ELLISON, SCHNEIDER & HARRIS L.L.P.

CHRISTOPHER T. ELLISON
ANNE J. SCHNEIDER
JEFFERY D. HARRIS
DOUGLAS K. KERNER
ROBERT E. DONLAN
ANDREW B. BROWN
GREGGORY L. WHEATLAND
CHRISTOPHER M. SANDERS
LYNN M. HAUG
PETER J. KIEL

ATTORNEYS AT LAW
2600 CAPITOL AVENUE, SUITE 400
SACRAMENTO, CALIFORNIA 95816
TELEPHONE (916) 447-2166 FAX (916) 447-3512

ELIZABETH P. EWENS, OF COUNSEL
BRIAN S. BIERING
TERESA W. CHAN
SHANE E. CONWAY
KATHRYN C. COTTER
JEDEDIAH J. GIBSON
CHASE B. KAPPEL
SAMANTHA G. POTTENGER

April 16, 2010

Commissioner Anthony Eggert, Presiding Member
Vice Chair James D. Boyd, Associate Member
Mr. Craig Hoffman, Project Manager
Abengoa Mojave Solar Project (09-AFC-5)
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Abengoa Mojave Solar Project (09-AFC-5): Responses to CURE's Data Requests – Set 1

Dear Commissioners Eggert and Boyd:

Abengoa Solar Inc. (the "Applicant") hereby files these written responses to certain data requests in CURE's Data Requests - Set 1 promulgated by CURE on March 17, 2010.

Thank you for your time and consideration of this matter.

Sincerely,

Christopher T. Ellison
Shane E. Conway
Ellison, Schneider & Harris, L.L.P.

Attorneys for Abengoa Solar Inc.

Attachment

Abengoa Mojave Solar Project

Responses to CURE's Data Requests - Set 1

Item 1:

Information Requested:

Please provide the Applicant's incidental take permit application(s) for the take of federally threatened and endangered species pursuant to 50 C.F.R. § 17.22(b).

Response:

The Applicant is coordinating with the U.S. Department of Energy (DOE) in the DOE's preparation of a Biological Assessment (BA) in support of a federal Endangered Species Act Section 7 consultation process. A Draft BA prepared by the Applicant to assist DOE was submitted to the California Energy Commission (CEC) in response to the CEC's Data Request Set #1A, Item 58(B). The DOE's BA is not available at this time. Once DOE has completed its BA, it will be submit its BA and a request to initiate formal consultation to the U.S. Fish and Wildlife Service.

Item 2:

Information Requested:

Please provide the common and scientific names of the species for which the Applicant requests incidental take authorization.

Response:

Although DOE has not finalized and submitted its BA to the USFWS, it is anticipated that the federally listed species covered by the Section 7 consultation process will be the desert tortoise (*Gopherus agassizii*), Mojave population.

Item 3:

Information Requested:

Please provide the complete description of the activity sought to be authorized under the incidental take authorization.

Response:

The Fish and Game Code Section 2081 Incidental Take Permit (2081) Application submitted by the Applicant, and docketed with the California Energy Commission (CEC), contains a description of the

activities for which incidental take authorization is sought. It is anticipated that the same set of activities will be included in the incidental take authorization issued pursuant to ESA Section 7.

Item 4:

Information Requested:

Please provide all correspondence between the Applicant and the USFWS regarding the Applicant's incidental take permit application.

Response:

The Applicant's correspondence with the USFWS regarding the incidental take permit application has been previously docketed with the CEC, in response to CEC Data Request Set #1A, Item 58(A).

Item 5:

Information Requested:

If the Applicant is not in possession of an incidental take permit application for the Project, please state when the application will be made available.

Response:

It is anticipated that DOE will finalize and submit its BA to USFWS by April 23, 2010. The USFWS is expected to review the BA and prepare a Biological Opinion (BO) within 135 days of initiation of consultation with the DOE.

Item 6:

Information Requested:

If the Applicant does not expect to submit an incidental take permit application to the USFWS pursuant to 50 C.F.R. § 17.22(b), please state the reasons why.

Response:

The Applicant fully expects DOE to consult with USFWS under Section 7 of the ESA, and to obtain a Biological Opinion that includes incidental take authorization for the Project.

Item 15:

Information Requested:

Please list the individuals from the CDFG and USFWS that provided survey guidance.

Response:

Becky Jones (CDFG)

Ray Bransfield (USFWS)

Ashleigh Blackford (USFWS)

Item 16:

Information Requested:

Please provide copies of any written correspondence between the Applicant and the agencies regarding the recommended focal species (or taxa) and survey methods.

Response:

Please refer to the attached email correspondence, in file "DR_1_16_Survey_Discussions.pdf", between the Project team and CDFG and/or USFWS, regarding recommended surveys and survey methods.

Item 17:

Information Requested:

Please document agency approval to forego each of the following survey efforts:

(a) additional trapping for Mohave ground squirrels, listed as threatened under the California Endangered Species Act.

(b) trapping for Mohave River voles, a rare species with potential to occur in the Project area.

(c) surveys for the Western burrowing owl in 2009, a California Species of Special Concern.

Response:

(a) No formal agency approval was requested to forego additional trapping for MGS. The decision was based on the assessment of Dr. Phil Leitner, a recognized MGS expert.

(b) No formal agency approval was requested to forego surveys of the Mohave River vole, a California Species of Special Concern (not a "rare species" as the Data Request indicates). The decision was based on reconnaissance surveys/habitat assessments of the area for a previously proposed Dairy Farm project. That assessment indicated that the only suitable Mohave River vole habitat in the area was immediately adjacent to the Mojave River, which is approximately 10 miles south of the Project.

(c) Please refer to the response to Item 16, above, in which the email record outlines the agreement between the Project and Becky Jones (CDFG) that 2009 western burrowing owl surveys were not required, since 2008 surveys were conducted and the Project assumes that portions of the site are occupied by the species.

Item 18:

Information Requested:

Please provide a map of the roads that were driven to conduct vegetation surveys.

Response:

Please refer to the attached map in file "DR_1_18_botany_survey_tracklogs.pdf"

Item 19:

Information Requested:

Please discuss how driving and meandering transects (at inconsistent spacing) constitute systematic field techniques.

Response:

Two techniques were used while performing botanical surveys -- driving (windshield surveying) and walking meandering transects. These two techniques were systematic because they were consistently used in conjunction with each other during surveys. For example, surveyors would drive through the survey area until flowers were noticed from the vehicle. Surveyors would then stop at that location and assess the immediate area, taking note of all species within an approximately 25 square meter area. After adding any new species to the plant species compendium, surveyors would then choose a direction to walk, form into a line with spacing of 30 to 100 feet apart, and then begin walking through the habitat. Surveyors would continue walking in search of target rare plant species and any other unexpected special status plant species for a distance ranging from 100 meters to 1 mile. This routine was systematically applied for the entire Survey Area so that all variations in vegetation community, elevation, soil type, and disturbance history in the Survey Area would be surveyed. Another systematic technique applied during botanical surveys included surveys of all washes. This was systematic because surveyors performed surveys within each wash within the survey area, and maintained a minimum distance of 10 feet from each other. Another systematic technique that was used during surveys included tightening survey transects to 10 feet apart in areas where special status plant species had been mapped in prior years (i.e., California Natural Diversity Database).

Item 20:

Information Requested:

Please indicate whether all habitats and impact areas were surveyed for special-status plant species.

Response:

Yes, all habitat types within the Survey Area, including impacts areas (i.e., project area and interconnection facilities) were surveyed for special-status species. See response to Item 19 above for further details.

Item 21:

Information Requested:

Please provide information on the specific locations at which protocol rare plant surveys were conducted, by month and year. In your response, please identify the "key areas" referenced in the 2008 survey reports, and specify the areas within the assessment area that were surveyed more than once.

Response:

"Key areas" refers to higher quality potential habitat, defined as areas that were relatively natural, supporting native vegetation communities, and not heavily disturbed by past agricultural activities. These areas were mapped as native, undisturbed scrub areas on the vegetation maps provided in the AFC, and represent areas surveyed more intensely where there was a higher potential for rare plants to occur. Prior to conducting each day of survey, the botanists would assess aerial imagery to look for signatures that might indicate the presence of a new or unusual habitat. During pedestrian surveys, the botanists would walk the parcel well enough to observe the entire parcel to determine whether potential habitat was present and also note plant species not previously observed. After a few days of surveying, the botanists would have collectively observed all of the major habitats and identified all of the observed plants, which made it easier to recognize a newly observed species and new habitats while walking the parcels. Observing additional plant species is one potential indicator of a subtle change in habitat and perhaps one that might indicate a change in habitat conditions that would warrant closer attention for its potential to support rare plants.

Botanists focused on natural habitats that were relatively undisturbed because those types of areas have a greater potential to support rare plants. Disturbed habitats such as former agricultural areas often have low species diversity and have a low potential for rare plants.

Item 22:

Information Requested:

For each botanical survey performed (i.e., 2007, 2008, and 2009), please provide the following, as required by the CNPS and CDFG protocols:

(a) the total number of hours each surveyor spent surveying in the field on each date.

(b) a description of the reference site(s) visited and phenological development of the target special-status plants, with an assessment of any conditions differing from the Project site that may affect their identification.

Response:

(b) The one reference site that did not have access restrictions included an approximately 80-acre area that exists just south of Roy Street and near the previously proposed interconnection facilities for MSP. There are historical accounts of desert cymopterus (*Cymopterus deserticola*; CNPS 1B.2) growing there. There were no desert cymopterus found at this location during 2007 or 2008; however, surveyors did

find one individual during 2008 surveys near the junction of Harper Lake Road and Santa Fe Avenue, approximately 1 mile to the west of the reference population. The botanists also visited Red Rocks State Park as a reference site for a known occurrence of *Eschschozia minutiflora* ssp. *twisselmanii* during the 2008 survey season.

Item 23:

Information Requested:

Please identify the local experts consulted and the herbaria that were visited for information on special-status plant species occurrence within the Project area and vicinity.

Response:

BLM biologist Glenn Harris was contacted in order to determine the optimal timing of surveys, based on Mr. Harris' knowledge of the area. The Red Rocks State Park herbaria was accessed and studied during one of the visits to the reference site at the Park.

Item 26:

Information Requested:

Please indicate whether the Applicant plans to conduct any more trapping or habitat assessments for the Mohave ground squirrel.

Response:

The Applicant does not plan on any additional trapping or habitat assessments for MGS.

Item 28:

Information Requested:

Please discuss why the botanical survey data sheets were changed to indicate detection of antelope ground squirrel instead of Mohave ground squirrel and identify the individual that made the modification.

Response:

The survey botanists collected incidental observations of wildlife data during the completion of the botanical surveys. None of the survey botanists were trained in the identification of MGS. The survey botanists who indicated detection of MGS on their data sheets were unaware of the potential for ground squirrel species, other than MGS, to occur within the area. As a result, upon understanding that other ground squirrel species could occur within the area, the survey botanists reassessed their conclusions, and determined that they could not definitively state that the species observed was MGS. Botanical field supervisor, biologist Joshua Corona-Bennett, made the determination to change the data sheet entries, based on the input provided by the surveying botanists.

Item 38:

Information Requested:

Please confirm that Leitner and Leitner (1989) captured Mohave ground squirrels at their Coso study "Site 1".

Response:

Dr. Leitner has confirmed that he did capture MGS at the Coso Study "Site 1".

Item 39:

Information Requested:

Please state whether Dr. Leitner has reviewed the following studies or literature:

(a) Aardahl and Roush (1985)

(b) Recht (1977)

(c) Gustafson (1993)

(d) Laabs and Allaback (1991)

(e) Rempel and Clark (1990)

(f) Wessman (1977)

Response:

Dr. Leitner has reviewed the studies or literature listed in Item 39.

Item 42:

Information Requested:

Please provide all correspondence between the Applicant and the CDFG regarding the habitat impact assessment and proposed compensation ratio.

Response:

This information has already been supplied to the CEC, as the Applicant's response to CEC Data Request Set #1A, Item 58(A) and Item 60. These responses have been docketed with the CEC.

Item 45:

Information Requested:

In accordance with CBOC protocol, please provide a map of the burrows that were monitored during the 2007 and 2008 burrowing owl surveys.

Response:

Per the CBOC survey protocol, all potential burrowing owl burrows were monitored during the surveys, to determine presence or absence of the species at these burrows. Following each of the surveys, a survey summary report was prepared, which show the locations of all burrows documented and monitored during that season's survey. The 2007 and 2008 burrowing owl survey reports have been previously supplied as part of Appendix F of the Project's AFC, and are available as part of the CEC docket.

Item 46:

Information Requested:

Please indicate whether the 2007 and 2008 burrowing owl surveys included monitoring in the eastern portion of the Project Area where four burrowing owls were detected during the 2006 reconnaissance surveys.

Response:

Yes. The 2007 and 2008 burrowing owl surveys monitored the burrows documented in each of those surveys, as well as the area identified in the 2006 reconnaissance survey that was documented with four burrowing owls.

Item 47:

Information Requested:

Please provide a citation for the statement that most intensively used areas of nesting burrowing owls is within approximately 2000 feet from nest sites.

Response:

The statement that most intensively used areas of nesting burrowing owls is within approximately 2000 feet from nest sites, was based on the 2008 personal communication with Pete Bloom, referenced in the AFC.

Item 48:

Information Requested:

Please provide the rationale for the conclusion in the AFC that a 20-acre conservation area would likely provide enough habitat for two (2) pairs of western burrowing owls, including citations to scientific literature if possible.

Response:

The conclusion in the AFC that a 20-acre conservation area would likely provide enough habitat for two (2) pairs of western burrowing owls was based on discussions with Pete Bloom, a noted burrowing owl expert. Mr. Bloom based his conclusion on his many years of experience studying the western burrowing owl. No specific citations to scientific literature are known to exist, other than the CBOC survey protocol and mitigation guidelines, which recommends a range of mitigation acreage requirements, based on a sliding scale from 9.75 acres per pair of burrowing owls (i.e., 19.5 acres for two pairs of western burrowing owls), up to 19.5 acres per pair.

Item 49:

Information Requested:

Please state how the amount of compensation habitat for burrowing owls will be determined.

Response:

As outlined in the AFC, the Applicant would follow the CBOC guidelines for determining the amount of burrowing owl compensation habitat to be acquired, based on pre-construction surveys. Compensation acreage would be determined through the CBOC guidelines formula, as summarized in AFC burrowing owl mitigation measure WBO-9.

Item 50:

Information Requested:

Please discuss the current habitat conditions within the proposed conservation area with respect to the habitat needs of the western burrowing owl and indicate whether the proposed conservation area will be at least 100 meters from Project features after Project construction.

Response:

As shown in Figure 8 of the CDFG Section 2081 Incidental Take Permit Application, previously docketed with the CEC, the proposed compensation lands are approximately 1.3 miles (approximately 2.1 kilometers) west of the Project. Based on a March 2010 site reconnaissance requested by the CEC, the compensation lands contain elements that could support the western burrowing owl. There are multiple existing animal burrows within the compensation area, concentrated on the north end of the site, any of which could be occupied by a burrowing owl. The north end of the site also consists of a hill that supports a rock outcrop, suitable for perching and hunting by the species. One large desert wash/drainage crosses the compensation site, and the soft, friable soils are conducive to burrow excavation by fossorial animals; any excavated burrows could be potentially used by burrowing owls. Vegetation across the site consists of creosote bush scrub in the north, and saltbush scrub in the central and southern portions of the site. The openness of the vegetation varies throughout the compensation

area, but is relatively open in the wash, the areas of creosote bush scrub, and portions of the saltbush scrub.

Item 51:

Information Requested:

Please discuss the actions that will be taken for the long-term management and monitoring of the proposed conservation area. Your response should state whether the Applicant plans to provide funding for the management and monitoring of the proposed conservation area and whether a conservation easement will be established for private lands acquired for compensation purposes.

Response:

The Applicant has reviewed the CEC's Staff Assessment, in which Condition of Certification BIO-15 addresses the compensatory mitigation site. The Applicant is generally in agreement with BIO-15, but is coordinating with the CEC to include having the compensation lands mitigate for impacts to the burrowing owl. BIO-15 also addresses the long-term management and monitoring of the compensation lands through title conveyance or establishment of a conservation easement, and the funding of enhancement and endowment funds for the long-term management of the site.

Item 52:

Information Requested:

If a conservation easement will be established, please state whether such lands will be preserved in perpetuity.

Response:

Any conservation easement placed on compensation lands will comply with all CDFG requirements to ensure that the compensation lands fully mitigate impacts to listed species.

Item 56:

Information Requested:

If a conservation easement will be established, please identify the proposed fee title holder.

Response:

Per BIO-15, if a conservation easement is established (as opposed to the option of title conveyance), the CDFG or an approved non-profit will be named as the fee title holder. If the non-profit is selected as fee title holder, then a conservation easement shall be recorded in favor of CDFG. If a non-profit holds a conservation easement over the compensation lands, then CDFG will be named a third party beneficiary. Under all circumstances, USFWS shall be named a third party beneficiary.

Item 58:

Information Requested:

Please clarify whether a winter raptor survey was conducted.

Response:

Yes, a winter raptor survey was conducted.

Item 59:

Information Requested:

If a winter raptor survey was conducted, please provide the methods that were used and the survey results.

Response:

Please refer to the attachment "DR_1_59_MSP 2007 Spring and Winter Raptor Survey Report.pdf" for survey methods and results.

Item 60:

Information Requested:

Please provide the dates in 2007 that protocol surveys for the desert tortoise were conducted.

Response:

The dates of the 2007 protocol desert tortoise surveys were previously supplied as part of Appendix F to the AFC, in the field data sheets included in the 2007 desert tortoise survey report.

Item 61:

Information Requested:

Please provide a map that depicts the areas where desert tortoise protocol surveys were conducted during each of the following years;

(a) 2007

(b) 2008

(c) 2009

Response:

The maps depicting desert tortoise survey areas were previously supplied as part of Appendix F to the AFC, within each of the desert tortoise survey reports. The 2007 and 2008 survey reports show the project boundary and the Zone of Influence survey areas. The 2009 survey report shows a shaded subset of the Project site, where desert tortoise surveys were conducted based on discussions with Becky Jones (CDFG).

Item 62:

Information Requested:

Please clarify whether the resource agencies made (or agreed to) the recommendation to skip the intensive surveys discussed in the protocol and provide documentation if possible.

Response:

The desert tortoise surveys were conducted per the USFWS 1992 protocol, as interpreted by the surveyors. The decision to forego the intensive survey was based on prior discussions with Ray Bransfield of the USFWS. During telephone and email communication with the USFWS, Mr. Bransfield indicated that he viewed the 1992 desert tortoise protocol as a guidance document, to be interpreted by the surveying biologist, in order to determine desert tortoise presence or absence, to indicate whether or not an ESA Section 7 consultation or Section 10 incidental take permit would be required. Since the Project had already recognized the transient use of a portion of the site by desert tortoise (observed on the Project site during the 2006 reconnaissance survey), a consultation with the USFWS was anticipated. Therefore, the intensive survey was not undertaken, since full and thorough clearance surveys were anticipated to be required prior to construction.

Item 63:

Information Requested:

Please identify the previous desert tortoise study referenced in the Mohave ground squirrel survey report and provide contact information for the principal investigator.

Response:

The Desert Tortoise Preserve Committee (DTPC) has a long-term monitoring effort associated with the Harper Lake Road (HLR) desert tortoise crossing beneath the roadway. The study was adopted by DTPC, when Harper Lake Companies, the developers of SEGS VII and IX, were unable to keep their mitigation commitments. The study has been conducted by various investigators, but the DTPC can be contacted at:

Desert Tortoise Preserve Committee, Inc., 4067 Mission Inn Avenue, Riverside, California 92501; Telephone: (951) 683-3872

Item 64:

Information Requested:

Please clarify the amount of potential desert tortoise habitat that would be directly and indirectly impacted by the Project. In your response, please demonstrate how the value was calculated.

Response:

The AFC (Mojave Solar 2009) identified the amount of tortoise habitat that would be directly impacted in the Project Area (Table 5.3-10). This is based on suitable habitat that could be disturbed by the Project - i.e., vegetation cover that could be potentially inhabited by tortoises, based on survey results as well as native habitat that might be occupied. Indirect effects are defined in Section 5.3.6 and discussed for desert tortoises in Section 5.3.6.2.1.1. The acreage for indirect impacts is different for different potential impacts (e.g., raven depredation, soil sedimentation) and can change with time, so are difficult to quantify specifically or in toto. However, mitigation for indirect effects will fully mitigate for indirect effects (Sections 5.3.11 and 5.3.12).

Item 65:

Information Requested:

Please indicate whether desert tortoises eat alfalfa.

Response:

There are unsubstantiated reports that tortoises eat alfalfa.

Item 66:

Information Requested:

Please state whether desert tortoises have the potential to occur in the alfalfa field located within the Project area.

Response:

Tortoises currently have access to the remaining farmed field, which has been farmed in alfalfa and also recently in wheat. Alfalfa is managed intensively - it is watered often and harvested several times a year. Once wheat is harvested, there is no cover in the field. The lack of cover (post harvest) and the continual disturbance is probably a deterrent to desert tortoise burrowing. However, it is possible that a tortoise might inhabit suitable native habitat adjacent to the field, and thereby either might graze the crop edges or be observed briefly traversing open areas near the habitat edges.

Item 67:

Information Requested:

Please provide justification for the conclusion in the AFC that "none of the Project Area is considered to be occupied DT habitat."

Response:

Desert tortoise focused surveys were conducted in April and May of 2007, 2008, and 2009 according to USFWS desert tortoise survey protocol (USFWS 1992). The survey area changed each year with refinements in the Project footprint, but was always a subset of the broadest area surveyed in 2007 - the Biological Resources Survey Area (BRSA) - which also included a one-mile buffer around the BRSA (see Mojave Solar [2009], Figure 5.3b in Section 5.3). In 2008, the proposed Project Area was modified as a subset of the BRSA. Surveys in 2008 were conducted within an updated Project Area and out to one mile from the Project Area boundary. During 2009, supplemental protocol-level surveys for desert tortoise were conducted within select locations of the Project Area. (See Mojave Solar [2009] for a detailed description of surveys completed each year.) The survey data indicate that tortoises are unlikely to currently occupy the Project Area. Tortoise sign observed on the Project Area consisted of carcass fragments and one full carcass of an immature tortoise (all of which could have been transported by predators); one old scat was observed in a center-pivot field, approximately 600 ft from the southern Project Area border. No live desert tortoise were documented on the Project Area during any focused surveys, although one tortoise was observed in the northeastern Project Area near a residence. No recent scat and no burrows were observed and their absence strongly indicates that tortoises do not occupy the site. As further support that tortoises stop short of burrowing in the ruderal and currently farmed areas, substantial quantities of tortoise sign were observed along the Project Area edges, outside the Project Area to the east, west and south, and a single tortoise was observed along the southern Beta field border during surveys in 2006 for another project. (See Mojave Solar [2009], Section 5.3, for details of desert tortoise observations.)

Item 68:

Information Requested:

Please provide data on the existing abundance of ravens in the Project Area and explain how the abundance estimate was obtained.

Response:

The BRTR (EDAW 2009) identified that all wildlife sightings were recorded during 2007, 2008, and 2009 protocol wildlife surveys and vegetation mapping (Section 2.2.3).

Item 69:

Information Requested:

Please indicate whether the Applicant assumes the common raven is a density-dependent species.

Response:

To some degree, ravens are density dependent – i.e., their abundance increases with increasing resources. However, this approach to raven abundance is too simplistic. Other factors, such as resource quality and the spatial distribution of resources, also influence raven abundance. For instance, the introduction of a high quality resource, such as a landfill, to an area where there is not currently a similar resource, would generally be expected to result in an increase in ravens to the area. As a second example, transmission lines are one of several factors that have allowed ravens to proliferate across the desert by providing nesting substrates (towers). But, ravens only occupy a very small percentage of the nesting substrates available on the transmission lines; use of all of the thousands of towers for nesting is restricted by the availability of other resources, undoubtedly as well as other aspects of raven behavior and factors that are affecting raven numbers elsewhere in the species range.

Item 70:

Information Requested:

If the Applicant assumes ravens are density-dependent, please provide justification for the conclusion in the AFC that the local raven population is not likely to increase as a result of the Project (i.e., the population is currently at maximum density).

Response:

The addition of perching sites and evaporation ponds to the MSP will add additional, low quality resources of the type already provided by the SEGS facility. More importantly, however, the MSP will remove high quality raven subsidies that currently exist as a result of agriculture. Many animals (rodents, birds, and others) injured or killed by farming operations (e.g., mowing and ground preparation) are commonly scavenged by hawks and ravens, which monitor mowing and tilling operations (Alice Karl, pers. obs.). Leaky irrigation pipe connections and irrigation itself also currently provide fresh drinking water for ravens. Shade trees at farm houses provide high quality nesting sites. Removal of agriculture from this area would remove significant agriculturally-based food, water, and nesting resources for ravens. In addition, the MSP Raven Control Plan will establish management strategies and provide Project-specific control measures to ensure that the construction, operation, maintenance, and decommissioning activities associated with the MSP do not increase the presence of ravens within the Project vicinity as a result of Project activities.

Item 71:

Information Requested:

Please discuss the measures that will be implemented to mitigate increased sheet flow on desert tortoise habitat.

Response:

The MSP will have little effect on hydrology in desert tortoise habitat. Desert tortoise habitat generally only occurs upstream of the MSP site. There is a small amount of remnant saltbush scrub in Section 28

that could be occupied by tortoises, although there was no evidence of tortoise use during all surveys. The MSP design for operation will retain all stormwater flows on-site and re-route off-site surface flows around the project site to be returned to natural velocity and location towards Harper Dry Lake. During construction, erosion from the site that could affect sediment deposition into this area would be minimized by grading, compaction, and other surface amendments. Methods to abate potential additional sediment inputs are outlined in the construction SWPPP BMPs. Please refer to Appendix K.1 of the AFC.

Item 72:

Information Requested:

Please specify the design features that will be implemented to minimize the impacts of altered drainage patterns to off-site habitats.

Response:

Please refer to the response to Item 71, above.

Item 73:

Information Requested:

Please specify the portions of the Project Area where desert tortoise clearance surveys will occur.

Response:

According to the DT-2 of the AFC (Mojave Solar 2009), "a clearance survey for DTs will be conducted in all areas with shrub cover."

Item 74:

Information Requested:

Please discuss the status of the Project's desert tortoise translocation plan.

Response:

The draft Desert Tortoise Clearance and Relocation/Translocation Plan (Karl 2010) was submitted to the CEC, USFWS, and CDFG on April 2, 2010.

Item 75:

Information Requested:

Please provide support for the conclusion in the AFC that the willow flycatcher that was observed within the Project Area on June 12, 2007 was likely a transient.

Response:

Please refer to the CEC Staff Assessment, and the 2007 Spring and Winter Raptor Survey Report (refer to response to Item 59). Additionally, since the species was observed only once during all surveys of the Project site, and sparse tamarisk occurs onsite, it was determined by the surveying ornithologist that the individual was a migrant passing through the site.

