

From: [Michael J. Connor](mailto:Michael.J.Connor)
To: CARSP@blm.gov; [Hector Villalobos](mailto:Hector.Villalobos); esolorio@energy.state.ca.us
Subject: Ridgecrest Solar Power Project DEIS
Date: 07/08/2010 01:21 PM
Attachments: _____

Dear Ms Eubanks and Mr. Villalobos:

Attached please find Western Watersheds Project's comments on the Draft Environmental Impact Statement for the Proposed Solar Millennium Ridgecrest Solar Power Project, Kern County, CA and Possible Land Use Plan Amendment and Staff Assessment. Comments on the DEIS are due today.

Could you please respond to this email to confirm that you received and could open the attached file.

Mike Connor

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Working to protect and restore Western Watersheds

July 8, 2010

By Email

BLM California Desert District
22835 Calle San Juan de los Lagos
Moreno Valley, California 92553
Attn: Janet Eubanks
< CARSP@blm.gov >

Re: Draft Environmental Impact Statement for the Proposed Solar Millennium Ridgecrest Solar Power Project, Kern County, CA and Possible Land Use Plan Amendment and Staff Assessment.

Dear Ms. Eubanks:

On behalf of Western Watersheds Project and myself, please accept the following comments on the *Staff Assessment and Draft Environmental Impact Statement and Draft California Desert Conservation Area Plan Amendment* for the Ridgecrest Solar Power Project. Western Watersheds Project submitted formal scoping comments for the Staff Assessment ("SA") and Draft Environmental Impact Statement ("DEIS") in two letters dated December 23, 2009 and January 21, 2010.

Western Watersheds Project works to protect and conserve the public lands, wildlife and natural resources of the American West through education, scientific study, research, public policy initiatives, and litigation. Western Watersheds Project and its staff and members use and enjoy the public lands, including the lands at issue here, and its wildlife, cultural and natural resources for health, recreational, scientific, spiritual, educational, aesthetic, and other purposes.

The Ridgecrest Solar Power Project ("Project") site consists of contiguous public land that is high quality wildlife habitat that provides unique linkage habitat for state and federal listed species. The DEIS reviews a proposed project right-of-way that includes approximately 3,995 acres of public lands administered by the BLM within which the disturbance area would encompass approximately 1,944 acres. The dry-cooled project would use solar parabolic trough technology to generate electricity. The project also includes the relocation of two Southern California Edison electrical transmission lines, construction of a new 5-mile long water supply pipeline, and an access road.

This controversial Project was originally "fast-tracked". The rush to meet fast-track deadlines has inevitably led to the development of an inadequate and premature DEIS. Many

areas of the DEIS provided to the public are admittedly incomplete. The SA/DEIS was a joint document prepared by BLM and CEC Staff. However, that process has now “bifurcated” and BLM and CEC will be producing separate subsequent documents. In addition, the Applicant has recently revised the Project design. Important biological and cultural resources survey data for all Project disturbance areas are not yet available. Only days ago (June 30, 2010), the project applicant requested that the BLM “suspend” processing the application pending two-years of additional studies on biological resources. In the light of this requested suspension, we asked the BLM to extend the DEIS comment deadline but have received no response. All these uncertainties make it extremely difficult for the public to participate in this process in any meaningful manner at this time.

Western Watersheds Project agrees with the SA/DEIS conclusion that the Project will have significant impacts on Biological and Visual Resources that cannot be mitigated. However, based on our review of the document, the DEIS also fails to show that impacts to Cultural, Soil and Water Resources can be mitigated to less than significant. These significant impacts to Biological, Visual, Cultural, Soil and Water Resources would result in undue degradation of these public lands, and approving the right-of-way application would thus violate the Federal Land Policy Management Act (“FLPMA”). The BLM should therefore adopt the no project/no action alternative in the Final Environmental Impact Statement (“FEIS”).

Purpose and Need, and Project Description

The purpose and need statement needs to be clarified. The DEIS states, “The BLM’s purpose and need is to respond to Solar Millennium, LLC’s application will be consistent under FLPMA for a ROW grant to construct, operate and decommission a solar generation facility and associated infrastructure in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws.” The Project Description is inadequate since the project has undergone significant design changes including an altered disturbance footprint and the addition of an evaporative pond. In effect, since the project description has changed yet the BLM claims that the purpose and need is to respond to the applicant’s application, the DEIS is inadequate to satisfy the basic requirements of NEPA.

Biological Resources

Western Watersheds Project agrees with CEC Staff’s conclusions that impacts to Biological Resources are significant and cannot be mitigated. We ask that the BLM address the following issues in the subsequent NEPA process.

Biological Resources - Desert Tortoise

1. The EIS should note that the BLM’s West Mojave Plan designation of the Mohave Ground Squirrel Conservation Area was expressly intended to benefit desert tortoise conservation in areas west and north of the Fremont-Kramer Desert Wildlife Management Area which includes the Project site. For example, in its Biological Opinion for the West Mojave Plan, the USFWS observes,

“The establishment of the conservation area for the Mohave ground squirrel is likely to promote the conservation of the desert tortoise to some degree in areas that are outside of desert wildlife management areas because the one percent limit on future ground disturbance will also be in effect within this area. In particular, desert tortoises located to the north and west of the Fremont-Kramer Desert Wildlife Management Area will likely derive conservation benefit from this action because the protective measures of a conservation area will apply.” 1-8-03-F-58 BO at 93.

2. Prior to the signing of the BLM’s West Mojave Plan in 2006, the area to the west of the project site was designated as Category II desert tortoise habitat. It was designated as Category II habitat because it was known to support relatively high densities of tortoise in the late 1970s. The high tortoise density on the project site is thus not unexpected. The fact that tortoise densities west of the project site have declined considerably and are now low but densities are still relatively high on the project site emphasizes the unique value of the Project site for desert tortoise and the need to protect this population *in situ*.

3. The DEIS’s description of the affected desert tortoise population is somewhat confusing. The tortoises in the project area are part of the Western Mojave Desert Tortoise Evolutionarily Significant Unit (“ESU”) as identified and defined in the 1994 *Desert Tortoise (Mojave Population) Recovery Plan*. The project area lies within the Western Mojave Desert Tortoise Recovery Unit which is the geographic area that encompasses the ESU. The more recent, detailed genetic analysis of Murphy *et al.* (2007)¹ has determined that within the Western Mojave ESU there are at least three populations (Western, Central, Southern) that can be identified. The desert tortoises at the project site are part of what Murphy *et al.* defined as the Western Mojave Recovery Unit which is a much smaller component of the Western Mojave Desert Tortoise Recovery Unit identified in the Recovery Plan. Tortoises within Murphy *et al.*’s Western Mojave Unit face a higher degree of threats compared to the Central and Southern Units. This underlines the need to conserve the high density desert tortoise population at the project site.

4. The DEIS incorrectly states, “In drought years, tortoises can be expected to wander farther in search of forage.” DEIS at C.2-18. Published work shows the exact opposite - tortoises tend to move less in drought periods (for example see Duda *et al.*, 1999²) thus saving energy reserves in difficult times. We believe this issue is of direct relevance to the project. The project applicant is proposing realigning the project boundary along washes. This raises the concern that during higher rainfall years when tortoises are most active, tortoises would have to use the El Paso Wash to cross the project site since upland areas would no longer be available and would be at increased risk of being inundated from water flows.

¹ Murphy, R. W., Berry, K. H., Edwards, T. and Mcluckie, A. M. 2007. A Genetic Assessment of the Recovery Units for the Mojave Population of the Desert Tortoise, *Gopherus agassizii*. *Chelonian Conservation and Biology* 6(2): 229–251.

² Duda, J. J., Krzysik, A. J. and Freilich, J. E. 1999. Effects of Drought on Desert Tortoise Movement and Activity. *Journal of Wildlife Management*. 63(4): 1181-1192.

5. The applicant has submitted testimony in which it seeks to reduce the estimate of the desert tortoise density on the project site as calculated using the formula provided in the 2009 USFWS Survey Protocol methodology. Their basis for doing so is to remove from the calculation the eight tortoises that were not assigned to a size group by the Applicant's biologists. The Applicant has provided no additional data that justifies considering these eight tortoises as juveniles. The estimated population should thus remain at 9.8 tortoises/sq km in the EIS, pending any appropriate modification resulting from the ongoing surveys.

6. Connectivity refers to the degree to which a landscape allows for the flow of organisms among habitat patches and populations. The range of the desert tortoise extends approximately 20 miles north of the project site to Rose Valley, where the most northwesterly population of desert tortoise in California occurs. Maintaining the desert tortoise population at the project site may be essential to retaining connectivity between the Rose Valley population and tortoise populations to the south. Genetic analyses show that the Mojave population as a whole shows a strong isolation by distance trend (Murphy et al, 2007; Hagerty, 2008³) which underlies the importance of maintaining connectivity with outlying populations such that found in Rose Valley. Also, as we pointed out in our December 23, 2009 scoping letter, these northerly populations may be of particular significance to the future survival of the species given the expected effects of global climate change. This issue should be addressed in the EIS.

7. The proposed project would require the translocation of a large number of desert tortoises. Translocation is an extremely controversial issue. The 2006 West Mojave Plan did not establish desert tortoise translocation sites. In 2009, the BLM's Barstow Field Office issued Environmental Assessment CA-680-2009-0058 for a large scale translocation of desert tortoises from the Fort Irwin expansion area in the Superior Valley. The BLM withdrew the EA following public comment. We have attached a copy of our August 31, 2009 comments to this comment letter and hereby incorporate its contents by reference. The BLM must describe the translocation protocol in the EIS and establish how this translocation will be compatible with BLM policy and all applicable laws and regulations.

Biological Resources - Mohave Ground Squirrel

1. The EIS should note that on April 27, 2010 the USFWS published a positive 90-day finding on a petition to the list the Mohave ground squirrel under the federal Endangered Species Act (USFWS 2010⁴). The basis for this finding was that the petition presented substantial information indicating that listing the Mohave ground squirrel as endangered may be warranted due to destruction, modification, or curtailment of the species' habitat or range. The Service did not consider the Ridgecrest Solar Energy Plant project or other proposed solar energy projects in making its finding since these projects had not been proposed at the time the petition was submitted. However, clearly this project will add to the destruction, modification, or curtailment

³ Hagerty, B. 2008. Ecological Genetics of the Mojave Desert Tortoise. PhD Dissertation. University of Nevada, Reno. 244 pp.

⁴ USFWS. 2010. Endangered and Threatened Wildlife and Plants; 90-day Finding on a Petition to List the Mohave Ground Squirrel as Endangered with Critical Habitat. Fed. Reg. Vol. 75, No. 80 Tuesday, April 27, 2010. 22063-22070.

of the species' habitat or range that has already occurred. The BLM is precluded by law from making decisions that propel federal listings.

2. The DEIS provides an excellent overview of the impacts of the proposed project on connectivity between Mohave ground squirrel populations. As the DEIS notes, at the project site the linkage is an approximate 2.5-mile wide area of low-relief habitat with alluvial/lacustrine soils bound by lava flows to the west and south and the developing areas of Ridgecrest near US 395 on the east. This linkage would be severely disrupted if the project goes ahead. The project applicant has recently proposed a modification that would provide a narrow corridor along El Paso Wash. While the minimal width for linkage habitat to provide functional connectivity is unknown, the EIS should note that in his recent overview of the status of the Mohave ground squirrel Dr. Leitner questions the effectiveness of a potential corridor between the Coso-Olancho and Little Dixie Wash core areas in part because of its minimal width (1-4 km) (Leitner 2008⁵). This is 10-40 times the width of the El Paso Wash corridor that would be available if the modified project was to proceed.

3. A large proportion of the proposed project site is within the Mohave Ground Squirrel Conservation Area that was established in the 2006 West Mojave Plan. While the West Mojave Plan allowed for a 1% cap on ground disturbance in the Conservation Area over the 30 year life of the plan this was never intended as a mechanism to allow large projects but rather was intended to discourage them by requiring heightened review.

Biological Resources - Burrowing Owl & Kit Fox

The project site includes at least 4 active desert kit fox burrow complexes. The burrowing owl is a State Species of Special Concern. Seven active burrows with at least one pair with juveniles and four individual owls were found within the original proposed disturbance area and an additional pair and four additional individuals were found within the original buffer area. Additional surveys in newly proposed project disturbance areas are being conducted this spring. The results of the initial surveys and personal observations I have made on site visits suggest that both kit fox and burrowing owl numbers are unusually high on the site. The BLM should provide data in the EIS comparing desert kit fox and burrowing owl occurrences on the project with numbers found on other projects so that the public and the decision makers can view the results of the surveys in an appropriate context.

Based on discussions at the recent workshops, CDFG guidance for burrowing owl mitigation may have changed compared to that proposed by the Applicant. This should be clarified in the EIS. Given the incomplete survey data and the uncertainties as to what CDFG considers appropriate mitigation in this case, we cannot provide additional comments on desert kit fox and burrowing owl at this time.

Biological Resources - Streambed Alteration

⁵ Leitner, P. 2008. Current Status of the Mohave Ground Squirrel. Transactions of the Western Section of the Wildlife Society. 44: 11-29.

As we discussed in our scoping letters, desert washes, drainage systems, and washlets are very important habitats for plants and animals in arid lands. For example, desert tortoises spend disproportionately more of their above-ground activity time in washes and on ridges than they do on “flat” areas.⁶ We commented on the need for wash habitat impacted by each alternative to be evaluated and appropriate mitigations made for stream bed alterations. According to the DEIS, “The applicant is currently preparing an updated delineation of waters of the state according to CDFG guidelines. Once that delineation is approved, the extent of impacts to state waters will be calculated.” DEIS at C.2-30. Given this data inadequacy, the public cannot provide meaningful comments on this issue nor can the BLM assume that the significant impacts will be mitigated. These inadequacies should be addressed in the EIS.

Visual Resources

We agree with CEC Staff’s conclusion that the Project would have significant visual impacts that cannot be mitigated to less than significant levels. The DEIS also notes that “Cumulative impacts in combination with foreseeable future solar and other renewable energy projects would contribute to a perceived sense of industrialization of the open, undeveloped desert landscape along within the California Desert Conservation Area overall”. DEIS at C.12-1. We note that is impact could be minimized or avoided if the project was sited on the alfalfa fields to be targeted by the applicant for the *Land Fallowing Program* as we had suggested in our scoping comments.

Soil and Water Resources

The Applicant has recently proposed new modifications to the Project boundaries, modification of major washes, and the addition of an evaporative pond (location not yet disclosed) into the Project design. These changes all have ramifications for hydrology and sheet flow across the project site. We cannot provide meaningful comments on this issue because the Project description used in the DEIS is inadequate.

The Indian Wells Valley groundwater is already in a significant overdraft. The proposed mitigations for impacts to Water Resources are complex and highly uncertain. It is unclear how participation in the *Cash for Grass* program could provide mitigation for the life of the project. It is also unclear how effective the *Land Fallowing Program* is likely to be. According to the DEIS, a component of this program is that the Applicant will meet with landowners to determine if they would be willing to participate in the fallowing program. Because of this basic uncertainty, the mitigations cannot be considered adequate to offset the impacts to Water Resources.

Cultural & Paleontological Resources

⁶ Jennings, B.J. 1997. Habitat Use and Food Preferences of the Desert Tortoise, *Gopherus agassizii*, in the Western Mojave Desert and Impacts of Off-Road Vehicles. Proceedings: Conservation, Restoration, and Management of Tortoises and turtles—An International Conference, pp. 42–45. New York Turtle and Tortoise Society.

Cultural resources survey data for all proposed Project disturbance areas are not yet available so the Staff Assessment is necessarily incomplete. Because of this, we cannot provide meaningful comments on this issue at this time.

Cumulative Effects Analysis

We asked in our scoping comments that the cumulative effects of this project be considered in combination with all the other current and planned consumptive uses that are occurring on these public lands including livestock grazing, off road vehicle activity, and mining, other energy developments that are planned for the area including utility-scale solar energy plants and new transmission line projects that have the potential to open up more lands to energy (or other) development. The cumulative effects sections do not mention a number of large projects that should be considered in the analysis.

