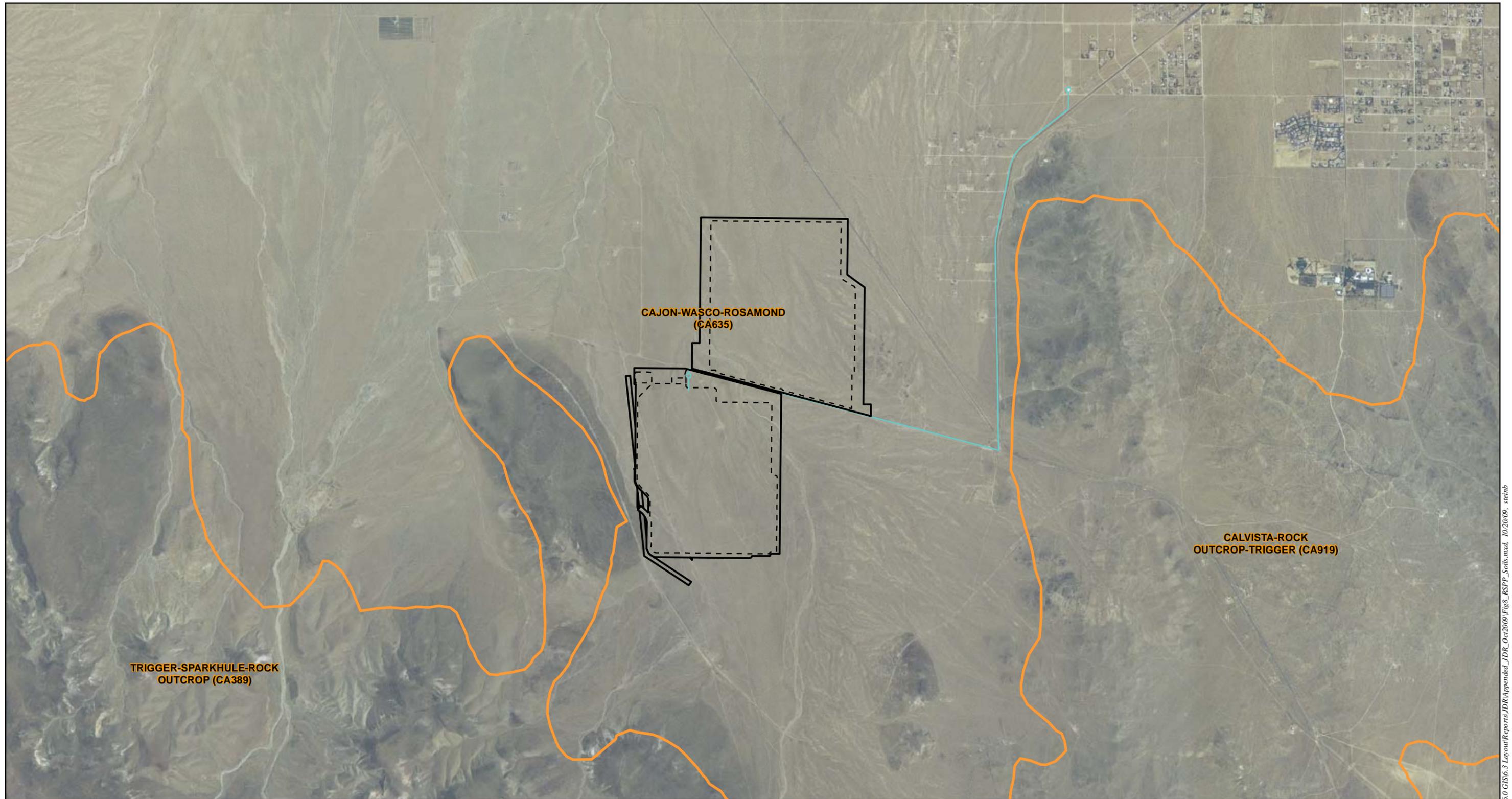
1 inch = 6,000 feet

0 6,000 12,000 Feet

**Ridgecrest Solar Power Project
Jurisdictional Delineation Report**

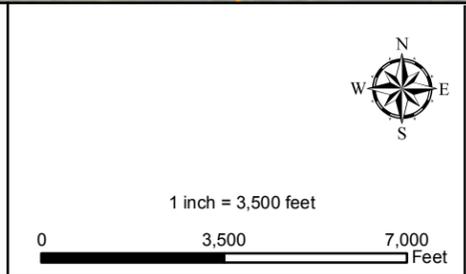
**Figure 7
Existing Hydrology**

Date: October 2009



Legend		Soil Types	
AFC Disturbance Area	CA389, TRIGGER-SPARKHULE-ROCK OUTCROP (CA389)	CA635, CAJON-WASCO-ROSAMOND (CA635)	
Water Line Corridor	CA919, CALVISTA-ROCK OUTCROP-TRIGGER (CA919)		
Facility Footprint			