Item 76:

Information Requested:

Please explain the conclusion in the AFC that the stands of tamarisk in the Project Area do not provide suitable habitat for the willow flycatcher.

Response:

Although the species has been documented to nest in tamarisk, the willow flycatcher will typically do so when tamarisk is available in the form of dense thickets, with a broad canopy cover. This structural diversity is absent from the tamarisk vegetation community on the Project site.

Item 77:

Information Requested:

Please provide justification for the conclusion that Project impacts to Swainson's hawks would be significant only if the species nests within a 0.5-mile radius of the Project area.

Response:

The conclusion was based upon CDFG's survey and mitigation guidelines for the species. However, as described in the CEC Staff Assessment, the CDFG guidelines are for the Central Valley region where the species is concentrated; per the Staff Assessment, it is expected that Swainson's hawks do not occur within the project vicinity in numbers that would result in significant project impacts.

Item 78:

Information Requested:

Please provide the schedule for the proposed Swainson's hawk nest surveys, including the dates (or range) surveys will be conducted within each designated survey period.

Response:

Raptor expert Pete Bloom has been contracted to conduct the Swainson's hawk surveys over a two-day period. The initial survey is scheduled for April 29, 2010. The second survey will be conducted approximately one month after the first survey (i.e., in late May, 2010).

Item 79:

Information Requested:

Please provide justification for the conclusion in the AFC that the American peregrine falcon that was detected was likely a transient.

Response:

Please refer to the 2007 Spring and Winter Raptor Survey Report (see response to Item 59), for a discussion of the American peregrine falcon. No known breeding locations of this species have been documented for the region. It is typically found along shorelines of large bodies of water, and forage up to 5 miles from nest sites. Harper Dry Lake would not constitute a large body of water, and as previously mentioned, the Mojave River is approximately 10 miles from the Project. As such, the species would not be expected to nest or forage onsite or in the general vicinity, and the presence of the species during the survey was categorized as being a transient individual.

Item 80:

Information Requested:

Please provide a discussion of Project impacts to, and mitigation for, American peregrine falcons.

Response:

Please refer to the CEC Staff Assessment for a discussion of impacts and mitigation. The Applicant is agreeable with Condition of Certification BIO-10, which requires pre-construction nest surveys and the implementation of impact avoidance measures for avian species.

Item 81:

Information Requested:

Please provide the Applicant's criteria for the use of the term "transient" (e.g., with respect to the willow flycatcher) and the criteria for the use of the term "migrant" (e.g., with respect to the yellow warbler).

Response:

The Applicant would like to clarify that the term "transient" was mistakenly used in reference to the willow flycatcher. Both the willow flycatcher and the yellow warbler should be referred to as migrants, as these species are expected to use Harper Lake Marsh and adjacent areas through the normal and periodic seasonal movements.

Item 82:

Information Requested:

Please provide a discussion of Project impacts on yellow warbler breeding and migratory stopover habitat.

Response:

As noted in the AFC and the CEC Staff Assessment, no suitable yellow warbler nesting habitat occurs onsite, and the offsite Harper Lake Marsh is the only migratory stopover habitat in the area. No direct impacts to this offsite area would occur. Additionally, the proposed storm water diversion channels would not result in any increase in volume or velocity of surface water movement into Harper Dry Lake.

Item 83:

Information Requested:

Please discuss the measures that will be implemented to mitigate impacts to yellow warblers and their habitat.

Response:

Please refer to the response to Item 82, above. No yellow warbler nesting or migratory stopover habitat occurs on the Project site. The Applicant is agreeable to Condition of Certification BIO-10, which requires pre-construction nest surveys and the implementation of impact avoidance measures for avian species.

Item 83b:

Information Requested:

Please provide justification for the conclusion that the short-eared owl that was detected was likely a transient and did not breed in the Project area.

Response:

The short-eared owl was documented once during a reconnaissance survey. The species was not observed during raptor surveys conducted over the spring and winter seasons in 2007, which focused on numerous raptor/owl species, including the short-eared owl. The species was not detected during any other Project survey. The lack of dense vegetation onsite, a nesting requirement, is lacking. Therefore, it was concluded that the species does not nest onsite, and the lone observation represented a transient individual.

Item 84:

Information Requested:

Please provide a copy of the reconnaissance survey report referenced in the AFC (i.e., EDAW 2006).

Response:

Please refer to the attachment “DR_1_84_Harper_Lake_SPA_Bio_Recon_Rpt.pdf”.

Item 85:

Information Requested:

Please provide copies of the BLM nest record cards for the Harper Dry Lake area.

Response:

The BLM nest record cards are public information. The information can be obtained by contacting the BLM Natural Resources Specialist, Lorenzo Encinas, in the BLM Barstow Field Office. Mr. Encinas can be contacted at:

Lorenzo F. Encinas
Natural Resource Specialist
Barstow Field Office
2601 Barstow Rd.
Barstow CA 92311
(760) 252-6086

Lorenzo_Encinas@ca.blm.gov

Item 86:

Information Requested:

Please discuss all attempts to document birds breeding in the Biological Resources Survey Area.

Response:

During the course of the various field surveys conducted for the Project over the past several years, surveyors were tasked with documenting any nesting activity observed. While not the focus of most surveys, breeding activity would be noted, incidental to other survey data collection. The spring and winter raptor surveys included the documentation of breeding activity in the form of nest locations.

The various biological surveys for the Project were primarily conducted during the general peak avian breeding season, during the spring, optimizing the potential for detection and observation of breeding activity.

Item 87:

Information Requested:

Please provide a discussion of Project impacts to, and mitigation for, short-eared owls.

Response:

As described in the CEC Staff Assessment, the Project would impact potential short-eared owl nesting habitat. However, the Applicant is agreeable to Condition of Certification BIO-10, which requires pre-

construction nest surveys, and the implementation of impact avoidance measures for avian species. Per the Staff Assessment, with BIO-10 in place, the Project would not result in significant impacts to the species.

Item 88:

Information Requested:

Please provide a discussion of Project impacts to, and mitigation for, prairie falcon foraging habitat.

Response:

As described in the CEC Staff Assessment, the Project would result in impacts to prairie falcon foraging habitat. The Project has been designed to minimize impacts to biological resources, as acknowledged by the CEC, CDFG, and USFWS. The Project also has proposed to compensate for Project impacts through the conservation of higher-quality habitat than what will be developed. As outlined in the Staff Assessment for impacts to Swainson's hawk foraging habitat, the Project-related loss of active and fallow agricultural land is considered adverse, but less than significant, and no mitigation is required. Prairie falcons would utilize the same foraging areas as the Swainson's hawk, which is a more highly regulated species than the prairie falcon. Therefore, the same conclusion is drawn that although the loss of prairie falcon habitat is adverse, it is less than significant, and no mitigation is required.

Item 89:

Information Requested:

Please provide a discussion of Project impacts to, and mitigation for, merlins.

Response:

Please refer to the response to Item 88, above. Assessment of potential impacts and mitigation requirements associated with the merlin would come to the same conclusion, as the merlin and prairie falcon forage over similar habitat associations.

Item 90:

Information Requested:

Please provide the date the Cooper's hawk was detected within the Survey Area.

Response:

The information requested has been previously supplied in the 2008 burrowing owl survey report, included in Appendix F of the AFC.

Item 91:

Information Requested:

Please provide a discussion of Project impacts to, and mitigation for, Cooper's hawks.

Response:

Please refer to the response to Item 88, above. Assessment of potential impacts and mitigation requirements associated with the Cooper's hawk would come to the same conclusion, as the Cooper's hawk and prairie falcon forage over similar habitat associations.

Item 92:

Information Requested:

Please clarify how the Project's proposed pumping of groundwater and alterations to hydrology will impact the vegetation communities within Harper Dry Lake.

Response:

The groundwater table is at a depth far below the root zone of the vegetation communities associated with Harper Dry Lake, and therefore, the groundwater proposed to be pumped would not be available as a natural source for vegetation to draw upon. Further, the groundwater proposed to be pumped for Project use would be completely retained for use within the facility, and discharged to onsite evaporation ponds; no discharge of groundwater outside of the facility would occur.

As previously stated, the proposed alterations to surface water hydrology from offsite sheet flow would not result in an appreciable change in the volume or velocity of the existing condition at the historical point of discharge. The outflow is designed to dissipate the flow, and to spread the flow out as it discharges into Harper Dry Lake..

Item 93:

Information Requested:

Please discuss whether the Project will contribute to the BLM's Harper Dry Lake ACEC Wetlands Restoration Project.

Response:

In the past years Abengoa has allowed the use of a private Abengoa well to support the ACEC water needs. This has included paying for repairs to that well to allow for the continued hydration of that area at no cost to the BLM. Additionally, Abengoa proposed, and is now agreeing to as a Condition of Certification, to repair the BLM's existing well prior to the decommissioning of the well currently used by the BLM at Abengoa's cost. Through these actions it is clear that Abengoa has already contributed and is agreeing to contribute to improvements at the ACEC as a part of the aforementioned Condition.

Item 96:

Information Requested:

Please state whether the Applicant would agree to a condition of certification requiring the Applicant to provide water discharge volumes to the ACEC comparable to those resulting from historic agricultural activity.

Response:

A similar measure was included as a Condition of Certification for the neighboring facilities as a result of concerns raised in that case regarding the impact of recent (at that time) cessation of irrigation drainage to the ACEC. In this case, the Applicant has not identified a need for delivery of additional volumes of water. A small area of the project site, 128 acres, has been in recent agricultural production. The Applicant is not aware of any evidence of appreciable water discharge volumes reaching the ACEC from this activity.

Item 97:

Information Requested:

Please provide any available information on the occurrence of Mohave River voles in the Project Area and surrounding habitats. If no additional information is available, please discuss the Applicant's plan for obtaining information on Mohave River vole occurrence in the direct and indirect impact areas.

Response:

As required by the CEC, the AFC includes a map of the historical biological resources (based on a query of the CNDDB) known from a radius of 10 miles around the Project site. No occurrences of Mohave River vole has been documented in the CNDDB for the area queried. Additionally, the habitat assessment/constraints analysis for the Harper Lake Specific Plan Area (please refer to the response to Item 84) concluded that potential Mohave River vole habitat occurred along the edge of the Mojave River, within the area of study, which would be approximately 10 miles from the Project boundary. The Project is located within the Harper Lake Specific Plan Area study limits, but does not include any Project feature that extends to the Mojave River, and would not impact any Mohave River vole habitat.

Item 98:

Information Requested:

Please discuss Project impacts on Mohave River voles.

Response:

Please refer to the response to Item 97, above. The Project would not impact Mohave River vole habitat.

Item 99:

Information Requested:

Please provide mitigation for any potentially significant Project impacts on Mohave River voles.

Response:

Please refer to the response to Item 97, above. The Project would not impact Mohave River vole habitat.

Item 100:

Information Requested:

Please confirm that a wildlife movement corridor study has not been conducted for the Project.

Response:

Although a detailed wildlife movement corridor study (e.g., utilizing camera stations, scent posts, tracking plates, etc.) was not conducted for the Project, the Applicant has analyzed the potential for wildlife movement through and around the site. This analysis looked at habitat features, including topography, habitat quality, presence or absence of protective cover, and the spatial distribution of special status species data collected within the Project site, Biological Resources Survey Area, and any associated buffers.

Item 101:

Information Requested:

Please provide information that would enable an assessment of the Project's impacts on wildlife movement corridors, particularly for the area surrounding Harper Dry Lake.

Response:

As noted in the AFC and the CEC Staff Assessment, the Project has been designed to minimize impacts to intact, natural vegetation communities. The Project has been sited on a previously disturbed area, historically utilized for agricultural purposes, and is currently primarily in fallow agriculture. The site is essentially surrounded on all sides by protected open space (except for the existing solar development adjacent to the northwest), in the form of desert tortoise Critical Habitat, MGS Conservation Area, and BLM DWMA/ACEC. The highly disturbed nature of the Project site would provide minimal attractiveness as a regional wildlife movement corridor, relative to the natural, undisturbed areas in the adjacent protected lands. The landscape features on the Project site are relatively flat and open, and do not provide unique protective cover for animals potentially moving through the region.

Item 102:

Information Requested:

The BLM maintains a database of right of way of applications for renewable energy projects. Please state whether the Applicant relied on data available through the BLM database.

Response:

Yes, the Applicant considered data on right of way applications available through the BLM database.

Item 103:

Information Requested:

Please provide a map that identifies the projects considered in the Applicant's cumulative impact analysis, and that shows their location with respect to the Project.

Response:

As identified in Section 5.1.1 of the AFC and referenced in the same section, Abengoa identified sites considered for cumulative impacts. Mapping is readily available on the referenced websites.

Item 104:

Information Requested:

Please clarify the timing of fence installation in relation to badger and kit fox avoidance and minimization measures.

Response:

The Applicant has been coordinating with the CEC to refine and revise the Conditions of Certification. Among the proposed revisions is a proposal to conduct a series of pre-construction surveys to ensure that foxes, badgers, and other mammals are not using onsite burrows. If unoccupied, these burrows would be collapsed to prevent re-occupation. The pre-construction surveys would be conducted prior to the whelping/pupping season, so that any burrow use at the time of survey would be transitory, allowing for the burrows to be collapsed during a subsequent survey when unoccupied. If necessary, occupied burrows found during the pre-construction surveys (prior to the whelping/pupping season), will be dug out by hand, and the animal will be allowed to escape offsite. Following the pre-construction surveys and the collapsing of all unoccupied burrows, the fence installation would occur.

Item 105:

Information Requested:

If the fence will be installed before the measures are implemented, please clarify how badgers, foxes, and other mammals will be able to exit the site.

Response:

Please refer to the response to Item 104, above. The pre-construction surveys and collapsing of burrows would occur prior to fence installation.

Item 106:

Information Requested:

For each of the following species, please provide (a) the date(s) the species was detected; (b) information on the distribution and abundance of the species within the survey area; and (c) a discussion of the potential significance of the Project on the species:

(a) great egret (rookery sites protected)

(b) great blue heron (rookery sites protected)

(c) snowy egret (rookery sites protected)

(d) Caspian tern (Nesting colonies protected; USFWS Bird of Conservation Concern)

(e) white-faced ibis (rookery sites protected; CDFG Watch List species)

(f) Osprey (CDFG Watch List species)

(g) Abert's towhee (American Bird Conservatory Watch List species)

(h) yellow-headed blackbird (CDFG Species of Special Concern)

(i) olive-sided flycatcher (CDFG Species of Special Concern; USFWS Bird of Conservation Concern)

Response:

The dates on which the species were detected have been previously supplied in the survey data sheets included in the various reports compiled in Appendix F of the AFC.

The various species that are protected at rookery or nesting colonies (great egret, great blue heron, snowy egret, Caspian tern, and white-faced ibis) are not expected to breed on the Project site, due to lack of suitable riparian habitat. Observations of these species were in proximity to the offsite Harper Lake Marsh area and the sparse tamarisk scrub on the Project site. Occurrence and densities were low, with individuals noted to be present during one survey, and absent during others. Due to a lack of habitat onsite, the Project would not significantly impact these species.

The osprey, Abert's towhee, yellow-headed blackbird, and olive-sided flycatcher were also associated with the offsite Harper Lake Marsh, and the tamarisk scrub on the Project site. The osprey typically nests in forested areas adjacent to large bodies of water. Nesting habitat for the osprey is absent from the Project site and the adjacent Harper Lake Marsh. The species specializes on preying upon fish, and will only prey upon small mammals and reptiles when necessary. Based upon the sub-optimal habitat and prey base in the area, the observation of the osprey is likely that of a migrant. No significant impacts to the osprey are expected to occur from the Project.

Abert's towhee was observed in low numbers in the offsite Harper Lake Marsh and in the tamarisk scrub onsite, and has the potential to nest in the tamarisk scrub onsite. The Project may result in impacts to nesting habitat for the species. However, with the implementation of Condition of Certification BIO-10, the impacts would not be considered significant.

The yellow-headed blackbird was observed in low numbers in association with the offsite Harper Lake Marsh, which constitutes potential nesting habitat. The Project would not directly impact the offsite marsh, and the proposed changes to surface flows would not result in any change in the net volume or velocity of surface water normally entering Harper Dry Lake. Therefore, the Project would not indirectly impact the potential nesting habitat of this species.

The olive-sided flycatcher nests and forages at the edges of dense coniferous forests, or occasionally in dense willow forests, usually at higher elevations (approximately 3000 to 7000 feet). Nesting and foraging habitat is absent from the Project site and the adjacent areas. Therefore, the olive-sided flycatcher observation was likely that of a migrant.

Item 107:

Information Requested:

Please discuss the avian collision risk that will result from the Project.

Response:

The Project will utilize technologies similar to what exists at the adjacent solar facility to the northwest. The existing plant, operated by NextEra Energy, has a requirement for monitoring avian mortality at the site. These monitoring records have been referenced in the public record as part of the CEC docket for the NextEra Beacon Solar Energy Project. The monitoring data indicate that avian collision risk is low, in association with that site. Since the Project is similar in location and technology to the existing NextEra solar facility, it is anticipated that the Project would also have a low risk for avian collision.

Item 108:

Information Requested:

Please discuss any Project-specific design measures that will be implemented to mitigate potential avian collision hazards with Project structures and the proposed transmission line.

Response:

Standard visual cues will be used on transmission lines and Project structures, such as colored spheres, rotating paddles, and other devices.

Item 109:

Information Requested:

Please indicate whether the applicant will implement the latest Avian Protection Plan (APP) Guidelines.

Response:

The Applicant will implement the appropriate site-specific measures in the latest Avian Protection Plan (APP) Guidelines, to the extent feasible.

Quon, Lyndon

From: Alice Karl [heliophile@mindspring.com]
Sent: Thursday, February 05, 2009 9:15 PM
To: Kimberly McCormick; 'Frederick Redell'; scott.frier@solar.abengoa.com; Graham, Bill; Quon, Lyndon
Cc: Rebecca Jones
Subject: Re: Fwd: FW: Harper Lake solar project -- desert tortoise surveys (DFG GroupWise Mail)

Harper Lake Team,

I spoke with Becky this evening and she identified the following:

1) Re: the one-year time limit on desert tortoise surveys. Surveys do not need to be repeated in 2009 if and only if we assume presence of desert tortoises AND plan to mitigate for loss of habitat. Becky and I then discussed the non-regrowth, recently abandoned and exisiting ag areas (east of Harper Lake Rd.), which do not meet her criteria. I said that these areas were not habitat, so we would not be compensating for them, although ultimately we would do a clearance survey just in case a transient tortoise built a burrow (which might occur near the edges where there is adjacent habitat). We discussed what constitutes habitat and Becky agreed that the major importance of the barren areas would be if a tortoise were found there - it would be the take of an individual animal that was important. However, since we would not be assuming presence on these non-habitat areas and will not be compensating for use of those areas, she would like to see a survey this spring of a 300-meter band that's adjacent to native habitat.

2) Re: Re-surveying for plants. Given that last year was an adequate survey year, judging from both the general growth of plants and the observations of special-status species in the survey area, I said that we would not be assuming presence of the special-status plant species. I further stated that the only condition under which we might consider re-surveying in order to verify absence would be if the rainfall conditions in Winter 2008-9 promoted an unusually abundant growth of plants in Spring 2009. This is a situation that occurs approximately once per decade, and most recently occurred in 2005. Under these unusually abundant rainfall conditions, rare plants, which may be represented by only a few individuals in an average year, can be quite abundant and found in areas where they were previously thought to be absent. Becky would like to think about whether she thinks that there should be any repeat surveys for plants. She asked for the species list, which I sent her.

Alice

Alice E. Karl, Ph.D.
P.O. Box 74006
Davis, CA 95617
(530) 666-9567
cell: (530) 304-4121
Fax: (612) 465-4822
----- Original Message -----
From: "Kimberly McCormick" <kimberly.mccormick@comcast.net>
To: "'Alice Karl'" <heliophile@mindspring.com>; "'Frederick Redell'" <fred@redellengineering.com>; <scott.frier@solar.abengoa.com>; "'Graham, Bill'" <Bill.Graham@edaw.com>; "'Quon, Lyndon'" <Lyndon.Quon@edaw.com>
Sent: Wednesday, February 04, 2009 8:37 PM
Subject: RE: Fwd: FW: Harper Lake solar project -- desert tortoise surveys (DFG GroupWise Mail)

> Thanks Alice.
>
> Law Offices of Kim McCormick
> 3920 Southern Cross Road NE
> Bainbridge Island, Washington 98110
> (206) 780 9064 (tel.)
> (206) 910 4772 (cel)
> kimberly.mccormick@comcast.net
> _____

> review, reliance or distribution by others or forwarding without express
> permission is strictly prohibited. If you are not the intended recipient,
> please contact the sender and delete all copies.
>
>
>
>
> -----Original Message-----
> From: Alice Karl [mailto:heliophile@mindspring.com]
> Sent: Wednesday, February 04, 2009 8:36 PM
> To: Kimberly McCormick; 'Frederick Redell'; scott.frier@solar.abengoa.com;
> 'Graham, Bill'; 'Quon, Lyndon'
> Subject: Re: Fwd: FW: Harper Lake solar project -- desert tortoise surveys
> (DFG GroupWise Mail)
>
> I did call Becky, but her phone was busy for quite awhile, and then the
> message machine picked up. I'll try again tomorrow.
> Alice E. Karl, Ph.D.
> P.O. Box 74006
> Davis, CA 95617
> (530) 666-9567
> cell: (530) 304-4121
> Fax: (612) 465-4822
>
> ----- Original Message -----
> From: "Kimberly McCormick" <kimberly.mccormick@comcast.net>
> To: "'Frederick Redell'" <fred@redellengineering.com>;
> <scott.frier@solar.abengoa.com>; "'Alice Karl'" <heliophile@mindspring.com>;
>
> "'Graham, Bill'" <Bill.Graham@edaw.com>; "'Quon, Lyndon'"
> <Lyndon.Quon@edaw.com>
> Sent: Wednesday, February 04, 2009 7:13 PM
> Subject: FW: Fwd: FW: Harper Lake solar project -- desert tortoise surveys
> (DFG GroupWise Mail)
>
>
>
>> Here is Becky Jones' response regarding 2009 surveys for DT. Alice is
>> going
>> to talk with Becky regarding plant surveys, and we have agreed to assume
>> MGS
>> presence without doing MGS surveys. Any other species we should be
>> concerned about for 2009 surveys?
>>
>>
>>
>> Law Offices of Kim McCormick
>>
>> 3920 Southern Cross Road NE
>>
>> Bainbridge Island, Washington 98110
>>
>> (206) 780 9064 (tel.)
>>
>> (206) 910 4772 (cel)
>>
>> kimberly.mccormick@comcast.net
>>
>> _____
>>
>> This email may contain material that is confidential, privileged and/or
>> attorney work product for the sole use of the intended recipient. Any

>> review, reliance or distribution by others or forwarding without express
>> permission is strictly prohibited. If you are not the intended recipient,
>> please contact the sender and delete all copies.
>>
>>
>>
>>
>>
>>
>>
>>
>>
>> _____
>>
>> From: Becky Jones [mailto:dfgpalm@roadrunner.com]
>> Sent: Wednesday, February 04, 2009 2:17 PM
>> To: Kimberly McCormick
>> Subject: Re: Fwd: FW: Harper Lake solar project -- desert tortoise surveys
>> (DFG GroupWise Mail)
>>
>>
>>
>> HI Kim,
>>
>> Yes, since tortoises were found on the first survey and the project
>> agrees
>> that they are on site, then a 2009 survey will not be needed. The first
>> survey is important so we have an idea of how may tortoises we might be
>> looking at for translocation.
>>
>> Becky
>>
>> Rebecca Jones wrote:
>>
>>
>>
>>
>>
>> _____
>>
>>
>>
>>
>>
>> Subject:
>>
>> FW: Harper Lake solar project -- desert tortoise surveys
>>
>>
>> From:
>>
>> "Kimberly McCormick" <mailto:kimberly.mccormick@comcast.net>
>> <kimberly.mccormick@comcast.net>
>>
>>
>> Date:
>>
>> Tue, 3 Feb 2009 09:23:06 -0800
>>
>>
>> To:
>>
>> <mailto:RJONES@dfg.ca.gov> <RJONES@dfg.ca.gov>

>>
>>
>>
>>
>> To:
>>
>> <mailto:RJONES@dfg.ca.gov> <RJONES@dfg.ca.gov>
>>
>>
>>
>>
>>
>>
>>
>>
>>
>>
>> Law Offices of Kim McCormick
>>
>> 3920 Southern Cross Road NE
>>
>> Bainbridge Island, Washington 98110
>>
>> (206) 780 9064 (tel.)
>>
>> (206) 910 4772 (cel)
>>
>> kimberly.mccormick@comcast.net
>>
>> _____
>>
>> This email may contain material that is confidential, privileged and/or
>> attorney work product for the sole use of the intended recipient. Any
>> review, reliance or distribution by others or forwarding without express
>> permission is strictly prohibited. If you are not the intended recipient,
>> please contact the sender and delete all copies.
>>
>>
>>
>>
>>
>>
>>
>>
>>
>>
>> _____
>>
>> From: Kimberly McCormick [mailto:kimberly.mccormick@comcast.net]
>> Sent: Tuesday, February 03, 2009 9:18 AM
>> To: Dfgpalm@mindspring.com
>> Subject: Harper Lake solar project -- desert tortoise surveys
>>
>>
>>
>> Hi Becky, it was nice to speak with you this morning. As I stated during
>> our telephone conversation, the project proponent for the proposed solar
>> energy project near Harper Lake conducted desert tortoise protocol surveys
>> at the site in 2008 and confirmed presence of desert tortoise. It is my
>> understanding, based on our conversation this morning, that the project
>> proponent does not have to do additional DT surveys in 2009 because the
>> project is assuming presence of DT based on the 2008 survey results.
>> Additional 2009 surveys would be necessary only if there are sensitive

>> species known to occur in the project vicinity, or for which habitat is
>> present on the project site, and the project was NOT going to assume
>> presence of those species. I would appreciate your confirmation of my
>> understanding of this survey question.
>>
>>
>>
>> As we also discussed, we would like to set up a meeting with you towards
>> the
>> end of February or early March to present the project to you and describe
>> what we have in mind. Please let me know if there are dates that will not
>> work for you, and we can schedule around those. It was good to talk with
>> you, and I look forward to working with you in permitting this project.
>> Kim
>>
>>
>>
>>
>>
>>
>>
>>
>> Law Offices of Kim McCormick
>>
>> 3920 Southern Cross Road NE
>>
>> Bainbridge Island, Washington 98110
>>
>> (206) 780 9064 (tel.)
>>
>> (206) 910 4772 (cel)
>>
>> kimberly.mccormick@comcast.net
>>
>> _____
>>
>> This email may contain material that is confidential, privileged and/or
>> attorney work product for the sole use of the intended recipient. Any
>> review, reliance or distribution by others or forwarding without express
>> permission is strictly prohibited. If you are not the intended recipient,
>> please contact the sender and delete all copies.
>>
>>
>>
>>
>>
>>
>>
>>
>>
>>
>>
>>
>>
>>
>> _____ NOD32 3827 (20090204) Information _____
>>
>> This message was checked by NOD32 antivirus system.
>> http://www.eset.com
>>
>
>

>
> _____ NOD32 3827 (20090204) Information _____
>
> This message was checked by NOD32 antivirus system.
> http://www.eset.com
>
>

Quon, Lyndon

From: <Ray_Bransfield@fws.gov> [Ray_Bransfield@fws.gov]
Sent: Saturday, June 02, 2007 6:59 AM
To: Lyndon Quon
Cc: Judy_Hohman@fws.gov
Subject: Re: Harper Lake desert tortoise survey window extension request

Lyndon,
No. Again, to me, the primary purpose of the protocol was to tell us whether tortoises were in the area and if a formal section 7 consultation or an incidental take permit would be necessary. As they are written, the protocols are designed to determine presence or absence of tortoises; they also provide some indication of whether one is dealing with lots of tortoises or just a few, but I don't think anyone is of the opinion that the surveys will provide the definitive numbers on a given site.