The cumulative effects section fails to include the Beacon Solar Project. Although the DEIS references the Beacon Solar Energy Project a number of times including in the context of comparison of generation efficiencies and proximity to the Garlock alternative site, this major project is not included in the list of projects considered in the cumulative effects section.

The BLM has approved several projects within the Mohave Ground Squirrel Conservation Area since the West Mojave Plan was signed that did not incorporate the West Mojave Plan's required 5:1 mitigation requirement such as the COSO-Hay Ranch Water Pipeline Project and the Deep Rose Geothermal Exploration Well Project. The EIS should include an actual accounting of the amount of ground disturbance on public land since the West Mojave Plan Record of Decision was signed that includes all projects that the BLM has approved since the Mohave Ground Conservation Area was established.

According to Senator Feinstein's staff, during discussions of Senator Feinstein's new proposed Desert Protection Bill, there was an objection raised to including the area known as the Golden Valley Wilderness Additions in the bill by a China Lake Naval Air Weapons Station official because the Navy was considering training Navy Seals in that area. The Golden Valley Wilderness Additions is within the Mohave Ground Squirrel Conservation Area and is also within the Superior-Cronese Desert Tortoise DWM A. This large-scale project is not mentioned in the list of projects considered in the cumulative effects section.

The DEIS incorrectly proclaims the existence of the West Mojave Habitat Conservation Plan (see for example the LORS table on page C.5-37). Although the BLM's West Mojave Plan was signed in 2006, the Habitat Conservation Plan ("HCP") component of the West Mojave planning effort is still in the planning stages. If it is ever completed it would be the largest HCP in the country. A basic precept of the planned West Mojave HCP is to use actions on public lands as mitigation for impacts occurring on private land. The ongoing West Mojave HCP process is not addressed in the DEIS. The EIS should consider the impacts of the Project, both singly and cumulatively with similar projects, on the viability of the West Mojave HCP process.

Alternatives

Western Watersheds Project considers the range of alternatives reviewed in the DEIS to be inadequate. In our January 21, 2010 letter, we proposed that Staff consider an alternative site on private lands in the Inyokern area north and east of highway 14/395 and west of China Lake Naval Air Weapons Station. This is the same area proposed by the applicants to be targeted for the *Land Fallowing Program*. Siting the plant at this location would not only avoid and minimize impacts to biological and cultural resources, but could positively benefit rather than impact water resources. This alternative was not addressed in the DEIS.

If we can be of any further assistance to the BLM or can provide more information please feel free to contact me by telephone at (818) 345-0425 or by e-mail at <mjconnor@westernwatersheds.org>.

Yours sincerely,

A handwritten signature in black ink that reads "Michael J. Connor". The signature is written in a cursive style and is underlined with a single horizontal line.

Michael J. Connor, Ph.D.
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ATTACHMENT: Western Watersheds Project August 31, 2009 letter RE: Environmental Assessment for the Translocation of Desert Tortoises onto Bureau of Land Management and Other Federal Lands in the Superior-Cronese Desert Wildlife Management Area, San Bernardino County, California Bureau of Land Management Environmental Assessment CA-680-2009-0058. 19 pp.

cc. California Energy Commission,
1516 Ninth Street, MS-15
Sacramento, CA 95814
Attn: Eric Solorio
<esolorio@energy.state.ca.us >



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Working to protect and restore Western Watersheds

By E-mail

August 31, 2009

Chris Otahal
U.S. Department of the Interior
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
<caftirwin@blm.gov>

Re: **Environmental Assessment for the Translocation of Desert Tortoises onto Bureau of Land Management and Other Federal Lands in the Superior-Cronese Desert Wildlife Management Area, San Bernardino County, California Bureau of Land Management Environmental Assessment CA-680-2009-0058**

Dear Mr. Otahal:

On behalf of Western Watersheds Project and myself, please accept the following comments on the Environmental Assessment for the Translocation of Desert Tortoises onto Bureau of Land Management and Other Federal Lands in the Superior-Cronese Desert Wildlife Management Area, San Bernardino County, California Bureau of Land Management Environmental Assessment CA-680-2009-0058 ("EA").

Western Watersheds Project works to protect and conserve the public lands, wildlife and natural resources of the American West through education, scientific study, public policy initiatives, and litigation. Western Watersheds Project and its staff and members use and enjoy the public lands, including the lands at issue here, and its wildlife, cultural and natural resources for health, recreational, scientific, spiritual, educational, aesthetic, and other purposes. Western Watersheds Project has a particular interest in the desert tortoise and recently petitioned the Department of Interior to list the Sonoran desert tortoise population under the Endangered Species Act.

The purpose of the project is to translocate large numbers of desert tortoises from areas that are now within the boundaries of Fort Irwin and that will be used by the Army for training, to public lands and compensation lands acquired by the Army. The proposed action outlined in the EA encompasses two desert tortoise translocation efforts; the continued removal of tortoises from critical habitat in the Southern Expansion Area according to protocols in the "Original Plan" which is predicted to require moving up to 89 tortoises on to eight sections of BLM managed lands within the Superior-Cronese DWMA; and, the removal of 516 to 1,143 tortoises

from the Western Expansion Area according to the USGS “Amended Translocation Plan” onto Army and BLM managed lands within the Superior-Cronese DWMA (EA at 9-10). The BLM is deciding whether or not to authorize translocation of desert tortoises onto public lands managed by BLM, consistent with the USGS Original and Amended Translocation Plans, and with the associated Biological Opinions.

The proposed project is highly controversial, of great public interest, and of special interest to Western Watersheds Project members. In 2008, the Army translocated 569 desert tortoises from the Southern Expansion Area (“SEA”) and then halted the project when massive fatalities of translocated and resident tortoises occurred. According to the U.S. Fish and Wildlife Service’s draft Biological Opinion, over 252 resident and translocated tortoises died, many of these deaths (67%) being attributed to predation by coyotes. The actual number of deaths is unknown in part because not all affected tortoises are being tracked, and mortalities continue to be reported. Large scale desert tortoise translocation is experimental, and thus scientifically controversial, and the large number of tortoise mortalities engendered in the 2008 translocation fueled public indignation. Despite this, the BLM released the EA with only a 15-day comment period and without adequate public notice in defiance of both the Federal Land Policy Management Act (“FLPMA”) and the National Environmental Policy Act (“NEPA”). Although we submitted timely scoping comments on the proposed project (see attached letter dated 02/18/09) we received no official notification of the release of the EA. When we asked the Bureau why we had not been notified we were informed that there was no record of our involvement. After we forwarded a copy of Dr. Quillman’s acknowledgment of our scoping comments we were then told that our comments were indeed in the record. Evidently, the BLM has either erred in not informing all the interested public or has ignored our scoping comments. Either way, the agency falls short of its obligations under NEPA and FLPMA. Notices to interested individuals and organizations are also required by BLM Handbook 1745 which sets out BLM policy governing species relocations.

On August 6, 2009 we submitted a joint request with five other interested organizations requesting a 60-day extension of the comment period because of the complex and controversial nature of the project. The BLM agreed to extend the comment period to August 31, 2009. We applaud the BLM for granting the extension. However, NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. We requested copies of various personal communications that are referenced in the EA that relate directly to the environmental effects of the proposed project. We were told that obtaining these would require a FOIA request, which we immediately submitted. We received these documents at the end of the comment period, leaving little or no time to review and digest the information. This flaunts both the spirit and intent of the NEPA and FLPMA requirements to involve the public in making decisions.

The National Environmental Policy Act requires agencies to take a “hard look” at the environmental impacts of its actions. The purpose of an EA is to provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (“EIS”) or issue a finding of no significant impact (“FONSI”) for a project. NEPA requires considerations of both context and intensity of the impacts of a project in determining if it significantly impacts the human environment. As we show below, based on these two criteria the project clearly falls into

the “will significantly impact” category and an EIS is required. The Bureau has determined that its proposed action, to allow the Army to release desert tortoises from Fort Irwin onto public lands in the western translocation area, is likely to adversely affect the desert tortoise.¹

(1) Baseline Data on the Prior Desert Tortoise Translocation.

The large scale translocation of any animal, especially a listed species, is inherently complex. In this regard, the results of the Army’s prior desert tortoise translocation effort should inform the process. *A priori*, at least the basic data from that effort needs to be presented. However, there is considerable confusion in the EA and associated documents even over the numbers of desert tortoises that have been affected and have died. The EA and the USFWS draft Biological Opinion² indicate that 569 desert tortoises were translocated from the Southern Expansion Area (“SEA”). Transmitters were left in place on 357 (i.e. 63%) of these animals following translocation. Some of the resident tortoises at the receptor sites and at control sites (sites where no tortoises were translocated to) were also processed and fitted with transmitters. Both the EA and draft Biological Opinion set this at 289 tortoises (149 controls and 140 recipients). The total number of tracked (i.e. transmitted) tortoises is thus 646. The actual number of resident desert tortoises at the receptor and control sites has not been determined. However, according to the EA, over 430 resident desert tortoises have been monitored in various studies. Since this was referenced by a personal communication, it is unclear if the 141 (i.e. 430-289) non-tracked resident tortoises were simply encountered during monitoring, if they were located in systematic surveys, were used in the various research projects, or what percentage of the total number of resident tortoises they represent. On August 27, 2009 we received a copy of the referenced personal communication (Email from R. Averill-Murray, dated 07/17/09). It was not helpful in clarifying this question.

The EA cites an unreleased analysis of predation of the tracked tortoises performed by the Desert Tortoise Recovery Office (“DTRO”). This analyzed population included 149 control, 140 recipient, and 357 translocated tortoises, i.e. 646 animals. Of these 646 tortoises, 147 died from “various causes”. This number calculates to 23% of the tracked tortoises. The EA (at 3) states that animals that were lost due to transmitter failure, difficulty in tracking, or undetected predation events were excluded from this analysis but does not provide the number that was excluded. Assuming that this was greater than zero, the overall mortality rate was higher than 23%. The EA is silent on the number of tortoise deaths attributed to predation versus other causes. The draft Biological Opinion (at 48) states, “To conduct research on how translocation affected desert tortoises, workers placed transmitters on 149 control, 140 resident, and 357 translocated desert tortoises. As of April 2009, coyotes had killed 169 desert tortoises; an additional desert tortoise was reported as ‘depredated.’ Five desert tortoises died of natural causes, 7 were killed by common ravens, 1 was killed by a vehicle, and 15 were euthanized. The cause of death was reported as unknown in 43 cases and as ‘other’ for 5 desert tortoises; no cause of death was reported for 6 desert tortoises. In total, approximately 252 desert tortoises died while translocation was under way (unpublished data: Excel file ‘mortalities 071709’). We

¹ Letter from the BLM California Desert District Manager to Diane Noda, USFWS, requesting initiation of consultation over the plan to translocate desert tortoises from Fort Irwin to Public Lands, dated July 23, 2009.

² Biological Opinion for the Proposed Addition of Maneuver Training Lands at Fort Irwin, California (8-8-09-F-43R). Draft dated July 30, 2009. 89 pp.

understand that a small number of desert tortoises have died since April but we have not received final reports on these animals.” Assuming that the 252 mortalities were among the 646 tracked tortoises as indicated in the quote, this would give a mortality rate of 39%. The 170 deaths by predation would amount to 26%.

It is unclear why the DTRO and draft Biological Opinion numbers are so disparate, especially since they were generated within the same agency. The loss of at least 252 adult desert tortoises is appalling in itself, even more so as it does not account for an unknown number of untracked tortoises that may have been affected. The lack of clarity relating to what happened during the first translocation is not helpful, and simply fuels further controversy. The various agencies involved need to better communicate with each other and with the public, and develop a clear and transparent process that will allow for the realistic documentation of the effects of the translocation that is required to meet NEPA’s requisite “hard look”.

(2) Baseline Desert Tortoise Data & Carrying Capacity at Proposed Translocation Sites.

The proposed action is to translocate up to 89 tortoises from the SEA and 516 to 1,143 tortoises from the Western Expansion Area (“WEA”) (EA at 3-4). The draft Biological Opinion cites the same number from the SEA and assumes about 1,100 tortoises could be moved from the WEA based on the midpoint of the upper estimates from two separate studies. The numbers of resident desert tortoises at the various receptor sites identified in the map (EA Figure 2) are unknown since no site specific abundances have been determined nor apparently are any planned. Instead, the agencies rely on density estimates generated in the range-wide line distance sampling (“LDS”) surveys, so we will follow their lead.

The EA identifies 205 sections in the Superior-Cronese DWMA as suitable for translocation of tortoises from the WEA based on modeling analysis. The EA (at 9) assumes an abundance of 19 desert tortoises per square mile, i.e. 3,952 tortoises on the 205 sections.³ The draft Biological Opinion assumes 16.4 desert tortoises per square mile, i.e. 3,362 tortoises on the 205 sections.⁴ If 1,100 tortoises are translocated this would increase the density on the 205 sites by 28% based on the EA numbers and 33% based on the draft Biological Opinion numbers. The most recent LDS data available, that provided in the DTRO’s draft 2007 Monitoring Report⁵, gives an estimate of 5.9 tortoises/sq km (with 95% confidence intervals of 3.72- 9.25), i.e. 15.2 tortoises per square mile (with 95% confidence intervals of 9.6- 24). Using that data, which we consider to be the most reliable estimate based on the recent improvements in sampling and statistical methodologies, the population estimate would be 3,132 and the translocation of 1,100 tortoises would increase the density on the 205 sites by 35%. These numbers are of course very simplistic estimates. Ten years ago, as part of the West Mojave Plan planning effort, tortoise sign surveys were conducted across what would become the Superior-Cronese DWMA. While not quantitative, this exercise indicated that the distribution of desert tortoises is patchy. The applicability of the DWMA-wide based LDS estimate to specific sites is also unclear since this

³ The EA cites Medica, personal communication as the source of the 19/sq mile number. In the response to our FOIA request we were sent an earlier, undated draft version of a translocation plan that cites “Medico [*sic*], personal communication”. Confusion could have been avoided if the BLM had used the actual DTRO monitoring reports.

⁴ Yet again, an example of the agencies using different datum.

⁵ Range-Wide Monitoring of the Mojave Population of the Desert Tortoise: 2007 Annual Report U.S. Fish and Wildlife Service Desert Tortoise Recovery Office, Draft dated November 2008. 50pp.

technique is geared towards obtaining trends at the range-wide and recovery unit levels. The new USGS proposed plan will avoid translocating tortoises within a 5 km buffer zone around any diseased resident tortoises. While this is an important improvement to the protocol, it will likely diminish the available receptor sites since *Mycoplasma*-positive animals have been detected in the area. Other factors too, may diminish the available receptor sites. However, the bottom line is that translocation of the WEA tortoises could increase tortoise densities by one third, and could directly impact over 3,000 resident tortoises. This level of impact cannot be discounted as minor and underscores the need for a complete EIS. Among other things, the increased density plus stress of capture, translocation, and release into foreign habitat may increase susceptibility of desert tortoises to *Mycoplasma* infections across a large area of the Superior-Cronese DWMA.

In our scoping comments, we had raised the need for the current desert tortoise carrying capacity to be estimated at the translocation sites. In the EA's response to comments section, by the comment "Need for analysis of carrying capacity of receptor sites" is the response "Addressed in sections 2.1.1.1 and 2.1.1.2". However, the issue is not addressed in either section (or elsewhere) unless the EA is referring to the unsupported claims in the sentence "Also, since there seems to be little connection between drought and non-drought conditions and mortality levels of translocated tortoises, the developers of the translocation plan considered food availability not a factor which needs be considered in the timing of translocation efforts" (EA at 7). Carrying capacity is the inherent ability of the land to support a given number of tortoises per unit area (West Mojave Plan at 3-94). While forage availability may be one factor the BLM uses in determining carrying capacity for livestock, it is not an appropriate delimiter for the ability of an area to support more desert tortoises. Instead, site-specific consideration of all the resources required over the life of a tortoise with respect to the size of the population is required: including food plants, cover sites, social hierarchies and territories, predators, essential constituents of habitat, and other ecological parameters (USFWS, 1994). This is especially important for receptor sites identified as being in "die-off regions", because the actual cause of the die-offs is so rarely known. If the translocation sites are not at carrying capacity, there must be an ecological reason. As such, adding more tortoises may create a surplus to what the local, receptor site can handle successfully. This could fuel increased density-dependent mortality via various means including parasites, disease, predation, and take by automobiles. Under the ESA, agencies must utilize their authorities in furtherance of the purposes of the Act and thus must take the most conservative approach in favor of the species and habitat when there are data gaps, like there are here. The lack of basic site-specific information such as desert tortoise abundance at each receptor site is a significant data gap.