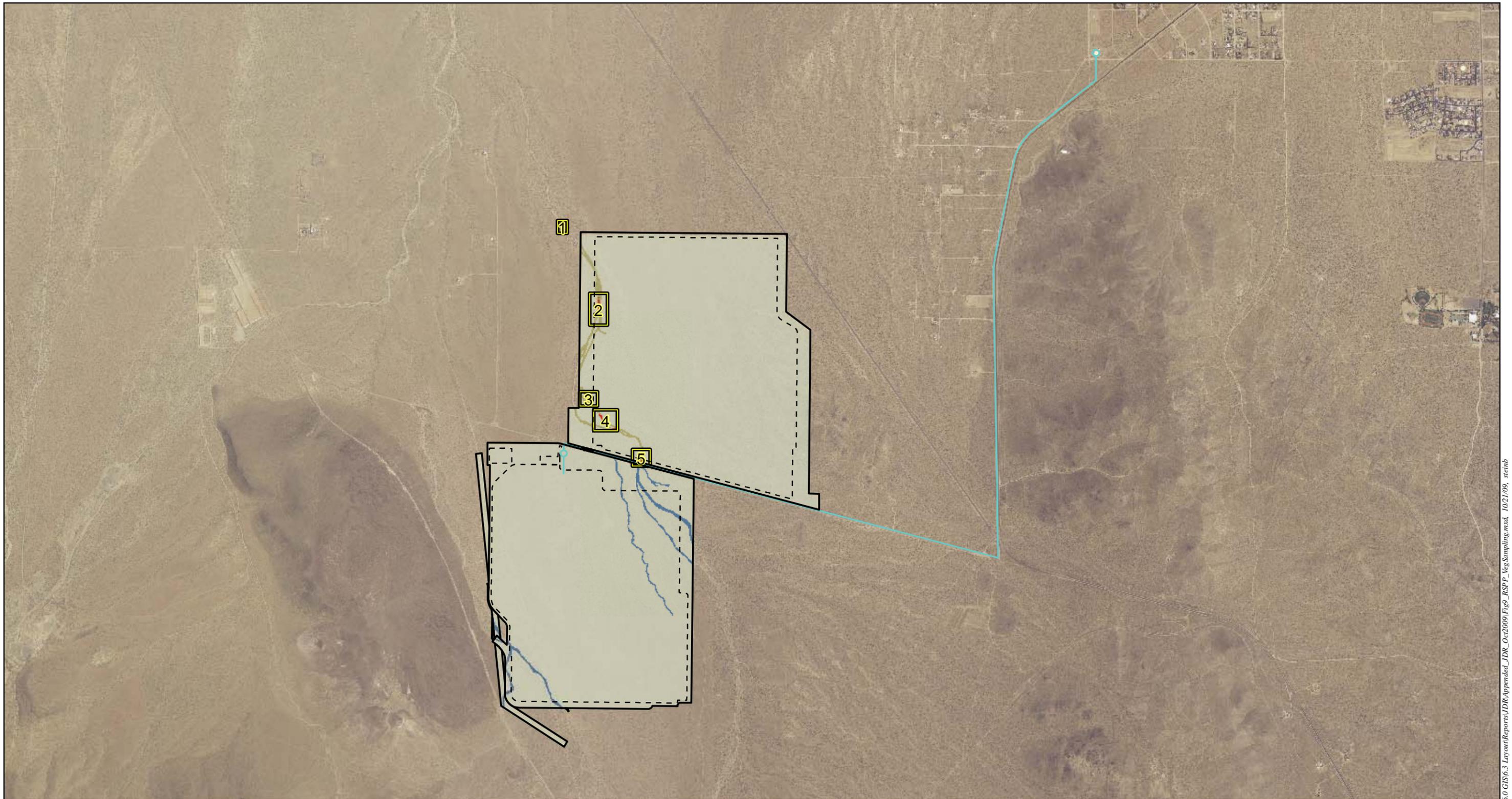
Source: NAIP 2005; USDA STATSGO 2009; AECOM 2009



Ridgecrest Solar Power Project
Jurisdictional Delineation Report

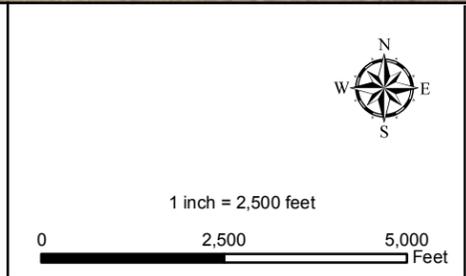
Figure 8
Soils

Date: October 2009



Legend		Vegetation Sampling Areas	Upland
AFC Disturbance Area	Vegetation Communities	Mojave Creosote Bush Scrub	Other
Water Line Corridor	Riparian	Mojave Desert Wash Scrub	Developed
Facility Footprint	Unvegetated Ephemeral Dry Wash	Wash Dependent Vegetation	