Given this, I prefer crafting surveys at this stage of the game to be specific to what the proponent needs at the time. In cases where we know tortoises are present and formal section 7 consultation will be required, I would recommend that we use surveys to generally characterize habitat to give us a big picture concept as to what we are dealing with than to do focused tortoise surveys; unless the impacts of the project would extend away from the project footprint in some odd way, I would suggest not doing the zone of influence surveys. Of course, if the project gets to the stage where ground disturbance is going to occur, I would be looking for full-on clearance surveys and other BMPs to minimize take. I.e., I'd rather expend the effort to protect tortoises during the work than on gathering information that may not be that important in the long run.

Section 10(a)(1)(B) permits may require more surveying up-front, considering that, in some cases, proponents may be able to avoid this lengthy process if they can site their project appropriately, but I would still apply the same concepts.

Also, when one is making a decision about the potential effects of an action on the tortoise, I think the conditions of the survey and the results dictate a lot about how the surveys should have been done. I know that's working a bit backward but, to me, it's useful for people to think about this stuff. For example, consider an area that may or may not have tortoises; the biologist does a survey at the hottest or coldest parts of the year during a drought year and doesn't find anything. How confident would you be that the biologist gave himself or herself the best opportunity to find a tortoise or sign? I wouldn't be too confident. On the other hand, negative results under good conditions can say a lot more.

I hope that rambling helps. Also, I confess that I have lost track of what may actually be happening now at Harper Lake. Is it now looking like a completely non-federal action or is BLM still involved? Or some combination of both? Given that the proposal seems to have changed, it may be useful for us to spend a bit of time with you or someone from Harper Lake LLC to be sure we know what you all will want from us. Being on the same page throughout the process can save a lot of pages near the end of your planning process.
Ray

"Lyndon Quon" <Lyndon.Quon@edaw .com>		To
06/01/2007 06:34 PM	<Ray_Bransfield@fws.gov>	cc
	<Judy_Hohman@fws.gov>	Subject
	Re: Harper Lake desert tortoise survey window extension request	

Ray:

Thank you for the information and guidance. Out of curiosity, does the Service have a limit on how long the survey window can be extended? Alice had mentioned that she would likely recommend revising the survey window, but she didn't specify precisely what she was intending to suggest for the revised protocol.

I ask this question, because I was just informed that the Harper Lake LLC has requested that I prepare and submit a proposal to them, for additional tortoise surveys along a linear feature extending to the south of the original Harper Lake site. I didn't want to promise the LLC that the surveys could be completed this year, if there will be a definite end to the survey window. Any additional guidance is greatly appreciated.

Thanks,

Lyndon Quon
Senior Wildlife Biologist
EDAW, Inc.
1420 Kettner Blvd., Suite 620
San Diego, CA 92101

www.edaw.com
Lyndon.Quon@edaw.com
619.764.6800
619.233.0952 (fax)

Please note that my e-mail address and telephone number have changed.
>>> <Ray_Bransfield@fws.gov> 06/01/07 4:40 PM >>>
Lyndon,
The Service has no objections to continuing the surveys beyond May 31. The
protocols were designed more to see if tortoises were present than to

provide a firm number that may be in an area and we agree with Alice
that
they need to be updated.

The reports that emanate from the survey work will be most useful if
they
accurately report what you find out there in terms of tortoises, the
level
of survey effort, and the conditions on the ground; i.e., documenting
both
the overall 'quality' of the habitat, both in terms of plant communities
and level of disturbance and also the seasonal conditions. (Obviously,
it's been a very dry year.)

Let me know if you have any other questions.
Ray

	"Lyndon Quon"	
	<Lyndon.Quon@edaw	
	.com>	
To		"Judy Hohman" <Judy_Hohman@fws.gov>
	05/30/2007 01:47	
cc		
	PM	"Ray Bransfield"
		<Ray_Bransfield@fws.gov>
Subject		Harper Lake desert tortoise survey
		window extension request

Judy/Ray:

EDAW has been contracted to conduct protocol-level surveys for the Mojave desert tortoise at the Harper Lake Solar site (south and east of the existing solar facility near Harper Lake). EDAW began the surveys on May 24, 2007. Since that time, it has become apparent that the surveys cannot be completed within the optimal survey window (ending May 31) outlined in the current protocol methodology. Our client, Harper Lake LLC, has indicated that they have been in contact with both of you in the past, regarding this project/property (this property, plus additional adjacent properties, was once proposed to be a dairy farm), and would be the Service personnel to contact, in order to request the survey window extension. It is anticipated that the survey of the approximately 1,200-acre site will be completed by June 7, 2007. EDAW is requesting that the survey window be extended for the Harper Lake Solar project, based on the following:

1. Observation of active tortoise: Qualified desert tortoise biologists have documented a tortoise above ground, 1 mile from the edge of the Harper Lake Solar project boundary on May 29, 2007 (yesterday). Additionally, active tortoises have been documented in the vicinity of the town of Hinkley, CA, approximately 15 miles southeast of the Harper Lake Solar site as of May 24, 2007.

2. An excerpted e-mail response from Dr. Alice Karl, when asked to provide input on requesting an extension to the survey window: "in general, tortoises are active past May 31. When the protocols were written, the general thought was that tortoises went underground in May sometime, not to return aboveground until fall. It was even thought that they aestivated. Well, we know better now, don't we? In fact, tortoises are active most of the summer, if somewhat less active than in months with mild temperatures and forage. Females don't even stop laying eggs until July, and they can make great movements in order to accomplish this. Bottom Line: Tortoises are active past May 31. The protocols are out of date (actually, out of data). There is no reason to think that Harper Lake tortoises behave differently...I am in the process of writing an amendment to the protocols, which FWS is expecting this summer sometime. It will include an adjustment to the protocol window."

Can either of you please provide your concurrence with the request to extend the survey window for this project? E-mail is fine, and probably the easiest/quickest way. I just need something for the project file.

Thanks,

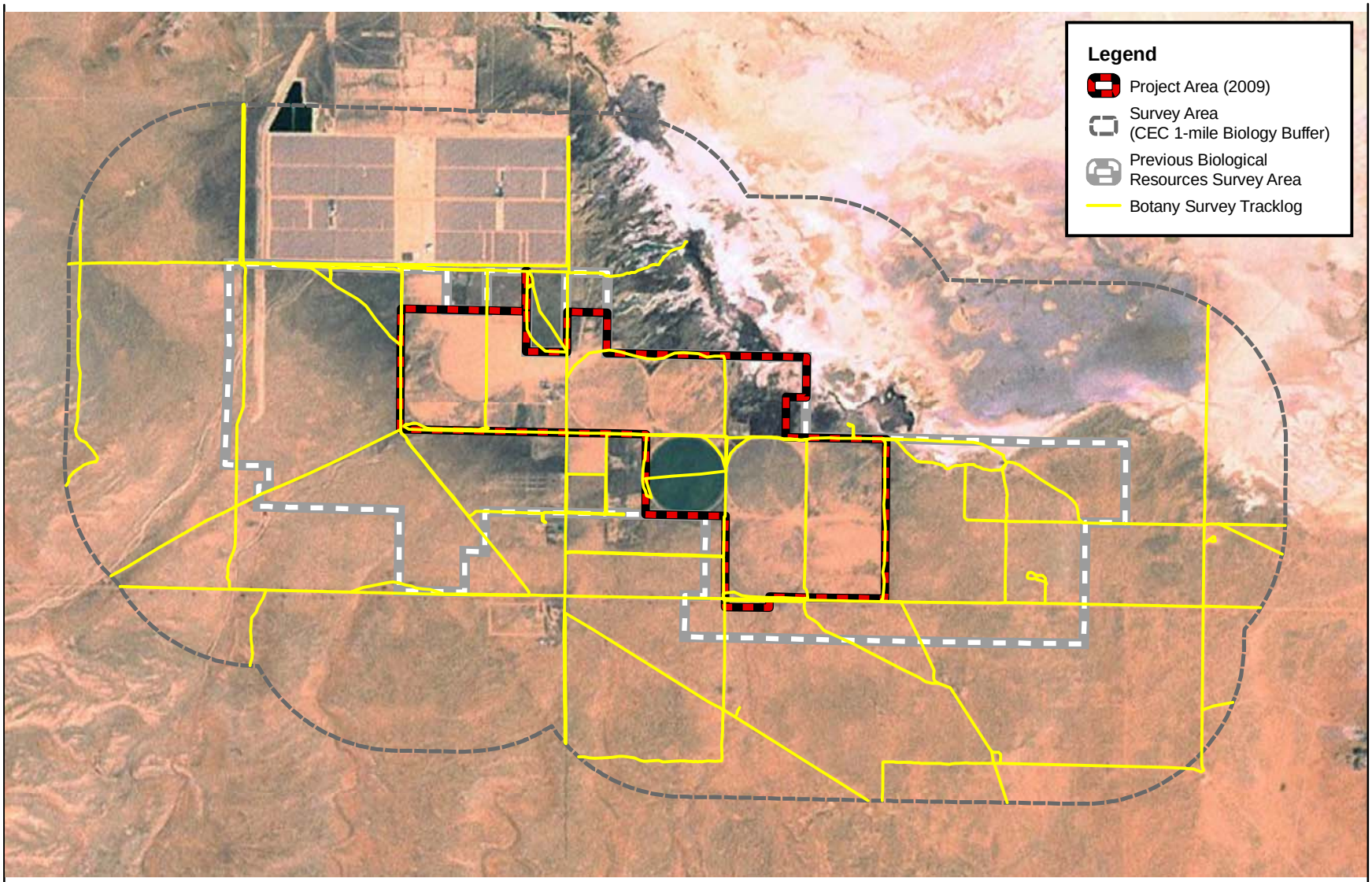
Lyndon Quon
Senior Wildlife Biologist
EDAW, Inc.
1420 Kettner Blvd., Suite 620
San Diego, CA 92101

www.edaw.com
Lyndon.Quon@edaw.com
619.764.6800
619.233.0952 (fax)

Please note that my e-mail address and telephone number have changed.

Mojave Solar Project

Path: P:\2008\08080191 Harper Lake Abengoa AFC\6.0 GIS\6.2 Project Directory\6.2.5 Layout\BIO\VEG\botany_survey_tracklogs.mxd, 04/06/10, LeeJ



Source: NAIP 2005; AECOM 2010

5,000 0 5,000 Feet

Scale: 1 = 60,000; 1 inch = 5,000 feet

Roads Traveled during Botany Surveys

HARPER LAKE SOLAR PROJECT
RAPTOR SURVEY
SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:

ENSR Corporation

Prepared by:

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

February 2008

TABLE OF CONTENTS

Section **Page**

APPENDICES

A Field Data Sheets

B Wildlife Species Detected during Raptor Surveys

LIST OF FIGURES

Figure **Page**

LIST OF TABLES

Table **Page**

LIST OF ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
CDFG	California Department of Fish and Game
CEC	California Energy Commission
EDAW	EDAW, Inc
GPS	Global Positioning System
MW	megawatts
SSC	Species of Special Concern
USGS	United States Geological Survey

This page intentionally left blank.

EXECUTIVE SUMMARY

Focused surveys for raptors were performed at the proposed Harper Lake Solar Project (Project) site in support of environmental documentation required by the California Energy Commission for licensing of thermal power plants over 50 megawatts. The proposed Project site is located southwest of Harper Dry Lake, approximately 15 miles west of Barstow, in San Bernardino County, California. The entire 1,250-acre Project site will be affected by Project development.

Currently, the Project site consists of active and fallow agriculture with pockets of desert saltbush scrub in the northern section. The Project site is surrounded by open space to the north, the Harper Lake Solar Electric Generating System facility to the northwest, the Harper Dry Lake Ecological Preserve to the northeast, and federal Bureau of Land Management-designated Open Space to the south and west.

Northern harriers (*Circus cyaneus*), prairie falcons (*Falco mexicanus*), and Swainson's hawks (*Buteo swainsoni*) are special status raptor species that are known to occur or have the potential occur on the Project site, based on habitat characteristics. Suitable breeding and foraging habitat for these species occurs on the Project site.

Focused raptor surveys were preformed in the summer (June) 2007 and winter (November through January) 2007 - 2008 by qualified biologists. Northern harrier, Cooper's hawk (*Accipiter cooperii*), Swainson's hawk, red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), merlin (*Falco columbarius*), prairie falcon, and American kestrel (*Falco sparverius*) were detected during focused raptor surveys, and peregrine falcon (*Falco peregrinus*), great horned owl (*Bubo virginianus*), barn owl (*Tyto alba*), and burrowing owl (*Athene cunicularia*) were detected on the Project site during other biological surveys in 2007 and 2008. Four other special status wildlife species (or their sign) were observed during raptor surveys. These include loggerhead shrike (*Lanius ludovicianus*), Le Conte's thrasher (*Toxostoma lecontei*), willow flycatcher (*Empidonax traillii*), and California horned lark (*Eremophila alpestris actia*).

This page intentionally left blank.

CHAPTER 1
INTRODUCTION

This report summarizes results of focused surveys conducted by EDAW, Inc. (EDAW) to determine whether raptors are present and use the proposed Harper Lake Solar Project site and surrounding area (Figures 1 and 2). The surveys were conducted under subcontract to ENSR on behalf of Abengoa Solar, Inc. (Abengoa) in support of environmental documentation for power plant licensing required by the California Energy Commission (CEC). Raptor surveys were requested by Becky Jones (Jones, 2007), California Department of Fish and Game (CDFG), based on concerns over use of the Harper Lake Solar Project site by northern harriers (*Circus cyaneus*). Impacts to breeding or wintering raptors on the Project site due to habitat destruction would require Project features to incorporate appropriate measures to avoid, minimize, or mitigate for impacts to these species.

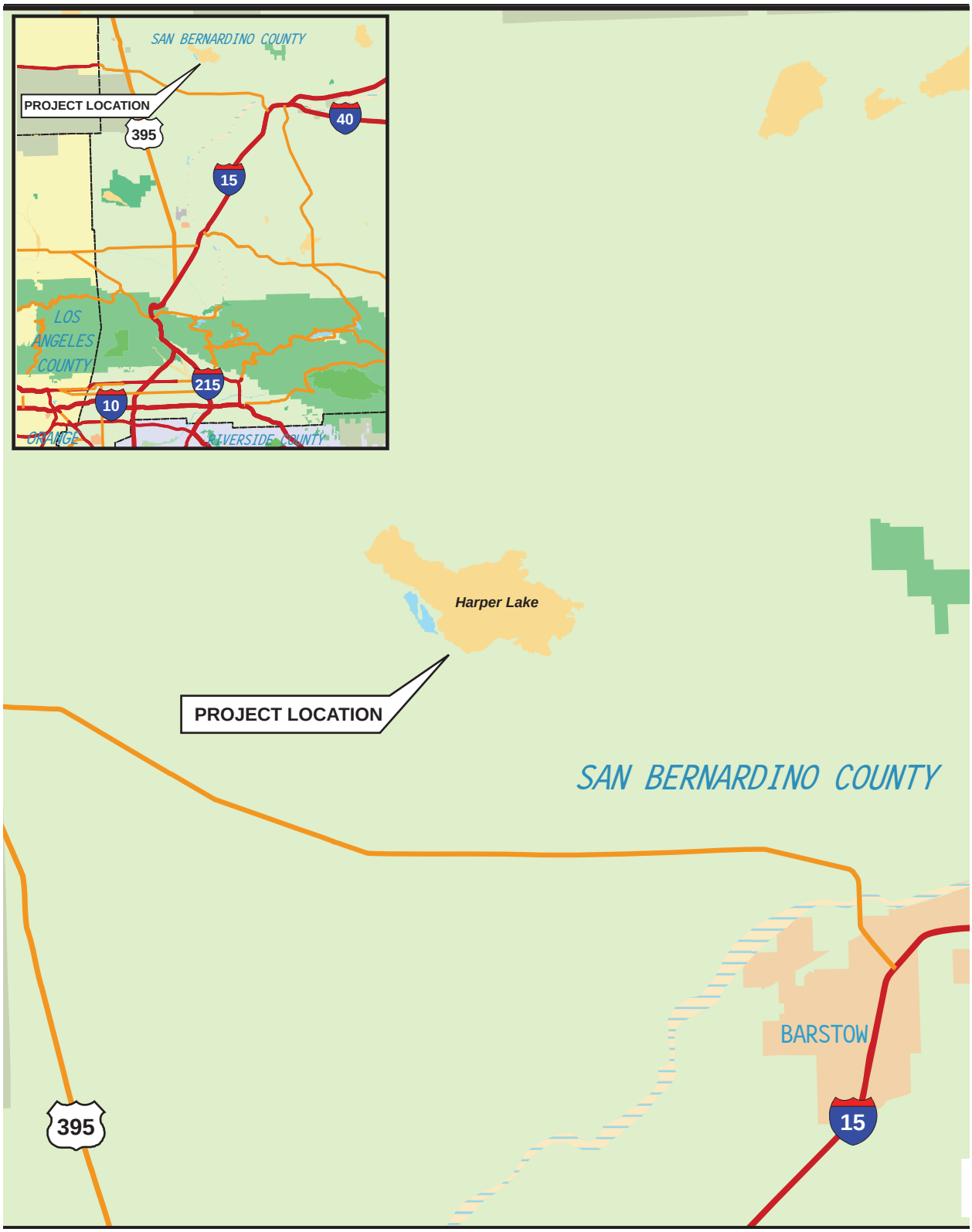
1.1 PROJECT DESCRIPTION

The Project involves developing solar thermal energy facilities with 250-megawatt (MW) generating capacity (using parabolic trough technology) on a 1,250-acre site. Project facilities will include a solar array field, steam turbine generator, cooling tower, and a variety of ancillary equipment and facilities. No offsite linear facilities are currently planned. The Project is expected to interconnect with existing transmission lines that run adjacent to the site's southern boundary. It will use site groundwater for cooling (no offsite water supply pipeline), and no natural gas pipeline is required. It is assumed that the biological resources of the entire 1,250-acre site will be affected by Project development.

1.2 PROJECT LOCATION AND SITE DESCRIPTION

The proposed Project site is approximately 15 miles northwest of Barstow, California, and approximately 5 miles north of State Route 58 (Figure 1). The Project site is located at the southwest corner of Harper Lake, an ephemeral alkalai lake bed, in the southern section of the Lockhart U.S. Geological Survey (USGS) quadrangle and the northern section of the Twelve Gauge Lake USGS quadrangle, northeast of the intersection of Santa Fe Avenue with Harper Lake Road (Figure 2). The Project site is approximately 1,250 acres and currently consists of contiguous parcels of private property.

Topography on the Project site is generally flat with elevation ranging from approximately 2,100 feet at the southwest corner falling to approximately 2,030 feet at the northeast edge of the site.



Source: Thomas Bros.

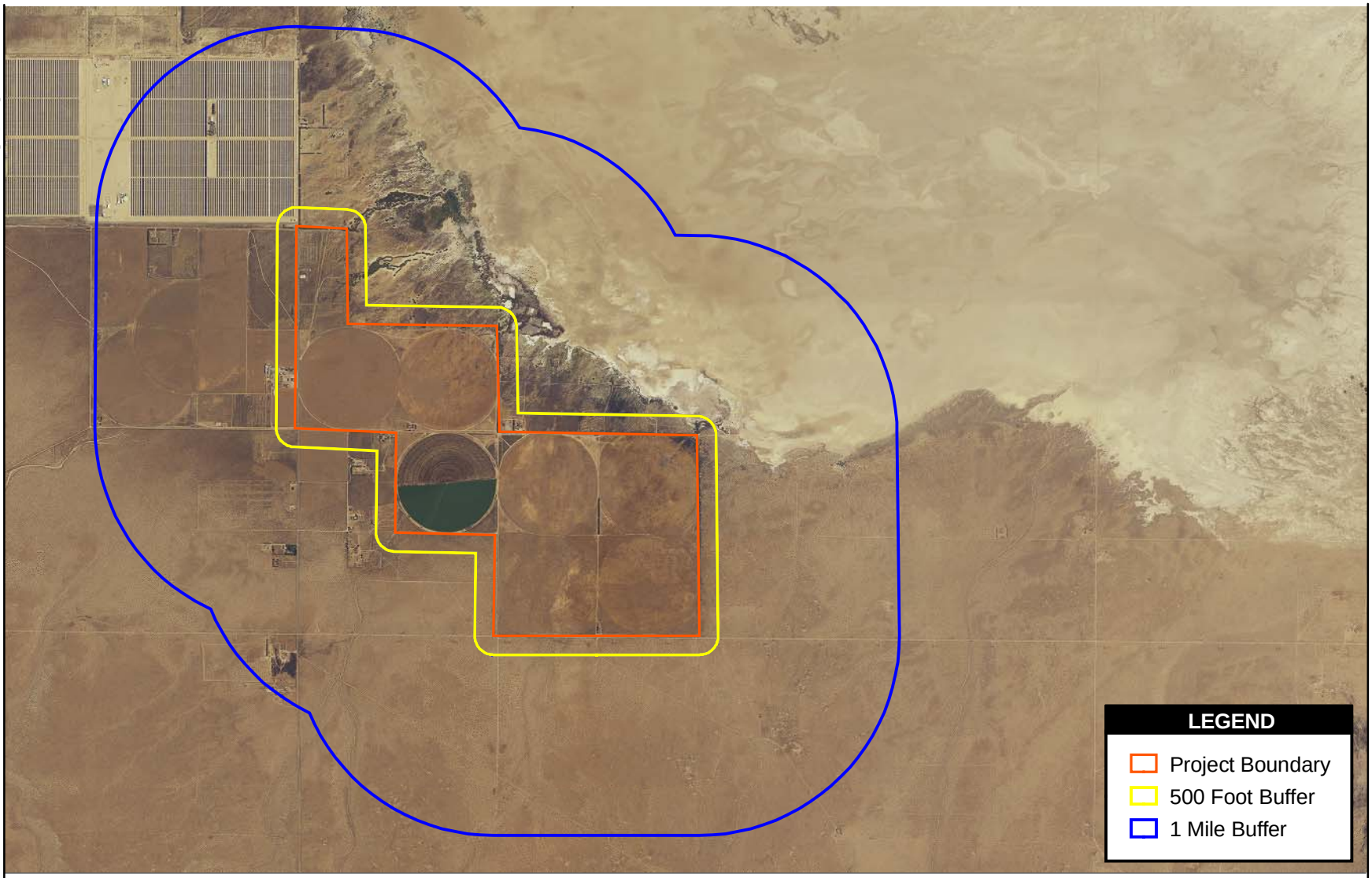
4.5 2.25 0 4.5 Miles

Approximate Scale: 1 inch = 4.5 miles

Figure 1
Regional / Vicinity Location Map

Harper Lake Solar Project Raptor Survey Report

Path P:\2007\07080136 Harper Lake Solar Biology\5GIS\MXD\BIO\Desert Tortoise\Letter Report\Project Boundary.mxd, 06/19/07, morenop



Source: NAIP 2005

4,000 2,000 0 4,000 Feet

Scale: 1:48,000; 1 inch = 4,000 feet

Figure 2
Project Boundary and Survey Area

Soils on the Project site have been characterized by Ninyo & Moore Geotechnical and Environmental Sciences Consultants (Ninyo & Moore, July 2006). The Project site is covered in older alluvium consisting of dry, loose-to-medium dense, silty fine-to-coarse sand with occasional gravel. Ninyo & Moore hypothesizes that layers of silt and possibly clay are likely present within the older alluvium. Vegetation communities that occur on the Project site include ruderal and fallow agricultural fields and saltbush (*Atriplex* spp.) scrub. Ruderal, exotic, and developed land cover types also occur and include urban/developed, general agriculture, and nonnative vegetation. Some Mojave creosote bush (*Larrea tridentata*) scrub is adjacent to the Project site along the south and west boundaries. Although most of the Project site was historically used for agriculture, only one active agricultural crop circle remains.

Six special status plant species and four special status wildlife species are known to occur in the region. Special status plant species include desert cymopterus (*Cymopterus deserticola*), Barstow woolly sunflower (*Eriophyllum mohavense*), Mojave monkey flower (*Mimulus mohavensis*), Utah glasswort (*Sarcocornia utahensis*), pygmy poppy (*Canbya candida*), and Mojave spineflower (*Chorizanthe spinosa*). Special status wildlife species include desert tortoise (*Gopherus agassizi*), burrowing owl (*Athene cunicularia*), prairie falcon (*Falco mexicanus*), and Mohave ground squirrel (*Spermophilus mohavensis*).

As shown in Figure 3, land directly north of the Project site is currently undeveloped open space. The existing 160 MW Harper Lake Solar Electric Generating System facilities are located northwest of the Project site. The Harper Dry Lake Ecological Preserve, managed by the Bureau of Land Management (BLM), is located northeast of the Project site and has been designated as a Key Raptor Area by the BLM. Areas south and west of the Project site are designated BLM Open Space.