According to the EA (at 8), relocation of the remaining SEA tortoises would result in the density increasing up to approximately 30 animals per square mile on eight sections of land. Apparently, this is to maintain the integrity of the ongoing tortoise research project. This could thus impact 240 desert tortoises in the Southern Translocation Area. The EA (at 28) states, "While this increased translocation density (relative to the Amended Translocation Plan) may exasperate the issues of disease transmission and predation, the USGS/University of Nevada-Reno team (and independent reviewers) have concluded that this increased density would not significantly raise the threat of disease or predation above back ground levels and that the conservation benefits gained by the on-going research would outweigh these potential drawbacks

(Todd Esque, USGS, personal communication).” The EA is silent on why the threat of disease or predation would not be above background levels. In fact, since the research sites are well within the range of movement of translocated tortoises, the carrying capacity of the SETA sites is unknown, and these sites are within the same general area that experienced massive coyote depredation rates in 2008, the benefit of staying with the original translocation protocol is not only unclear but appears to be outweighed by the risks not just to these 240 resident and translocated tortoises but even to the tortoises at the nearby research sites. The ESA requires the agencies to minimize incidental take. We see no evidence in the EA that staying with the original translocation protocol for the remaining SEA tortoises will do so.

(3) The Fort Irwin Desert Tortoise Translocation and Predation.

The EA and supporting documents take the view that the Fort Irwin translocation had no effect on coyote depredation but rather that the massive loss of tortoises would have occurred anyway. This is based on similar predation rates observed among translocated, control and resident tortoises that were tracked as part of the research effort in the original translocation. However, no data is available (and evidently was never collected) on the fate of the resident tortoises that were not part of the research study; nor is it clear if survival data was collected on those translocated tortoises whose transmitters were removed at release. The EA (at 3) references a personal communication as the source of its information on these similar predation rates. This was the email from Roy Averill-Murray dated 07/17/09. It contains the two paragraphs that were cut and pasted into the EA with no additional supporting data.

The translocation involved extensive manipulation of the tracked desert tortoises including transmitter attachment and removal, repeated monitoring, and the presence of large numbers of biologists and support staff at the receptor sites. Some of the receptor sites were close to human habitation. All these factors could contribute to alerting predators and altering predation rates. Boarman *et al* (1998) reviewed possible effects of transmitter attachment on chelonians. They concluded “Studies should be conducted to evaluate the effect that transmitters and their attachment methods have on turtles and tortoises with the results reported in the literature.” That observers may influence predation rates is a known issue for desert tortoises. For example, Bjurlin and Bissonette (2004) raised concern that monitoring may facilitate predator detection of desert tortoise nests and cautioned that a systematic study of researcher impact on predator behavior is warranted. In a preliminary study of the possible risks of tracker dogs attracting predators such as coyotes when being used to locate desert tortoises, Cablk *et al* (2004) found that human presence alone may attract coyotes especially with prolonged stays. Cablk also provides a brief literature review of related studies. The large scale of the Fort Irwin translocations would make these kinds of observer effects of particular concern.

The Draft Biological Opinion includes the following table; a similar table was shown by Dr. Esque during his presentation at the 2009 Desert Tortoise Council Symposium.

Location	Sample Size	Number Dead	Percent Loss
Superior-Cronese, CA	15	1	6.7
Marine Corps Air Ground Combat Center, CA	11	1	9.1

Coyote Springs Valley, NV	26	4	15.4
River Mountains, NV	19	4	21.1
Piute Valley, NV	14	3	21.4
Fort Irwin, CA	647	147	22.6
Soda Mountains, CA	29	12	41.4
Chuckwalla Bench, CA	16	7	43.8
Chemehuevi, CA	11	5	45.5

How the data was collected, actual site locations, the level of manipulation of the animals, the demographics of the sampled tortoises, when the sites were sampled, the statistical significance of the losses, how the losses to predation were actually determined, and what other causes of death were observed are not explained. However, the authors speculate that this data provides evidence of range-wide coyote depredation. The documents provide no data showing trends in coyote depredation rates over time at any of these locations. Without these data, it is difficult to determine whether depredation rates changed in 2008 and what contribution manipulation of a tortoise may have made to it subsequently being preyed upon. Certainly, if the tabulated numbers are taken at face value and the none-Fort Irwin data is representative of un-harassed tortoises, the observation of only a 6.7% loss (a single tortoise) at the Superior-Cronese site compared to the 22.6% loss in the Fort Irwin translocation is deeply troubling.⁶ It suggests that the magnitude of the intervention may have contributed to the massive loss of tortoises in the Fort Irwin translocation. There is no foundation for the claim reiterated in the documents that the Fort Irwin translocation did not contribute to the massive losses. Accordingly, predation cannot be discounted and must be fully factored into the environmental analysis.

We included a brief review of literature related to coyote predation on desert tortoises in our scoping comments. Over 60 years ago, Woodbury and Hardy (1948) found evidence for coyote predation on desert tortoise and concluded that the rate probably increased in dry years when rabbit populations were low. Given the background literature and recent experience, canid depredation of desert tortoises following translocation is clearly likely to occur, and needs to be mitigated for to minimize take. We do not advocate lethal control of local coyotes, since this is at best a stopgap measure and it is unclear as to how effective coyote removal would be at reducing depredation (cf. Goodrich & Buskirk, 1995). Rather, predator distribution and presence should be criteria used in selecting translocation sites. Appropriate predator mitigation measures (such as temporary protective fencing and stringent protocols to minimize prolonged human presence at translocation sites) should be incorporated into the translocation plan. Any proposals for control of coyotes and other predators need to be fully analyzed in the NEPA documents. Coyote removal could result in new packs moving in from adjacent areas and occupying the now vacant territory, potentially compounding the problem. Lethal coyote control could have potential long-term consequences for the local desert ecosystem. Coyote removal could trigger an increase in the local rabbit and black-tailed hare population and change the availability of tortoise food plants in subsequent years. Coyote eradication could lead to increased kit fox numbers and increased predation on desert tortoise nests.

⁶ On August 31, 2009 we obtained a copy of a table provided by USGS in response to a FOIA request entitled “Working Tortoise Predation Table 10Aug2009”. This included the same information provided in the draft Biological Opinion with additional data columns for 2006 and 2007. The mortality for 2007 at the Superior Cronese plot was $1/16 = 6.3\%$, i.e. a statistically identical result to 2008. No data was provided for 2006.

The EA claims that the translocation project may have a positive long-term effect on the upward or stationary trend of desert tortoise within the DWMA by increasing the available pool of healthy adult females of reproductive age. Yet as we mentioned in our scoping comments, Berry et al (2009) reported that more females than males were killed by predators in the 2008 translocation. In the EA's response to comments section, by the comment "Need for development of protocols to address gravid females." is the response "Discussed in section 4.3.1.1". However, no such discussion occurs in that section (or elsewhere in the EA). The translocation plan must include mitigation measures to address this imbalance. The plan should include specific guidelines related to the translocation of gravid females to minimize risks to this crucial demographic group.

(4) The Experimental Nature of Large Scale Translocation.

The 1994 Recovery Plan considered translocation as a potentially important conservation tool if the techniques can be perfected, and recommended that research be conducted to achieve this. It was with this in mind that the Fort Irwin translocation was built around conducting vital research. This research is still ongoing, and large scale desert tortoise translocations remain experimental and the object of scientific controversy. This is recognized in the EA, and is why different protocols were adopted for the SEA versus WEA tortoises. The remaining SEA tortoises cannot be released according to the amended protocols (i.e., dispersed across the Southern Expansion Translocation Area), because they would compromise the study design (control animals) in the research projects currently under way.⁷

Certainly there has been some welcome progress in desert tortoise translocation related research. A recent paper by Field *et al.* (2007) provides data from a small scale translocation conducted at the LSTS in 1997-1998. They translocated tortoises that had been held at the Desert Tortoise Conservation Center in Las Vegas. They observed a 21.4% fatality in the first year that they attributed to drought conditions at the release site, and zero the second year (1998) which was one of wettest years on record for the area. Despite the small sample size, short duration of the study, and absence of long term follow up, they concluded that tortoise translocation should be considered a valid tool for desert tortoise conservation. At its March 13, 2009 meeting, the DTRO's Science Advisory Committee reached consensus that translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option.⁸ Given the high degree of scientific uncertainty, large scale translocation remains experimental, scientifically controversial, and unproven as a tool for desert tortoise conservation.

The 1994 Recovery Plan proposed DWMA as protected areas within Recovery units where preserve level management would be implemented to recover the desert tortoises. While the Recovery Plan entertained the concept of "experimental zones" within DWMA, it recommends that these be limited to no more than 10% (Recovery Plan at 36). Neither the

⁷ Per 07/16/2009 e-mail from Roy Averill Murray to Chris Otahal.

⁸ Meeting Summary Desert Tortoise Science Advisory Committee Meeting, March 13, 2009, San Diego Wild Animal Park, Escondido, CA. 4 pp.

Recovery Plan nor the governing land use plan (West Mojave Plan) envisioned making entire DWMA experimental zones.

(5) Range of Alternatives.

The NEPA implementing regulations specify that NEPA documents must analyze a full range of alternatives. Based on the information and analysis presented in the sections on the Affected Environment (40 C.F.R. § 1502.15) and the Environmental Consequences (40 C.F.R. § 1502.16), the NEPA document should present the environmental impacts of the proposed action and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. The regulations specify that agencies shall:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the alternative of no action.
- (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

In our scoping comments, we had recommended that the BLM consider an alternative based on the recommendations of the 1994 Desert Tortoise Recovery Plan. This alternative would fully implement the recommendations of the 1994 Desert Tortoise Mojave Population Recovery Plan Appendix B. This alternative would identify translocation sites outside the DWMA. Analysis of this alternative would have provided a baseline for fully analyzing risks to the tortoises and to the DWMA, since tortoises would be translocated outside the DWMA under this alternative. We are surprised that the BLM has not just ignored our proposed alternative but has failed to consider any alternative based on the current Desert Tortoise Recovery Plan in the EA. In doing so, the BLM has failed to explore and evaluate a reasonable range of alternatives.

The EA reviews four alternatives; the proposed action under which tortoises would be translocated onto BLM managed and Army owned lands in the Superior-Cronese DWMA guided by the USGS original and amended translocation plans; alternative A which is the same as the proposed action but would also allow tortoises from the SEA to be translocated onto 65 square miles of the Soda Mountains Wilderness Study Area (“WSA”) at the east end of the Superior-Cronese DWMA; alternative B under which tortoises would be translocated onto 62 square miles of Army and state owned lands in the Superior-Cronese DWMA; and “no action”, under which no translocation and no army training would occur.

Although the BLM claims to have analyzed alternatives A and B in depth, the habitat quality of the WSA lands, the Army acquired lands, and the state lands is not described and no

maps are provided to even indicate the locations. Again, the BLM is failing to take a hard look at environmental consequences and what's best for this listed species. The EA (at 12) states, "For the purposes of the analysis in this EA, it is assumed that all of these lands would be available for receiving translocated animals, though[t] it is likely that some locations would be deemed unacceptable for translocation". The absence of habitat quality and suitability data, and basic maps of the locations make it difficult for the public to appreciate the relative merits of these alternatives. The EA also makes incorrect assertions about management on the state and the Army's acquired compensation lands. The general management of these lands essentially reflects what is going on, on the public lands around them. What is different though is that these lands are not open to BLM's multiple use policy and therefore are not available for mining and energy development, etc. If the Army's compensation lands are transferred to the BLM they will be open to these developments and other consumptive uses. The EA should consider alternatives under which the Army's compensation lands are not transferred to BLM or are only transferred if the BLM guarantees that these lands will be conserved in perpetuity for the purposes of conserving and recovering desert tortoises and other special status species.

For alternative B, receptor sites would be on Army compensation lands and state lands only. However, state lands were considered unsuitable in the site selection decision support model (Amended Translocation Plan at 30). Further, according to the Amended Translocation Plan, State lands are not being considered due to the administrative burden related to such activities (Amended Translocation Plan at 6). Thus, it is unclear why this alternative is even being considered in the EA.

Under the "no action" alternative the translocation effort would not take place on BLM managed lands and no military activities would take place. For the purposes of analysis, it is assumed that conditions on BLM managed lands would not change from the current baseline conditions. Yet, based on bald claims made in the EA and associated documents, some 25% or so of the DWMA's adult tortoises were depredated by coyotes in 2008. This is a catastrophic level of change that cannot be ignored. Why does the BLM not expect densities of desert tortoise to change if predation is such an issue? Assuming that densities will not change is not helpful in establishing the base-line for impacts from the proposed action, particularly if mortality continues at the rates observed in the prior translocation.

(6) Clearance Surveys.

The clearance surveys for the WEA tortoises described in the EA and Amended Translocation Plan could result in large numbers of tortoises being left in the training area. The proposed action is to undertake a single pass survey by tortoise pedestrian survey teams through one kilometer blocks. If more than four adult tortoises are found within any one square kilometer block, then the block would be surveyed a second time in its entirety. Four tortoises per square kilometer equal 10.3 tortoises per square mile. But the Amended Translocation Plan (at 4) also indicates that the percentage of tortoises detected on a single pass was only 70%. Assuming this detection rate is correct and is achievable under field conditions, the trigger for a second survey would be an abundance greater than 14.8 tortoises per square mile. This density is similar to the actual Superior-Cronese DWMA abundance of 15.2 adult tortoises per square mile

determined in the most recent range wide LDS monitoring. Thus, the trigger for a second “sweep” is finding an average number of tortoises for the area.

Because the second sweep will only occur on habitat that supports equal or higher numbers of tortoises than the average abundance for the area, the clearance surveys will leave a large number of tortoises within the WEA. It is difficult for us to calculate the number of tortoises that would be left since we do not have access to the agencies’ survey data.⁹ However, for a worse-case scenario if we assume that the LDS abundance of 5.9 tortoises/km² (15.2 tortoises/mile²) is a median value, half of the WEA (125 km²) would not receive a second pass, and 221 (i.e. 5.9 x 125 x .3) adult tortoises would be missed from areas that received only a single pass. The total number of adult tortoises actually left in the WEA would be higher since the detection rate for 2 passes is 95% (i.e. 5% missed), and an unknown number of hatchlings and young tortoises will also be missed. The criteria for triggering a second sweep will not minimize incidental take and should be reconsidered.

(7) Selection of Translocation Sites.

Translocation sites should be selected based on sound, science-based criteria and manageability to maximize likely success.

The Amended USGS plan incorporates “die-off” as a positive factor in choosing translocation sites. Die-off regions are identified as areas in which the carcass encounter rate exceeded the live encounter rate in the range-wide LDS monitoring. However, the efficacy of using this ratio is unclear since both carcasses and live tortoises are likely to be more frequently encountered in higher tortoise density areas, but available carcasses are easier to find than are live tortoises depending on the conditions on the day of the survey. Use of this factor in choice of translocation sites also assumes that whatever caused the die-off is no longer an issue in those areas. Since we rarely know the cause of die-offs, this hypothesis needs critical evaluation, and requires ground-truthing at each translocation site. Recent studies of tortoise and wildlife translocations emphasize the need to abate existing threats for translocations to be successful (Fischer and Lindenmayer, 2000; Fields *et al.*, 2007). The cause of any die-offs needs to be determined so that the threat(s) can be ameliorated.