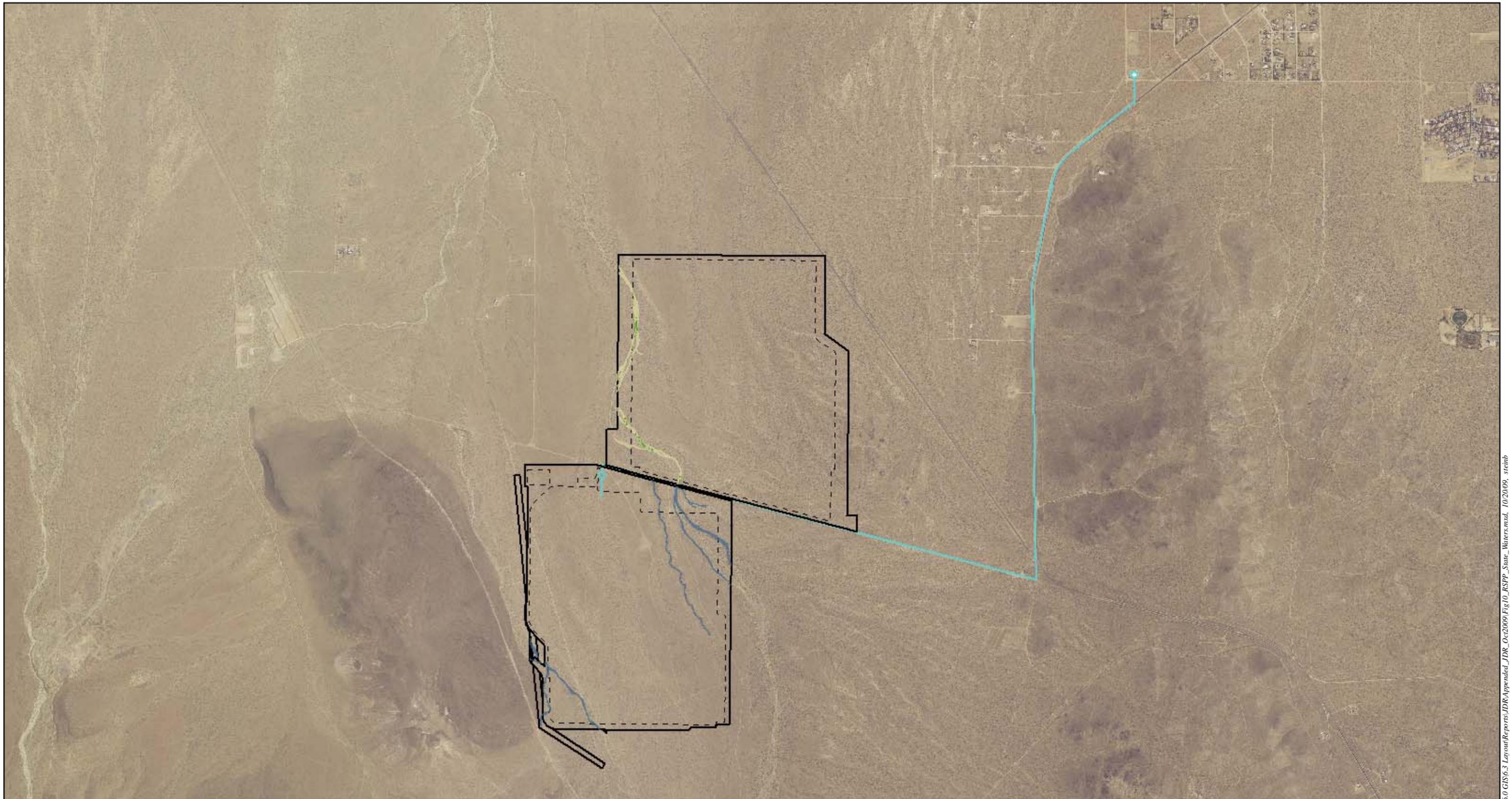
Source: NAIP 2005; AECOM 2009; EDAW 2009



**Ridgecrest Solar Power Project
Jurisdictional Delineation Report**

**Figure 9
Wash-Dependent
Vegetation Subsampling**

Date: October 2009



Legend

Disturbance Area

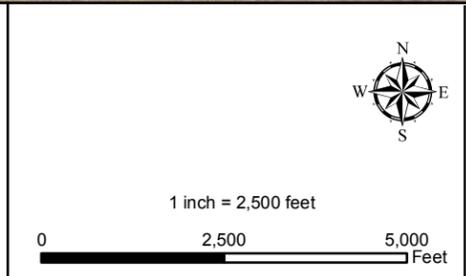
- AFC Disturbance Area
- Facility Footprint

Jurisdictional Waters of the State

Mojave Desert Wash Scrub

- Wash Dependent Vegetation (Subsampled Areas)
- Vegetated Ephemeral Dry Wash
- Unvegetated Ephemeral Dry Wash