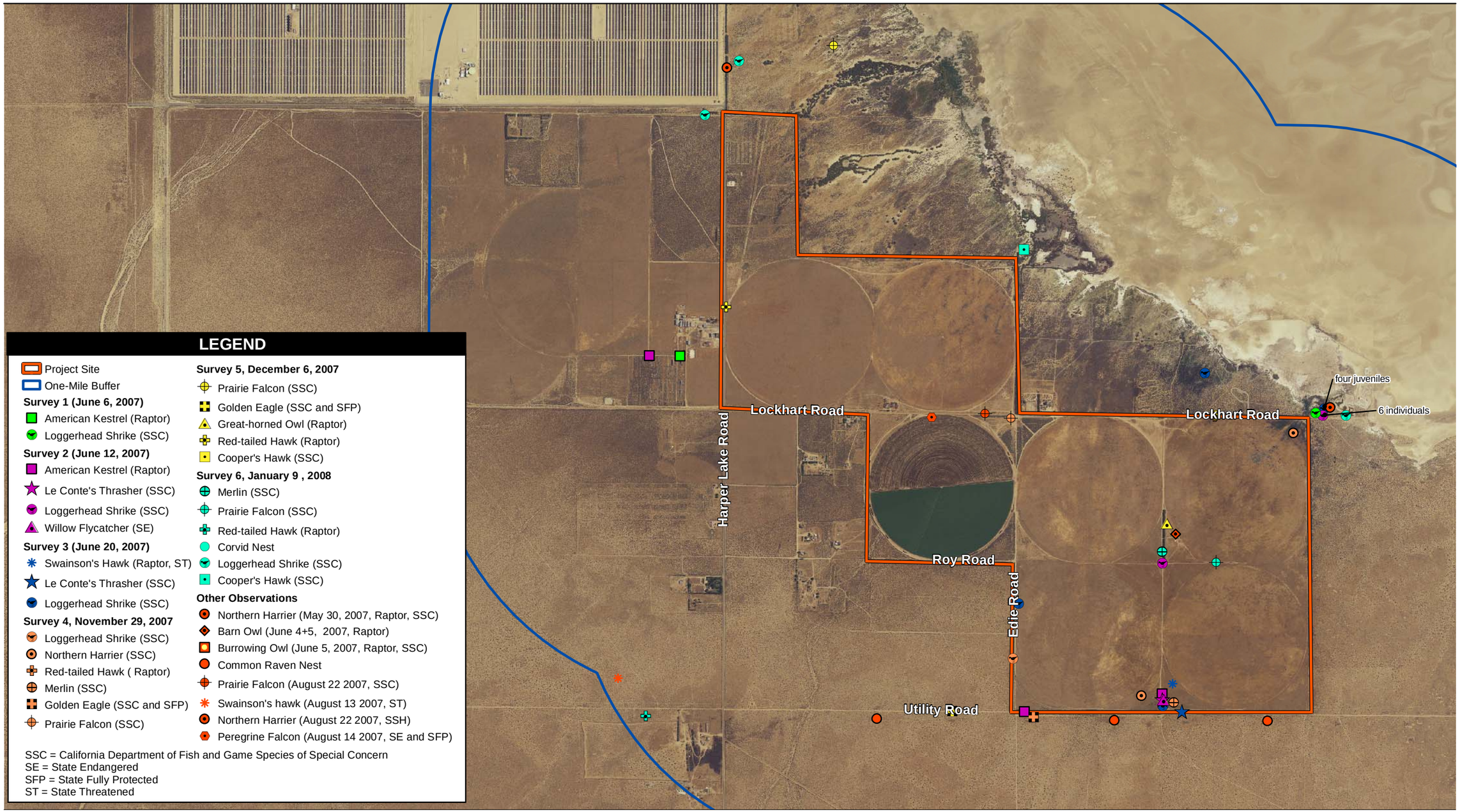
1.3 RAPTOR SPECIES BACKGROUND INFORMATION

The following raptor and other large, soaring bird species have the potential to, or are known to, occur at the Project site.

1.3.1 Northern Harrier

The northern harrier was identified as a Species of Special Concern (SSC) by the CDFG in 1978 and is protected under the Migratory Bird Treaty Act (MBTA). Northern harriers were detected within the Project vicinity during 2006 reconnaissance activities. This species forages in open fields, grasslands, dry uplands, croplands, marshes, and cold desert shrub-steppe with low vegetation, which are habitat features that are present in the Project area (MacWhirter and

Bildstein, 1996). Harriers most often nest on the ground in shrubby vegetation, using platform nests of sticks and grasses, frequently near



Source: NAIP

1,750 875 0 1,750 Feet

Scale: 1:21,000; 1 inch = 1,750 feet

Figure 3
Raptor Survey Results
2007

Path: P:\2007\07080136 Harper Lake Solar Biology\5GIS\MXD\BIO\Raptor Survey\Raptor Report\Survey Results Jan 2008 Updates.mxd, 01/31/08, MorenoP

This page intentionally left blank.

moist areas or by water but also in dry upland desert scrub. They generally perch on the ground but will also use fence posts or other low perches.

Northern harrier population densities are correlated with the abundance of major prey species, such as mice and voles (Craighead and Craighead 1956). Nest sites are limited by the presence of mammalian predators. Breeding generally begins in April and extends through September, with peak activity in June and July.

1.3.2 Cooper's Hawk

Nesting populations of Cooper's hawks (*Accipiter cooperii*) were identified as SSC by the CDFG in 1978 and the species is protected under the MBTA. The Cooper's hawk is a breeding resident throughout most of the wooded portion of California (CDFG, 2005). The species ranges in elevation from sea level to above 9,000 feet. Although generally a year-round resident, wintering Cooper's hawks will disperse widely from southern Canada to northern Mexico. Cooper's hawks nest primarily in oak woodlands but occasionally in willows or eucalyptus, and build their nests high in trees but beneath the canopy (Asay, 1987). The species usually nests and forages near open water or riparian vegetation, and uses dense stands of live oak, riparian deciduous, or other forest habitat near water. The Cooper's hawk preys on small birds, especially young during nesting season, and small mammals. They also take reptiles and amphibians. Cooper's hawks catch their prey in the air, on the ground, and in vegetation and generally hunt in patchy woodland and habitat edges. The species has declined in California due to destruction of riparian woodland, contamination with pesticides, and shooting. Numbers appear to be increasing range-wide as the species adapts to the urban environment (Rosenfield and Bielefeldt, 2006).

Breeding habitat for the Cooper's hawk may have occurred at the Project site when Harper Dry Lake was more regularly inundated. Currently, habitat for this species is limited and probably only suitable for winter residency.

1.3.3 Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) was listed as threatened under the California Endangered Species Act on April 17, 1983 and is protected under the MBTA. This species typically inhabits savanna, open pine-oak woodland, and cultivated lands with scattered trees and is known to build nests along wetlands, drainages, savannas, and farmsteads. Swainson's hawks are common inhabitants of the Great Plains and other relatively arid areas of western North

America, extending less commonly to interior Alaska; northern Mexico; and western Minnesota, Illinois, Missouri, and Texas. Prey includes mammals, birds, and reptiles during the breeding season, and invertebrates (especially grasshoppers and dragonflies) at other times (England et al., 1997). Suitable nesting and foraging habitat for Swainson's hawk occurs on site in the form of large ornamental trees at occupied and abandoned residences and open active and fallow agricultural fields.

1.3.4 Golden Eagle

The golden eagle (*Aquila chrysaetos*) was identified as an SSC in 1978, is Fully Protected by the CDFG, is protected under the MBTA, and is also protected under the federal Bald and Golden Eagle Protection Act. Golden eagles are distributed throughout North America, Eurasia, and North Africa (Johnsgard, 1990). Golden eagles occur as breeding residents in the western half of the United States and formerly nested in the northeast (Terres, 1980; Johnsgard, 1990). This species is an uncommon resident throughout California (CDFG 1983a). Golden eagles forage in grassy and open shrubby habitats and nest primarily on cliffs, with secondary use of large trees (e.g., oaks and sycamore), features found on or near the Project site. This species has declined because of loss of foraging and nesting habitat to urban and agricultural development, human persecution (illegal shooting), incidental poisoning of prey species (e.g., ground squirrels and prairie dogs), egg collecting, power line electrocution, and human disturbance at nest sites (Snow, 1973; Johnsgard, 1990; Scott, 1985).

1.3.5 Merlin

The merlin (*Falco columbarius*) was identified as an SSC in 1978 and is protected under the MBTA. This species is an uncommon winter migrant to California from September to May (Zeiner et al., 1990). It is seldom found in heavily wooded areas, or open deserts. The species frequents coastlines, open grasslands, savannahs, woodlands, lakes, wetlands, edges, and early successional stages of vegetation. The merlin ranges from annual grasslands to ponderosa pines and montane hardwood-conifer habitats. It occurs in most of the western half of the state below 3,900 feet. The merlin is a rare winter migrant in the Mohave Desert. Numbers declined markedly in California in the 1960's but seem to be rebounding since 1990 (Unitt, 2004; Sodhi et al., 2005). This small falcon is atypical in its family because it is highly migratory and has a strong preference for bird prey. It is similar to the unrelated Cooper's and sharp-shinned hawks in prey preference, but forages over much more open terrain, which is abundant at the Project site.

1.3.6 Peregrine Falcon

The American peregrine falcon (*Falco peregrinus anatum*) was listed as endangered under CESA in 1971, is a California state Fully Protected species, and is protected under the MBTA. In the past, the species primarily nested on cliffs, although recent nesting has been documented in old common raven (*Corvus corax*) nests, electric utility poles, and buildings (White et al., 2002), among other unconventional sites. Peregrine falcons are frequently found along shorelines and large bodies of water, and they forage in open landscapes, often foraging up to five miles from the nest site and ranging widely during migration (White et al., 2002). Home range for this species can be up to 582 square miles. The peregrine falcon is not known to breed in the vicinity of the Project area. No large bodies of water or suitable breeding structures occur near the Project, although the open habitat is suitable for wintering individuals.

1.3.7 Prairie Falcon

The prairie falcon was identified as an SSC in 1978 and is protected under the MBTA. Prairie falcons inhabit dry environments of western North America where cliffs of bluffs punctuate open plains and shrub-steppe deserts (Steenhof, 1998). The prairie falcon preys on medium-sized desert mammals (frequently ground squirrels, *Spermophilus* spp.) and birds (especially horned larks and western meadowlarks, *Sternella neglecta*). The species ranges widely, searching large areas for patchily distributed prey. This species was detected during reconnaissance surveys of the Project site in 2006 (EDAW, 2006). Suitable prairie falcon breeding habitat occurs on the desert bluffs approximately eight miles northeast of the Project site but not on the Project site.

1.3.8 Other Avian Species

Habitat for other raptor species such as American kestrel (*Falco sparverius*) and red-tailed hawk (*Buteo jamaicensis*) and other large, nonraptorial desert birds such as common raven (*Corvus corax*) and turkey vulture (*Cathartes aura*), also occur on the Project site. These species are also protected under the MBTA. These large species have the potential to perch on suitable tall structures and forage on the Project site and use adjacent, off-site utility poles, large ornamental trees, and abandoned buildings as nesting sites.

This page intentionally left blank.

CHAPTER 2
SURVEY METHODOLOGY

EDAW biologists Suellen Lynn, Barbra Calantas, Andrew Fisher, Katie Hall, and Erin Riley conducted spring raptor surveys between June 6 and June 20, 2007, and winter raptor surveys between November 29, 2007, and January 9, 2008. Surveys were conducted at least one week apart, three times during the spring and three times during the winter. Two biologists conducted the surveys by slowly driving (at 15 to 25 miles per hour) along dirt and paved roads on the Project site and a one-mile buffer surrounding the Project site, frequently stopping to scan surrounding terrain and suitable perches for raptor species using 8 to 10 power binoculars and verifying species identity using a 60 mm spotting scope with a 20 to 40 power zoom lens. Surveys occurred between 8 am and 3 pm and lasted 3 to 4.5 hours. The one-mile buffer zone was evaluated for potential raptor habitat and scanned during driving surveys as recommended by CEC regulations for biological evaluations contained in Applications for Certification for power plant licensing.

Raptor (families Accipitridae, Falconidae, Tytonidae, and Strigidae) and nonraptorial (families Cathartidae and Corvidae) soaring bird species were identified and their locations were recorded using the global positioning system (GPS) and mapped on 1 inch = 200 feet maps. Active and inactive nests were also noted and mapped using GPS. Reported observations of species from previous surveys were also noted and investigated during raptor surveys.

This page intentionally left blank.

CHAPTER 3
RESULTS

Table 1 summarizes the dates, times, personnel, and weather conditions of raptor surveys, and Table 2 summarizes observations during each survey. A copy of all field notes is presented in Appendix A.

Table 1
Raptor Survey Dates, Personnel, and Weather Conditions

Date and Time	Personnel	Weather
Spring 2007		
June 6, 2007 09:40 a.m. – 2:40 p.m.	Suellen Lynn Katie Hall	Start: 63.5ºF, 10% cloud cover, wind W 18.5 mph End: 75.9ºF, 0% cloud cover, wind W 6.9 mph
June 12, 2007 08:52 a.m. – 2:30 p.m.	Suellen Lynn Barbra Calantas	Start: 76.9ºF, 0% cloud cover, wind E 3.1 mph End: 92.2ºF, 0% cloud cover, wind S 4.2 mph
June 20, 2007 08:30 a.m. – 1:20 a.m.	Suellen Lynn Barbra Calantas	Start: 84.4ºF, 0% cloud cover, wind E 1.2 mph End: 95.8ºF, 0% cloud cover, wind W 1.3 mph
Winter 2007 - 2008		
November 29, 2007 09:40 a.m. – 3:10 p.m.	Suellen Lynn Erin Riley	Start: 58.5ºF, 10% cloud cover, wind SW 0.6 mph. End: 60.9ºF, 60% cloud cover, wind N 3.6 mph
December 6, 2007 10:10 a.m. – 4:10 p.m.	Suellen Lynn Andrew Fisher	Start: 60.5ºF, 75% cloud cover, wind N 2.5 mph End: 70.8ºF, 40% cloud cover, wind W 13 mph
January 9, 2008 10:10 a.m. – 4:20 p.m.	Suellen Lynn Andrew Fisher	Start: 54.5ºF, 10% cloud cover, wind W 2.2 mph End: 61.1ºF, 15% cloud cover, wind N 2 mph

Table 2. Raptor Survey Results

	Species Observed During Survey											
Survey Date	**Northern Harrier**	**Cooper's Hawk**	**Swainson's Hawk**	**Red-tailed Hawk**	**Golden Eagle**	**American Kestrel**	**Merlin**	**Prairie Falcon**	**Turkey Vulture**	**Great Horned Owl**	**Common Raven**	**Large Nests[1]**
On Project Site												
June 6, 2007	.	.	.	.	.	.	.	.	1	.	6	.
June 12, 2007	.	.	.	.	.	1	.	.	.	.	5	.
June 20, 2007	.	.	1	.	.	.	.	.	.	.	18	.
November 29, 2007	1	.	.	1	.	.	1	1		.	1	.
December 6, 2007	.	.	.	2	.	.	.	.	.	1 (carcass)	14	.
January 9, 2008	.	.	.	.	.	.	1	1	.	.	27	.
In One-Mile Buffer												
June 6, 2007	.	.	.	.	.	1	.	.	.	.	.	3 inactive
June 12, 2007	.	.	.	.	.	2	.	.	2	.	2	1 active
June 20, 2007	.	.	.	.	.	.	.	.	2	.	4	.
November 29, 2007	1	1	.	.	2	.	.	1	.	.	1	.
December 6, 2007	.	1	.	.	2	.	.	1	.	.	3	.
January 9, 2008	.	1	.	1	.	.	.	.	.	.	.	1 inactive

[1] Most likely corvid nests; active nest had raven nestlings.

3.1 SUMMARY OF SURVEY RESULTS

At least 2 turkey vultures, 1 Swainson's hawk, 3 American kestrels, and 22 common ravens were detected during spring raptor surveys. To minimize double counting individuals, the largest number of each species seen in one scan was recorded unless surveyors were reasonable confident that a new sighting represented a new individual. Of these, at least 1 turkey vulture, 1 Swainson's hawk, 1 American kestrel, and 18 common ravens were observed on or directly over the Project site. At least 2 northern harriers, 1 Cooper's hawk, 2 red-tailed hawks, 2 golden eagles, 1 merlin, 2 prairie falcons, 1 great horned owl (*Bubo virginianus*) carcass, and 27 common ravens were observed during winter raptor surveys. Of these, at least 1 northern harrier, 2 red-tailed hawks, 1 merlin, 1 prairie falcon, 27 common ravens, and the 1 great horned owl carcass were observed on or over the Project site.

3.2 SURVEY RESULTS BY SPECIES

3.2.1 Turkey Vulture

Turkey vultures were observed circling over the Project site or buffer on all three spring survey dates (not mapped). Appropriate breeding habitat for this species, which includes the ground and abandoned buildings, occurs throughout the Project area. This species was not observed during winter raptor surveys.

3.2.2 Northern Harrier

Two northern harriers (1 male and 1 female) were observed on the same day, November 29, 2007. A female was observed flying over Harper Dry Lake, near the northeastern border of the Project site and a male was observed flying across the center of the Project site, over fallow agriculture (Figure 3). A northern harrier was also observed north of the Project site at Harper Dry Lake on May 30, 2007 during botanical surveys (Figure 3). This species is likely a resident of this area in low numbers.

3.2.3 Cooper's Hawk

A Cooper's hawk was observed in the buffer area during all three winter raptor surveys. Two sightings were associated with stands of salt cedar (*Tamarix ramosissima*), north and south of the Project site, and a third sighting was of an individual flying over the created wetland, northeast

of the Project site (Figure 3). This species was not observed during spring surveys and only poor quality breeding habitat occurs for this species on the Project site or in the immediate vicinity. Therefore, it is likely that Cooper's hawks are winter visitors only and are not likely to breed at the Project site.

3.2.4 Swainson's Hawk

An individual Swainson's hawk was observed one time on June 20, 2007 (Figure 3). The hawk was initially perched in a small tree on the Project site near the southern boundary, then flew west, out of view off site. The hawk was a second-year individual that was molting heavily and likely did not breed this year. However, appropriate breeding habitat exists in the form of large ornamental trees on site and at surrounding residences within the one-mile buffer area. A pair of Swainson's hawks was also observed in August during surveys for western burrowing owls (Figure 3). This species was not observed during winter raptor surveys.

3.2.5 Red-tailed Hawk

Red-tailed hawks were observed in various parts of the survey area during winter raptor surveys (Figure 3). A single red-tailed hawk was observed on two different days perched on a utility pole at the northeast boundary of the Project site, near Harper Dry Lake. Other red-tailed hawks were observed west and southwest of the Project site, in the buffer area. While red-tailed hawk habitat includes open areas with scattered elevated perches (Preston and Beane, 1993), as found on the Project site, this species was not observed within the Project site during spring raptor surveys and likely does not breed in the area.

3.2.6 Golden Eagle

A pair of golden eagles was observed during each of two winter raptor surveys, using the utility towers south and southwest of the Project site in the buffer area (Figure 3). Both individuals left the Project vicinity before the end of the day's survey. While foraging habitat and preferred prey (black-tailed jackrabbit; *Lepus californicus*) for this species occur on the Project site and immediate vicinity, preferred nesting habitat, in the form of cliffs, does not occur nearby. However, golden eagle home ranges of 36 to 48 square miles have been recorded in California (Zeiner et al., 1990), and the Project site could occur as a portion of this pair's home range.

3.2.7 American Kestrel

An American kestrel was observed on the Project site near the southern boundary, perched in a tree associated with an abandoned homestead (Figure 3). Other American kestrels were observed in the buffer south and west of the Project site, using utility poles, abandoned buildings, and fence posts for perches. Suitable nesting substrate for this species occurs at the old general store site west of the northern section of the Project area, although definitive nesting behavior was not observed. This species was not observed during winter raptor surveys.

3.2.8 Merlin

One merlin was observed on the Project site on during two winter raptor surveys (Figure 3). One individual was using an ornamental tree associated with an abandoned homestead in the southern section of the Project site, and on a subsequent survey, an individual was observed using the salt cedar grove just north of this area. Merlins were not observed during spring raptor surveys, nor are they known to breed in California (Sodhi et al., 2005). However, the Project site provides adequate foraging habitat for wintering merlins.

3.2.9 Prairie Falcon

Prairie falcons were observed on all three winter raptor surveys (Figure 3) and also on several other non-raptor biological surveys during the spring and summer (Figure 3). Suitable foraging habitat for this species occurs on the Project site and in the surrounding area. Suitable nesting habitat, in the form of vertical rock faces occurs within 3.5 miles of the Project site. Therefore, prairie falcons are likely resident on and in the vicinity of the Project site.

3.2.10 Great horned Owl

A great horned owl carcass (flight feathers and contour feathers) was discovered near the narrow salt cedar grove in the southern section of the Project site, near the location of the barn owl observation (May 2007; Figure 3). Several feathers appear to have been pulled under low-lying branches, suggesting that the owl had been either killed or scavenged by a mammal. This species is found in a wide variety of habitats, including open agricultural areas (Houston et al., 1998), which compose the majority of the Project site. Additionally, large stick nests found near the Project site could be used by this species. Therefore, it is likely that great horned owls are resident on or in the vicinity of the Project site.

3.2.11 Common Raven

Common ravens were observed throughout the survey area, though concentrated in the active agricultural field on the Project site (not mapped). One active raven nest and three large inactive (probable raven) nests were detected on the large transmission towers immediately south of the Project site within the buffer area. The active raven nest contained at least one large nestling during the spring surveys. Ravens were also observed carrying food, presumably to feed their young. Therefore, this species is resident on and in the vicinity of the Project site.

3.2.12 Other Special Status Species

Four other special status avian species or their sign were observed during raptor surveys (Figure 3). These include loggerhead shrike (*Lanius ludovicianus*, SSC); Le Conte's thrasher (*Toxostoma lecontei*, SSC); willow flycatcher (*Empidonax traillii*, California State endangered); and California horned lark (*Eremophila alpestris actia*, SSC; not mapped). Suitable breeding habitat for Loggerhead shrike, Le Conte's thrasher, and California horned lark occurs on the Project site and in the one-mile buffer. Juvenile loggerhead shrikes and Le Conte's thrashers were observed during spring surveys, and flocks of California horned larks were observed during all six raptor surveys, indicating that these species are resident on and in the vicinity of the Project site. No suitable breeding or wintering habitat for the willow flycatcher occurs on or in the vicinity of the Project site. Therefore, this individual was likely a migrant and used the Project area only in transit. All other wildlife species detected during the raptor surveys are listed in Appendix B.

One peregrine falcon was observed on the Project site during other biological surveys on August 14, 2007. Because no large bodies of water or suitable breeding structures occur near the survey area and no other sightings of this species have been recorded in this area, this individual was likely a transient or at most may use the area in the vicinity of the survey area as a peripheral and occasional part of its home range.

Two owl species were observed on the Project site and during other biological investigations separate from the raptor surveys. A barn owl (*Tyto alba*) was detected on the Project site at an abandoned shed near a grove of saltcedar on June 4 and 5 during botanical surveys (Figure 3) but was not detected during raptor surveys. Numerous barn owl pellets were found surrounding the abandoned shed, indicating that the barn owl likely spent a large amount of time there. Western burrowing owls (*Athene cunicularia*; SSC) were observed during western burrowing owl surveys

and during desert tortoise (*Gopherus agassizii*) surveys, but were not detected during raptor surveys (see EDAW 2007 for western burrowing owl survey results).

This page intentionally left blank.

CHAPTER 4
LITERATURE CITED

Asay, C. E., 1987. Habitat, Biology, and Productivity of Cooper's Hawks Nesting in the Oak Woodlands of California. M.S. thesis. University of California, Davis. 53 pp.

California Department of Fish and Game (CDFG), 1983a. California's Wildlife, Birds, Golden Eagle. California Wildlife Habitat Relationships System. http://www.dfg.ca.gov/habcon/cgi-bin/read_one.asp?specy=birds&idNum=35.

California Department of Fish and Game (CDFG), 1983b. California's Wildlife, Birds, Merlin. California Wildlife Habitat Relationships System. http://www.dfg.ca.gov/habcon/cgi-bin/read_one.asp?specy=birds&idNum=36.

California Department of Fish and Game (CDFG), 2005. Cooper's Hawk Accipiter cooperii. California Interagency Wildlife Task Group. California Wildlife Habitat Relationships version 8.1. Sacramento, California.

Craighead, J. J. and F. C. Craighead, Jr., 1956. Hawks, Owls and Wildlife. Stackpole, New York.

EDAW, Inc. (EDAW), 2006. Harper Lake Specific Plan Area Biological Constraints Analysis. Prepared for ENSR. October 2006.

EDAW, Inc. (EDAW), 2007. Harper Lake Solar Project Burrowing Owl Presence/Absence Survey. December 2007.

England, A. S., M. J. Bechard, and C. S. Houston, 1997. Swainson's Hawk (*Buteo swainsoni*). *In* The Birds of North America, No. 265 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Houston, C. S., D. G. Smith, and C. Rohner, 1998. Great Horned Owl (*Bubo virginianus*). *In* The Birds of North America, No. 372 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Johnsgard, P.A., 1990. Hawks, Eagles, and Falcons of North America. Washington, D.C.: Smithsonian Institution Press. 464 pp.

Jones, Becky, 2007. Biologist, California Department of Fish and Game. Personal communication during a meeting at Harper Lake, LLC Office with L. Quon, H. Orlosky, A. Bachrach, T. Dodson, S. Frier, L. Trowsdale. April 13.

MacWhirter, R. B., and K. L. Bildstein, 1996. Northern Harrier (*Circus cyaneus*). *In* The Birds of North America, No. 210 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Ninyo & Moore Geotechnical and Environmental Sciences Consultants (Ninyo & Moore),. 2006. Geotechnical Reconnaissance Harper Lake Dairy Park, Lockhart, California. Prepared for Metcalf & Eddy. July 7.

Preston, C. R. and R. D. Beane, 1993. Red-tailed Hawk (*Buteo jamaicensis*). *In* The Birds of North America, No. 052 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Rosenfield, R. N., and J. Bielefeldt, 2006. Cooper's Hawk (*Accipiter cooperii*). *In* The Birds of North America, No. 075 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Scott, T. A., 1985. Human Impacts on the Golden Eagle Population of San Diego County from 1928 – 1981. M.S. thesis. San Diego State University. 101 pp.

Snow, C., 1973. Golden eagle. Habitat Management Series for Unique or Endangered Species. Bureau of Land Management Technical Report Number 7. Denver, Colorado.

Sodhi, N. S., L. W. Oliphant, P. C. James, and I. G. Warkentin, 2005. Merlin (*Falco columbarius*). *In* The Birds of North America, No. 044 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Steenhof, K., 1998. Prairie Falcon (*Falco mexicanus*). *In* The Birds of North America, No. 346 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Terres, J., 1980. The Audubon Society: Encyclopedia of North American Birds. Alfred A. Knopf, Inc. New York. 1109 pp.

Unitt, P., 2004. San Diego County Bird Atlas. San Diego Natural History Museum. P.O. Box 121390 San Diego, California 92112-1390. Ibis Publishing Company.

White, C.M., N.J. Clum, T.J. Cade, and W.G. Hunt, 2002. Peregrine Falcon (*Falco peregrinus*). *In* The Birds of North America, No. 660 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Zeiner, D. C., W. F. Laudenslayer, Jr., K. E. Mayer, and M. White, 1990. California's Wildlife, Volume II, Birds. California Statewide Wildlife Habitat Relationships System. Sacramento, California.