Translocation sites should be selected in areas where resident desert tortoises share similar genetic backgrounds. In this case, the project would translocate desert tortoises throughout the range of what has been identified as a genetically distinct “Central Mojave” population of desert tortoises (Murphy *et al.*, 2007). Murphy *et al.* considered the range of this population to encompass Rowlands’ Central Mojave botanic region (Rowlands, 1995). The Superior-Cronese DWMA boundary was based on administrative boundaries, roads and other defined barriers. While it includes much of the Central Mojave it also overlaps with the West Mojave botanic unit. The USGS (Amended Translocation Plan at 21) apparently considered

⁹ Today, August 31, 2009, we obtained a copy of Walde, A. D., Boarman, W. I. and Woodman, A. P. *Desert Tortoises Estimates on the Western Expansion Area of Fort Irwin dated 6 February 2009*. They surveyed 62 sq km plots in the WEA in a single pass survey. They found densities of 5 or fewer tortoises on 44 plots and 6 or more tortoises on 18 plots. This suggests that our worse-case scenario may be over-optimistic; more than half of the plots may only get a single sweep.

genetic integrity in choosing possible translocation sites but did not explicitly acknowledge the significance of the Central Mojave desert tortoise population. Since no maps were provided, it is unclear if the lands that would be used under alternative B fall within the Central Mojave region. The Central Mojave botanic region boundary, not the Superior-Cronese DWMA boundary, should be the delimiter for translocation sites used in the decision support modeling, so that translocation does not compromise the genetic integrity of the Central Mojave desert tortoise population.

We had commented that the habitat quality of translocation sites should be comparable to the habitat from which the tortoises have been removed based on site-specific surveys of soils, hydrology, vegetation, invasive species, and anthropogenic threats. The BLM describes the tortoises and their habitat within the DWMA as having been “adversely affected by multiple stress factors, including anthropogenic factors and disease and drought that swept through populations in the 1990’s” (EA at 4). It is unclear if these factors have been ameliorated. The decision support model appendix mentions the condition of vegetation at receptor sites but it is unclear if this consideration was added to the model (Amended Relocation plan at 31). Nor does the model seem to have incorporated invasive weed presence and fire risk. The feasibility of being able to close off the area around translocation sites should disease containment be required was not addressed. The decision support model has also not explicitly addressed predator distribution. While proximity to human habitation may be of some value, the model could certainly have factored in proximity to open waters since water availability may be rate-limiting for coyote distribution, and coyote sign is much higher around developed waters (DeStefano *et al*, 2000).

(8) Biological Goals, Objectives, Outcomes, Criteria for Success.

The EA does not provide explicit biological goals and objectives for the translocation project. Is the translocation a large experiment, is it meant as a conservation measure, or is it merely to address the human-tortoise conflict created by the expansion of Army training activities?

The EA claims that the translocation project may have a positive long-term effect on the upward or stationary trend of desert tortoise within the DWMA by increasing the available pool of healthy adult females of reproductive age (EA at 25). Certainly, adding tortoises will temporarily increase the number of tortoises, but there is a difference between temporarily increasing the total population size by releasing tortoises and increasing the breeding or effective population size. The latter will require that the translocated tortoises integrate with residents, adapt to the new local ecological conditions, and form a stable, breeding population. The claim that the translocation may positively benefit the population trends is hypothetical at best, and should be clearly construed as such.

The EA describes large-scale monitoring that will occur but does not explain how this data will be used, and without any stated biological goals and objectives its utility cannot be determined. The Amended Translocation Plan mentions the development of testable hypotheses several times, but does not specify these.

The lengthy time-scale over which translocations must be monitored to determine their success or failure is an important consideration that is repeated extensively in the scientific literature (see for example, Dodd and Seigel, 1991; Fischer and Lindenmayer, 2000). Both the method of release and the distance of release from capture sites affect the behavior of translocated desert tortoises (Walde *et al.*, 2009). If the goal of the large-scale translocation is population augmentation, then measurable long term objectives must be specified. The 5 year monitoring period may provide information on initial survival, but it is insufficient to determine the success of population augmentation and the success of translocation as a conservation tool. The NEPA documents should provide clear biological and conservation goals and objectives, expected outcomes, and benchmark criteria that measure the success in achieving the established goals and objectives.

(9) Health and Disease Issues, and Contingency Planning.

The USGS have incorporated important, additional protocols to evaluate the health status of translocated desert tortoises into the Amended Translocation Plan. These protocols will reduce but not eliminate the risk of infectious tortoises being moved into the DWMA.

The Amended Translocation Plan also proposes sampling resident tortoises at 64 sample points located across the translocation area. This will provide data on the disease status of tortoises that will be used to modify the translocation area. Translocated tortoises will not be released within a 5 km buffer around any detected diseased resident tortoises.¹⁰ This is an important improvement over the Original Translocation Plan, however its likely effectiveness is not addressed and no alternative buffer sizes are considered. Since 5 km is less than half the maximum distance moved by many tortoises in previous translocations, the measure may reduce but will not eliminate the risk of translocated tortoises moving into the home range of infected resident tortoises. This factor is of particular concern with species like the desert tortoise that have complex social behavior, since translocated tortoises may disrupt the social structure of resident populations by displacing residents (Berry, 1986). Long distance movements by both translocated and resident tortoises could lead to disease spread and place the larger population at risk of epidemics. In this respect, Walde *et al.* (2009) reported that one of the 2008 translocated tortoises moved as far as 23 km. The translocation plan should include an epidemiological analysis, and the EA should consider additional measures such as temporary fencing to reduce the risk posed by tortoises making long distance movements.

We are concerned about the adequacy of the sampling of resident tortoise populations in the Western Expansion Translocation Area (“WETA”) to determine their health status. The Amended Translocation Plan proposes to sample tortoises at 64 sites throughout the WETA. The number of tortoises to be sampled at each site is unclear. Sample sizes for the resident tortoises need to be appropriate to detect the presence of *Mycoplasma* and other diseases. In the 2008 translocation, some 7 of 142 sampled translocated tortoises (i.e. about 5%) initially tested positive or suspect positive for *Mycoplasma agassizii* or *M. testudineum* (Berry et al, 2009). Based on that report, a large sample size would be needed to determine absence of disease among residents at each of the 64 sites. This must be addressed in the EA and supporting

¹⁰ Presumably, the buffer zones will have a 5 km radius, not diameter. Neither the Plan nor the EA are explicit on this.

documents. In addition, none of 64 proposed disease sampling sites are on the “red squares” on the Amended Translocation Plan maps. These “red squares” are not slated as translocation sites but may be adjacent to the “green square” translocation sections and form a checkerboard in some areas. Because a higher live tortoise to carcass ratio was a negative factor in the model used to select translocation sites, the adjacent and nearby “red squares” may have higher tortoise densities. Since disease transmission may be density dependent, sampling should also be conducted in any “red squares” with higher tortoise densities that are within the expected range of movement of translocated tortoises.

In our scoping comments, we raised the need for contingency planning to deal with potential disease outbreaks that could be triggered by the translocation including quarantine measures. This has not been done. The agencies must do more than simply monitor tortoises for disease but describe specific remedies that will taken to avoid disease outbreaks reaching epidemic levels. The NEPA analysis should identify counter-measures should disease epidemics be detected, and should include specific triggers for implementation of these counter-measures.

(10) Risk Assessment.

The BLM recognizes that this large-scale translocation will adversely affect desert tortoises. It may result in some lethal and non-lethal Section 9 ESA take, and if the carrying capacity at a translocation site is exceeded, may result in adverse modification of critical habitat and retardation of recovery of the population. Translocated tortoises may undergo long-distance movements, can disrupt the social behavior of residents (Berry, 1986) and may result in other stresses such as weight loss (Gowan *et al.*, 2009) that could contribute to the outbreak of clinical signs of disease and disease spread. Because negative social interactions could result in resident tortoises moving off site, there is a risk of both resident and relocated tortoises contracting and spreading infectious disease. The USGS amended plan has recognized the importance of this issue in building in a 5 km buffer around areas with infected tortoises. The 5 km buffer is based in part on a distance that is 50% of the maximum linear movements made by tracked tortoises in prior translocations. Since tortoises are known to move considerably more than 5 km, the buffer may diminish but does not remove the risk. The large-scale proposal to translocate tortoises throughout the Superior-Cronese DWMA places the entire West Mojave population, particularly the Central Mojave type tortoises described by Murphy *et al*, at risk. The agencies should formally evaluate this risk not just recognize it, and a credible, quantitative risk assessment should be made for each alternative analyzed in the NEPA process.

(11) Use of Best Available Science.

The Endangered Species Act clearly mandates that “Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an “agency action”) is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this

paragraph each agency shall use the best scientific and commercial data available.” (Emphasis added). In this case, the project would translocate desert tortoises throughout the range of what has been identified as a genetically distinct “Central Mojave” population of desert tortoises (Murphy *et al.*, 2007). This entire Central Mojave population would be placed at risk by the proposed action. Loss of this population would produce a significant gap in the range of the species. None of the documents including the EA, the various translocation plans, and the draft Biological Opinion even mention Murphy *et al.* let alone analyze the potential impacts to this identified population.

The EA list of references does not include a single citation from the primary literature; all the listed references are derivative agency documents. Instead, the EA relies heavily on “personal communications”. In many cases, these “personal communications” consist of nothing more than the actual wording that was inserted into the EA and contain no substantive, supportive data or references. This is particularly egregious with respect to the controversial claims that there is little connection between drought and predator prey base availability and the success of desert tortoise translocation. The claims made in the personal communications all cite the similar mortalities among the 2008 translocated, resident, and control tortoises. These provide no data on mortality among non-manipulated residents, and as discussed above, data in the Biological Opinion shows lower mortality at a nearby Superior-Cronese site and does not support this claim.

The EA also misrepresents existing literature. For example, the EA (at 8) states that “Climate change and drought were not regarded as threats to the desert tortoise in the 1994 Recovery Plan”. The Recovery Plan certainly recognized drought as an issue (USFWS, 1994). And, even though the Recovery Plan was written in 1994, it was a far-seeing document that incorporated climate change considerations. Climate change was incorporated into the population viability analysis (Recovery Plan at C3), threats analysis including fire (Recovery Plan at D24), and research on “climate and vegetation” was included in its implementation schedule. While criticizing the Recovery Plan, the EA fails to mention that the proposed translocation does not follow the science-based recommendations of that plan.

(12) Monitoring Programs.

The NEPA documents must explain the monitoring programs that will be in place to judge both the short and long term effectiveness of the translocation based on sound biological goals and objectives. Because most of the affected resident tortoises will not be tracked, funding should be ear-marked to assure routine inclusion of the Superior-Cronese DWMA in the range-wide LDS monitoring effort, or additional population monitoring protocols developed to ensure that the non-translocated resident tortoises that will be affected by the translocation receive appropriate short and long term monitoring. The NEPA documents should include the timelines, and estimated costs and sources of funding for all components of the monitoring programs.

(13) Compliance with BLM Policy and Land Use Plans.

All translocations must fully comply with relevant BLM policies. BLM Handbook 1745 requires that “Decisions for making introductions, transplants, or reestablishments should be

made as part of the land use planning process (see BLM Manual Section 1622). Releases must be in conformance with approved RMPs. A Land Use Plan Amendment must be prepared for proposed releases if management direction is not provided in the existing Land Use Plan (see BLM Manual Section 1617, emphasis added).” There is no consideration in the California Desert Conservation Area Plan as amended by the West Mojave Plan EIR/EIS for using the designated DWMAs for large-scale desert tortoise translocations. This is recognized in the EA at 4 – “translocation of desert tortoises is not specifically addressed in the CDCA Plan, as amended”. Therefore, a plan amendment is required to comply with BLM policy.

In addition, BLM Handbook 1745 at .1.12A requires that the activity plan be site-specific and include “Site-specific and measurable vegetation/habitat population objectives which are based on existing ecological site potential/condition, habitat capability, and other important factors. (See BLM Manual Sections 1619, 6780, and 4120).” As we discussed above, the EA does not adequately describe existing ecological conditions nor does it address the capability of the habitat at the translocation sites to support additional tortoises.

The BLM should adhere to its own policy and prepare an EIS that proposes and analyses an amendment to the CDCA Plan that provides the required management direction with respect to desert tortoise translocation. It could then use that guidance to develop a translocation plan for the Fort Irwin tortoises that includes the required site-specific analyses to comply with BLM policy, FLMPA, and NEPA.

(14) Miscellaneous Issues.

Under the proposed action desert tortoises would not be translocated to wilderness. However, the USGS proposes to monitor tortoises in Wilderness as a “control” group in its Amended Translocation Plan. In addition, some of the potential translocation sites are in areas under active consideration for wilderness designation by Senator Feinstein and thus may not be available. The NEPA documents should analyze potential impacts of monitoring to Wilderness values and any potential cumulative impacts to areas being considered as wilderness.

The different alternatives may have different impacts on cultural resources. For example, Alternative A apparently would include the Cronese Lakes ACEC, although the maps are inadequate to ascertain this and the ACEC is not mentioned by name. The proposed action appears to include translocation sites within the Blackwater Well Archeological District. All ground-disturbing activities in these areas should be scrutinized and fully analyzed in the NEPA documents.

(15) Continued Public Involvement.

We requested in our scoping comments that the translocation plan should incorporate specific measures aimed at keeping the public informed on the progress of translocations, including providing daily or weekly updates of translocation numbers, demographics, and any losses on the California Desert District website. Given the high level of interest in the desert tortoise, providing meaningful and timely data should be an essential component of management if the agencies are to engender public support for this highly controversial project.

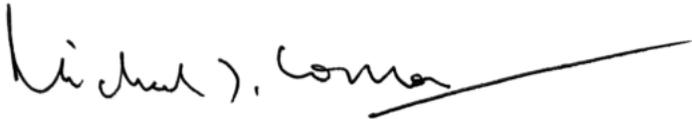
(16) Conclusions.

The purpose of an EA is to provide sufficient evidence and analysis to determine whether a project requires preparation of an environmental impact statement (EIS) or whether issuance of a finding of no significant impact is merited. [CEQ NEPA Implementing Regulations, 40 C.F.R. §1508.9]. Given the significance of the proposed translocation to desert tortoise survival and recovery, the unanswered questions outlined above, the need for a land use plan amendment, the considerable scientific controversy, and the intense public interest the 2008 translocation generated, the EA provides no basis for a FONSI and a comprehensive EIS is clearly required for this project. Given the Army's wish to begin training in the SEA and WEA, the BLM should immediately embark on initiating the required EIS.

We hope that you find our comments useful. Please continue to keep Western Watersheds Project informed of all further substantive stages in the NEPA process and document our involvement as members of the 'interested public' in the record.

If I can be of any assistance or provide more information please feel free to contact me by telephone at (818) 345-0425 or by e-mail at <mjconnor@westernwatersheds.org>.

Yours sincerely,

A handwritten signature in black ink that reads "Michael J. Connor". The signature is written in a cursive style and is underlined with a single horizontal line.

Michael J. Connor, Ph.D.
California Director
Western Watersheds Project
P.O. Box 2364
Reseda, CA 91337
(818) 345-0425
<mjconnor@westernwatersheds.org>

cc. Diana Noda, Ray Bransfield, USFWS
Larry LaPre, Steve Borchard, BLM California Desert District
Mickey Quillman, Roxie Trost, BLM Barstow Field Office

Attachment: Western Watersheds Project Scoping Comments on the Proposed Fort Irwin Desert Tortoise Translocation. Dated February 18, 2009.

References

Electronic copies of these documents are available on request.

Berry, K. H. 1986. Desert tortoise (*Gopherus agassizii*) relocation: implications of social behavior and movements. *Herpetologica* 42: 113-125.

Berry, K. H., Mack, J., Brown, M., Anderson, K., Roberts, J. and Jacobson, E. 2008. Decision Time for Desert Tortoises in the Fort Irwin Translocation Project: Health and Disease Issues. Abstracts of the 2008 Desert Tortoise Council Annual Symposium. Page 4.

Berry, K. H. Gowan, T. and Mack, J. S. 2009. Health and Survival of 158 Tortoises Translocated from Ft. Irwin: Year 1 of the Health Research Program. Abstracts of the 2009 Desert Tortoise Council Annual Symposium. Page 4.

Boarman, W. I. 2002. Threats to desert tortoise populations: a critical review of the literature. Unpubl. Report, prepared for the West Mojave Planning Team and the Bureau of Land Management. 86 pp.

Bjurlin, C. D. and Bissonette, J. A. 2004. Survival during Early Life Stages of the Desert Tortoise (*Gopherus agassizii*) in the South-Central Mojave Desert. *Journal of Herpetology*. 38(4): 527-535.