Source: NAIP 2005; AECOM 2009; EDAW 2009

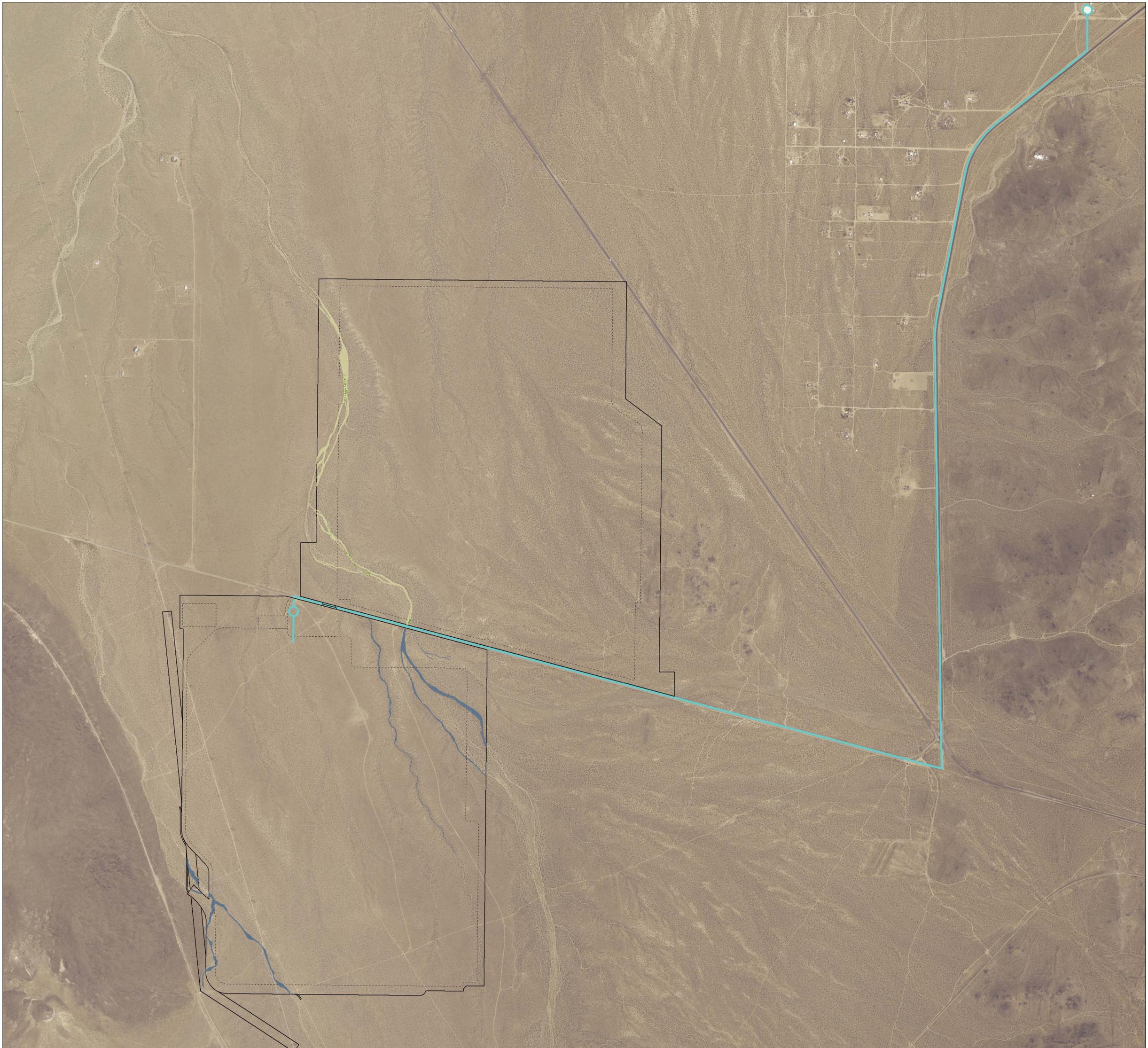


**Ridgecrest Solar Power Project
Jurisdictional Delineation Report**

**Figure 10
State Jurisdictional Waters**




Date: October 2009



Legend

Disturbance Area

- AFC Disturbance Area
- Water Line Corridor
- Facility Footprint

Jurisdictional Waters of the State

Mojave Desert Wast Scrub

- Wash Dependent Vegetation (Subsampled Areas)
- Vegetated Ephemeral Dry Wash
- Unvegetated Ephemeral Dry Wash