APPENDIX A

FIELD DATA SHEETS

RAPTOR SURVEYS

Entered 7/2/07 SL (not species) 2/8/07

Recorder: Slynn | Add'l Person: K. Hall | GPS Unit: Garmin 1
Project: Harper Lake | Survey Section: All | Map #: HLRS1
Date: 6/6/2007 | Survey Type: Raptor | Survey 1 of 3
Time Start: 0940 | Time End: 1240

Start: T: 63.5° CC: 10% Wind Sp/Dir: 25.5/18.5 SW General Weather Condition: clear, windy
End: T: 75.9 CC: 0 Wind Sp/Dir: 13.6/6.9 NW General Weather Condition: clear, windy

Map/GPS #	Time	Species	Age	Sex	Point Type	Comments
HLSLCR01	0946	CORA	A J U	M F U	2 indiv	flying
		HOLA	A J U	M F U		
		BTJR	A J U	M F U		black-tailed jackrabbit
		MODO	A J U	M F U		
HLSLTV01	1009	TUVU	A J U	M F U		
HLSTNE01	1022	Nests	A J U	M F U	2 large nests	- large pellets + bones underneath
		BRBL	A J U	M F U		
		WWPE	A J U	M F U		
		WEKI	A J U	M F U		
HLSLYB01	1036	YHBL	A J U	M F U		
		WEME	A J U	M F U		
		CLSW	A J U	M F U		
HLSLCR02	1040	CORA	A J U	M F U	4 indiv	flying over alfalfa & vineyard
HLSLAK01	1117	AMKE	(A) J U	M (F) U	1 indiv	around Gen Store
HLSLCR03	1127	CORA	(A) J U	M F U	1 indiv	carrying food
HLSLNE02	1153	Nest	A J U	M F U	1 nest	on ~~tr~~ trans pole
		GRRO	A J U	M F U		
		Coyote	A J U	M F U		
HLSLBO01	Not Seen	BAOW	A J U	M F U		Barn owl - reported by K Hall 6/4/07 + 6/15/07
HLSLNH01	Not Seen	NOHA	A J U	M F U	seen by KH on 5/30/07	
			A J U	M F U		
HLSLLS01	1223	LOSH	A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

RAPTOR SURVEYS

entered 8/7/07

Recorder: B Calantas Add'l Person: S Lynn GPS Unit: Garmin 1
Project: Harper Lake Survey Section: A1 Map #: HL-RS 2
Date: 06/12/07 Survey Type: Raptor Survey 2 of 3 /summer
Time Start: 0852 Time End: 1230

Start: T: 76.9 CC: 0 Wind Sp/Dir: 3.1/4.7/E General Weather Condition: clear
End: T: 92.2 CC: 0 Wind Sp/Dir: 4.2/5.5/S General Weather Condition: clear

Map/GPS #	Time	Species	Age	Sex	Point Type	Comments
HLSLNE03		CORA	A (J) U	M F U	NEST w IND	young raven on nest - 2 well-feathered juveniles
		WEKI	A J U	M F U		
HLSLAK02		AMKE	(A) J U	(M) F U	IND	
HLSLTH01		LOTH	A J U	M F U	IND	
HLSLWF01		WIFL	(A) J U	M F U	IND	FITZBEW'd
		HOSP	A J U	M F U		
		BTJRabbit	A J U	M F U		numerous individuals
HLSLAK03		AMKE	A J U	(M) F U	IND	maybe same as HLSLAK02
		HOLA	A J U	M F U		
		coyote	A J U	M F U	IND	2 individuals in alfalfa
HLSLCR05		CORA	(A) J U	M F (U)	4 IND	same as 4 last week, sprinkler
		WEME	A J U	M F U		
		BRBL	A J U	M F U		
		cabbage white	A J U	M F U		
		MODO	A J U	M F U		
HLSLLS02		LOSH	A J U	M F U	3 IND	3 juv
		KILL	A J U	M F U		
		cottontail	A J U	M F U		
		white tailed ant squirrel	A J U	M F U		
		SAPH	A J U	M F U		
		WWPE	A J U	M F U		
HLSLTV02		TUVU	(A) J U	M F U	1 IND	
		SGSP	A J U	M F U	2 IND	
HLSLCR06		CORA	(A) J U	M F (U)	1 IND	perched on pole
		blue nosed lizard	A J U	M F U		
HLSLTV03		TUVU	(A) J U	M F U	1 IND	soaring
HLBCMLS01		MLion?	A J U	M F U	scat	photo taken - true ML?
HLSLCR07		CORA	(A) J U	M F U	1 IND	soaring
HLSLAK04		AMKE	A J U	M F U	1 IND	
HLSLCR00		CORA	(A) J U	M F U	1 IN	watertower

RAPTOR SURVEYS

Recorder: B. Calantas Project: Harper Lake Survey Section: All
Date: 06/12/07 Survey Type: Raptor Map #: HL-RS2

#	Time	Species	Age	Sex	Point ~~Vegetation Type~~	Comments ~~Distance/ Direction~~
HLSLLS03		LOSH	(A) J U	M F U	1 IND	
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

Comments:

RAPTOR SURVEYS

entered SL 7/3/07

Recorder: Slynn Add'l Person: B. Calantas GPS Unit: Garmin 1
Project: Harper Lake '06 Survey Section: A11 Map #: HLRaptor03
Date: 6/20/07 Survey Type: Raptor Survey 3 of 3
Time Start: 0830 Time End: 1120

Start: T: 84.4 CC: 0 Wind Sp/Dir: 1.2/3.4 E General Weather Condition: Sunny, light breeze
End: T: 95.8 CC: 0 Wind Sp/Dir: 1.3/2.9 W General Weather Condition: Sunny, light breeze

Map/GPS #	Time	Species	Age	Sex	Point Type	Comments
		HOLA	A J U	M F U		
	Ground	Squirrel	A J U	M F U		
HLSLNE03	0836	Nest	A J U	M F U	CORA Nest	- not active?
HLBCCR01	0840	CORA	A J U	M F U	indiv	on metal power tower
HLBCCR03	0840	CORA	A J U	M F U	indiv	on wood utility tower
		MODO	A J U	M F U		
HLBCLT01	0845	LETH	A J U	M F U	indiv	flew from buildings to atriplex#5
HLBCLS01	0850	LOSH	A J U	M F U	indiv	
HLBCSH01	0856	SWHA	A SY J U	M F (U)	indiv	heavy molt
		WEKI	A J U	M F U		
HLBCCR02	0900	CORA	A J U	M F U	2 indiv	on pole @ pump shack (Owl)
HLBCLS02	0915	LOSH	A J (U)	M F (U)	1 indiv	flew across Dirt Rd
		jackrabbit	A J U	M F U		
HLBCCR04	0917	CORA	A J (U)	M F (U)	indiv	on ground, middle of dirt field
HLBCCR05	0921	CORA	A J (U)	M F (U)	12 indiv + 2	in crop, flew to perch on sprinkler
	orange	sulfur	A J U	M F U		
HLBCCR06	0928	CORA	A J (U)	M F (U)	indiv	on antenna near tamarisk, flew to ground
HLBCLS03	0955	LOSH	A J (U)	M F (U)	indiv	perched on tamarisk
HLBCLS04	0948	LOSH	A J (U)	M F (U)	indiv (4)	perched on snag in weeds/1 disabled from tortoise surveys
HLBUOW01			A J U	M F U		
HLBCTV01	1013	TUVU	A J (U)	M F (U)	2 indiv	circling over buildings
HLBCCR07	1038	CORA	A J (U)	M F (U)	indiv	perched on light post
HLBCCR08	"	"	A J (U)	M F (U)	"	"
		ROPI	A J U	M F U		in old gen stove
		FUST	A J U	M F U		
		SAPH	A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

HLBUOW NAD27 473135E 3873099N
6/5

RAPTOR SURVEYS

Recorder: S. Lynn Add'l Person: E. Riley GPS Unit: Garmin 5
Project: Harper Lake Survey Section: All Map #: ~~Raptor~~ HLRSA
Date: 11/29/07 Survey Type: Raptors Survey 4 of 6
Time Start: 0940 Time End: 1310

Start: T: 58.5° CC: 10% Wind Sp/Dir: 0.6/0.9 SW General Weather Condition: Sunny, cool
End: T: 60.9 CC: 60% Wind Sp/Dir: 3.6/4.8 N General Weather Condition:

Map/GPS #	Time	Species	Age	Sex	Point Type	Comments
HLERPR01	0940	PRFA	(A) J U	M F (U)	Indiv.	Foraging over Creosote, perched on salt cedar
		SAGS	A J U	M F U		
		HOLA	A J U	M F U		
HLERCR01	1009	CORA	A J U	M F U	2 Indiv	on tower (pair)
HLERGE01	1009	~~COFA~~ GOEA	(A) J U	M F U	2 Indiv	on tower (pair) foraging
HLERCR03	1018	CORA	A J U	M F U	1 Indiv	flying over abandoned ag field
HLERCR02	1046	CORA	A J U	M F U	2 Indiv.	
		WEME	A J U	M F U		
		MOBL	A J U	M F U		
		SAPH	A J U	M F U		
HLERRT01	1103	RTHA	(A) J U	M F U	1 Indiv	perched on utility pole, circled up
HLERCR04	1117	CORA	A J U	M F U	1 Indiv	flying from ground in aband. ag.
		WTAnt.Sq.	A J U	M F U		white-tailed antelope squirrel
HLERNH01	1124	NOHA	(A) J U	M (F) U	1 Indiv	flying low over dry lake, perched briefly
HLERML01	1147	MERL	(A) J U	M (F) U	1 Indiv	perched in mesquite, flew to small shrub
HLERNH02	1150	NOHA	(A) J U	(M) F U	1 Indiv	flying over ag
HLERCH01	1135	COHA	(A) J U	(M) F U	1 Indiv	*NO GPS @ created wetland
HLERPR02	1209	PRFA	A J U	M F U	1 Indiv	perched on utility pole over active ag.
HLERLT01	1239	UNTH?	A J U	M F U	1 Indiv	pale but not 100% sure
		BTJR	A J U	M F U		
HLERLS01	1300	LOSH	A J (U)	M F (U)	1 Indiv	flew across Rd to creosote
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

RAPTOR SURVEYS

Recorder: SLY | Add'l Person: AFI | GPS Unit: GTF3
Project: Harper Lake | Survey Section: ALL | Map #: HLK85
Date: 12/06/07 | Survey Type: Raptor | Survey 5 of 6
Time Start: 1010 | Time End: 14:10

Start: T: 60.5°F CC: 75% Wind Sp/Dir: 2.5mph N General Weather Condition: Cool Calm, Overcast
End: T: 70.8 CC: 40% Wind Sp/Dir: 13/16.1mph W General Weather Condition: Windy

Map/GPS #	Time	Species	Age	Sex	Point Type	Comments
		NOLA	A J U	M F U		
HLSLCH001	1010	COHA	(A) J U	(M) F U		
		SNSP	A J U	M F U	(SAGS)	
HLSLCR001	1040	CORA	(A) J U	M F U		1
HLSLGE001	1100	GOEA	(A) J U	M F U	Fair	
HLSLCR002	1111	CORA	(A) J U	M F U		3
HLSLCR003	1134	CORA	(A) J U	M F U		2
HLSLCR004	1134	CORA	(A) J U	M F U		1
HLSLCR005	1141	CORA	(A) J U	M F U		10
HLSLRT001	1155	RTHA	A J U	M F U		1
White-Tailed Antelope Ground Sq.			A J U	M F U		
		SNPL	A J U	M F U		
	B-T Jackrab.		A J U	M F U		
HLSLGH001	1300	GHOW	A J U	M F U	Scavenged	Carcass
			A J U	M F U		Wind Started to get very
HLSLRT002	1330	RTHA	(A) J U	M F U		windy @ 1300.
HLSLFA001	1340	PRFA	(A) J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

RAPTOR SURVEYS

Recorder: SLH Add'l Person: AFI GPS Unit: GTF3
Project: Harper Lake Survey Section: All Map #: ~~Raptor 06~~ HLRS6
Date: 1/09/2008 Survey Type: Raptor Survey 6 of 6
Time Start: 10:10 Time End: 14:20

Start: T: 54.5°F CC: 10 Wind Sp/Dir: 2.2/3.1 W General Weather Condition: Sunny, Light breeze
End: T: 61.1°F CC: 15 Wind Sp/Dir: 2/2.5 N General Weather Condition: Sunny, Calm

Map/GPS #	Time	Species	Age	Sex	Point Type	Comments
		HOLA	(A) J U	M F U		
		SAGS	(A) J U	M F U		
HLSLCN10		CORAMER	A J U	M F U		
HLSLLH001		LOSH	(A) J U	M F U		
	GWTE	GWTE	(A) J U	(M) (F) U		Green-Wing Teal
HLSLFD002		FRFA	(A) J U	M F U		
HLSLME001		MERL	A J (U)	M F U		
HLSLCR013		COMR	A J U	M F U		13 ind. in Ag. field
		SAPH	A J U	M F U		
HLSLCR014		COCA	A J U	M F U		14 indiv
		ROPI	A J U	M F U		
HLSLCH002		COHA	(A) J (U)	M (F) U		
HLSLLH002		LOSH	(A) J U	M F U		
		WTSW	A J U	M F U		
HLSLLH003		LOSH	(A) J U	M F U		
HLSLRT003		RTHA	(A) J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

APPENDIX B

WILDLIFE SPECIES DETECTED DURING RAPTOR SURVEYS

Appendix B
Wildlife Species Detected during Raptor Surveys

Scientific Names	Common Names
Arthropods	
Order Lepidoptera	
Family Pieridae	
Pieris rapae	cabbage white butterfly
Colias eurytheme	orange sulphur
Reptiles	
Order Squamata	
Family Iguanidae	
Dipsosaurus dorsalis	desert iguana
Birds	
Order Anseriformes	
Family Anatidae	
Anas crecca	green-winged teal
Order Ciconiiformes	
Family Cathartidae	
Cathartes aura	turkey vulture
Order Falconiformes	
Family Accipitridae	
Circus cyaneus	northern harrier *
Accipiter cooperii	Cooper's hawk
Buteo swainsoni	Swainson's hawk **
Buteo jamaicensis	red-tailed hawk
Aquila chrysaetos	golden eagle *$^{+}$
Family Falconidae	
Falco sparverius	American kestrel
Falco columbarius	merlin
Falco mexicanus	prairie falcon
Order Charadriiformes	
Family Charadriidae	
Charadrius vociferous	killdeer
Order Cuculiformes	
Family Cuculidae	
Geococcyx californianus	greater roadrunner
Order Columbiformes	
Family Columbidae	
Columba livia	rock pigeon
Zenaida macroura	mourning dove
Order Apodiformes	
Family Apodidae	
Aeronautes saxatalis	white-throated swift
Order Passeriformes	
Family Tyrannidae	
Contopus sordidulus	western wood-pewee
Empidonax traillii	willow flycatcher **
Sayornis saya	Say's phoebe
Tyrannus verticalis	western kingbird
Family Laniidae	
Lanius ludovicianus	loggerhead shrike *

Scientific Names	Common Names
Family Corvidae	
Corvus corax	common raven
Family Alaudidae	
Eremophila alpestris actia	California horned lark *
Family Hirundinidae	
Petrochelidon pyrrhonota	cliff swallow
Family Turdidae	
Sialia currucoides	mountain bluebird
Family Mimidae	
Toxostoma lecontei	Le Conte's thrasher *
Family Sturnidae	
Sturnus vulgaris	European starling
Family Emberizidae	
Amphispiza belli	sage sparrow
Family Icteridae	
Sturnella neglecta	western meadowlark
Xanthocephalus xanthocephalus	yellow-headed blackbird
Euphagus cyanocephalus	Brewer's blackbird
Family Passeridae	
Passer domesticus	house sparrow
Mammals	
Order Carnivora	
Family Canidae	
Canis latrans	coyote
Order Lagomorpha	
Family Leporidae	
Sylvilagus audubonii	desert cottontail
Lepus californicus	black-tailed jackrabbit
Order Rodentia	
Family Sciuridae	
Ammospermophilus leucurus	whitetail antelope squirrel

* CDFG Species of Special Concern
** CDFG listed species

HARPER LAKE SPECIFIC PLAN AREA

BIOLOGICAL CONSTRAINTS ANALYSIS

Prepared for:

ENSR
1220 Avenida Acaso
Camarillo, California 93012
Contact: Arrie Bachrach

Prepared by:

EDAW, Inc.
3780 Wilshire Boulevard, Suite 250
Los Angeles, California 90010
Contact: Kim Svitenko

October 2006

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

This report is a biological constraints analysis for the Harper Lake Specific Plan area, located south of Harper Dry Lake and approximately 10 miles west of Barstow in San Bernardino County, California. The analysis presents the results of biological reconnaissance field surveys conducted in the spring and summer of 2006. The survey area comprised approximately 3,315 contiguous acres, as well as a proposed 5-mile rail spur route and 12-mile water line route.

The majority of the western portions of the Specific Plan area is undisturbed and consists of intact desert salt bush scrub. The eastern portion of the survey area largely contains fallow agricultural land, although scattered remnant patches of saltbush scrub were observed. One active 60-acre agricultural area also was observed and a large stand of tamarisk scrub was located adjacent to Harper Lake at the northeastern boundary of the survey area.

A number of special-status plant and wildlife species are known to occur in the region, including five special-status plant species: desert cymopterus, Barstow woolly sunflower, Mojave monkey flower, Utah glasswort, and Mojave spineflower. None of these species except the Mojave spineflower were observed during the reconnaissance surveys. The Barstow woolly sunflower is considered to have a high potential to occur within the survey area (species is known to occur on the site and suitable habitat is present); the desert cymopterus and Mojave monkey flower have a medium potential to occur (species is not known to occur on the site but suitable habitat is present); and the Utah glasswort has a low potential to occur (species is not known to occur on the site and suitable habitat is not present).

Several special-status wildlife species are known in the region, including a number with a high potential to occur in the Specific Plan area. These include desert tortoise and burrowing owl, both of which were observed during the reconnaissance surveys, as well as loggerhead shrike, cactus wren, prairie falcon, and northern harrier, which also were observed. The western snowy plover has a medium potential to occur, while the Yuma clapper rail and the Mojave River vole have a low potential to occur. Formal protocol surveys for the Mohave ground squirrel in 2006 did not detect the species; although sufficient suitable habitat is present to require a formal survey, the site is outside the species' identified range and potential to occur is considered low.

There are a number of isolated ephemeral drainages that flow and collect into the hardpan depressions across the Specific Plan area. These are not expected to come under U.S. Army Corps of Engineers' jurisdiction, but the state (CDFG) may assert jurisdiction.

A number of recommendations are provided:

- A formal jurisdictional delineation should be performed pursuant to the United States Army Corps of Engineers Wetland Delineation manual.
- As the development footprint within the Specific Plan area is established, careful attention should be given to avoiding impacts on approximately 9 acres of dry lake bed and seasonal marsh in the extreme northeast of the area, as it is considered a particularly sensitive and ecologically valuable resource.
- Focused surveys should be performed for sensitive plant species identified in this constraints analysis.
- When development footprints are defined, focused wildlife surveys in accordance with established protocols should be performed in the appropriate habitat areas for desert tortoise, burrowing owl, snowy plover, Mohave ground squirrel, and Mojave River vole.
- Prior to the onset of construction activities during the raptor nesting season (February through June), surveys should be conducted to identify active raptor nests.

1.0 INTRODUCTION

This biological constraints analysis has been prepared by EDAW, Inc. (EDAW) in response to ENSR's request for biological studies of the Harper Lake Specific Plan area and summarizes the findings of reconnaissance field surveys. EDAW biologists performed reconnaissance field surveys during the spring and summer of 2006. This constraints analysis will outline the subsequent biological studies necessary to fulfill resource agency permit requirements for development activities in the Specific Plan area.

This information has been reported in accordance with accepted scientific and technical standards that are consistent with the requirements of the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). The Specific Plan process has not yet reached the stage where a construction footprint(s) and construction limits have been established. Therefore, no development-specific impacts or recommended mitigation measures are included in this analysis. Within this biological constraints analysis report, the area surveyed for biological resources will be referred to as the Specific Plan area or survey area because there is no established "project" footprint at this time.

1.1. Specific Plan Area Location

The Specific Plan area is located south of Harper Dry Lake and north of State Highway 58 in San Bernardino County, California. The area is near Lockhart, approximately 30 miles north of Victorville and 10 miles west of Barstow (Figure 1). The survey area comprises approximately 3,315 acres of agricultural fields, desert habitats, and developed areas. It also encompasses a proposed 5-mile rail spur along Harper Lake Road and a 12-mile waterline along Santa Fe Road and Dixie Road (Figure 2). The majority of the survey area is within the U.S. Geological Survey 7.5 minute *Lockhart* quadrangle. The southern edge of the survey area, the proposed rail spur, and the proposed waterline are within the *Twelve Gauge Lake* and *Hinkley* quadrangles.

1.2. Specific Plan Description

The Harper Lake Specific Plan provides for three general land use categories within the roughly 3,300 acres: 1) dairy park and ancillary facilities, 2) energy park, and 3) housing, each of which is briefly summarized below.

The dairy park will incorporate state-of-the-art designs and technology to develop a world-class, highly-integrated dairy complex that will use total clean-flush dairies to maintain a clean and safe environment. The dairy park consists of 30 condominium dairies each with up to 3,000 cows. Dairymen will share common infrastructure/services, such as weighing stations, feed and grain storage, a rail depot, veterinary facilities, meat processing and animal rendering facilities. The dairy park will include a 49.9 MW power plant fueled by methane gas recovered from cow manure as part of the animal waste treatment system, and used to power dairy park and related operations. Other features will include a water supply system, railroad tracks, road improvements, and administrative offices. The dairy park also will include dairy-related facilities, such as facilities for milk processing, cheese production, ethanol production, fertilizer manufacturing, and meat packing, as well as service industries related to the dairy condominiums and ancillary facilities, and commercial and manufacturing activities attracted by the dairy and ancillary facilities .

The energy park component of the Specific Plan will involve up to approximately five individual 100 MW solar energy plants, utilizing solar thermal technology. Housing opportunities will be provided in the Specific Plan for employees of the dairy condominiums and other facilities developed in the Specific Plan area. The overall Harper Lake Specific Plan area also will

include other land uses, such as open space and recreational facilities, public schools and other public service facilities, and habitat conservation areas.

In addition to the contiguous Specific Plan area, the biology constraints analysis also covers: 1) the route of a proposed 5-mile rail spur along Harper Lake Road from the dairy park to connect with the existing Burlington Northern and Santa Fe Railroad main line that runs parallel to the north of Highway 58, and 2) a 12-mile water line route extending southeast along Santa Fe Avenue and continuing through the town of Hinkley to a location next to the Mojave River.

1.3. Existing Conditions and Surrounding Land Uses

The entire survey area is relatively flat and ranges in elevation from approximately 2,020 feet above mean sea level (MSL) to 2,250 feet MSL. The majority of the survey area is devoid of development and approximately 1,318-acres of the total approximately 3,315-acre survey area have historically been used for agriculture and livestock operations. Currently, there are no active livestock operations within the survey area.

As shown on Figure 3 (and in more detail on Figures 3a -3e), the majority of the western portion of the Specific Plan area (west of Lockhart Road), is undisturbed and consists of intact desert salt bush scrub, with the eastern portion of the survey area comprising acreage that have been devoted to agricultural use. Remnant patches of saltbush scrub were observed scattered throughout the agricultural area. One active agriculture area, half-circle (approximately 60 acres) was observed and a large stand of tamarisk scrub was located directly adjacent to Harper Dry Lake at the northeastern Specific Plan area boundary. The vegetation in the northwestern most portion of the survey area is Mojave creosote bush scrub with two distinct soil types: sand and desert pavement. Between Lockhart Road and Harper Lake Road is primarily disturbed saltbush scrub with some patches of higher quality saltbush scrub. Abandoned structures are prevalent around the intersection of Lockhart Road and Harper Lake Road.

Adjacent and uses to the north of the survey area consist of two 80 MW solar energy plants that utilize solar thermal technology (arrays of solar collectors that track the sun and collect the heat energy in a working fluid, with the collected heat energy converted to steam which is used to generate electricity). Land use to the south and west is land designated by the federal Bureau of Land Management (BLM) as open space; this includes areas along the southern most portion of the proposed 5-mile rail spur alignment, and along the 12-mile proposed waterline along Santa Fe Road and terminating at Dixie Road. The northwestern portion of the survey area is within U. S. Fish and Wildlife (USFWS) designated Desert Tortoise Critical Habitat. Northeast of the project site is the Harper Dry Lake Ecological Preserve, managed by BLM. This area has been designated by BLM as an Area of Critical Environmental Concern (ACEC). An ACEC is a BLM administrative designation for areas requiring special management attention to protect and prevent irreparable damage to important wildlife resources (Figure 2).

2.0 LITERATURE REVIEW

Prior to the reconnaissance surveys, EDAW biologists conducted a literature review to identify additional special status plants, wildlife, and habitats known to occur in the vicinity of the survey area. The California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2006), California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDB) (CDFG 2006a), and the current List of Special Status Animals (CDFG 2006b), were reviewed. The majority of the survey area is within the U.S. Geological Survey 7.5 minute *Lockhart* and *Hinkley* quadrangles. Adjacent quadrangles were also entered into the database search and included: *The Buttes, Lockhart, Water Valley, Twelve Gauge Lake, Bird Spring, Kramer Hills, Opal Mountain,* and *Fremont Peak.*

Results of the literature review and research identified the following sensitive species as having the potential to occur in the survey area based on geographic proximity: Mojave monkeyflower (*Mimulus mohavensis*), Barstow wooly sunflower (*Eriophyllum mohavense*). desert cymopterus (*Cymopterus deserticola*), Utah glasswort (*Sarcocornia utahensis*), desert tortoise (*Gopherus agassizii*), Mohave tui chub (*Gila bicolor mohavensis*), Yuma clapper rail (*Rallus longirostris yumanensis*), prairie falcon (*Falco mexicanus*), burrowing owl (*Athene cunicularia*), snowy plover (*Charadrius alexandrinus nivosus*), Mojave vole (*Microtus californicus mohavensis*), and Mohave ground squirrel (*Spermophilus mohavensis).*

3.0 HYDROLOGY

Several ephemeral drainages and unnamed blue line streams bisect the survey area and were observed on aerial photographs as well as in the field (Figure 2). Three ephemeral drainages located at the northeastern boundary of the Specific Plan area potentially conduct seasonal flow from Harper Dry Lake onto the survey area. These three areas are dominated by non-native and invasive tamarisk (*Tamarix* sp.). Ephemeral drainages and erosion rills bisect Harper Lake Road and Santa Fe Road. In these locations the erosion rills lead to several areas of hardpan depressions where seasonal water collects; the depressions were essentially devoid of vegetation, but did show stains associated with water evaporation.