Cablk, M. E., Heaton, J. S. and Sagebiel, J. C. 2004. Risk of Attracting Predators From Human and Human-Dog Team Wildlife Surveys. Report Prepared for: Natural Resources and Environmental Affairs Division Marine Air Ground Task Force Training Command Twentynine Palms, CA 92278. Contract Number W911NF-04-1-0279. 31 pp.

DeStefano, S., Schmidt, S. L. and deVos, J. C. 2000. Observations of predator activity at wildlife water developments in southern Arizona. *Journal of Range Management*. 53:255-258.

Dodd Jr., C. K. and Seigel, R. A. 1991. Relocation, repatriation and translocation of amphibians and reptiles: are they conservation strategies that work? *Herpetologica*. 47:336-350.

Esque, T. C., Nussear, K. E. and Medica, P. A. 2005. Desert Tortoise Translocation Plan for Fort Irwin's Land Expansion Program at the U. S. Army National Training Center (NTC) & Fort Irwin Prepared for U.S. Army National Training Center, Directorate of Public Works. 129 pp.

Field, K. J., Tracy, C. R., Medica, P. A., Marlow, R. W. and Corn, P. S. 2007. Return to the wild: translocation as a tool in conservation of the desert tortoise (*Gopherus agassizii*). *Biological Conservation* 136: 232-245.

Fischer, J. and Lindenmayer, D. B. 2000. An Assessment of the Published Results of Animal Relocations. *Biological Conservation*. 96: 1-11.

Goodrich, J. M. and Buskirk, S. W. 1995. Control of Abundant Native Vertebrates for Conservation of Endangered Species. *Conservation Biology*. 9(6): 1357-1364.

Gowan, T., Berry, K. H. and Mack, J. S. 2009. The Ft. Irwin Translocation Project in 2008: Health, Behavior, and Movements of 158 Translocated Desert Tortoises in the Nine Months after Translocation. Abstracts of the 2009 Desert Tortoise Council Annual Symposium. Page 15.

- Hochachka, W. M. and Dhondt, A. A. 2000. Density-dependent decline of host abundance resulting from a new infectious disease. PNAS. 97(10): 5303-5306.
- Murphy, R. W., Berry, K. H., Edwards, T. and McLuckie, A. M. 2007. A Genetic Assessment of the Recovery Units for the Mojave Population of the Desert Tortoise, *Gopherus agassizii*. Chelonian Conservation and Biology 6(2): 229–251.
- Nussear, K. E. 2004. Mechanistic investigation of the distributional limits of the desert tortoise *Gopherus agassizii*. Dissertation. University of Nevada, Reno.
- Rowlands, P.G. 1995. Regional bioclimatology of the California desert. In: Rowlands, P.G. and Lattig, J. (Eds.). The California Desert: An Introduction to Natural Resources and Man's Impact. Volume 1. June Lattig Books, pp. 95–134.
- USFWS. 1994. Desert tortoise (Mojave Population) Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR.
- Walde, A. D., Woodman, A. P., and Boarman, W. I. 2009. Desert Tortoise Surveys and Research in the Southern and Western Expansion Areas of Fort Irwin 2008 Summary Report. Unpublished report dated January 2008 (apparently in error since the report includes data through January 2009). 14 pp.
- Woodbury, A. M. and Hardy, R. 1948. Studies of the Desert Tortoise, *Gopherus agassizii*. Ecological Monographs 81: 146–200.

From: [Carroll L. Evans Jr.](#)
To: esolorio@energy.state.ca.us
Cc: carspp@blm.gov; [Hector Villalobos](#); [Don Decker](#); [Carroll L. Evans Jr.](#)
Subject: : Comments on the draft SA/DEIS Document, Docket Number 09-AFC-9, "Solar Millennium, Ridgecrest Solar Power Project"
Date: 05/21/2010 03:18 PM
Attachments:

With respect to DEIS Document, Docket Number 09-AFC-9, "Solar Millennium, Ridgecrest Solar Power Project" the following are attached:

- 1) Letter from Carroll L. Evans Jr.
- 2) PDF version of a scan from "Skywatcher's Newsletter of the China Lake Astronomical Society" for April 26, 1976

Thank you for your consideration

Carroll L. Evans Jr.

SKYWATCHER'S NEWSLETTER

OF THE CHINA LAKE ASTRONOMICAL SOCIETY

26 APRIL 1976

THE NEXT REGULAR MEETING WILL BE ON MONDAY, 3 MAY, AT 7:30 PM IN THE CLAS CLUBHOUSE, 401-A MCINTIRE. THE CLUBHOUSE WILL BE OPEN THE OTHER MONDAY EVENINGS OF MAY FOR CONVERSATION AND TELESCOPE MAKING.

PROGRAM FOR MAY 3 MEETING

For the regular meeting on Monday, May 3, Jim Fujii will present a very basic presentation on how binary star measurements relate to true orbital parameters.

The featured film for this meeting is a 21-minute film entitled "Space Navigation." If the title of this film sounds familiar, it should. This film was scheduled to be shown at our January meeting but arrived too late to be shown. It must have had a navigational problem, namely a slight timing error.

This film describes the principles of charting a course in space for manned and unmanned spacecraft. The emphasis will be on navigational techniques, navigational problems, and equipment used in the Apollo program.

--- JIF

DATES TO KEEP IN MIND

Friday, April 30:	CLAS star party at old Highway 395 site. (See below.)
Monday, May 3:	Regular CLAS meeting.
Saturday-Monday, May 29-31:	Riverside Telescope Makers Conference at Camp Oaks.
Monday, June 7:	Regular CLAS meeting.
Tuesday, June 15:	Morrison Lecture at Community Center

CLAS STAR PARTY ON FRIDAY, APRIL 30, AT SITE SOUTH OF OLD HIGHWAY 395

Weather permitting, there will be a CLAS star party on Friday evening, April 30. The star party is scheduled for 8:00 p.m. PDT at a site 9 miles southwest of Ridgecrest off old Highway 395.

To reach the star party site take South China Lake Boulevard + where it intersects U. S. Highway 395 at 6.3 miles from the intersection of Ridgecrest and China Lake Boulevards. Go straight across U. S. Highway 395 at this point and you will be on old Highway 395. Proceed west on old Highway 395 for 2.4 miles from the intersection. At this point there will be a 2-foot by 2-foot sign on the north side of the old highway labelled "STAR PARTY" with an arrow pointing to the left (south). Turn off the highway to the left (south). (The back side of the sign will have another "STAR PARTY" sign facing west for those approaching the site from Inyokern.) Proceed southeast from the old highway on a dirt road for 0.5 mile to the star party site.

This star party is on next Friday evening, three days before our regular May meeting on Monday, May 3. Make a note of the day and tell your friends. If the

5/21/2010

From: Carroll Evans
215 S, Springside St.
Ridgecrest, CA 93555

To: Eric Solorio
Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814-5504
esolorio@energy.state.ca.us

Janet Eubanks
Project Manager
California Desert District
22835 Calle San Juan De Los Lagos
Moreno Valley, CA, 92553
carspp@blm.gov

Subj: Comments on the draft SA/DEIS Document, Docket Number 09-AFC-9, “Solar Millennium, Ridgecrest Solar Power Project”

Ref: 1) China Lake Astronomical Society viewing site at Latitude 35 deg 33 min 06.74 sec N, Longitude 117 deg 44 min 54.99 W 829 meters elevation. 2) Announcement of the April 30, 1976 China Lake Astronomical Society viewing party (enclosed)

This letter is written by me personally, and does not necessarily reflect the consensus of the China Lake Astronomical Society.

I would like to thank the California Energy Commission (CEC) and Bureau of Land Management (BLM) staff for an opportunity to offer input into the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) for the Ridgecrest Solar Power Project (RSPP). A great deal of effort has been put into the Application for Certification (AFC) for this project by Solar Millennium (SM), which requests a Right of Way (ROW) from the Bureau of Land Management (BLM) for certain properties on which to construct a solar power plant. However, there is a serious conflict with an existing use of part of the ROW area that SM is requesting. For at least the last 34 years, the China Lake Astronomical Society (CLAS) has used a site that is within the boundaries of the applicant’s solar field on the south side of South Brown Rd. CLAS has used a specific unimproved road leading to a site where public astronomical viewing is provided. These public events are known as “star parties”, and are held ten months of the year. The star parties are provided by the China Lake Astronomical Society as a free public service.

These locations have been previously identified to the applicant and to the BLM and to the California Energy Commission. It can be proven that the use of these sites dates back to April 30, 1976 and perhaps before. The unimproved road begins at approximately Latitude 35 deg 33 min 27.03 sec N, Longitude 117 deg 45 min 09.07 sec W, 820 meters elevation and ends at the viewing site whose approximate coordinates are given above. The viewing site is roughly circular, with a radius of about 200 feet.

Coordinates were determined from Google Earth.

I have been a CLAS member since its founding in 1958. I have served in as an officer of the club and have been the Newsletter Editor for many years. I have a complete set of the Society's newsletters and have appended an image copy of the April 30, 1976 edition as evidence of our early activity at the referenced site. Star parties have continued to the present day, and will continue unless or until they are no longer feasible at this site.

It is my intention that this letter be viewed as evidence that the CLAS is able to assert a ROW for our activity under Federal Regulations and Laws embodied in RS 2477 and FLPMA Section 701, said CLAS having constituted a legitimate and documented historic usage. I am requesting this letter be posted in the docket for the RSPP. In addition, it is also my intention to recommend that CLAS formally request a ROW for our activity from the BLM and request that this ROW be excluded from the ROW issued for the RSPP and that the construction plans approved by the CEC and BLM not disturb this right of way and the road therein in any way.

Signed, Carroll Evans

Cc: Hector_Villalobos@ca.blm.gov, RFO



RECEIVED
CITY OF RIDGECREST LAND MGMT.
MAIL ROOM

100 West California Avenue, Ridgecrest, California 93555-4054

Telephone 760 499-5001
FAX 760 499-1500

TO JUL - 2 AM 9:45
CALIF. DESERT DISTRICT
MORENO VALLEY, CA
June 24, 2010

James D. Boyd
Vice Chair and Presiding Member
Ridgecrest Solar AFC Committee
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Anthony Eggert
Commissioner and Associate Member
Ridgecrest Solar AFC Committee
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Kourtney Vaccaro
Hearing Officer
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Eric Solorio
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

(SOLAR MILLENNIUM) RIDGECREST SOLAR POWER PROJECT; 09-AFC-9

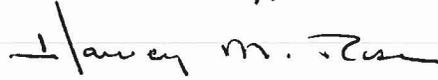
It is understood that during a hearing conducted in Ridgecrest on Thursday, June 24, 2010, someone not representing the City of Ridgecrest Wastewater Treatment Plant stated that all wastewater effluent was committed and was not available as a coolant for the proposed Ridgecrest Solar Power Project. Although a small portion of the present day wastewater effluent is used to irrigate a golf course on the China Lake Naval Base, it is incorrect to say that all effluent is presently committed. And, certainly, no commitments have been made for the use of wastewater effluent from a proposed treatment plant currently in design.

An average 2.56 MGD of effluent is currently produced (WDO = 3.6 MGD maximum). Of this, 366 KGD is provided to irrigate the China Lake Naval Base golf course (a maximum of 670 KGD may be provided pursuant to the MOA between the City and the Base). It is anticipated that the new plant will produce 3.0 MGD, with expansion capacity up to 4.5 MGD. There have been inquiries from Solar Millennium, the Indian Wells Valley Water District, and Searles Valley Minerals, but no offers have been made.

During the years the City has been in contact with Solar Millennium and other solar power plant developers, the City has shown an eagerness to see a Solar Power

Project approved, constructed and successful. Towards that end, the City of Ridgecrest stands ready to negotiate the sale of its wastewater treatment plant effluent.

Cordially,

A handwritten signature in black ink, appearing to read "Harvey M. Rose". The signature is written in a cursive style with a horizontal line underneath.

Harvey M. Rose, City Manager

CC: Mayor and Members, City Council
City of Ridgecrest

Billy Owens
Director, Project Development
Solar Millenium
1625 Shattuck Avenue, Suite 270
Berkeley, CA 94709-1161

Janet Eubanks, Project Manager
Bureau of Land Management
California Desert District
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553

From: [Brendan Hughes](#)
To: esolorio@energy.state.ca.us; carspp@ca.blm.gov
Subject: Comments on Ridgecrest Solar Power Project DEIS
Date: 06/27/2010 12:14 PM

To whom it may concern:

I would like to ask BLM and CEC to choose the second No Action Alternative for the Ridgecrest Project, denying the ROW application and amending the CDCA plan to prohibit future development of the proposed project site. This project will have immitigable impacts on biological and visual resources, and has essentially been deemed illegal by the CEC staff. BLM and CEC should not attempt to go beyond the law and grant a ROW to this misguided and terribly damaging project.

The Ridgecrest Solar Power Project will have tremendous negative impacts on the biological resources of the Indian Wells Valley. First, it supports a healthy, breeding population of desert tortoises with a density higher than the surrounding desert tortoise critical habitat of the Fremont-Kramer DWMA. Take of this many tortoises is unacceptable, especially in light of the fact that relocation would cause 20 percent mortality or more to this threatened species. Additionally, this project would be located within prime Mohave ground squirrel habitat, a state-listed threatened species. CEC staff admits that impacts to these species would be immitigable, and therefore BLM and CEC should deny this application for a ROW.

Moreover, impacts to visual resources in this area will be immitigable. The proposed project will impact the corridor leading from Brown Road to the El Paso Wilderness Area and Sheep Spring. Currently, travels to this area are pleasant and unblemished with large developments or impacts. The Ridgecrest Solar Project would hamper my enjoyment of my public lands. This is unacceptable when so many other, previously disturbed and degraded lands are available for solar development.

I urge you to deny this ROW application and place this special area off-limits to future development through a CDCA plan amendment.

Thank you for your consideration.

Brendan Hughes
61093 Prescott Trail
Joshua Tree, CA 92252

Hotmail is redefining busy with tools for the New Busy. Get more from your inbox. [See how.](#)

From: [Kim Delfino](#)
To: CARSP@blm.gov; esolorio@energy.state.ca.us; [Docket Optical System](#)
Subject: Comments on Solar Millennium Ridgecrest Power Project Staff Assessment/Draft EIS
Date: 07/07/2010 02:45 PM
Attachments:

Attached please find the comments from Defenders of Wildlife, NRDC, and The Wilderness Society on the Staff Assessment/Draft EIS for the Solar Millennium Ridgecrest Solar Power Project.

If you have any questions or comments, you can reach me at kdelfino@defenders.org or (916) 313-5800 ex. 109.

Thank you,

Kim Delfino

Audubon California
California Native Plant Society * California Wilderness Coalition
Center for Biological Diversity * Defenders of Wildlife
Desert Protective Council * Mojave Desert Land Trust
National Parks Conservation Association
Natural Resources Defense Council * Sierra Club * The Nature Conservancy
The Wilderness Society * The Wildlands Conservancy

Renewable Siting Criteria for California Desert Conservation Area

Environmental stakeholders have been asked by land management agencies, elected officials, other decision-makers, and renewable energy proponents to provide criteria for use in identifying potential renewable energy sites in the California Desert Conservation Area (CDCA). Large parts of the California desert ecosystem have survived despite pressures from mining, grazing, ORV, real estate development and military uses over the last century. Now, utility scale renewable energy development presents the challenge of new land consumptive activities on a potentially unprecedented scale. Without careful planning, the surviving desert ecosystems may be further fragmented, degraded and lost.

The criteria below primarily address the siting of solar energy projects and would need to be further refined to address factors that are specific to the siting of wind and geothermal facilities. While the criteria listed below are not ranked, they are intended to inform planning processes and were designed to provide ecosystem level protection to the CDCA (including public, private and military lands) by giving preference to disturbed lands, steering development away from lands with high environmental values, and avoiding the deserts' undeveloped cores. They were developed with input from field scientists, land managers, and conservation professionals and fall into two categories: 1) areas to prioritize for siting and 2) high conflict areas. The criteria are intended to guide solar development to areas with comparatively low potential for conflict and controversy in an effort to help California meet its ambitious renewable energy goals in a timely manner.