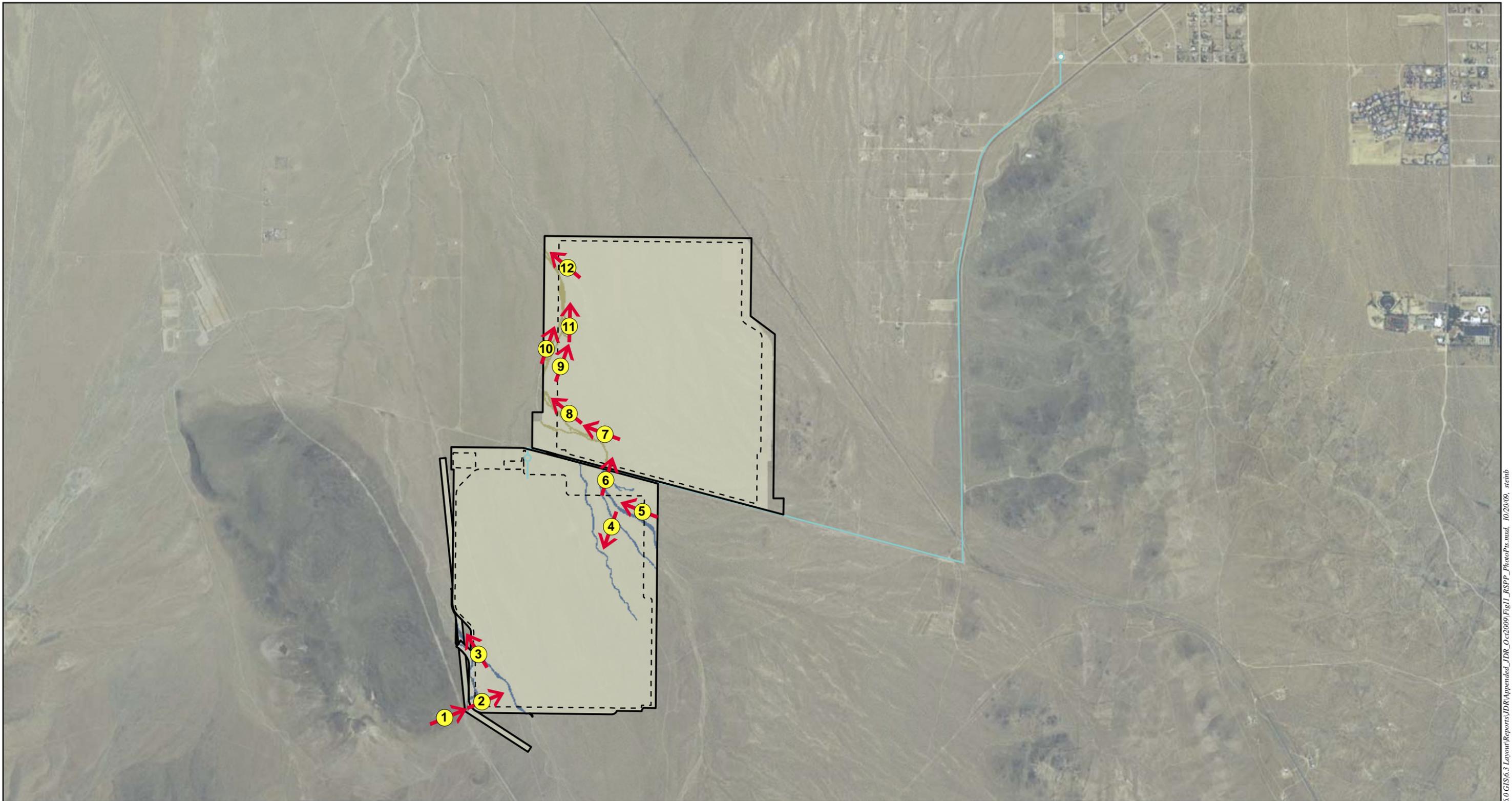
Source: NAIP 2005; AECOM 2009; EDAW 2009

1 inch = 500 feet

**Ridgecrest Solar Power Project
Jurisdictional Delineation Report**

**Figure 11
State Jurisdictional Waters**

Date: October 2009



Legend

AFC Disturbance Area
 [Solid Line] AFC Disturbance Area
 [Dashed Line] Facility Footprint

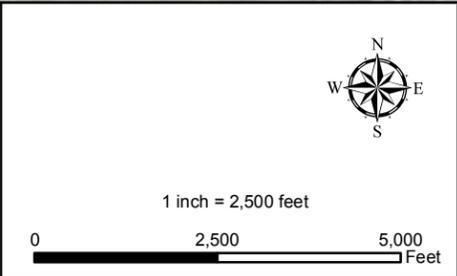
Water Line Corridor
 [Light Blue] Water Line Corridor

Vegetation Communities

- [Green] Mojave Desert Wash Scrub
- [Blue] Unvegetated Ephemeral Dry Wash
- [Light Green] Mojave Creosote Bush Scrub
- [Dark Green] Developed

Photo Point Location
 [Yellow Circle with # and Red Arrow] Photo Point Location

Source: NAIP 2005; AECOM 2009; EDAW 2009



**Ridgecrest Solar Power Project
 Jurisdictional Delineation Report**

**Figure 12
 Photo Point Locations**

Solar Millennium

AECOM

Date: October 2009



Photograph 1: Looking east at railroad trestle that crosses a large unvegetated ephemeral wash which originates southeast in the El Paso Mountains. This photo is located at the southwest portion of the facility footprint where it abuts the El Paso Mountains.



Photograph 2: Looking north from the center of the large unvegetated ephemeral dry wash just northwest of the railroad trestle. Note the graded portion of this wash and the obvious flow pattern within the channel.

Map Location



**Ridgecrest Solar Power Project
Jurisdictional Delineation Report
Figure 13
Representative Photographs 1 and 2**



Date: August 2009



Photograph 3: Looking north from the center of an unvegetated ephemeral dry wash. Note that the evidence of scour and the development of bed and bank become less defined as the distance from the El Paso Mountains increase.



Photograph 4: Looking south at developed ephemeral wash. Note cobble and established bed and bank features.

Map Location



**Ridgecrest Solar Power Project
Jurisdictional Delineation Report
Figure 14
Representative Photographs 3 and 4**



Date: August 2009



Photograph 5: Looking northwest at a portion of the El Paso Wash. Note high volume of sandy substrate.



Photograph 6: Looking north from Brown Road, upstream at the center of El Paso Wash (which is the primary ephemeral dry wash occurring within the facility footprint). Note that Mojave Dry Wash Scrub dominates the channel as indicated by the presence of scale-broom in the foreground.

Map Location



**Ridgecrest Solar Power Project
Jurisdictional Delineation Report
Figure 15
Representative Photographs 5 and 6**



Date: August 2009



Photograph 7: Looking northwest from the center of the primary channel. This feature was delineated using evidence of bed and bank and the presence of wash dependent species (e.g., scalebroom).



Photograph 8: Looking northwest from the center of the channel at the northern edge of the primary wash within the study area. Note that this portion of the El Paso Wash is a compound channel.