4.0 SOILS

Soils in the survey area have been characterized by Ninyo & Moore Geotechnical and Environmental Science Consultants (August 2006) and were observed during reconnaissance surveys. The northeastern corner of the survey area contains lake deposits generally consisting of dry to damp, loose, sandy silt and silt often covered by salt deposits. Soils were categorized as alluvium plain with 0-1 percent slope draining northeast. The remainder of the survey area is covered in older alluvium generally consisting of dry, loose to medium dense, silty fine to course sand with occasional gravel. Ninyo & Moore hypothesize that layers of silt and possibly clay are likely to be present within the older alluvium.

5.0 SURVEY METHODS

General reconnaissance surveys of the survey area were conducted by EDAW biologists on the following dates: May 10 and 11, 200, August 21-23, 2006 and August 30, 2006. The May surveys encompassed approximately 1,318 acres of the survey area east of Harper Lake Road. This area historically has been used as agricultural and for livestock operations. Temperatures during the May surveys ranged from 62º to 99º F; skies were clear. The August surveys encompassed approximately 1,996 acres of survey area west of Harper Lake Road which contains mostly undisturbed native vegetation. Temperatures during the August surveys ranged from 68º to 113º F; skies were mostly clear. The purposes of the reconnaissance surveys were to assess current conditions, identify plant and animal species present on the survey area, map vegetation communities, evaluate the potential of the survey area to support sensitive and special status species, and to identify any potential jurisdictional areas. Representative site photographs are included in Appendix A.

The survey area was generally mapped for vegetation and other cover types. Plant communities were characterized according to CDFG's *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (2003) and classified according to Holland (1986) and Sawyer and Keeler-Wolf (1995). Figure 3 shows the vegetation and cover types within the main survey area. Figures 3a through 3e depict specific and representative vegetation cover within the main survey area.

Plant species were identified in the field or collected for later identification. Taxonomy and nomenclature for plants follows Hickman (1993), Stewart (1998), and Munz (1974). Taxonomy and nomenclature for wildlife follows Behler (1998) for amphibians and reptiles, American Ornithologist Union (1998) and Sibley (2000) for birds, and Jones et. al (1992) for mammals. All wildlife species observed or detected by sign (tracks, scat, burrows, etc.) were recorded in field notes. Listings of plants and wildlife observed during the reconnaissance surveys are included in Appendix B and Appendix C, respectively.

As noted above, several sensitive species have been identified through the CNDDB and CNPS literature review as having the potential to occur in the vicinity of the survey area. At the conclusion of the reconnaissance field surveys performed during May 2006, Mohave tui chub and Yuma clapper rail were eliminated from potentially occurring at the Specific Plan area for lack of appropriate site conditions.

6.0 VEGETATION AND COVER TYPES

Vegetation and cover types of the Specific Plan area were classified as follows: Mojave creosote bush scrub, Mojave creosote bush scrub (desert pavement), desert saltbush scrub, disturbed desert saltbush scrub, tamarisk scrub, active alfalfa field, dry lake bed, fallow, ruderal and, developed. Figure 3 shows the entire survey area and vegetation cover acreage totals. Figures 3a-3e show more detail of each area studied. Appendix A shows representative site photographs of selected habitat and cover types within the survey area.

Mojave Creosote Bush Scrub is a plant community dominated by widely spaced creosote bush in well-drained sandy soils. Mojave creosote bush scrub in the survey area also contains saltbush (*Atriplex* sp.), burro brush (*Hymenoclea salsola*), as well as annual plants (Appendix A, Photo 1). This vegetation type occurs primarily adjacent to and south of the Mojave creosote bush scrub (desert pavement) in the northernmost portion of the west end of the survey area. The southern boundary of the west end of the survey area also captures a relatively small amount of this community. Mojave creosote bush scrub occupies approximately 30 acres of the survey area (Appendix A, Photo 1).

Mojave Creosote Bush Scrub (Desert Pavement) is the same plant community described above as Mojave creosote bush scrub except that, instead of sandy soils, its substrate is desert pavement, a veneer of coarse particles left on the ground after erosion of finer particles by wind (Appendix A, Photo 2). Within the survey area, this vegetation type occurs in the northernmost portion of the west end. Mojave creosote bush scrub (desert pavement) occupies approximately 76 acres of the survey area (Appendix A, Photo 2).

Desert Saltbush Scrub is a vegetation community dominated by low, grayish, small-leaved shrubs in dry, fine-textured soils with high alkalinity or salinity. It is generally found on the margins of dry lake beds in the Colorado, Mojave, and Great Basin deserts. Desert saltbush scrub in the survey area and is dominated by allscale (*Atriplex polycarpa*) and spinescale (*Atriplex spinifera*) and contains other species such as burro brush, Indian ricegrass (*Achnatherum hymenoides*), desert sand verbena (*Abronia villosa*) and desert pincushion (*Chaenactis fremontii*) (Appendix A, Photo 3). Desert saltbush scrub occupies approximately 1,570 acres and is the dominant vegetation cover within the survey area. This vegetation type occupies most of the survey area west of Lockhart Road and occurs in smaller areas between Lockhart Road and Harper Lake Road in areas formerly used for agriculture. There is also a section east of Harper Lake Road in the northern part of the survey area and fragments adjacent to fallow fields and other sites in the eastern part of the survey area of this habitat type. The 5-mile proposed rail spur along Harper Lake Road and the 12-mile proposed water line along Santa Fe Avenue are also characterized by desert saltbush scrub.

Disturbed Desert Saltbush Scrub in the survey area consists of former agricultural fields that are gradually returning to desert saltbush scrub habitat. Some of the former agricultural area has returned so satisfactorily that it is no longer considered disturbed (areas between Lockhart Road and Harper Lake Road as mentioned above). Disturbed saltbush scrub contains sparse cover of allscale and other shrubs. Within the survey area, this vegetation type occurs east of Lockhart Road and west of Harper Lake Road. There are approximately 418 acres of disturbed saltbush scrub within the survey area.

Tamarisk Scrub is a vegetation community dominated by tamarisk (*Tamarix* sp.); a non-native plant species that tends to invade intermittently flooded areas. Tamarisk scrub in the survey area contains an understory of annual non-native weeds such as barley (*Hordeum* sp.), filaree (*Erodium cicutarium*), and pineapple weed (*Chamomilla suaveolens*) (Appendix A, Photo 4). Within the survey area, tamarisk scrub is in the northeast along the margins of Harper Dry Lake and in small patches among the fallow fields. There are approximately 22 acres of tamarisk scrub within in the survey area (Appendix A, Photo 4).

Active Alfalfa Field, comprised of irrigated alfalfa (*Medicago sativa*) field, occurs in the eastern portion of the survey area and occupies approximately 60 acres.

Dry Lake Bed is alkali soils and is essentially devoid of vegetation with the exception of a few scattered tamarisk, remnant cattails (*Typha* sp.), and salt grass (*Distichlis spicata*). A portion of this area may convert to a small salt marsh during seasonal rain events. Dry lake bed is located in the northeastern most corner of the project site and comprises 9 acres within the survey area (Appendix A, Photo 5).

Fallow agricultural fields are dominated by cover of non-native annuals, primarily tansy mustard (*Descurainia sophia*). The fallow fields also contain other ruderal species such as filaree, Mediterranean grass (*Schismus arabicus*), barley, and rattlesnake weed (*Chamaesyce albomarginata*), and occasionally desert dandelion (*Malacothrix glabrata*) (Appendix A, Photo 6). Within the survey area, fallow fields are the dominant cover type east of Harper Lake Road. There are approximately 863 acres of fallow fields within the survey area.

Ruderal (disturbed) vegetation in the survey area is dominated by Mediterranean grass, foxtail chess (*Bromus madritensis* ssp. *rubens*), filaree, barley, and pineapple weed (Appendix A, Photo 6). Ruderal areas within the survey area surround many of the fallow fields and are also adjacent to developed areas. There are approximately 252 acres of ruderal vegetation (not associated with fallow fields) in the survey area.

Developed areas include abandoned structures, structures associated with agriculture, and paved areas. Within the survey area, there are developed areas along the west side of Harper Lake Road and along the north side of Lockhart Road. Developed sections of the survey area total approximately 23 acres.

7.0 SPECIAL STATUS PLANTS AND WILDLIFE

Special-status biological resources are: 1) species listed under federal or state Endangered Species Acts, 2) species listed as Species of Special Concern by the state, 3) species protected under official conservation programs (e.g., Multi-Species Conservation Programs), 4) resources considered sensitive under CEQA, 5) species or habitats designated by legislation as requiring protection.

Legal protection for special-status species varies widely, from the relatively comprehensive protection extended to listed threatened/endangered species to no legal status at present. The

USFWS, CDFG, and local agencies, and special interest groups such as the California Native Plant Society (CNPS) publish watch lists of declining species; these lists often describe the general nature and perceived severity of the decline. In addition, recently published findings and preliminary results of ongoing research provide a basis for consideration of species that are candidates for state and/or federal listing. Finally, species that are clearly not rare or threatened statewide or regionally, but whose local populations are sparse, rapidly dwindling or otherwise unstable, may be considered to be of "local interest."

Reconnaissance surveys in May and August 2006 determined the presence or absence of suitable habitat for special-status species dentified through review of the CNDDB and CNPS literature as having the potential to occur in the Specific Plan vicinity based on geographic proximity. The probabilities of these species to occur within the survey area are ranked in Tables 1 and 2 as follows:

- **High**: species is historically or currently known to occur on the site and suitable habitat is present;
- **Medium**: species is not known to occur on the site but suitable habitat is present;
- **Low**: species is not known to occur on the site and suitable habitat is not present.

7.1 Special Status Plants

Table 1 summarizes the special status plant species known in the region of the Harper Lake Specific Plan. Table 1 identifies the plant species, provides its status, describes its habitat and identifies its potential to occur in the Specific Plan area. Focused surveys for these sensitive plant species were not performed during spring 2006, which is when such surveys must be conducted. Based on established protocols, focused surveys for these sensitive species are conducted over the course of many weeks during the peak blooming season for each species. For this constraints analysis, a general reconnaissance site visit was performed which resulted in the detection of suitable habitat for these species. For this reason a probability of occurrence is described in the below table. Focused surveys conducted during the appropriate blooming season for each species listed would result in a definitive presence/absence determination.

TABLE 1
SPECIAL STATUS PLANT SPECIES
KNOWN TO OCCUR IN THE REGION

Scientific Name **Common Name**	**Sensitivity Status**[1]	**General Habitat Description**	**Potential to Occur within the Survey area**
Cymopterus deserticola desert cymopterus	Federal: SOC State: N/A CNPS: List 1B	Found in coarse, sandy soils. Associated with Joshua tree woodland and Mojave Desert scrub. Elevation 2,051-2,986 ft. (625-910 m.) Blooms March-May.	**Medium**. The survey area contains potentially suitable habitat for this species.
Eriophyllum mohavense Barstow woolly sunflower	Federal: N/A State: N/A CNPS: List 1B	Found in open, silty, or sandy areas within in desert chenopod scrub, Mojave Desert scrub, and desert playas. Elevation 1,640-2,953 ft. (500-900 m.) Blooms April-May.	**High**. This species is historically known to occur at several sites throughout the survey area. The survey area is located approximately 4-miles southeast of the designated Barstow Woolly Sunflower Conservation Area.

Scientific Name **Common Name**	**Sensitivity Status**[1]	**General Habitat Description**	**Potential to Occur within the Survey area**
Mimulus mohavensis Mojave monkeyflower	Federal: N/A State: N/A CNPS: List 1B	Dry, sandy, or rocky washes along the Mojave River. Associated with Joshua tree woodland and Mojave Desert scrub. Elevation 1,967-3,855 ft. (600-1,175 m.) Blooms April-June.	**Medium**. The survey area contains limited suitable habitat for this species. The survey area is located northeast of the designated Mojave Monkeyflower Conservation Area.
Sarcocornia utahensis Utah glasswort	Federal: N/A State: N/A CNPS: List 2	Alkaline sites within chenopod scrub and playas. Elevation 1,050 ft. (320 m.) Blooms August-September	**Low**. The survey area contains limited suitable habitat for this species.

STATUS DEFINITIONS

USFWS

FE: Species designated as endangered under the federal Endangered Species Act. Endangered = "any species in danger of extinction throughout all or a significant portion of its range."

FT: Species designated as threatened under the Federal Endangered Species Act. Threatened = "species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

SOC: Species of Concern.

CDFG

ST: Threatened = "a species that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this Act" (California Endangered Species Act).

SE: Endangered = "a species is endangered when its prospects of survival and reproduction are in immediate jeopardy from one or more causes."

CNPS

1A Plants Presumed Extinct in California
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2 Plants Rare, Threatened, or Endangered in California But More Common Elsewhere
3 Plants About Which We Need More Information- A Review List
4 Plants of Limited Distribution - A Watch List

Desert Cymopterus (*Cymopterus deserticola)*

Desert cymopterus is a federal Species of Concern and a CNPS designated List 1B species. This species is a perennial herb and has a very distinctive spherical flower, with the appearance of a dark purple drumstick. It occurs in Mojave creosote bush scrub, desert saltbush, and Joshua tree woodland where it shares the habitat with the desert tortoise and the Mohave ground squirrel. This species was not observed during the spring reconnaissance surveys but has potential to occur within the survey area due to the presence of suitable habitat conditions.

Barstow Woolly Sunflower (*Eriophyllum mohavense)*

Barstow woolly sunflower is a CNPS designated List 1B species. This species occurs in sandy or rocky places within creosote bush scrub. This species was not observed during the spring reconnaissance surveys but has the potential to occur within the survey area due to the presence of suitable habitat conditions.

Mojave Monkeyflower *(Mimulus mohavensis)*

Mojave monkeyflower is a CNPS designated List 1B species. This species has a relatively limited distribution and is known from San Bernardino County between Barstow and Victorville. It is associated with creosote bush scrub communities, and is found on dry, sandy or rocky areas along the Mojave River. This species was not observed during the spring reconnaissance surveys but has potential to occur within the survey area due to the presence of suitable habitat conditions and known historical occurrences.

Utah Glasswort (*Salicornia utahensis)*

Utah glasswort is a CNPS List 2 species and is a low-growing annual herb, common in salt marshes. It has no leaves but is formed of cylindrical, jointed branches of a light green color,

smooth and succulent and full of salt. This species was not observed during the spring reconnaissance surveys but has potential to occur within the dry lake bed and seasonal marsh area of the survey area.

7.2 Special Status Wildlife

Table 2 summarizes the special-status wildlife species known in the region of the Harper Lake Specific Plan. Table 2 identifies wildlife species, provides its status, describes its habitat, and identifies its potential to occur in the Specific Plan area. Focused surveys for these sensitive wildlife species were not performed during spring 2006. As mentioned above for special status plants, focused surveys for these special-status wildlife species must be conducted over the course of many weeks during the appropriate activity period for each species. For this constraints analysis, a general reconnaissance site was performed that detected suitable habitat for these species. For this reason a probability of occurrence is described in the below table. Focused surveys conducted during the appropriate activity period for each species listed would result in a definitive presence/absence determination.

TABLE 2
SPECIAL STATUS WILDLIFE SPECIES
KNOWN TO OCCUR IN THE REGION

Scientific Name **Common Name**	**Sensitivity Status**[1]	**General Habitat Description**	**Potential to Occur within the Survey area**
Gila bicolor mohavensis Mohave tui chub	Federal: FE State: SE CDFG: FPE	Endemic to the Mojave River Basin, adapted to alkaline, mineralized waters. Needs deep pools, ponds, or slough-like areas. Needs vegetation for spawning.	**Low**. The survey area lacks deep pools or ponds that are contiguous with an adjacent water body necessary to support this species.
Gopherus agassizii desert tortoise	Federal: FT State: ST CDFG: N/A	Occurs in almost every desert habitat but most common in creosote bush scrub, desert scrub, desert wash, and Joshua tree habitats with large annual wildflower blooms. Requires friable soil for burrowing and nest construction.	**High**. Observed by Eremico Biological Services during May, 2006.
Charadrius alexandrinus nivosus western snowy plover	Federal: N/A State: ST CDFG: SSC (Federal listing applies only to the pacific coastal population)	Sandy beaches, salt pond levees and shores of large alkaline lakes. Needs sandy, gravely or friable soils for nesting.	**Medium**. This species has been reported to occur at the wildlife viewing area east of the survey area. There is limited suitable habitat within the survey area to support this species.
Athene cunicularia burrowing owl	Federal: SOC State: N/A CDFG: SSC	Found mainly in grassland and open scrub from the seashore to foothills. They are known to appropriate dens for California ground squirrels as their own nests.	**High**. Observed during May 2006 reconnaissance surveys by EDAW.
Lanius ludovicianus Loggerhead shrike	Federal: N/A State: N/A CDFG: SSC	Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**High**. Observed during May 2006 reconnaissance surveys by EDAW.
Campylorhynchus brunneicapillus Cactus wren	Federal: N/A State: N/A CDFG: SSC	Requires tall prickly pear cactus (*Opuntia* sp.) or cholla for nesting and roosting.	**High**. Observed during May 2006 reconnaissance surveys by EDAW.

Scientific Name **Common Name**	**Sensitivity Status**[1]	**General Habitat Description**	**Potential to Occur within the Survey area**
Falcon mexicanus prairie falcon	Federal: N/A State: N/A CDFG: SSC	Inhabits dry, open terrain, either level or hilly and breeds on cliffs. Forages far afield, even to marshlands and ocean shores.	**High**. Observed during reconnaissance surveys in May, 2006.
Circus cyaneus Northern harrier	Federal: N/A State: N/A CDFG: SSC	Grasslands, agricultural fields, marshes, open habitats where interstitial spaces exist for prey.	**High**. Observed during May 2006 reconnaissance surveys by EDAW.
Rallus longirostris yumanensis Yuma clapper rail	Federal: FE State: SE CDFG: N/A	Nests in dense vegetation within marshes along the Colorado river and the south and east edges of the Salton Sea.	**Low**. Not expected to occur. The survey area lacks suitable habitat for this species.
Microtus californicus Mojave River vole	Federal: N/A State: N/A CDFG: SSC	Occupies moist habitats along the Mojave River including meadows, freshwater marshes and irrigated pastures in vicinity of the Mojave River.	**Low**. Limited suitable habitat within the survey area exists.
Spermophilus mohavensis Mohave ground squirrel	Federal: N/A State: ST CDFG: N/A	Found in open desert scrub, alkali scrub, and Joshua tree woodlands. Also feeds in annual grasslands. Is restricted to the Mojave Desert. Prefers sandy to gravely soils, avoids rocky areas. Uses burrows at the base of shrubs for cover. Nests are in burrows.	**Low**. Not expected to occur on site. Species not detected during focused surveys conducted March through July 2006 by Eremico Biological Services. Project site is outside of identified MGS range as shown in the West Mojave Plan FEIR/S Map 3-15.

STATUS DEFINITIONS

USFWS

FE: Species designated as endangered under the Federal Endangered Species Act. Endangered = "any species in danger of extinction throughout all or a significant portion of its range."

FT: Species designated as threatened under the Federal Endangered Species Act. Threatened = "species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

FPE: Proposed for federal listing as Endangered.

SOC: Species of Concern.

CDFG

ST: Threatened = "a species that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this Act (California Endangered Species Act)."

SE: Endangered = "a species is endangered when its prospects of survival and reproduction are in immediate jeopardy from one or more causes."

SSC: Species of Special Concern.

Mojave Tui Chub (*Gila bicolor mohavensis*)

The Mojave tui chub is a federal and state listed as endangered, and a CDFG proposed endangered species. This fish is widely distributed throughout the Mojave Desert including the northern portion. Natural populations of the Mojave tui chub were restricted to the Mojave River. This species is most frequently associated with deep pools and slough-like areas of the Mojave River. They are rarely found in streams without those features (Lovich, 1998). At the time of the reconnaissance surveys the survey area did not exhibit the natural features necessary to support this species. Therefore, this species is not expected to occur within the survey area.

Desert Tortoise (*Gopherus agassizi*)
The desert tortoise is federally and state listed as threatened. This species is generally found in the flat inter-montane basins of the Sonoran and Mojave Deserts. Primary activity periods for this species revolve around rainfall events, particularly during the summer monsoon season (August-September) with peak activity in early mornings and late afternoon. While active, desert tortoises forage on a variety of plant material including grasses and wildflowers. Desert tortoise was observed within and adjacent to the Specific Plan area by Eremico Biological Services biologists during spring 2006.

Western Snowy Plover (Charadrius alexandrinus nivosus)
Western snowy plover is a state designated Species of Special Concern. These small shore birds prefer mud or salt flats. They nest in a scrape or on bare ground where there is little or no vegetation, or by brackish or salty interior wetlands. The dry lake area at the northeastern portion of the survey area shows evidence of seasonal ponding of water within the dry lake area. This species is likely to occur within the survey area due to the presence of suitable habitat.

Burrowing Owl (*Athene cunicularia*)
The burrowing owl is a federal Species of Concern and a California Species of Special Concern. Breeding and foraging habitat for this owl consists of grasslands, preferably on flat to low rolling hills in treeless terrain. The burrowing owl was formerly more common, but now is a rare resident of southern California. The project site provides suitable foraging and nesting habitat for this species. The burrowing owl was observed within the survey area during the May 2006 reconnaissance surveys.

Loggerhead Shrike (*Lanius ludovicianus*)
The loggerhead shrike is a federal Species of Concern and a California Species of Special Concern. Shrikes inhabit grasslands and other dry, open habitats. They can often be found perched on fences and posts from which prey items (large insects, small mammals, lizards) can be seen. Suitable foraging and nesting habitat for this species is present within the survey area and this species was observed during the May 2006 reconnaissance surveys.

Coastal Cactus Wren (*Campylorhynchus brunneicapillus*)
The coastal cactus wren is a state designated Species of Special Concern. This wren requires sage scrub habitat with patches of prickly pear and/or cholla cactus. In San Bernardino County, this species is considered an uncommon and local resident of sage scrub habitat containing significant cactus patches. Suitable foraging and nesting habitat for this species is present within the survey area and this species was observed during the May 2006 reconnaissance surveys.

Prairie Falcon (*Falco mexicanus*)
The prairie falcon is a state designated Species of Special Concern. Preferred foraging habitat for this species includes grasslands, scrub habitats, and estuaries. The project site provides suitable foraging and nesting habitat for this species. This species was observed during the May 2006 reconnaissance surveys.

Northern Harrier (*Circus cyaneus*)
The northern harrier is a state designated Species of Special Concern. It can be expected at any month of the year and can be seen foraging in grassland, scrub, and riparian habitats. While once a relatively common species during fall, winter, and spring in undeveloped areas, the northern harrier population is now greatly reduced and localized in distribution. Suitable foraging habitat for this species, (but limited potentially suitable nesting habitat), is present for

this species within the survey area. This species was observed during the May 2006 reconnaissance surveys.

Yuma clapper rail (*Rallus longirostris yumanesis*)
Yuma clapper rail is a federal and state listed endangered species. This species prefers fully grown and dense marsh habitat. Suitable habitat for this species was not observed within the survey area. Therefore, this species is not expected to occur within the survey area.

Mojave River Vole (*Microtus californicus*)
Mojave River vole is a state designated Species of Special Concern. This species occupies moist habitats along the Mojave River. Limited suitable habitat for this species was observed at the terminus of the proposed waterline route adjacent to the Mojave River). Specific development activity locations would need to be identified needed in order to allow determination of the likelihood of impacts to the vole.

Mohave Ground Squirrel (*Spermophilus mohavensis*)
Mohave ground squirrel (MGS) is a state listed threatened species. This species is only active in the spring and summer when they feed on leaves and seeds of native shrubs and annual plants. Appropriate habitat to support this species occurs on site, however, protocol MGS trapping surveys conducted at the Specific Plan area by Eremico Biological Services during the 2006 survey period (March through July 15) did not find any MGS. This survey result is only considered valid for a 12-month period (i.e., until July 15, 2007).

8.0 SURVEY RESULTS

8.1 Plants

The literature review identified four sensitive plant species with the potential to occur within the survey area based on geographic proximity (Table 1). Reconnaissance surveys confirmed the presence of potential habitat for these four sensitive plant species within the survey area. During the reconnaissance survey, one additional sensitive plant, Mojave spineflower was identified within the survey area. Mojave spineflower is a CNPS List 4 species. This species was identified in the survey area during the May 2006 reconnaissance surveys. Numerous plants were located at several sites along the west side of Harper Lake Road, between approximately 0.5-mile and 3.0 miles north of Highway 58; these plants were observed in open areas in desert saltbush scrub, approximately 15 to 20-feet from the road.

8.2 Wildlife

The survey area has appropriate habitat conditions to support a variety of sensitive and common wildlife species. Several sensitive species identified in the literature review have been directly observed during reconnaissance surveys (Table 2). During the May 2006 surveys, EDAW biologists observed a burrowing owl complex and a pair of burrowing owls, a northern harrier pair, and an American badger in the fallow field toward the southeastern side of the survey area (Figure 3). During August 2006 surveys, LeConte's thrashers and loggerhead shrikes were observed within the survey area near the abandoned buildings near Lockhart Road (Figure 3c). A great-horned owl (*Bubo virginianus*) was observed in the tamarisk tree adjacent to the abandoned buildings located along Harper Lake Road and Lockhart Road.

Evidence of desert kit fox (*Vulpes macrotis arsipus*) scat and digs was present in the form of scat and digs near the burrowing owl complex (Figure 3a). A juvenile female desert kit fox had apparently been struck by a vehicle and was observed dead at the intersection of Lockhart Road and Harper Lake Road.

Desert tortoise scat was observed on the project's southernmost boundary directly adjacent to BLM property (Figure 3). Desert tortoise has been observed and documented occupying the BLM property directly adjacent to the southern project boundary and has been directly observed within the survey area (personal communication William Clark, May 10, 2006). The location of the desert tortoise within the survey area is shown on Figure 3b. In the northwestern-most survey area (Figure 3e), within the Mojave desert scrub habitat, possible tortoise sign was observed in the form of a rock pallet, path, and turn-around although these sign did not appear to be recent.

Habitat conditions within the survey area are conducive to support the California state threatened Mohave ground squirrel. As noted above, protocol MGS surveys were conducted during 2006, but no MGS were detected.

Mojave river vole was identified in the literature review as potentially occurring in the project vicinity. One relatively isolated area of the project footprint (the southernmost end of Dixie Road where the 12-mile waterline alignment will terminate at the Mojave River) could potentially be within habitat for this species. This species was not observed during the reconnaissance site visits.

8.3 General Habitat Loss, Wildlife Displacement, and Habitat Fragmentation

In addition to the potential species-specific habitat issues identified above, it should be noted that, in general, development within the survey area may result in the loss of native and non-native habitats that provide valuable nesting, roosting, foraging, and denning opportunities for a wide variety of wildlife species. Removing or altering habitats within the survey area would result in the loss of small mammals, reptiles, amphibians, and other animals of slow mobility that live in the habitats within the project's direct impact area. More mobile wildlife species now using the survey area would be forced to move into remaining areas of open space, consequently increasing competition for available resources in those areas. This situation may result in losing individuals of the wildlife population that cannot successfully compete.