Areas to Prioritize for Siting

- Lands that have been mechanically disturbed, i.e., locations that are degraded and disturbed by mechanical disturbance:
 - Lands that have been “type-converted” from native vegetation through plowing, bulldozing or other mechanical impact often in support of agriculture or other land cover change activities (mining, clearance for development, heavy off-road vehicle use).¹
- Public lands of comparatively low resource value located adjacent to degraded and impacted private lands on the fringes of the CDCA:²
 - Allow for the expansion of renewable energy development onto private lands.
 - Private lands development offers tax benefits to local government.
- Brownfields:
 - Revitalize idle or underutilized industrialized sites.
 - Existing transmission capacity and infrastructure are typically in place.

- Locations adjacent to urbanized areas:³
 - Provide jobs for local residents often in underserved communities;
 - Minimize growth-inducing impacts;
 - Provide homes and services for the workforce that will be required at new energy facilities;
 - Minimize workforce commute and associated greenhouse gas emissions.
- Locations that minimize the need to build new roads.
- Locations that could be served by existing substations.
- Areas proximate to sources of municipal wastewater for use in cleaning.
- Locations proximate to load centers.
- Locations adjacent to federally designated corridors with existing major transmission lines.⁴

High Conflict Areas

In an effort to flag areas that will generate significant controversy the environmental community has developed the following list of criteria for areas to avoid in siting renewable projects. These criteria are fairly broad. They are intended to minimize resource conflicts and thereby help California meet its ambitious renewable goals. The criteria are not intended to serve as a substitute for project specific review. They do not include the categories of lands within the California desert that are off limits to all development by statute or policy.⁵

- Locations that support sensitive biological resources, including: federally designated and proposed critical habitat; significant⁶ populations of federal or state threatened and endangered species,⁷ significant populations of sensitive, rare and special status species,⁸ and rare or unique plant communities.⁹
- Areas of Critical Environmental Concern, Wildlife Habitat Management Areas, proposed HCP and NCCP Conservation Reserves.¹⁰
- Lands purchased for conservation including those conveyed to the BLM.¹¹
- Landscape-level biological linkage areas required for the continued functioning of biological and ecological processes.¹²
- Proposed Wilderness Areas, proposed National Monuments, and Citizens' Wilderness Inventory Areas.¹³
- Wetlands and riparian areas, including the upland habitat and groundwater resources required to protect the integrity of seeps, springs, streams or wetlands.¹⁴
- National Historic Register eligible sites and other known cultural resources.
- Locations directly adjacent to National or State Park units.¹⁵

EXPLANATIONS

¹ Some of these lands may be currently abandoned from those prior activities, allowing some natural vegetation to be sparsely re-established. However, because the desert is slow to heal, these lands do not support the high level of ecological functioning that undisturbed natural lands do.

² Based on currently available data.

³ Urbanized areas include desert communities that welcome local industrial development but do not include communities that are dependent on tourism for their economic survival.

⁴ The term "federally designated corridors" does not include contingent corridors.

⁵ Lands where development is prohibited by statute or policy include but are not limited to:

National Park Service units; designated Wilderness Areas; Wilderness Study Areas; BLM National Conservation Areas; National Recreation Areas; National Monuments; private preserves and reserves; Inventoried Roadless Areas on USFS lands; National Historic and National Scenic Trails; National Wild, Scenic and Recreational Rivers; HCP and NCCP lands precluded from development; conservation mitigation banks under conservation easements approved by the state Department of Fish and Game, U.S. Fish and Wildlife Service or Army Corps of Engineers a; California State Wetlands; California State Parks; Department of Fish and Game Wildlife Areas and Ecological Reserves; National Historic Register sites.

⁶ Determining “significance” requires consideration of factors that include population size and characteristics, linkage, and feasibility of mitigation.

⁷ Some listed species have no designated critical habitat or occupy habitat outside of designated critical habitat. Locations with significant occurrences of federal or state threatened and endangered species should be avoided even if these locations are outside of designated critical habitat or conservation areas in order to minimize take and provide connectivity between critical habitat units.

⁸ Significant populations/occurrences of sensitive, rare and special status species including CNPS list 1B and list 2 plants, and federal or state agency species of concern.

⁹ Rare plant communities/assemblages include those defined by the California Native Plant Society’s Rare Plant Communities Initiative and by federal, state and county agencies.

¹⁰ ACECs include Desert Tortoise Desert Wildlife Management Areas (DWMAs). The CDCA Plan has designated specific Wildlife Habitat Management Areas (HMAs) to conserve habitat for species such as the Mohave ground squirrel and bighorn sheep. Some of these designated areas are subject to development caps which apply to renewable energy projects (as well as other activities).

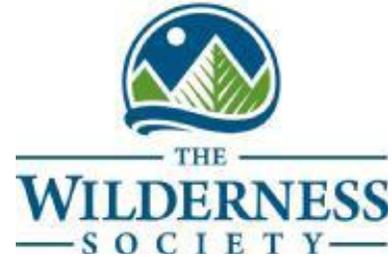
¹¹ These lands include compensation lands purchased for mitigation by other parties and transferred to the BLM and compensation lands purchased directly by the BLM.

¹² Landscape-level linkages provide connectivity between species populations, wildlife movement corridors, ecological process corridors (e.g., sand movement corridors), and climate change adaptation corridors. They also provide connections between protected ecological reserves such as National Park units and Wilderness Areas. The long-term viability of existing populations within such reserves may be dependent upon habitat, populations or processes that extend outside of their boundaries. While it is possible to describe current wildlife movement corridors, the problem of forecasting the future locations of such corridors is confounded by the lack of certainty inherent in global climate change. Hence the need to maintain broad, landscape-level connections. To maintain ecological functions and natural history values inherent in parks, wilderness and other biological reserves, trans-boundary ecological processes must be identified and protected. Specific and cumulative impacts that may threaten vital corridors and trans-boundary processes should be avoided.

¹³ Proposed Wilderness Areas: lands proposed by a member of Congress to be set aside to preserve wilderness values. The proposal must be: 1) introduced as legislation, or 2) announced by a member of Congress with publicly available maps. Proposed National Monuments: areas proposed by the President or a member of Congress to protect objects of historic or scientific interest. The proposal must be: 1) introduced as legislation or 2) announced by a member of Congress with publicly available maps. Citizens' Wilderness Inventory Areas: lands that have been inventoried by citizens groups, conservationists, and agencies and found to have defined “wilderness characteristics.” The proposal has been publicly announced.

¹⁴ The extent of upland habitat that needs to be protected is sensitive to site-specific resources. For example: the NECO Amendment to the CDCA Plan protects streams within a 5-mile radius of Townsend big-eared bat maternity roosts; aquatic and riparian species may be highly sensitive to changes in groundwater levels.

¹⁵ Adjacent: lying contiguous, adjoining or within 2 miles of park or state boundaries. (Note: lands more than 2 miles from a park boundary should be evaluated for importance from a landscape-level linkage perspective, as further defined in footnote 12).



July 7, 2009

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Re: **Comments on the Staff Assessment/Draft Environmental Impact Statement for the Solar Millennium Ridgecrest Solar Power Project and Possible California Desert Conservation Area Plan Amendment; 75 Fed. Reg. 17762-63 (April 7, 2010).**

Dear Ms. Eubanks and Mr. Solorio:

This letter constitutes the comments on the above-captioned document for the proposed Ridgecrest Solar Power Project by the Defenders of Wildlife, the Natural Resources Defense Council (NRDC) and The Wilderness Society (TWS), national environmental membership organizations with long histories of advocacy for conservation and environmentally sustainable multiple uses of public lands and their resources administered by the Bureau of Land Management (BLM). More recently, our organizations have been intensively involved in the Bureau's work to develop comprehensive renewable energy programs for the public lands as well as its efforts to objectively analyze and consider granting rights-of-ways for numerous "fast track" renewable energy projects in the California Desert. A majority of these proposed projects may be eligible for grant funding under the American Recovery and Reinvestment Act of 2009 (ARRA).

Our organizations recognize the need to develop the nation's renewable energy resources and to do so rapidly in order to respond effectively to the challenge of climate change. Unique natural resources in California are already being affected by climate change, including, for example, the Pika of the High Sierra Nevada and Joshua Trees in the Mojave Desert. We also recognize that renewable energy development can help create jobs in communities that are eager for them because of the nation's economic crisis. For these and other related reasons, our organizations are working with regulators and project proponents to move renewable energy projects forward. That said, renewable

energy development is not appropriate everywhere on the public lands and must be balanced against the equally urgent need to protect unique and sensitive resources of the California Desert, including public lands within the California Desert Conservation Area (CDCA). California is fortunate in having sufficient and diverse renewable energy resources throughout the State that can be developed in an environmentally and fiscally sensitive way.¹

As we and our colleagues at sister organizations have repeatedly stated, the best way to develop the renewable resources of the California Desert is through comprehensive land use planning by applicable federal, state and local government agencies working in concert with the public in an open and participatory process to identify the most appropriate areas for such development -- *i.e.*, development zones -- and to guide development to those zones. *See, e.g.*, letter dated June 29, 2009 to Interior Secretary Salazar and California's Governor Schwarzenegger and signed by 11 organizations, including our own, attached as Exhibit 1. That process, namely the development of the Desert Renewable Energy Conservation Plan (DRECP), is underway and our organizations are active participants. The outcome of this effort will be identification of zones comprised of federal and non-federal lands where 1) certain kinds of renewable energy projects may be allowed through a streamlined, but thorough, environmental review procedure, and 2) conservation will be the primary goal that would preclude consideration of any or most utility-scale renewable energy projects. Permanent conservation goals must be achieved in perpetuity as the basis of this planning effort. We anticipate that such conservation will be based on a combination of federal, state and private lands containing habitat for species at-risk that are covered under the provisions of the DRECP. In addition, the DRECP will include a comprehensive mitigation strategy. The integration and completion of these efforts offers the promise of a balanced plan that will facilitate development of renewable resources in the California Desert while protecting desert resources.

Pending completion of the DRECP, the BLM will, unfortunately, continue to consider and process applications for rights-of-way for numerous utility-scale renewable energy projects, most of which are proposed for public lands in relatively pristine condition that support a wealth of significant biological and cultural resources and their inherent values. Among these projects is the proposed Ridgecrest Solar Power Project. Despite our fundamental belief in the critical importance of agency-guided development of renewable energy, rather than developer-initiated development, we have, as indicated, been investing a great deal of time and effort into the fast track projects. We have done so in response to the emphasis the Department, the BLM and the developers place on meeting ARRA deadlines as well as the potential role these projects could play in meeting the renewable generation and economic goals of the state and federal governments. We have also done so because we wanted to make the proposed projects as environmentally suitable as they can be and because we wanted to ensure, to the extent possible, that their accompanying environmental documents are as sound and defensible as they can be. It is now apparent to us that not even the best of the environmental documents being produced for the fast track projects and/or the best projects should be models or precedents for the future. Regrettably, as written, neither this Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) nor this project is a candidate for either of those categories.

¹ California's Renewable Energy Transition Initiative found, for example, that the state potentially could access 500 GW of renewable energy, an order of magnitude greater than the state's peak demand and far beyond the ability of our electric grid to handle.

As we transition toward a clean energy future, it is imperative for our future and the future of our wild places and wildlife that we strike a balance between addressing the near-term impact of large-scale solar development with the long-term impacts of climate change on our biological diversity, fish and wildlife habitat, and natural landscapes. To ensure that the proper balance is achieved, we need smart planning for renewable power that avoids and minimizes adverse impacts on wildlife and wild lands. These projects should be placed in the least harmful locations, near existing transmission lines and on or adjacent to already disturbed lands. We expect that the analysis of alternatives in the Environmental Impact Statements (“EISs”), prepared pursuant to the National Environmental Policy Act, 42 U.S.C. § 4332(2)(C) (“NEPA”), will fully address opportunities for locating proposed projects on both federal and privately owned lands consistent with the purpose and need for each project. See 40 C.F.R. § 1502.13.

Our comments and recommendations regarding the proposed project are based on the project description contained in the Staff Assessment/Draft Environmental Impact Statement for the proposed Ridgecrest Solar Power Project (SA/DEIS). For background information purposes, we include a brief summary of the project description, as follows:

Project Description: Solar Millennium LLC proposes to construct and operate a utility-scale solar thermal electric power generating facility on approximately 2,000 acres of public lands located several miles southwest of the City of Ridgecrest, California. The project will have a nominal output of 250 megawatts (MW), consisting of a single power plant utilizing two solar fields.

Power transmission would be through the existing Southern California Edison 230-kilovolt (kV) Inyokern/Kramer Junction transmission line. The project would require realignment of one-mile each of two existing transmission lines; a 230 kV transmission line and a 115 kV line. The proposed project would consist of two solar fields, a power block, construction areas, a dry-cooling tower, steel transmission towers with associated transmission lines, access roads, three covered water tanks, an underground water pipeline, a water treatment facility, an electrical switchyard, a land treatment unit for bioremediation of any soil that may be contaminated by heat transfer fluid, an office, a warehouse, a parking lot, and facility perimeter fencing.

Environmental Review: Intensive field surveys of biological and cultural resources have been conducted on the proposed project site; numerous public meetings and workshops have been held; and the draft subject document containing an analysis of the environmental effects of the proposed project was released for a 90-day public review and comment on or about April 1, 2010. The conclusion of the regulatory agencies about the environmental effects of the proposed project are that it would result in significant and unmitigatable impacts to biological and other natural resources, most notably to the threatened Desert Tortoise, threatened Mohave Ground Squirrel, and scenic quality associated with the view of the adjacent El Paso Mountains from portions of the Indian Wells Valley. Portions of the El Paso Mountains and surrounding area contain a National Register Property designated to protect significant prehistoric cultural resources and lands sacred to Native Americans. A significant portion of the El Paso Mountains are designated the Black Mountain Wilderness.

Environmental Setting and Land Use Policies: The proposed project area is roughly divided into two equal parts by Brown Road, a paved two-lane county road which runs in an east-west direction. The applicable land use plan governing use of public lands affected by the proposed

project is the California Desert Conservation Area (“CDCA”) Plan². The CDCA Plan, initially released in 1980, was amended by the West Mojave Planning Area amendments of 2006.

The southern half of the proposed project is located in a Limited Use Class zone which is also a part of the BLM-designated Mohave Ground Squirrel Wildlife Habitat Management Area (“MGS Area”), an extensive area of approximately 1.2 million acres of public land in the western Mojave Desert. Multiple uses are allowed within this management area, but habitat loss is limited to a maximum of one-percent of the total over a 30 year period, and any habitat loss associated with multiple use activities is required to be compensated at a ratio of five acres acquired for every acre lost or destroyed. Habitat compensation would typically occur by monetary equivalency sufficient for the BLM to acquire and manage replacement habitat obtained from private sources or by private land acquisition and donation to the BLM or Department of Fish and Game for long-term conservation benefit. The proposed project would result in the loss of approximately 900 acres of habitat within the MGS Area, thus requiring the project applicant to provide funding sufficient to acquire and manage in perpetuity private land habitat totaling 4,500 acres or provide in-lieu mitigation fees.

The northern half of the project, although located in an area that appears to have greater abundance and diversity of wildlife resources, is not within the MGS Area, and is in an Unclassified status for multiple uses. Habitat loss compensation on the northern half of the project would be required at a one to one ratio as per the CDCA Plan, as amended by the West Mojave Planning Area amendments.

Mitigation for impacts to wildlife resources will need to satisfy State and Federal requirements. State mitigation for impacts to listed species (i.e., Desert Tortoise and Mohave Ground Squirrel) will need to be at a level that fully mitigates or offsets impacts. The Federal requirements for federally listed species (i.e., Desert Tortoise) mitigation require that impacts be minimized.

NEPA Adequacy of the SA/DEIS: NEPA was enacted to force agencies to document their compliance with “the letter and spirit of the Act” so that their decisions will be “based on understanding of environmental consequences” and that their actions will “protect, restore and enhance the environment.” 40 C.F.R. §§ 1500.1 (a) and (c). Our concerns with the SA/DEIS relate to the following key elements: 1) the purpose and need statement, 2) alternatives, 3) cumulative impact analysis, and 4) climate change.