Map Location



**Ridgecrest Solar Power
Project
Jurisdictional Delineation
Report
Figure 16
Representative
Photographs 7 and 8**



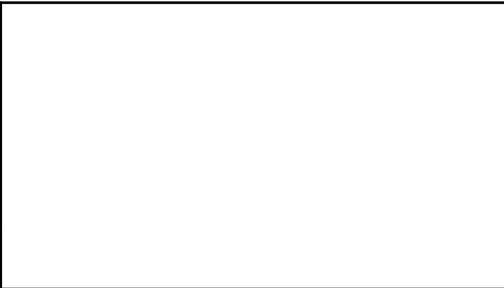
Date: August 2009



Photograph 9: Looking north at the El Paso Wash. Note that the interfluvium occurring within the channel is composed of scalebrum.



Photograph 10: Looking north at a side channel of the El Paso Wash. Note that this portion of the wash is unvegetated.



**Ridgecrest Solar Power Project
Jurisdictional Delineation Report
Figure 17
Representative Photographs 9 and 10**



Date: August 2009



Photograph 11: Looking north at a primary channel of the El Paso Wash. Note the presence of cobble in the bed and scale-broom within and along the channel banks.



Photograph 12: Looking northwest at the El Paso wash at the northwest portion of the facility footprint. Note gravel and sandy substrate.



**Ridgecrest Solar Power Project
Jurisdictional Delineation Report
Figure 18
Representative Photographs 11 and 12**



Date: August 2009

ATTACHMENT 2
APPROVED JD FORM

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Los Angeles District, South Coast Branch, Ridgecrest Solar Power Plant

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CA County/parish/borough: Riverside City: Approximately 6 miles southwest of Ridgecrest, CA (refer to Figures 1-3 in the Jurisdictional Delineation Report [JDR]).

Center coordinates of site (lat/long in degree decimal format): Lat. 35.556064° N, Long. -117.746008° W

Universal Transverse Mercator: 11 N 432268.88 mE 3934948 mN

Name of nearest waterbody: Isabella Lake (approximately 45 miles east of project location).

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A

Name of watershed or Hydrologic Unit Code (HUC): Indian Wells-Searles Valleys Watershed (HUC 18090205)

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request (refer to Figures 3 through 11 in the JDR).

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc.) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date:

Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

TNWs, including territorial seas

Wetlands adjacent to TNWs

Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs

Non-RPWs that flow directly or indirectly into TNWs

Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

Impoundments of jurisdictional waters

Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: Not Applicable

Elevation of established OHWM (if known):

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

2. **Non-regulated waters/wetlands (check if applicable):**³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain:

1. All ephemeral washes delineated within the disturbance area abate into the landscape and become a discontinuous ephemeral wash.
2. No ephemeral wash delineated within the disturbance area directly connected with the China Lake which is itself a desert sink with no identifiable outlet.
3. The lack of hydrological connectivity of the ephemeral washes into storm drains, culverts, or ditches (no storm drains are present within the disturbance area).
4. The lack of hydrological connectivity (presenting a significant nexus [SNX] to any traditional navigable waterbody [TNW]) for washes occurring within the disturbance area.
5. The evaluation of the ephemeral washes not presenting a SNX to a TNW include the volume, duration, and frequency of the flow of water to a TNW (the Salton Sea, 60 miles southwest and the Colorado River, 15 miles east of the disturbance area).
6. Examination of the flow characteristics and functions of ephemeral washes (which do not support adjacent wetlands) has been determined not to present a significant effect on the chemical, physical, and biological integrity of downstream TNWs.
7. Lack of an ecological connection to TNWs. The ephemeral washes present a low to no potential or capacity to transfer nutrients and organic carbon (vital to support downstream foodwebs [e.g., macroinvertebrates] present in headwater streams or to convert carbon in leaf litter making it available to species downstream), nor present habitat services such as providing spawning areas for recreationally or commercially important species in downstream waters.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: _____ .

Summarize rationale supporting determination: _____ .

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent": _____ .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

³ Supporting documentation is presented in Section III.F.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **acres**
 Drainage area: **acres**
 Average annual rainfall: inches
 Average annual snowfall: inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

- Tributary flows directly into TNW.
- Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
 Project waters are **Pick List** river miles from RPW.
 Project waters are **Pick List** aerial (straight) miles from TNW.
 Project waters are **Pick List** aerial (straight) miles from RPW.
 Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW⁵:
 Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):

Average width: feet
 Average depth: feet
 Average side slopes: **Pick List**

Primary tributary substrate composition (check all that apply):

<input type="checkbox"/> Silts	<input type="checkbox"/> Sands	<input type="checkbox"/> Concrete
<input type="checkbox"/> Cobbles	<input type="checkbox"/> Gravel	<input type="checkbox"/> Muck
<input type="checkbox"/> Bedrock	<input type="checkbox"/> Vegetation. Type/% cover:	
<input type="checkbox"/> Other. Explain:		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:
 Presence of run/riffle/pool complexes. Explain:
 Tributary geometry: **Pick List**
 Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
 Estimate average number of flow events in review area/year: **Pick List**

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List**. Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
 Dye (or other) test performed: .