9.0 REGULATORY SETTING

9.1 Federal Endangered Species Act and Regulatory Agency Participation

Biological resources within the survey area are governed by several regulatory agencies and applicable statutes and guidelines for which they are responsible, including, but not limited to the following: the USFWS [Federal Endangered Species Act (FESA)], the CDFG [California Endangered Species Act (CESA), and Fish and Game Code Section 1601], Regional Water Quality Control Board (RWQCB) [Federal Clean Water Act Section 401] and the U.S. Army Corps of Engineers (USACE) [Section 404 of the Federal Clean Water Act]. These agencies can provide input into the environmental review process regarding compliance with the FESA and CESA.

The FESA of 1973 protects plants and animals that are listed by the federal government as "endangered" or "threatened." The FESA is implemented by enforcement of Sections 7 and 9 of the CESA. A federally-listed species is protected from unauthorized "take" pursuant to Section 9 of the FESA. "Take," as defined by the FESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or to attempt to engage in any such conduct. All "persons" are presently prohibited from taking a federally-listed species unless and until 1) the appropriate Section 10(a) permit has been issued by the USFWS, or 2) an incidental take statement is obtained as a result of formal consultation between a federal agency and the USFWS pursuant to Section 7 of the FESA and implementing regulations pertaining thereto (50 CFR 402). "Person" is defined in the FESA as an individual, corporation, partnership, trust, association, or

any private entity; or any officer, employee, agent, department or instrumental of the federal government, or any state, municipality or political subdivision of the state, or any other entity subject to the jurisdiction of the United States.

Under ordinary circumstances, if a federally listed “threatened” or “endangered” species is documented as occurring on a site, then consultation with the USFWS is required to determine whether the proposed action would either 1) result in a “Take” that would jeopardize the continued existence of the species (aka “jeopardy”), 2) “may affect” the species such that “Take” may potentially occur without jeopardy, or 3) have “no effect.” The USFWS will not authorize “Take” if they determine it would “jeopardize” the species in question. Similarly, the USFWS may not require a “take” permit if they determine that the project would have “no effect.” If, however, a “may affect” determination is made, then “take” may be a permitted pursuant to Section 10(a) of the FESA if a Habitat Conservation Plan (HCP) prepared pursuant to regulations at 50 CFR 17.22(b) (2) and 50 CFR 17.32 (b) (2) is approved by the USFWS.

The northwestern portion of the Specific Plan area falls within designated critical habitat for the desert tortoise. Impacts to this area will be addressed under the FESA.

9.2 California Environmental Quality Act

Guidelines for the Implementation of the California Environmental Quality Act (CEQA) (AEP 2006) provide that a special status species be considered as endangered, threatened, or "rare" regardless of appearance on a formal list for the purposes of the CEQA (Guidelines, Section 15380[b] and [d]) if it meets the criteria of endangered or rare in Section 15380(b). The desert tortoise meets this definition and there also is the potential for burrowing owl to meet this definition due to current listing as both a federal and state species of concern. The CEQA requires a mandatory finding of significance if impacts to threatened or endangered species (including those that meet the criteria as defined above, are likely to occur (Sections 21001{c}, 21083, Guidelines 15380, 15064, 15065). Avoidance or mitigation must be presented to reduce impacts to less than significant levels.

CEQA Guidelines Section 15065 directs that a mandatory finding of significance is required for projects that have the potential to substantially degrade or reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare, or threatened species. Direct or indirect impacts desert tortoise and burrowing owl could trigger one of these conditions. CEQA requires agencies to implement feasible mitigation measures or feasible alternatives identified in EIRs for projects which will otherwise cause significant adverse impacts (Sections 21002, 21081, 21083; Guidelines, sections 15002(a)(3), 15021(a)(2), 15091(a), 15126.4).

To be legally adequate, mitigation measures must be capable of "avoiding the impact altogether by not taking a certain action or parts of an action"; "minimizing impacts by limiting the degree or magnitude of the action and its implementation"; "rectifying the impact by repairing, rehabilitating or restoring the impacted environment"; "or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action." (Guidelines, Section 15370).

9.3 Migratory Bird Treaty Act

Most bird species found within the vicinity of the Harper Lake Specific Plan survey area are protected by international treaty under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). Harper Lake is considered an important resting area for migratory birds. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed

in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3503, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. MBTA requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (March 1 - August 15, annually). Disturbance that causes nest abandonment or loss of reproductive effort (e.g., killing or abandonment of eggs or young) or the loss of habitat upon which the birds depend is considered "take" and is potentially punishable by fines and/or imprisonment. Such take would also violate federal law protecting migratory birds (e.g., MBTA).

9.4 U.S. Army Corps of Engineers and California Department of Fish and Game (Jurisdictional Waters Issues)

USACE takes jurisdiction over areas considered “waters of the U.S.” and wetlands. Jurisdictional waters are typically defined by the ordinary high water mark. Wetlands, a subset of jurisdictional waters, are defined as those that possess the following three parameters: (1) hydrology providing permanent or periodic inundation by groundwater or surface water, (2) hydric soils, and (3) hydrophytic vegetation. Jurisdictional limits of the CDFG are similar to the jurisdiction of USACE, but include riparian habitat supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. The limits of CDFG jurisdiction are often defined by riparian vegetation or the ordinary high water mark. CDFG does not take jurisdiction over isolated wetlands, such as vernal pools, and seeps. As noted below, the ephemeral drainages in that flow and collect into the hardpan depressions across the Specific Plan area are considered likely not to come under USACE jurisdiction, but CDFG may well assert jurisdiction.

9.5 West Mojave Plan

The West Mojave Plan, the largest habitat conservation plan ever developed in the United States, encompasses 9.3 million aces in San Bernardino, Kern, Los Angeles, and Inyo counties. This Plan has been jointly released, along with the Final Environmental Impact Statement and environmental Impact Report (EIS/EIR), by BLM, the County of San Bernardino, and the City of Barstow. The purpose of the West Mojave Plan is to develop management strategies for the desert tortoise, Mohave ground squirrel, and over 100 other sensitive plants and animal species that would conserve those species throughout the western Mojave Desert, while at the same time establishing a streamlined program for compliance with the regulatory requirements of the Federal Endangered Species Act and the California Endangered Species Act. Agencies, local jurisdictions and others with a stake in the future of the western Mojave Desert have collaborated in the development of the West Mojave Plan. The Harper Lake Specific Plan area falls within the West Mojave Plan area and thus the Plan’s policies, strategies, etc. are directly relevant.

9.6 Harper Dry Lake Area of Critical Environmental Concern

The Harper Lake ACEC was established to protect the remnant marshes at the southwestern edge of Harper Dry Lake. The seasonal marsh and alkali wetland community bordering Harper Dry Lake hold potential for discovery of several rare and restricted-range plant species. The playa bordering the marshes has supported nesting Western snowy plovers in the past and is an area important for the conservation of Western snowy plover nesting habitat. Harper Dry Lake is recognized as a Key Raptor Area by the BLM, which has designated 223 such areas nationwide. Key Raptor Areas are places known to be significant habitats for selected species of birds of prey, and Harper Dry Lake is one of seven Key Raptor Areas in the Mojave Desert.

10.0 RECOMMENDATIONS

10.1 Jurisdictional Delineation and Determination

The ephemeral drainages that flow and collect into the hardpan depressions across the Specific Plan area are probably isolated and will not fall under USACE jurisdiction. However, in EDAW's past experience in this geographic region of California, CDFG has taken jurisdiction over such areas.

It is recommended that a formal jurisdictional delineation and determination be conducted of those features, pursuant to the USACE 1987 Wetland Delineation Manual, for all ephemeral drainages, erosion rills, and hardpan depressions that fall within the survey area or more specifically, the footprint of development activities once such a footprint has been established. Because jurisdictional determinations made by USACE are considered valid for a limited period of time (five years), it may be advisable to consider waiting until the development footprint is more clearly established before conducting the wetland delineation.

10.2 Wildlife Displacement and Habitat Fragmentation

The ability of habitats to function as wildlife corridors is of importance to resource regulatory agencies. Development within the Specific Plan area could sever connectivity between high value native habitats and possibly diminish the quality of similar habitat adjacent to but outside the boundaries of the Specific Plan. This issue would be expected to be addressed by resource agencies during the environmental review process associated with permitting specific development activities within the Specific Plan.

The northeastern edge of the survey area encompasses 9 acres of dry lake bed and seasonal marsh. Seasonal rains fill this part of the survey area and create seasonal ponds for many species of shore birds including great blue herons, white pelicans, tricolored blackbirds, and numerous species of waterfowl. The mud-flats support killdeer, snowy plover, mountain plover, black-necked stilts, and American avocets. Saltbush scrub adjacent to the seasonal marsh provide habitat for a variety of migratory birds such as warblers, sparrows, bluebirds, and grosbeaks. Many birds of prey known to southern California and the Mojave Desert frequent the survey area, including northern harriers, bald eagles, golden eagles, peregrine falcons, prairie falcons, and ferruginous hawks. It is recommended that as the development footprint within the Specific Plan is established, careful consideration be given to avoiding impacts on this sensitive and ecologically valuable natural resource.

10.3 Vegetation Cover and Sensitive Plants

The vegetation map should be further refined as the development footprint within the Specific Plan area is defined in order to assure the absence of any isolated pockets of sensitive vegetation not detected during reconnaissance surveys. EDAW recommends performing focused surveys for special-status plant species identified in the literature review and during reconnaissance visits. These surveys should focus in those areas where appropriate habitat exists for identified species. Table 3 includes shows the survey period for the identified species.

TABLE 3
SURVEY PERIOD FOR SPECIAL STATUS PLANT SPECIES

Common Name	Scientific Name	Survey Period
Desert cymopterus	*Cymopterus deserticola*	March-May
Mojave spineflower	*Chorizanthe spinosa*	April-July
Barstow woolly sunflower	*Eriophyllum mohavense*	March-April

Common Name	Scientific Name	Survey Period
Mojave monkeyflower	*Mimulus mohavensis*	April-June
Utah glasswort	*Sarcocornia utahensis*	August-September

Priority for surveys should be given to California Native Plant Society (CNPS) List 1B species that are known from the vicinity of the survey area. Most surveys will take place in March through June in order to coincide with blooming periods for the sensitive plant species that have a potential to occur within the corridor. Given the linear configuration of part of the survey area (areas along Harper Lake Road and Santa Fe Road), areas surveyed during the earlier portion of the survey period may require a re-survey after completing the survey of the line. This is because some species may not be in optimal bloom during the first couple of weeks of the March survey period.

10.4 Surveys for Special Status Wildlife

Prior to implementation of development activities in the Specific Plan area, focused surveys for several sensitive and listed species must be conducted. Focused surveys should not commence until a defined development footprint(s) is established. It also may be possible to avoid certain habitats elements when footprints are established for specific development activities. With the Specific Plan area as currently defined for the constraints analysis, and absent knowledge of specific areas that might be excluded from development activities, focused surveys would be needed for the following species: burrowing owl, snowy plover, Mohave ground squirrel, Mojave river vole, and desert tortoise. The surveys would need to be conducted in the areas of the Specific Plan area that contain the habitat types appropriate for the various individual species. All focused surveys would have to be conducted per USFWS and CDFG survey protocol requirements.

Surveys for Burrowing Owl

Burrowing owl was observed during the spring 2006 reconnaissance surveys; the area for the focused surveys would be established based on the expected footprint of development activities. CDFG recommends the methodology developed in the Burrowing Owl Consortium Guidelines be used when surveying for burrowing owl. These guidelines are intended to provide decision-making process that should be implemented whenever there is a potential for a project to adversely affect burrowing owls or the resources that support them. The process begins with a four-step survey protocol to document the presence of burrowing owl habitat, and evaluate burrowing owl use of the defined project footprint and a surrounding buffer zone.

Surveys for Desert Tortoise

Presence/absence surveys for desert tortoise will be required within the Specific Plan area and along linear features where appropriate habitat for this species is observed. Survey areas would include Mojave creosote bush scrub, Mojave creosote bush scrub (desert pavement), desert saltbush scrub, and disturbed desert saltbush scrub the within the Specific Plan development footprint and along the proposed 5-mile rail spur alignment and 12-mile waterline alignment.

Surveys for Mohave Ground Squirrel

The Specific Plan area is located on the periphery of the Mohave ground squirrel range. Habitat conditions on site are conducive to support this species, although as noted above 2006 trapping efforts were negative. The results of these surveys are valid for one year until July 15, 2007. The MGS survey is presence/absence and it may be worth considering assuming MGS presence rather than repeating the surveys for economic reasons. The key consideration likely

would be the expected mitigation acreage requirement (and associated costs) that would be imposed by CDFG compared to the costs of conducting the MGS surveys.

Surveys for Mojave River Vole

Mojave river vole was identified in the literature review as potentially occurring in the Specific Plan vicinity. One relatively isolated portion of the survey area (the southernmost end of Dixie Road where the 12-mile waterline would terminate at the Mojave River) could potentially be within habitat for this species. This issue should be taken into account when detailed development planning/design occurs, e.g., ways to avoid impacts on the vole and its associated habitat.

Snowy Plover

Snowy plover was identified in the literature review as potentially occurring in the Specific Plan vicinity. The 9.0-acre area of dry lake bed located at the northeastern edge of the Specific Plan area is the location within the survey area where this species is most likely to occur. However, it is our recommendation that consideration be given to avoiding this biologically sensitive and important area of the dry lake when specific development footprints are defined.

10.5 MBTA Compliance and Preconstruction Surveys for Nesting Raptors

A survey for active raptor nests is recommended by CDFG at least seven days prior to any habitat disturbance that occurs during the raptor nesting season (February 1 to June 30). Prior to the onset of construction activities associated with Specific Plan development activities, a qualified biologist should survey within the limits of expected ground disturbance for the presence of any active raptor nests, including burrowing owl burrows. Any nest/burrow found during survey efforts would be mapped on the construction plans. If no active nests/burrows are found, no further mitigation would be required. Results of the surveys would be provided to Harper Lake, LLC and CDFG. If nesting activity is present at any raptor nest/burrow site, the active site must be protected until nesting activity has ended or as otherwise directed by a qualified biologist in order to ensure compliance with the California Fish and Game Code. To protect any nest/burrow site, the following restrictions on construction are required between February 1 and June 30 (or until nests/burrows are no longer active as determined by a qualified biologist): 1) clearing limits must be established for a minimum of 500-feet in any direction from any occupied nest/burrow and 2) access and surveying will not be allowed within 100-feet of any occupied nest/burrow. Any encroachment into the buffer areas around the known nest/burrow will only be allowed if it is determined by a qualified biologist that the proposed activity will not disturb the nest/burrow occupants.

11.0 REFERENCES

American Ornithologists' Union. 1998. *Check-list of North American Birds*. 7th edition. American Ornithologists' Union, Washington, D.C.

Behler, J.L. and F.W. King. 1998. *National Audubon Society Field Guide to North American Reptiles and Amphibians*. Alfred A. Knopf, New York. 743 p.

California Burrowing Owl Consortium. April 1993. *Burrowing Owl Survey Protocol and Mitigation Guidelines*.

California Department of Fish and Game. September 2003. *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database*. Wildlife and Habitat Data Analysis Branch, Sacramento.

California Department of Fish and Game. 2006a. *California Natural Diversity (RareFind) Database*. California Department of Fish and Game, Natural Heritage Division, Sacramento.

California Department of Fish and Game. 2006b. List of Special Animals. *Wildlife and Habitat Data Analysis Branch California Natural Diversity Database*.

California Native Plant Society (CNPS). 2006. *Electronic Inventory of Rare and Endangered Vascular Plants of California*. California Native Plant Society, Sacramento.

Clark Biological Consulting. William Clark, Principal. Personal communication May 10, 2006.

Desert Tortoise (*Gopherus agassizii*) Field Survey Protocol. January 1992. http://www.fws.gov/ventura/es/protocols/de-tortoise-fsp.pdf

Eremico Biological Services. August 2006. *Mohave Ground Squirrel Survey at the Proposed Harper Lake Dairy Park, Lockhart, San Bernardino County, California.*

Hickman, J.C., (ed.) 1993. *The Jepson Manual; Higher Plants of California*. University of California Press, Berkeley.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California.* State of California Department of Fish and Game, Nongame-Heritage Program, Sacramento.

Jones, J. K., R. Hoffmann, D. Rice, C. Jones, R. Baker, and M. Engstrom. 1992. *Revised checklist of North American Mammals north of Mexico*. Occasional Papers: The Museum of Texas Tech University. 23 pp.

Lovich, Jeff, 1998. Mohave Tui Chub (*Gila bicolor mohavensis*). U.S. Geological Survey, Department of Biology, University of California, Riverside, California.

Munz, P.A. 1974. *A Flora of Southern California*. University of California Press, Berkeley.

Ninyo & Moore Geotechnical and Environmental Sciences Consultants. July 7, 2006. *Geotechnical Reconnaissance Harper Lake Dairy Park, Lockhart California*. Prepared for Metcalf & Eddy.

Sawyer, J.O. and Keeler-Wolf, T. *A Manual of California Vegetation*. California Native Plant Society, Sacramento.

Sibley, D.A. 2000. National Audubon Society, *The Sibley Guide to Birds*. Alfred A. Knopf, New York. 544 p.

Small, A. 1994. *California Birds: Their Status and Distribution*. Ibis Publishing Company. Vista, California.

Stewart, J. M. 1998. *Mojave Desert Wildflowers*. Jon Stewart Photography, Singapore.

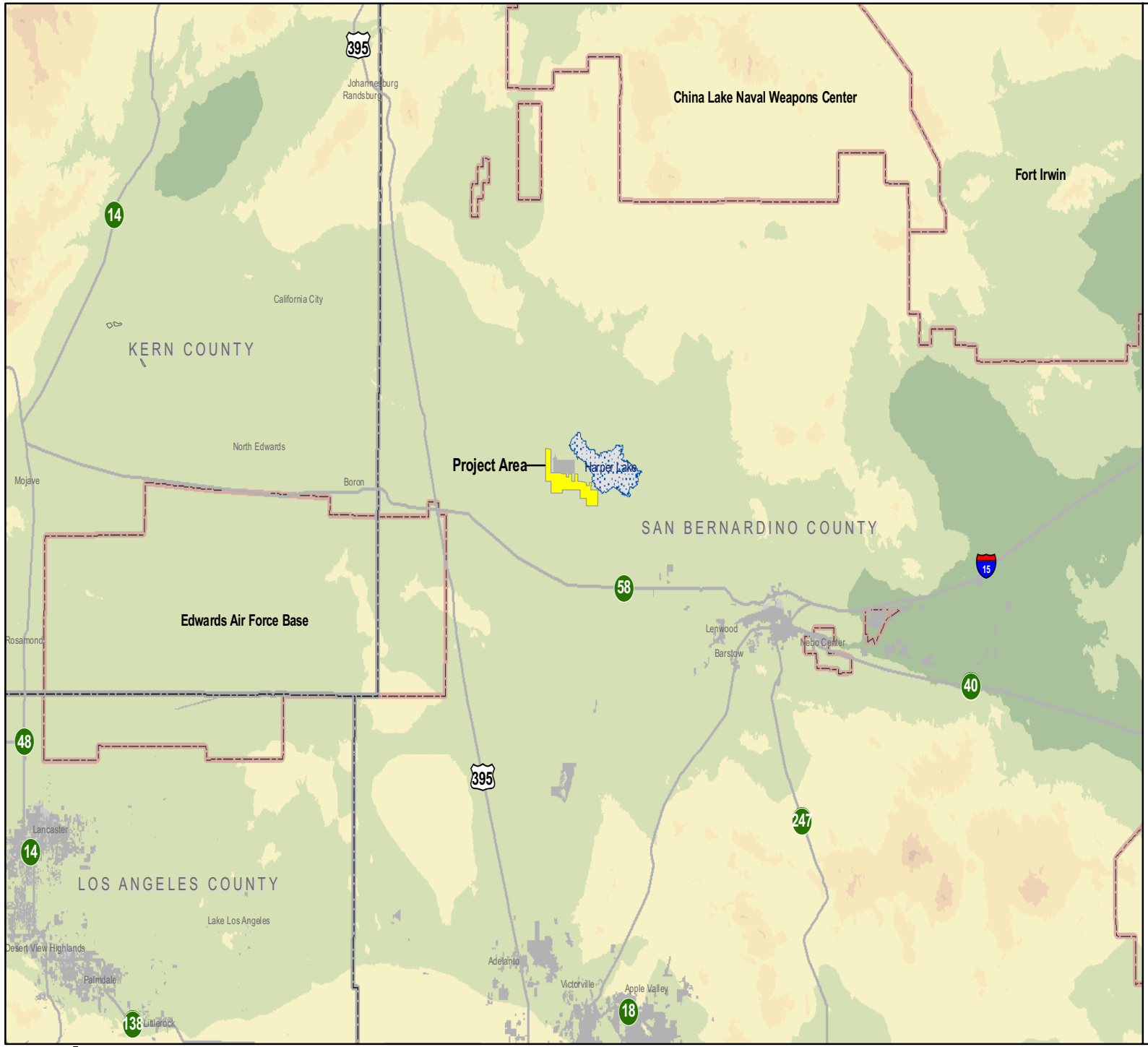
United States Bureau of Land Management website. http://www.blm.gov/ca/barstow/harper.html

Zeiner, D.C., W. F. Laudenslayer Jr., K.E. Mayer, M. White, eds. 1990. *California's Wildlife Vol. 3: Mammals*. California Department of Fish and Game, The Resources Agency, Sacramento.

12.0 FIGURES

HARPER LAKE, LLC

Figure 1
Regional and Vicinity Map



1 inch = 10 miles

Miles

0 5 10

HARPER LAKE, LLC

Figure 2
Survey Area and Critical Areas

Legend

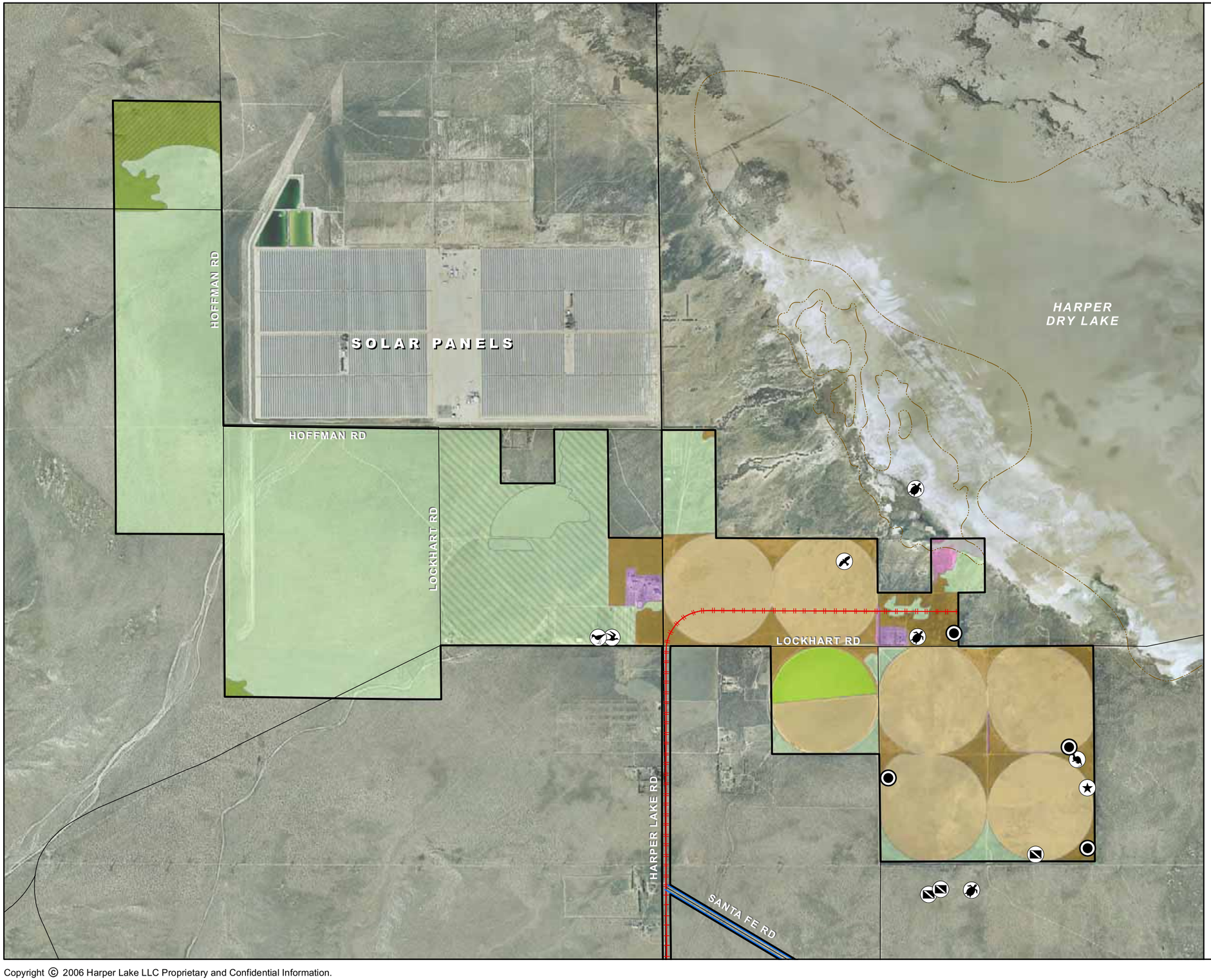
- Survey Area
- Desert Tortoise Critical Habitat
- Bureau of Land Management
- Area of Critical Environmental Concern (ACEC)
- Proposed Railroad Spur
- Proposed Water and Sewer Pipeline
- Blue Line Streams

SOLAR PANELS
HARPER DRY LAKE
HAPER LAKE RD
SANTA FE RD
RAINBOW RANCH RD
A.T. & S.F. RAILROAD
58
HINKLEY
58
DIXIE RD
HELENDALE RD
MOJAVE RIVER

1 inch = 8,000 feet
Feet
0 2,000 4,000 6,000 8,000

HARPER LAKE, LLC

Figure 3
Survey Area Vegetation and Cover Types



Legend

- Survey Area
- Dry Lake
- Proposed Railroad Spur
- Proposed Water and Sewer Pipeline

Vegetation Types

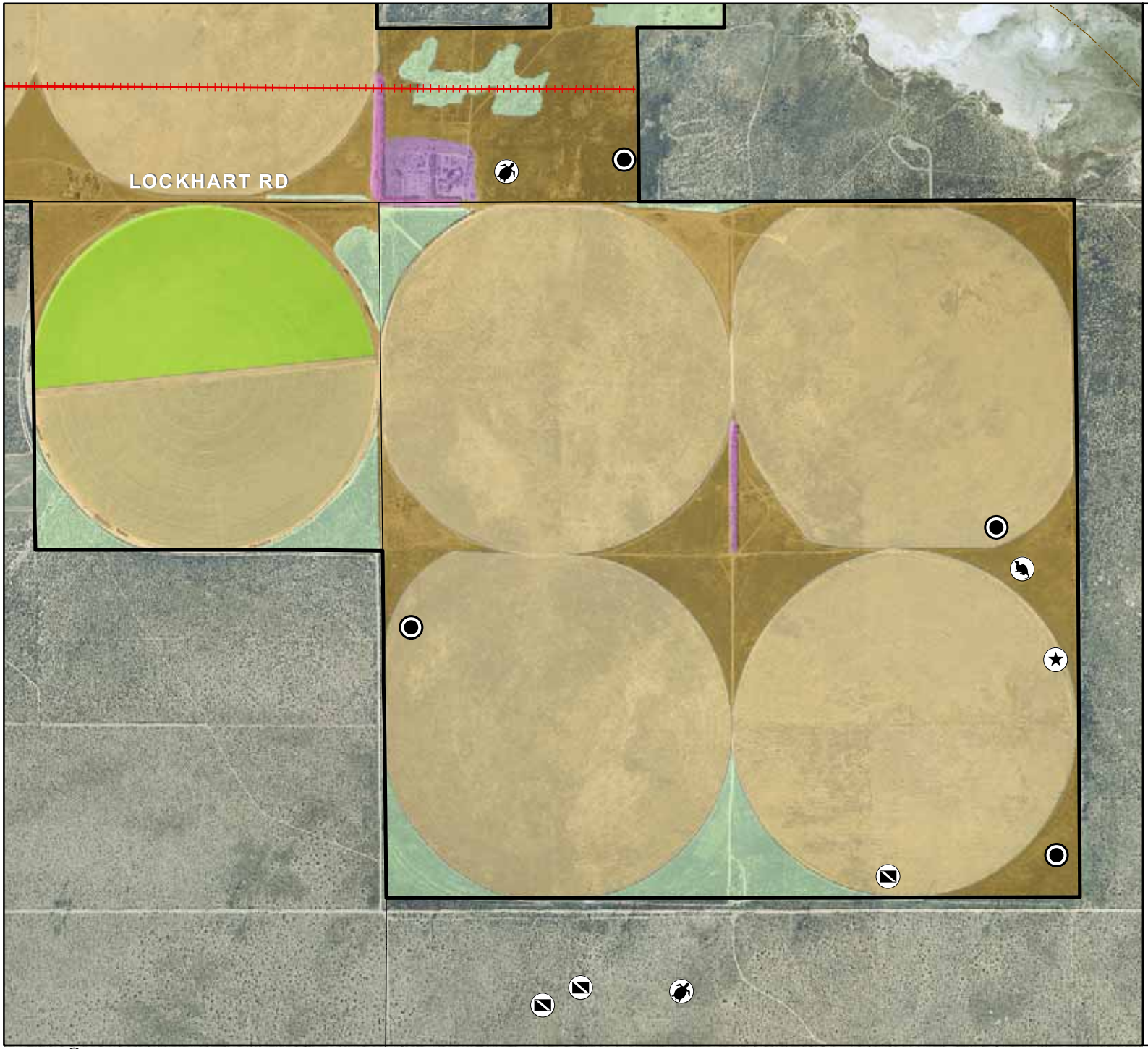
- Developed (22.8 ac.)
- Tamarisk Scrub (13.3 ac.)
- Fallow (863.2 ac.)
- Ruderal (251.9 ac.)
- Mojave Creosote Bush Scrub (MCBS) (30.1 ac.)
- MCBS (Desert Pavement) (76.3 ac.)
- Desert Saltbush Scrub (1,570.3 ac.)
- Disturbed Desert Saltbush Scrub (418.1 ac.)
- Active Alfalfa Field (59.5 ac.)
- Dry Lake Bed (9.0 ac.)