Purpose and Need: The BLM’s purpose and need statement for this project is too narrow. The SA/DEIS states that the BLM’s purpose and need is “to respond to” the company’s ROW application for the proposed project. SA/DEIS at B.2-9. As discussed below, this mindset affected the inadequate range of alternatives examined. The BLM should avoid both this mindset as well as too narrow a statement of purpose and need in order to help ensure that its EISs are legally defensible documents. In place of the statement that was used here, our organizations urge the adoption of the following to achieve these goals:

The purpose of the proposed action is to “facilitate environmentally responsible commercial development of solar energy projects”³ consistent

² U.S. Department of the Interior, Bureau of Land Management. 1980. The California Desert Conservation Area Plan. California Desert District, Riverside, CA. 173 pp.

³ This quotation is from Secretary Salazar himself.

with the statutory authorities and policies applicable to the Bureau of Land Management, including those providing for contributions towards achieving the renewable energy and economic stimulus and renewable energy development objectives under the Energy Policy Act of 2005 (EP Act), the American Recovery and Reinvestment Act, and Presidential and Secretarial orders, including the Federal Land Policy and Management Act (FLPMA). Among the most important statutory mandates of the BLM is the Federal Land Policy and Management Act, and particularly Section 601, the California Desert Conservation Area ([43 U.S.C. 1781]:

(1) the California desert contains historical, scenic, archeological, environmental, biological, cultural, scientific, educational, recreational, and economic resources that are uniquely located adjacent to an area of large population; and

(b) It is the purpose of this section to provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality.

The need for this action is to implement Federal policies, orders and laws that mandate or encourage the development of renewable energy sources, including the Energy Policy Act of 2005, which encourages the Secretary of the Interior to seek to approve at least 10,000 MW of non-hydropower renewable energy on public lands by 2015, and the Federal policy goal of producing 10% of the nation's electricity from renewable resources by 2010 and 25% by 2025; to enable effective implementation of the economic incentives for qualifying projects intended by the American Recovery and Reinvestment Act; and to support the State of California's renewable energy and climate change objectives, consistent with BLM's mandates and responsibilities under FLPMA.

This kind of purpose and need statement would clearly satisfy applicable legal requirements, *see e.g.*, National Parks Conservation Assn v. BLM, 586 F.3rd 735 (9th Cir. 2009), and thus help ensure that environmentally acceptable projects will not only be permitted but will also be built without unnecessary delays.

Alternatives: The analysis of alternatives to the proposed project is the “heart of the environmental impacts statement.” 40 C.F.R. § 1502.14. NEPA requires BLM to “rigorously explore and objectively evaluate” a range of alternatives to proposed federal actions. See 40 C.F.R. §§ 1502.14(a), 1508.25(c). “An agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action.” Nw. Envntl. Defense Center v. Bonneville Power Admin. 117 F.3d 1520, 1538 (9th Cir. 1997). An agency violates NEPA by failing to “rigorously explore and objectively evaluate all reasonable alternatives” to the proposed action. City of Tenakee Springs v. Clough, 915 F.2d 1308, 1310 (9th Cir. 1990) (quoting 40 C.F.R. § 1502.14). This evaluation extends to considering more environmentally protective alternatives and mitigation measures. *See e.g.*, Kootenai Tribe of Idaho v. Veneman, 313 F.3d 1094, 1122–23 (9th Cir. 2002) (and cases cited therein). For this project and EIS, the consideration of more environmentally

protective alternatives is also consistent with the FLPMA requirement that BLM “minimize adverse impacts on the natural, environmental, scientific, cultural, and other resources and values (including fish and wildlife habitat) of the public lands involved.” 43 U.S.C. §1732(d)(2)(a).

A total of 26 alternatives to the proposed project were considered by the CEC and BLM, but BLM considers only four of them reasonable, all of which apply to the same location as the proposed project. Two public land alternatives in locations different from the proposed project were dismissed from further analysis; one in the Alabama Hills area west of Lone Pine, California, and one located in proximity to the Ridgecrest Sanitary Landfill located near the proposed project but closer to the City of Ridgecrest.

BLM considered all the alternatives involving private land as unreasonable because of lack of jurisdiction. The mere fact that lands are not administered by BLM does not render an offsite alternative unreasonable. In defining what is a “reasonable” range of alternatives, NEPA requires consideration of alternatives “that are practical or feasible” and not just “whether the proponent or applicant likes or is itself capable of carrying out a particular alternative”; in fact, “[a]n **alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable.**” Council on Environmental Quality, *Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, Questions 2A and 2B* (emphasis added), available at <http://ceq.hss.doe.gov/nepa/regs/40/40p3.htm>; 40 C.F.R. §§ 1502.14, 1506.2(d). The California Energy Commission considers alternatives that include private lands provided site control can be obtained in a reasonable timeframe and with some certainty.

Our groups and sister organizations have affirmatively advocated that certain areas be prioritized for renewable energy development. Criteria we have promoted for identification of those areas include the following: lands that have been mechanically disturbed; lands of comparatively low resource value located adjacent to degraded and impacted private lands on the fringes of the California Desert Conservation Area; brownfields; locations adjacent to urbanized areas; and locations that minimize the need to build new infrastructure such as roads and substations. The overall goal of these criteria is to steer projects to areas with comparatively low potential for conflict and controversy in order to facilitate their timely development.

Because the proposed project fails to conform to many of the above siting criteria, and would result in such severe impacts to significant biological and cultural resources, we strongly recommend that the staffs of the California Energy Commission and BLM reformulate and analyze a range of alternative project locations that would result in avoiding and minimizing such impacts when compared with the proposed project. Such alternative locations should include both public and private lands that are or adjacent to developed or degraded lands considered of low value for biological resources, and conform as much as possible to the siting criteria our fellow environmental organizations have recommended, noted above.

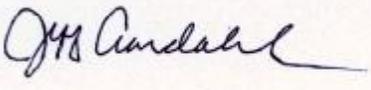
Concern over availability and use of water in support of project construction, dust control and operations must be taken very seriously during the examination of alternatives. Even solar thermal trough technology utilizing air-cooled steam condensers require water-cooled heat exchangers for auxiliary equipment. The amount of direct ground disturbance for a solar thermal trough facility is significantly greater compared to other technologies, such as photovoltaic panels on pedestals. The type of technology and its relative level of impact on already limited water supplies and relative degree of ground impact should be strongly considered in the formulation of alternatives.

Cumulative Impacts: The SA/DEIS contains extensive information about current and reasonably foreseeable land use projects within the region and western Mojave Desert that affect and their basic impacts to habitats and species. Placing these impacts in context with BLM's basic mission under FLPMA, and its management policies for habitat and species conservation as contained in Manuals 6500 (Wildlife Habitat Management) and 6840 (Special Status Species Management), and the CDCA Plan, is essential. The cumulative impact analysis must include how these multiple land use activities will impact BLM's ability to carry out its management responsibilities in the western Mojave region where the proposed project is located.

Climate Change Impacts: The SA/DEIS's discussion of climate change focuses on the reduction of greenhouse gases and the development of renewable energy resources. That is, it looks at the effects of the proposed action on climate change. It does not, however, analyze the impacts of climate change on species of concern in the project area, on their habitats, or on the importance of maintaining habitat connectivity in the sustaining species diversity and landscape level movements. The potential impacts of climate change of the project must also be examined, especially in relationship to water availability and use, rainfall amount and intensity, and potential flooding. See, e.g., Secretarial Order 3289, Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources (February 22, 2010). Such an analysis will allow the BLM to assess and reduce the vulnerabilities of the proposed action to climate change, integrate climate change adaptation into the proposed action and alternatives and produce accurate predictions of environmental consequences of the proposed actions and alternatives.

Thank you in advance for considering our comments. If you have any questions about them, please do not hesitate to contact us.

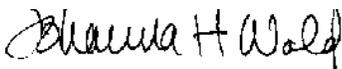
Sincerely,



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cc: Jim Abbott, Acting California State Director, BLM

From: [Kathy LaShure](#)
To: esolorio@energy.state.ca.us; carspp@blm.gov; Hector_Villalobos@ca.blm.gov
Subject: Comments on the SADEIS for the RIDGECREST SOLAR POWER PROJECT (09-AFC-9)
Date: 05/19/2010 12:23 PM
Attachments:

Dear Mr. Solorio and Ms. Eubanks,

On behalf of the Creosote Ring Subchapter of the California Native Plant Society, I have attached a comment letter on the SADEIS for the Ridgecrest Solar Power Project (09-AFC-9).

Respectfully,

Kathryn Kvapil LaShure
P. O. Box 196
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California Native Plant Society

May 19, 2010

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Janet Eubanks, Project Manager
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RE: RIDGECREST SOLAR POWER PROJECT (09-AFC-9)

Dear Mr. Solorio and Ms. Eubanks,

I am writing on behalf of the Creosote Ring Subchapter of the California Native Plant Society. We are part of the geographically large Bristlecone Chapter covering Mono and Inyo Counties and the northeast corner of Kern County, where the Subchapter is based (primarily the Indian Wells Valley communities of Ridgecrest and Inyokern). Our membership includes individuals who have lived in the area for a great many years and who have a significant understanding of the local flora. Many of our members have participated in the annual Wildflower Show at the Maturango Museum in Ridgecrest, as both collectors (with correct BLM permits) and identifiers of the area flora over many years. I believe this experience gives our group a unique appreciation of the biological resources contained within the Ridgecrest Solar Power Plant site.

The mission of The California Native Plant Society (CNPS) is to conserve California native plants and their natural habitats. CNPS has gone on record [scoping comments by Conservation Director Greg Suba to the BLM on 12-23-09] as opposing the siting of large-array renewable energy projects in functionally intact desert areas on public trust lands, especially *as the first option*. The Creosote Ring subchapter fully supports this view and believes that the Ridgecrest Solar Power Project site is an irreplaceable biological resource. We support the CEC biological staff assessment that this site should be protected.

The SA/DEIR for the proposed Ridgecrest Solar Power Project states that it is “to be constructed on land featuring unique habitat for sensitive species and biological resources” [page 19]. One of the key precepts that even grade school biology classes teach is that the web of life is everywhere dependent on plants, as they are the organisms able to create food resources through photosynthesis. Therefore, in order for the sensitive fauna present on this site (Desert Tortoise and Mojave Ground Squirrel, both of which are herbivores, i.e. plant eaters) to thrive, the proper plants must exist on the site. With a high occurrence of Desert Tortoise and a functioning genetic corridor linking Mojave Ground Squirrel populations, this is truly an irreplaceable location.

The Creosote Ring CNPS subchapter conducted a field trip to the site on April 17, 2010. Prior to that date the field trip leaders, Mary Jane McEwen and I, visited the site several



Dedicated to the preservation of California native flora

times. Both leaders also visited the site at later dates. 23 participants helped to document the annual and perennial plant species found on both the North and South sites. 72 species from 25 plant families were observed, indicating a complex well-functioning ecosystem. Especially note-worthy were the existence of Winter Fat (*Krascheninnikovia lanata*) and Spiny Hop-Sage (*Grayia spinosa*), indicators of Mojave Ground Squirrel habitat and, perhaps more importantly, the occurrence of many preferred food plants for both juvenile and adult Desert Tortoises. A copy of the plant list was included with Ms. McEwen's comment letter dated 4-29-10. Her letter also discussed the research documenting preferred Desert Tortoise foods.

It should be pointed out that the Plant Communities section of SA/DEIR has insufficient information to fully analyze the impact of RSPP. "Unvegetated ephemeral dry wash" is not a known community in either of the sources cited. "Mojave desert wash" community may be misidentified, as its dominant species Catclaw Acacia (*Acacia greggii*) does not occur on the site (it is not mentioned as occurring by staff biologists and it was not observed by CNPS members).

In order to fully understand the complex biological functionality of the RSPP site, a detailed vegetation map should be created. This would show the mosaic of plant communities. These communities are intricately tied to the predominant land feature of the site, i.e. alluvial plain or bajada. By its very nature, this floodplain can, and has in the recent past, had sheet flow over a very large area in times of heavy precipitation in the El Paso Mountains. Grading of the site would destroy the small washes that help distribute this sheet-flow, preventing major flooding and also supporting the mosaic pattern of vegetation. Channelizing run-off from the RSPP site into the main wash would change the ability of the wash to support the same vegetation as it now does. In the desert where plants have evolved to survive, even thrive, with little annual precipitation, such a major alteration of hydrology as proposed within the RSPP site would be very detrimental to plant life and therefore to animal life.

Although the Creosote Ring CNPS subchapter has compiled a plant list, the SEC staff should include their own inventory of all plant species on the site. Such an inventory should be undertaken using the protocols outlined in detail in CNPS' comment letter of 12-23-09 (previously cited). It is quite likely that plant species that are locally rare (not just the special status plants listed in Biological Resources Table 2) may occur on the site. By looking only for Special Status plants, locally rare plants can be overlooked. Ideally plant surveys would be conducted over a multi-year period, as variable weather patterns can greatly affect the germination of annual species. Also fall surveys can be valuable in documenting those species that only appear after summer rains.

Disturbance of such a large area of pristine desert habitat would also encourage the invasion of alien opportunistic plant species further degrading the surrounding area both in terms of its ability to support wildlife and visual impact. Although a Weed Management Plan has been proposed many of the likely invading alien plants have proved difficult if not impossible to control elsewhere.

A final botanical point that has not been addressed in the SA/DEIR is the occurrence of Creosote Bush (*Larrea tridentata*) rings on the RSPP site. In the Mojave Desert Creosote Bush often grows in a clonal ring over millennia. The oldest documented ring in California is over 11,000 years old. There are many Creosote Bush rings in the Indian Wells Valley on both public and private lands. They should be conserved for future study. Construction of the RSPP would destroy this valuable research opportunity.

The Creosote Ring CNPS subchapter also supports the CEC staff finding that impacts to visual resources cannot be mitigated. The RSPP site is located in a very scenic area of the Indian Wells Valley with the backdrops of the El Paso Mountains to the south and the southern Sierra Nevada Range to the west. Over the spring months the Brown Road corridor is awash with golden blooms: first the low carpet of Goldfields (*Lasthenia californica*) punctuated by Desert Dandelion (*Malacothrix glabrata*) followed by many golden-hued shrubs such as Goldenhead (*Acamtopappus sphaerocephalus*) and Cooper Goldenbush (*Ericameria cooperi* v. *cooperi*) and finally, as the weather turns hot, the spectacular display of Desert Senna (*Senna armata*). For wildflower lovers this area offers much enjoyment. A number of subchapter members use the Railroad Bed Bike Trail for hiking – use would certainly drop off with the view being dominated by an industrial installation. Many subchapter members also use the current BLM recreational roads through the project area to access additional flora displays further into the El Paso Mountains.

In conclusion, the Creosote Ring CNPS Subchapter believes that the loss of such a unique and special place should not happen. The preferred alternative is that no project be constructed at this site.

Respectfully submitted,

Kathryn Kvapil LaShure

Kathryn Kvapil LaShure
Creosote Ring Subchapter Coordinator
Bristlecone Chapter
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Cc: Hector_Villalobos@ca.blm.gov, Ridgecrest Field Office

From: [Janet Westbrook](#)
To: carspp@blm.gov
Cc: [Hector Villalobos@ca.blm.gov](mailto:Hector_Villalobos@ca.blm.gov)
Subject: Comments on the SAIEIS for the RIDGECREST SOLAR POWER PROJECT (09-AFC-9)
Date: 05/21/2010 11:20 AM
Attachments:

My comments regarding the Ridgecrest Solar Plant and mitigation measures which just cannot be accomplished because of the nature of the location of the project:

Janet Westbrook :-)

^_^

o.o

P.O. Box 554
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21 May 2010

Janet Eubanks, Project Manager
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Moreno Valley, CA 92553
carspp@blm.gov

Comments on the SA/EIS for the RIDGECREST SOLAR POWER PROJECT (09-AFC-9)

I would like to highly recommend that BLM issue the following regarding this project:

"No Action on project and amend the CDCA plan to classify the area as unsuitable for future solar development. The RSPP project is not approved (project denied) and no ROW grant is issued to Solar Millennium, and the CDCA plan is amended to classify the project area as unsuitable for large scale renewable energy development.