Tributary has (check all that apply):

- Bed and banks
 - OHWM⁶ (check all indicators that apply):
 - clear, natural line impressed on the bank
 - changes in the character of soil
 - shelving
 - vegetation matted down, bent, or absent
 - leaf litter disturbed or washed away
 - sediment deposition
 - water staining
 - other (list): .
 - Discontinuous OHWM.⁷ Explain: .
- the presence of litter and debris
 - destruction of terrestrial vegetation
 - the presence of wrack line
 - sediment sorting
 - scour
 - multiple observed or predicted flow events
 - abrupt change in plant community

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- High Tide Line indicated by:
 - oil or scum line along shore objects
 - fine shell or debris deposits (foreshore)
 - physical markings/characteristics
 - tidal gauges
 - other (list): .
- Mean High Water Mark indicated by:
 - survey to available datum;
 - physical markings;
 - vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

(iv) Biological Characteristics. Channel supports (check all that apply):

- Riparian corridor. Characteristics (type, average width): .
- Wetland fringe. Characteristics: .
- Habitat for:
 - Federally Listed species. Explain findings: .
 - Fish/spawn areas. Explain findings: .
 - Other environmentally-sensitive species. Explain findings: .
 - Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:
Wetland size: . acres
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

⁶ A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷ Ibid.

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is: **Pick List**. Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
 Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- Directly abutting
- Not directly abutting
 - Discrete wetland hydrologic connection. Explain: .
 - Ecological connection. Explain: .
 - Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List**.
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width): .
- Vegetation type/percent cover. Explain: .
- Habitat for:
 - Federally Listed species. Explain findings: .
 - Fish/spawn areas. Explain findings: .
 - Other environmentally-sensitive species. Explain findings: .
 - Aquatic/wildlife diversity. Explain findings: .

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately _____ acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)
-----------------------	-----------------	-----------------------	-----------------

Summarize overall biological, chemical and physical functions being performed: .

C. **SIGNIFICANT NEXUS DETERMINATION**

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

- TNWs: linear feet, width (ft) Or, acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
 Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet, width (ft).
 Other non-wetland waters: acres.
 Identify type(s) of waters:

3. **Non-RPWs⁸ that flow directly or indirectly into TNWs.**

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet, width (ft).
 Other non-wetland waters: acres.
 Identify type(s) of waters:

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

⁸ See Footnote #3.

- Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from “waters of the U.S.,” or
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
 from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
 which are or could be used for industrial purposes by industries in interstate commerce.
 Interstate isolated waters. Explain: .
 Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet, width (ft).
 Other non-wetland waters: acres.
Identify type(s) of waters: .
 Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
 Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 Prior to the Jan 2001 Supreme Court decision in “SWANCC,” the review area would have been regulated based solely on the “Migratory Bird Rule” (MBR).
 Waters do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction. Explain: see Section II.B.2 above and JDR.
 Other: (explain, if not covered above): refer to Figures and Hydrology Section in JDR.

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
 Lakes/ponds: acres.

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.**

- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: A total of 16.2 acres.

List type of aquatic resource:

8.4 acres of unvegetated ephemeral channel (*Riverine; Unconsolidated Bottom, Sand, Intermittently Flooded, Temporary, Well Drained/Fresh, Alkaline*).

7.8 acres of vegetated ephemeral channel (*Palustrine; Forested, Broad-Leaved, Evergreen, Intermittently Flooded/ Temporary, Well Drained/Fresh, Alkaline*). Vegetated ephemeral dry wash are desert washes that present an established bed, bank, and channel that support wash-dependent vegetation.

Note: there are a total of 8.2 acres of Mojave Desert Wash Scrub (*Palustrine; Forested, Broad-Leaved, Evergreen, Intermittently Flooded/ Temporary, Well Drained/Fresh, Alkaline*) occurring within the project boundary. Mojave Desert Wash Scrub is composed of:

1. *Wash-Dependent Vegetation-0.4 ac*
2. *Riparian Interfluve-0.0 ac*
3. *Vegetated Ephemeral Dry Wash-7.8 ac*

Note: Only vegetated and unvegetated channel are considered as other nonwetland waters. Riparian interfluves are not included as other non-wetland waters because they do not exhibit an established bed or bank (as defined by 33 CFR 328.3[e] and other federal guidance [e.g., 2008 OHWM Delineation Manual, RGLs 88-06 and 05-05]) and are features which do not support wetland. Please refer to Table 10 in the JDR.

Note: Although Mojave Desert Wash Scrub lacks the three characteristic features of a wetland (e.g., hydrophytic vegetation, hydric soils, and wetland hydrology) and is not considered a wetland community (as defined by 33 CFR 328.3[b]; 40 CFF 230.3[t]; the 1987 Manual; and the 2008 Supplement), this vegetation community still perform important wetland functions (*Review and Synopsis of Natural and Human Controls on Fluvial Channel Processes in the Arid West* ERDC/CRREL TR-07-16. USACE 2007).

- Wetlands: acres.

SECTION IV: DATA SOURCES

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: JDR with figures.
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters’ study: .
- U.S. Geological Survey Hydrologic Atlas: .
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: 7.5 U.S. Geological Survey (USGS) InyoKern Southeast (1972) and Ridgecrest (1973) topographic quadrangles USDA Natural Resources Conservation Service Soil Survey. Citation: .
- National wetlands inventory map(s). Cite name: .
- State/Local wetland inventory map(s): .
- FEMA/FIRM maps: The portion of the disturbance area within El Paso Wash presents a 1 percent chance of flood hazards, with unknown Base Flood Elevations (FEMA Flood Zone Designation A).

- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): USDA NAIP 2005.
or Other (Name & Date): Site Photos located in JDR (August 2009).
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
 Other information (please specify): Ridgecrest Solar Plant Hydrology Report (AECOM 2009).

B. ADDITIONAL COMMENTS TO SUPPORT JD: refer to JDR and Figures.

ATTACHMENT 3

FIELD DATA AND SUBSAMPLING METHOD

ATTACHMENT 3

Primary Ephemeral Wash-Dependent Vegetation Cover Subsampling

Raw Data (from GIS)

The raw GIS data are displayed below. These data were used to calculate the quantity of wash-dependent vegetation within the survey area, based on subsampling results. While the subsampling method is detailed in the next section, the purpose of displaying this raw, unformatted data is to present in detail how the extrapolated wash-dependent vegetation is depicted in Table 10 of the JDR.

Sum of Acres			
Zone	JD_TYPE	DDWW_TYPE	Total
Disturbance Area	MDWS		8.2
	UV		8.4
			1738.2
Additional Disturbance Area (Water line)	MDWS		0.03
	UV		0.00
			19.3
Grand Total MDWS			8.2
Grand Total UV			8.4
Grand Total Disturbance Area			1757.5
Subsample Components	MDWS	Riparian Interfluve	0.0
		Vegetated Ephemeral Dry Wash	7.8
		Wash Dependent Vegetation	0.4

Summing the “wash-dependent vegetation” and “vegetated ephemeral dry wash” acreages for the “Disturbance Area (unchanged)” gives a total of 8.2 acres (rounded to tenths). However, substituting the 0.4 acre of extrapolated wash-dependent vegetation for the 0.14 acre of physically subsampled wash dependent vegetation shown in the table above, the total adds to 8.5 acres. The resultant 0.3 acre of “extra” area is due to the wash-dependent vegetation being interspersed throughout the non-subsampled area mapped as vegetated ephemeral dry wash. These areas cannot and should not be double-counted.

The 0.4 acre of wash-dependent vegetation is interspersed throughout the non-subsampled area mapped as riparian interfluve and/or vegetated ephemeral dry wash. Of this amount, 0.3 acre is extrapolated and 0.1 acre was physically mapped during subsampling. To ensure the extrapolated wash-dependent vegetation area was not double-counted, weighted proportions of the 0.3 acre of extrapolated area were subtracted from both the riparian interfluve (RI) and the vegetated ephemeral dry wash (VEDW). Since no RI was mapped on site, the entire 0.3 acre was subtracted from VEDW.

Subsampling Method

To estimate total coverage of wash-dependent vegetation occurring within the primary wash the weighted arithmetic mean was calculated where the estimate of absolute cover (χ) equals the sum of each sample of absolute cover (χ_i) multiplied by the area of each sample, or the weight (ω_i), divided by the sum of all weights. The formula used was:

$$\chi = \frac{\sum \omega_i(\chi_i)}{\sum \omega_i} \text{ OR } X = \frac{\omega_1(\chi_1) + \omega_2(\chi_2) + \omega_3(\chi_3) \dots}{\omega_1 + \omega_2 + \omega_3 \dots}$$

Subsampling Area	Vegetated ^b Ephemeral Dry Wash (MDWS)	Sampled ^b Wash-Dependent Vegetation (MDWS)	Riparian ^b Interfluve (MDWS)	Total ^b Subsample Area (ω_i)	% Cover Wash-Dependent Vegetation (χ_i)	($\omega_i \cdot \chi_i$)
1	0.32	0.02		0.34	0.058823	0.02
2	1.33	0.05		1.39	0.035971	0.05
3	0.61	0.01		0.62	0.016129	0.01
4	0.57	0.04		0.61	0.065572	0.04
5	0.29	0.02		0.33	0.060603	0.02
<i>SUM($\omega_i \cdot \chi_i$)</i>						0.14
<i>SUM ω_i</i>						3.29
Weighted Mean = SUM ($\omega_i \cdot \chi_i$)/SUM ω_i						0.043

^a A weighted arithmetic mean was calculated where the estimate of absolute cover (χ) equals the sum of each sample of absolute cover (χ_i) multiplied by the area of each sample, or the weight (ω_i), divided by the sum of all weights. The formula used was: $\chi = \frac{\sum \omega_i(\chi_i)}{\sum \omega_i}$ OR $X = \frac{\omega_1(\chi_1) + \omega_2(\chi_2) + \omega_3(\chi_3) \dots}{\omega_1 + \omega_2 + \omega_3}$

^b In acres.

Primary Ephemeral Wash-Dependent Vegetation Cover Mapping

Type of Jurisdictional Water of the State	Acres
Unvegetated Ephemeral Dry Wash	8.4
Mojave Desert Wash Scrub	8.2
<i>Wash-Dependent Vegetation</i> (based on weighted mean percent [4.3%])	0.4
<i>Riparian Interfluve</i>	0.0
<i>Vegetated Ephemeral Dry Wash</i>	7.8
Total Waters	16.6