Sensitive Wildlife

- Northern Harrier
- LeConte's Thrasher
- Loggerhead Shrike
- American Badger Den
- Burrowing Owl
- Short-Eared Owl
- Desert Tortoise
- Desert Tortoise Sign

1 inch =2,400 feet

0 1,200 2,400 3,600 Feet



HARPER LAKE, LLC

Figure 3a
Survey Area Vegetation and Cover Types

Legend

- Survey Area
- Dry Lake
- Proposed Railroad Spur

Vegetation Types

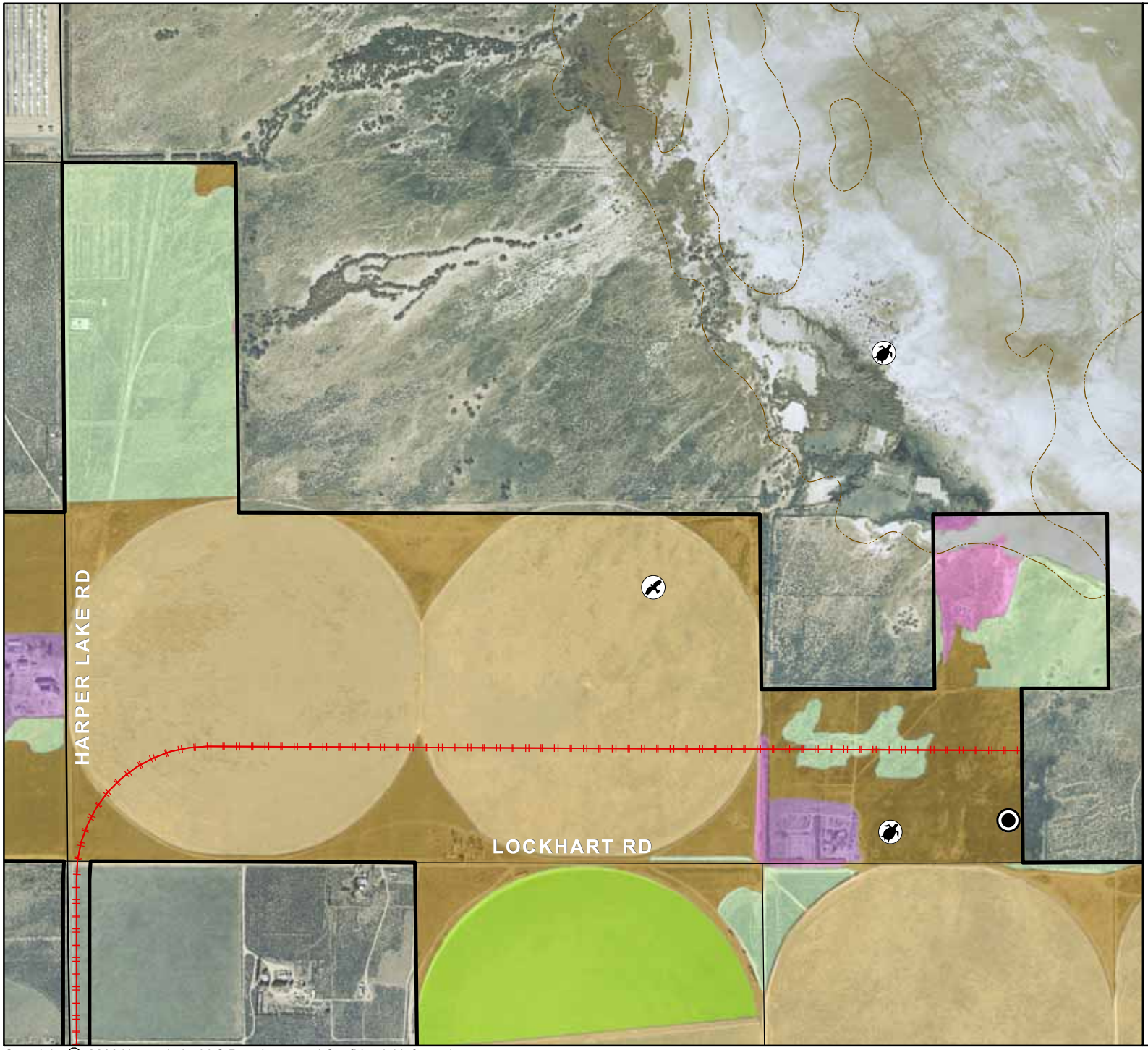
- Developed
- Tamarisk Scrub
- Fallow
- Ruderal
- Desert Saltbush Scrub
- Active Alfalfa Field

Sensitive Wildlife

- American Badger Den
- Burrowing Owl
- Short-Eared Owl
- Desert Tortoise
- Desert Tortoise Sign

1 inch = 0.20 miles

0 0.1 0.2 Miles



HARPER LAKE, LLC

Figure 3b
Survey Area Vegetation and Cover Types

Legend

- Survey Area
- Dry Lake
- Proposed Railroad Spur

Vegetation Types

- Developed
- Dry Lake Bed
- Tamarisk Scrub
- Fallow
- Ruderal
- Desert Saltbush Scrub
- Active Alfalfa Field

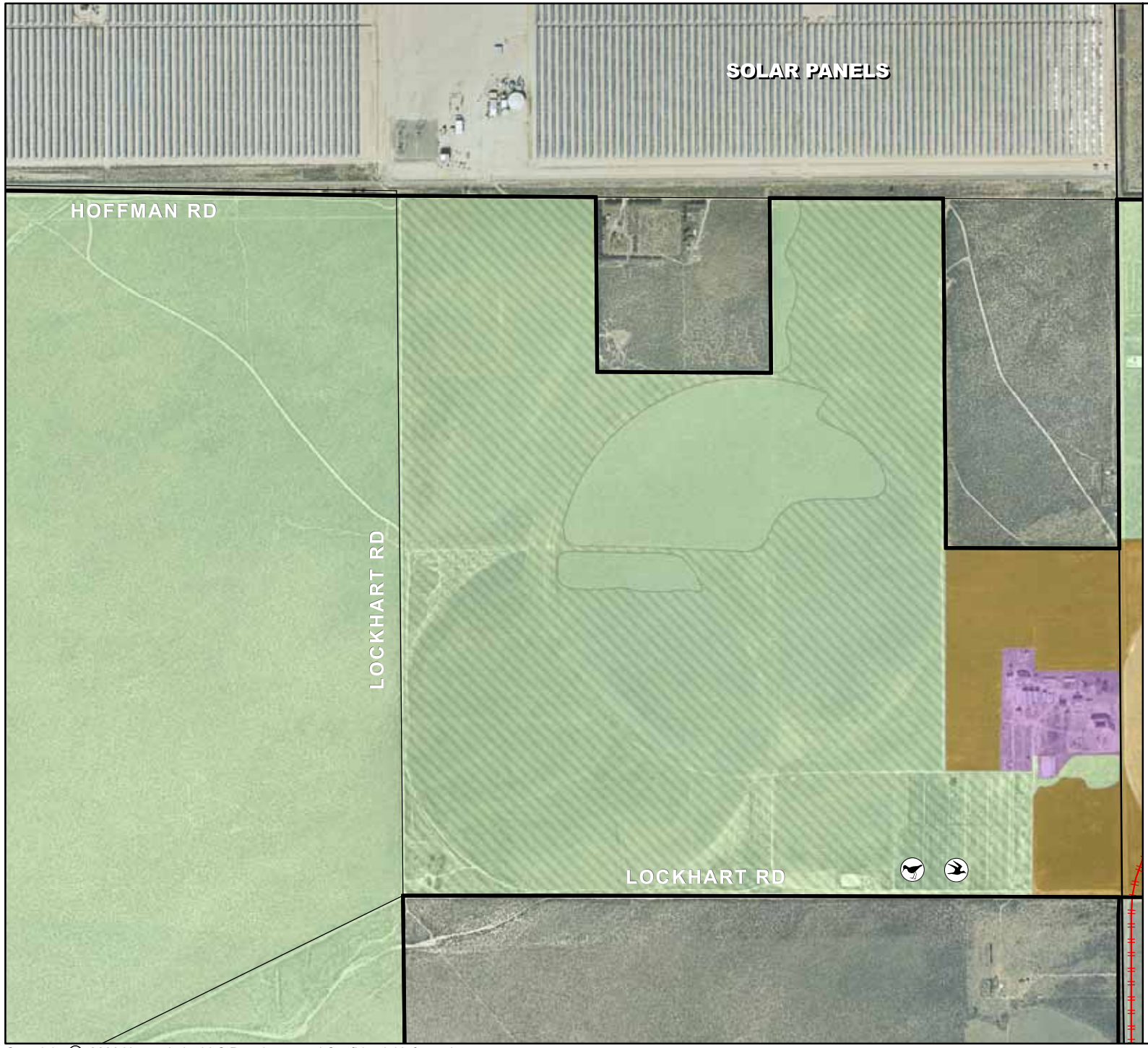
Sensitive Wildlife

- Burrowing Owl
- Desert Tortoise
- Northern Harrier

1 inch = 0.20 miles

Miles

0 0.1 0.2



HARPER LAKE, LLC

Figure 3c
Survey Area Vegetation and Cover Types

Legend

- Survey Area
- Proposed Railroad Spur

Vegetation Types

- Developed
- Fallow
- Ruderal
- Desert Saltbush Scrub
- Disturbed Desert Saltbush Scrub

Sensitive Wildlife

- LeConte's Thrasher
- Loggerhead Shrike

1 inch = 0.20 miles

0 0.1 0.2 Miles

HARPER LAKE, LLC

Figure 3d
Survey Area Vegetation and Cover Types

Legend

Survey Area

Vegetation Types

- Mojave Creosote Bush Scrub
- Desert Saltbush Scrub
- Disturbed Desert Saltbush Scrub

1 inch = 0.20 miles

0 0.1 0.2 Miles

HARPER LAKE, LLC

Figure 3e
Survey Area Vegetation and Cover Types

Legend

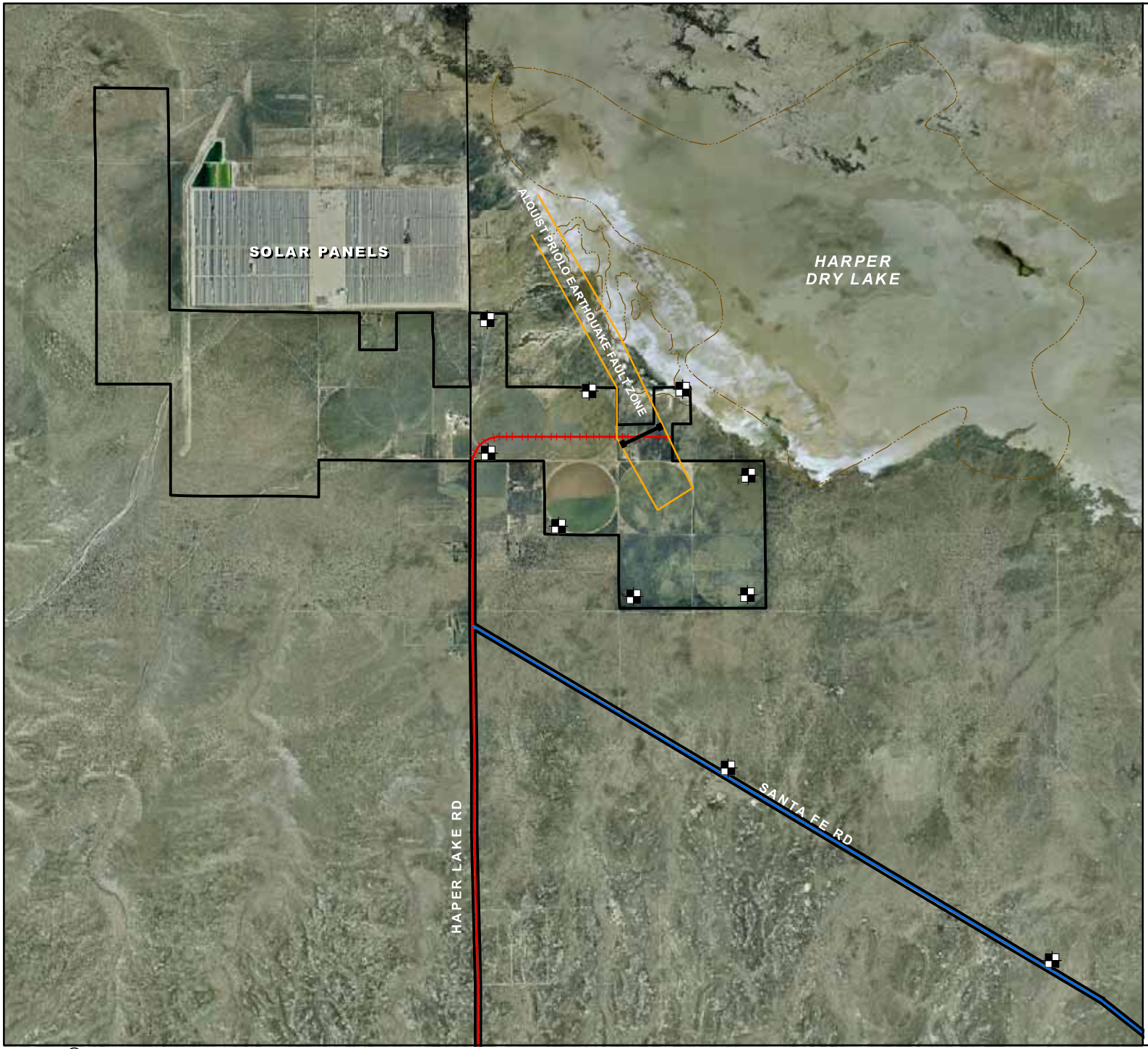
Survey Area

Vegetation Types

- Mojave Creosote Bush Scrub (MCBS)
- MCBS (Desert Pavement)
- Desert Saltbush Scrub

1 inch = 0.20 miles

0 0.1 0.2 Miles



HARPER LAKE, LLC

Figure 4
Geotechnical Testing Locations

Legend

- Survey Area
- Dry Lake
- Proposed Railroad Spur
- Proposed Water and Sewer Pipeline
- Alquist Priolo Earthquake Fault Zone
- Fault Trench
- Approximate Location of Test Pits

1 inch = 5,000 feet

0 2,500 5,000 Feet

13.0 APPENDICES

APPENDIX A PHOTOGRAPHS OF THE SURVEY AREA

Photo 1: Mojave Creosote Bush Scrub, northwest aspect toward Harper Dry Lake

Photo 2: Mojave Creosote Bush Scrub (Desert Pavement), south aspect across the survey area. Note: desert hardpan depression in center background.

Photo 3: Desert Saltbush Scrub, south aspect.
Note: Hoffman Road in foreground.

Photo 4: Lakebed Edge and Tamarisk Scrub, west aspect.

Photo 5: Dry lake bed with intermittent Tamarisk.

Photo 6: Ruderal (foreground) Fallow (background) northeast aspect.
Note: Harper Dry Lake in distance

APPENDIX B PLANT COMPENDIA
Plant species observed at Harper Lake Specific Plan area during spring and summer 2006 surveys.

Abronia villosa	desert sand verbena
Achnatherum hymenoides	Indian ricegrass
Ambrosia acanthicarpa	Sand-bur
Ambrosia dumosa	burro weed
Amsinckia tessellata	devil's lettuce
Amsinckia tessellata var. tessellata	Fiddleneck
Astragalus sp.	milk-vetch
Atriplex polycarpa	allscale
Atriplex spinifera	spinescale
Baileya multiradiata	desert marigold
Bromus madritensis ssp*. rubens**	foxtail chess
*Bromus tectorum**	Cheat grass
Camissonia sp.	sun cup
Chaenactis fremontii	desert pincushion
Chaenactis sp.	pincushion
Chamaesyce albomarginata	rattlesnake weed
*Chamomilla suaveolens**	pineapple weed
Chorizanthe brevicornu	brittle spineflower
Chorizanthe spinosa	Mojave spineflower
Cryptantha sp.	Cryptantha
Cylindropuntia echinocarpa	Golden cholla
*Descurainia sophia**	flixweed or tansy mustard
Distichlis spicata	saltgrass
Eremalche exilis	White mallow
Eriastrum wilcoxii	woollystar
Eriogonum deflexum var. deflexum	Skeleton weed
Eriogonum pusillum	puny buckwheat
*Erodium cicutarium**	Red-stemmed filaree
Heliotropium curassavicum	salt heliotrope
*Hordeum murinum ssp. leporinum**	Wild barley
Hordeum sp.*	barley
Hymenoclea salsola	burro brush
Larrea tridentata	creosote bush
Lepidium flavum	yellow peppergrass
Lepidium lasiocarpum var. *lasiocarpum*	peppergrass
Lyceum cooperi	Peach-thorn
Malacothrix glabrata	desert dandelion
Malva parviflora	cheeseweed
*Medicago sativa**	alfalfa
Phacelia fremontii	Yellowthroats
Plagiobothrys sp.	Popcorn-flower
Plantago erecta	plantain
Populus fremontii (dead)	Fremont cottonwood
Prosopis glandulosa var. *torreyana*	Honey mesquite
Psorothamnus arborescens var. *minutifolius*	indigo bush
Rafinesquia neomexicana	Desert chicory
Salix sp. (dead)	willow
Salsola tragus	Russian thistle
*Schismus arabicus**	Mediterranean grass
*Schismus sp.**	Mediterranean grass
*Sisymbrium irio**	London rocket
Sphaeralcea ambigua	apricot mallow
Sporobolus airoides	Alkali sacaton

Stanleya pinnata	prince's plume
Stephanomeria exigua ssp. *exigua*	Annual mitra
Suaeda calceoliformis	Horned sea-brite
*Tamarix ramosissima**	Saltcedar
Tamarix sp.*	tamarisk
Tetradymia stenolepis	Mojave horsebrush

** - indicates non-native species*

Some species may not have been detected due to the seasonal nature of their occurrence and the timing of the surveys. Common names are taken from Hickman (1993), and Stewart (1998).

APPENDIX C WILDLIFE COMPENDIA
Wildlife species observed at Harper Lake Specific Plan area during spring and summer 2006 surveys.

REPTILIA	**REPTILES**
Uta stansburiana	Side-blotched lizard
Cnemidophorus tigris mundus	Western whiptail
Gopherus agassizii	Desert tortoise (scat)
Sceloporus magister	Desert spiny lizard
Crotalus scutulatus	Mojave rattlesnake
Crotalus mitchellii	Speckled rattlesnake

AVES	**BIRDS**
Cathartes aura	Turkey-vulture
Circus cuaneus	Northern harrier (pair observed)
Buteo jamaicensis	Red-tailed hawk
Tyto alba	Barn owl
Bubo virginianus	Great horned owl
Athene cunicularia	Burrowing owl (pair observed)
Chordeiles acutipennis	Lesser nighthawk
Asio flammeus	Short-eared owl
Falco sparverius	American kestrel
Falco mexicanus	Prairie falcon
Geococcyx californianus	Greater Roadrunner
Callipepla californica	California quail
Zenaida macroura	Mourning dove
Columba livia	Rock pigeon
Calypte anna	Anna's hummingbird
Tyrannus verticaulis	Western kingbird
Euphagus cyanocephalus	Brewer’s blackbird
Corvus corax	Common raven
Lanius ludovicianus	Loggerhead shrike
Mimus polyglottos	Northern mockingbird
Toxostoma lecontei	Le Conte’s thrasher
Sturnus vulgaris	European starling
Amphispiza belli	Sage sparrow
Sturnella neglecta	Western meadowlark
Eremophila alpestris	Horned lark
Carpodacus mexicanus	House finch
Carduelis psaltria	Lesser goldfinch
Anas platyrhynchos	Mallard
Callipepla gambelii	Gambel’s quail
Sayornis saya	Say’s phoebe
Hirundo rustica	Barn swallow
Zonotrichia leucophrys	White-crowned sparrow
Carduelis tristis	American goldfinch

MAMMALIA	**MAMMALS**
Lynx rufus	Bobcat
Canis latrans	Coyote
Taxidea taxus	American badger
Vulpes macrotis arsipus	Desert kit fox
Lepus californicus	Black-tailed jackrabbit
Sylvilagus audubonii	Desert cottontail
Ammosperophilus leucurus	White-tailed antelope squirrel
Perognathus longimembris	Little pocket mouse
Chaetodipus formosus	Long-tailed pocket mouse
Dipodomys merriami	Merriam's kangaroo rat
Dipodomys panamintinus	Panamint kangaroo rat
Peromyscus maniculatus	Deer mouse
Neotoma lepida	Desert wood rat

Taxonomy follows Behler (1998) for reptiles, AOU (1998) Sibley (2000) for birds, and Jones (1992) for mammals.

STATE OF CALIFORNIA

Energy Resources Conservation
and Development Commission

Application for Certification for the ***ABENGOA MOJAVE SOLAR POWER PLANT***	)	Docket No. 09-AFC-5

PROOF OF SERVICE

I, Karen A. Mitchell, declare that on April 16, 2010, I served the attached *Responses to CURE's Data Requests – Set 1* via electronic mail and United States Mail to all parties on the attached service list.

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

Karen A. Mitchell

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
FOR THE *ABENGOA MOJAVE SOLAR POWER PLANT*

Docket No. 09-AFC-5
PROOF OF SERVICE
(Revised 3/4/2010)

APPLICANT
Emiliano Garcia Sanz
General Manager
Abengoa Solar Inc.
11500 West 13th Avenue
Lakewood, CO 80215
emiliano.garcia@solar.abengoa.com

Scott D. Frier
Chief Operating Officer
Abengoa Solar Inc.
13911 Park Ave., Ste. 206
Victorville, CA 92392
scott.Frier@solar.abengoa.com

Tandy McMannes
2030 Addison Street, Suite 420
Berkeley, CA 94704
tandy.mcmannes@solar.abengoa.com

APPLICANT'S CONSULTANTS
Frederick H. Redell, PE
Engineering Manager
Abengoa Solar, Inc.
11500 West 13th Avenue
Lakewood, CO 80215
frederick.redell@solar.abengoa.com

COUNSEL FOR APPLICANT
Christopher T. Ellison
Ellison, Schneider & Harris
2600 Capitol Ave.
Sacramento, CA 95816
cte@eslawfirm.com

INTERESTED AGENCIES
California ISO
E-mail Preferred
e-recipient@caiso.com

INTERVENORS
California Unions for Reliable Energy ("CURE")
Tanya A. Gulesserian
Marc D. Joseph
Elizabeth Klebaner
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
E-mail Preferred
tgulesserian@adamsbroadwell.com
eklebaner@adamsbroadwell.com

Luz Solar Partners Ltd., VIII
Luz Solar Partners Ltd., IX
Jennifer Schwartz
700 Universe Blvd
Juno Beach, FL 33408
jennifer.schwartz@nexteraenergy.com

ENERGY COMMISSION
***ANTHONY EGGERT**
Commissioner and Presiding Member
aeggert@energy.state.ca.us

JAMES D.BOYD
Vice Chairman and Associate Member
jboyd@energy.state.ca.us

Paul Kramer
Hearing Officer
pkramer@energy.state.ca.us

Craig Hoffman
Project Manager
choffman@energy.state.ca.us

Christine Hammond
Staff Counsel
chammond@energy.state.ca.us

Jennifer Jennings
Public Adviser's Office

*indicates change

publicadviser@energy.state.ca.us