Or any other kind of development on that particular piece of land. It needs to be protected for its high biological values, both plant and animal. BLM's management plan for the area should stand, or be amended to further protect, not develop, this particular area."

Please note that the California Energy Commission in their Draft SA/EIS has recommended the following:

"Energy Commission staff considers the No Project/No Action Alternative to be superior to the proposed project. While it would eliminate the potential for 250 MW of additional solar thermal power created using parabolic trough technology at the Ridgecrest Solar Power Project site and thus not meet project objectives, it would eliminate significant immitigable visual and biological resource impacts associated with the proposed project. New renewable resources may be developed to meet the State's Renewables Portfolio Standard (RPS) requirements in the absence of the Ridgecrest Solar Power Project."

(Underlining is mine). This is a biologically rich piece of land and should not be disturbed. You have designated many other places for solar development. Solar Millennium should never have been pointed to this piece of BLM land.

There should not be any disturbance at this Brown Road site ever because:

1. Biological concerns cannot be completely or even partly mitigated.

Endangered Species- it is well known that translocating tortoises doesn't work very well. Mojave Ground Squirrels can't be moved at all. The ESA is quite specific and was enacted for good reason. The only way to make sure we still have live tortoises and MGS is "no project" at that site.

Everyone else- the laws require that endangered critters be paid attention to, but what about all the other animals and plants at the site? The biological surveys turned up many kit fox dens, burrowing owl pairs, and even a badger! Those are rare around here, and the area between Laurel Mountain and Black Mountain seems to suit them. If there are that many predators there, then the prey population is doing well too - the Antelope Ground Squirrels are common, as must be nocturnal mice and kangaroo rats. The CNPS folks saw an active tortoise burrow and a Mojave Rattlesnake curled up in another. Mojave Rattlesnakes are the most dangerous snake in North America - ours have three venoms (hemotoxin, cardiotoxin, neurotoxin) and a good bite will be

fatal as there is no antivenin produced and the site is too far from the hospital to get a bite victim there before respiration ceases. While there are no endangered plants, still there is thriving plant diversity, particularly around the washes. Clearly, as your biologist says, "something is right" to have such a diverse and dense population of tortoises, ground squirrels, fox, coyote, badger, owls, hawks. Plowing under three-square miles of these animals and plants is not warranted. This special place cannot be completely mitigated nor "restored".

"Connectivity" is the major issue which absolutely cannot be mitigated. The animal populations would be separated by the project, fences, roads, increased traffic, and noise. The plant populations likewise, as a lot of seeds blow in the wind and can't necessarily blow over the mirrors to another suitable area. The project runs from Hwy 395 on the east to the base of the hills on the west, once the power lines are moved. That doesn't leave ANY space for plants or animals who can't crawl over hills to get around. The El Paso wash is going to be changed so much in nature by the project that very few animals will choose to go there.

By grading and flattening out 2000 acres of desert, the various washes in the area will be greatly affected and no longer connected. Now, when it rains, the rainwater is absorbed into the undisturbed areas of the desert - there is very little runoff to the washes unless we get a real thunderburst in one area - which can happen. In that case, the entire area "sheet floods". Changes in the drainage pattern will affect the plants, which will affect the animals that are left. Water will run off the surface of the project's compacted dirt and into El Paso wash, so it will become a serious river every time it rains, where before it was not except in very violent local storms. What happens to the runoff waters downstream (north) of the plant site?

The site contains "ancient landscapes", as evidenced by numerous creosote rings, several over 10 feet in diameter, indicating a great age, and well-developed areas of "desert pavement," the parts which look "bare" of bushes. It takes a long time for desert pavement to form, perhaps thousands of years. So that whole alluvial plain leading downhill and northward from the El Paso mountains is a very old, well established set of soils and plants like the Creosote. Such places are rare to find. These cannot be mitigated, nor can they be "restored" if the RSPP closes.

2. We residents keep reminding the project staff that it can be very windy in our valley and that so far no large construction project whether by civilians or the Navy has managed to "keep dust down", or "inside the fence" ever. The biggest problem is that our dust contains Valley Fever spores, and the project is directly upwind of Ridgecrest and China Lake. No one has successfully mitigated "the dust situation" yet.

3. FEMA Flood Zone maps show that the El Paso wash and the other little washlets are in the "100 year Flood zone." But floods can occur more often than that, of course, and the legend indicates a 26% chance of a major flood within the 30 year life span of the project. The last good flood there was in August, 1984. RSPP will alter the wash system. The area is also subject, thanks to the desert pavement, to regular sheet flooding when we get steady rains that last more than a few minutes. Has all that been adequately mitigated?

4. The plant will have dangerous explosive materials (propane and Therminol) so close (upwind) to town. Thinking about the explosion that occurred at Harper Lake, what happens if the 1.3 million gallons of Therminol flashes into fire? Are there adequate safety devices in place?

5. Dark Skies and quiet places are hard to come by, even in the desert, but this site is just uphill and "around the corner" enough that it provides exactly that. That's why the China Lake Astronomical Society uses the place for star parties once a month. That's where town people can go to have a

quiet place. Brown road is a great place to jog or bike ride because it is quiet. That can't be mitigated and not easily replaced anywhere this close to town.

6. Building the plant will cause altered recreation pathways which will cause even more roads to be established in the area. It will be "an attractive nuisance", and will attract more traffic to the area than it now has. This will affect what few plants and animals are still around. Mitigation will involve making trails where there are now none.

7. Cultural resources and old Native American trails will be disturbed and erased, forever. That can't be mitigated.

8. Air quality issues with dust, service trucks on site, propane and other supply delivery trucks - and their emissions which are not now there - all are a concern. Is there adequate mitigation?

9. In the morning when the mirrors face east, there will be a glare created for drivers headed north on Hwy 395 as they are headed west just before reaching the Ridgecrest/Brown Road turnoff. I was just driving by the Kramer Junction site 2 days ago and, while the road is N/S, I did turn my eyes east briefly to see if there was a glare and indeed, it's very bright. The mirrors concentrate the sun on the collecting pipe, but the pipe is smaller than the bright-lighted area, so there IS a bright glare created. The highway heads directly toward the site for some distance. Can a screen-type fence high enough to keep the glare behind the screen so drivers won't be bothered by it mitigate this?

"The RSPP project", using this technology, should not be allowed within the Indian Wells Valley at all because:

1. There should not be any project which needs any groundwater from our depleted basin anywhere within the Indian Wells Valley, unless they come with their own source of water. Even cleaning up the water from the sewer ponds is not necessarily a desirable thing to do, as that water recharges the shallow aquifer under the ponds feeding the wet ditches in the area which have an endangered species in them (Mojave Tui Chub) and many, many migrating and nesting birds have come to depend upon those ponds. The project will be using 3000 acre-feet for construction and 160(?) acre feet every year thereafter. How can that be mitigated for every year? Cash for grass isn't enough.

2. CEC encourages "brownfield" projects, but this would be a "greenfield" project; there are many places both on BLM and private lands which have been disturbed. Such large energy projects should be sited on previously disturbed lands. The EIS should seriously discuss several alternate places to put the RSPP where groundwater is not an issue.

3. The upper Mojave Desert is not well suited for this particular technology. The Heat transfer fluid Solar Millennium has chosen to use, Therminol VP-1, cannot be colder than 54°F. The upper Mojave Desert has many freezing nights depending on location; the Indian Wells Valley has nights below 54°F from October through May. This means the plant would have to use a very large amount of propane just to keep the HTF from turning to wax. That makes the whole idea of "clean green energy" not so clean or green after all. The sun is free, but propane is not. This type of parabolic trough power plant is better sited down in the much warmer parts of the

Colorado/Sonoran deserts of California and Arizona. The higher elevations of the Mojave desert are better suited for photovoltaic panels which do not require groundwater (except to wash them), nor propane, for example. The EIS should seriously discuss alternative ways to use our sun without worrying about cold temperature issues.

4. Our local community will not benefit very much from the finished project. All of the electricity produced will go to "the grid", not specifically to our valley. Only a few people will be needed to run and maintain the plant, and those may or may not choose to live here. There will be a short-term benefit from the construction of the project, both workers staying in the area and some materials being procured from our stores, but mostly the necessary skilled union workers will need to be imported from elsewhere, and most materials will just not be available from local sources. Dust will continue to blow into town for many years until things really stabilize. There will always be the constant threat of dangerous chemicals, the HTF fluids in particular which can burst into flame, upwind of town.

During the 2-3 year construction period Brown road will no longer be the peaceful roadway with little traffic where it is safe to ride a bicycle or do a "5K, 10K run" which groups and weekend joggers do on a regular basis all year. After the plant is there, there will be much increased traffic from the intersection of Hwy 395 to the entrance to the power plant and will be dangerous for bike and jogging traffic.

The one benefit I do see for our community is that CalTrans will have to redo the Brown Rd/China Lake Blvd/Hwy 395 intersection and that will be a major improvement!

Solar power is definitely desirable as the sun's rays keep on shining at least part of every day cycle. There are many ways to take advantage of this resource. Finding a "good location" to match the technology is the challenge. There are disturbed BLM lands in the desert, and there are other ways to collect the sun's energy. This parabolic mirror plant should not be built in the Indian Wells Valley or anywhere where nights get cold. This particular location should be protected from any development because it is so biologically rich.

Janet Westbrook
Professor of Biology, Cerro Coso College
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Cc: Hector_Villalobos@ca.blm.gov, Ridgecrest Field Office



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CALIF. DESERT DISTRICT
MORENO VALLEY, CA

May 12, 2010

Eric Solario, Project Manager
Siting, Transmission and Environmental Protection Division
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esolario@energy.state.ca.us

Subject: Comments on Docket Number 09-AFC-0, "Solar Millennium, Ridgecrest Solar Power Project"

Dear Sir,

The Eastern Kern County Resource Conservation District (EKCRCD) would like to take this opportunity to comment on the Solar Millennium Project. We are a division of local government operating under Division 9 of the Resources Code of the State of California. The proposed project lies within the boundaries of our district and we believe that it is important to address the impacts of this project upon the soil, water, air quality, plants, habitat, and wildlife resources of the area, as well as land use issues.

The facility footprint is proposed to be 1,448 acres. The land disturbance during construction and operation of the Project is of great concern not only for loss of habitat and impacts to plant and wildlife endangered and threatened federally and state listed species, but also for health issues for people living in the area.

These health issues, including the incidence of Valley Fever and other dust related conditions need to be addressed both during and after construction.

The loss of prime habitat for the desert tortoise is a major concern. The area proposed for the project consists of some of the best habitat for tortoises, supporting greater numbers of tortoises than even the Desert Tortoise Natural Area which has been set aside for their protection. EKCRCD recommends that conservation easements be established within the proposed project area and that a fund be set aside for management of the conservation easements in perpetuity. However, the impacts to the connectivity corridor for the Mojave ground squirrel may not be able to be mitigated.

The purchase of private land for mitigation purposes poses its own problems as it removes land from the tax rolls and has long term effects upon the economy of Kern County. Sacramento receives the tax dollars, not Kern County. Using BLM land for the project means financial benefit to the project proponent, but there is a long term financial impact on the county for fire, police, schools, roads, all infrastructure issues. In reviewing the land use maps for the area, we believe that there may not be enough private land available long term for purchase for mitigation for this project and other proposed projects. In addition there is no mitigation for loss of

recreational use and open space for people. Looking at the BLM land use maps, it is readily apparent that open space is at a premium in the Indian Wells Valley.

We recommend siting projects such as this on fallow agricultural land or other sites where land disturbance is not of such great significance.

We recommend the use of best management practices prescribed by the Natural Resources Conservation Service and other EKCRCD partners such as the Dustbusters Group in Antelope Valley be put in place to help prevent soil erosion by wind and water.

The El Paso Wash is a major flood channel carrying floodwaters toward the city of Ridgecrest during storm events. We recommend that the project address flood related issues on site as well as impacts that may be caused by stream flow diversions.

The project may have potential significant impacts to groundwater supplies and effects upon pre-existing groundwater wells that are nearby. Any drops in water levels in nearby wells would not support existing land uses or planned uses for which permits have been given. At a minimum the project should put in place monitoring wells and groundwater monitoring provisions and provide data to the Indian Wells Valley Cooperative Groundwater Management Group (IWVCGWMG).

Thank you for the opportunity to comment. Please notify the Eastern Kern County RCD of any meetings which will be concerned with this project.

Sincerely,

/s/ DT:JV

Donna Thomas, President
Eastern Kern County Resource Conservation District

DT:jv

CC: BLM California Desert District Office
Attn: Janet Eubanks, Project Manager

From: [Ileene Anderson](#)
To: carspp@ca.blm.gov; Janet_Eubanks@ca.blm.gov
Cc: ['Lisa Belenky'](#); ['Eric Solorio'](#); Brian_Croft@fws.gov; khunting@dfg.ca.gov; McPherson.Ann@epamail.epa.gov
Subject: CBD comments on RSPP DEIS
Date: 07/08/2010 04:13 PM
Importance: High
Attachments:

Hello Janet Eubanks,
Please find attached to this email, the Center for Biological Diversity's comments on the Ridgecrest Solar Power Plant's Draft Environmental Impact Statement. I will be sending a copy of it, along with attachments to you via snail mail as well.
If you have any questions, please feel free to contact me.
Best regards,
Ileene Anderson

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"Our good fortune will only last as long as our natural resources" Will Rogers

Please consider the impact on the environment before printing this e-mail.

****Get the latest on the BP oil spill on the Center's new [Gulf Disaster website](#), updated daily.****



Via Email and Overnight Mail

July 8, 2010

Janet Eubanks, BLM Project Manager
Bureau of Land Management
22835 Calle San Juan de los Lagos,
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carspp@ca.blm.gov

RE: Comments on Staff Assessment and Draft Environmental Impact Statement and Draft California Desert Conservation Area Plan Amendment for the Ridgecrest Solar Power Plant Application for Certification 09-AFC-9, Kern County, March 2010, CEC-700-2010-008 DES-10-14

Dear Ms. Eubanks,

The Center for Biological Diversity (“Center”) is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 43,000 members throughout California and the western United States, including members that live in the vicinity of the proposed Ridgecrest Solar Power Plant (RSPP) and/or recreate there. The Center submits these comments regarding the March 2010 Staff Assessment and Draft Environmental Impact Statement and Draft California Desert Conservation Area Plan Amendment (“DEIS”) for the Ridgecrest Solar Power Plant (“proposed project”) on behalf of our board, staff and members. The Center is an intervenor in the proceedings before the California Energy Commission (“CEC”) and on May 21, 2010 the Center submitted comments on the Staff Assessment to the CEC along with references. Those comments and references are attached hereto and incorporated herein by reference. The Center’s earlier comments to the CEC provided detailed information regarding the shortcomings of the environmental review that are relevant to both the CEC’s and the BLM’s review of this project. In addition, as discussed briefly below, the environmental review of the proposed project and the proposed plan amendment in the DEIS is fails to meet the standards of NEPA, FLPMA and other federal laws.

By letter dated June 30, 2010, the project applicant Solar Millennium requested that the BLM (and CEC) “suspend the application of the Ridgecrest Solar Power Project (CACA 49016) and Docket No. 09-AFC-9.” The letter also states that a study will be undertaken regarding the use of the area by Mojave ground squirrel (“MGS”) and “[u]pon completion of the study the application would be restarted if the findings show the project does not significantly affect the connectivity of the MGS.” Because the project proponent is no longer actively pursuing the

Right of Way (“ROW”) application, the BLM could have withdrawn the DEIS or at minimum suspended the public comment period. However, because the BLM has not yet withdrawn the DEIS or suspended the comment period, the Center submits the following comments on the DEIS and Draft CDCA amendment. Most importantly, because of the sensitive resources in this area, the Center urges the BLM to adopt a land use plan amendment that will protect the resources of this area from future ROW applications-- the alternative stated as: “Do not approve the ROW grant and amend the CDCA Land Use Plan of 1980, as amended, to designate the area unsuitable for future solar development”. DEIS at B.2-3.

The following comments further address the inadequacies of the DEIS for the proposed project proposal focusing largely on the impacts on biological resources:

- The evidence in the DEIS shows that this area should not be developed but should be preserved. As the DEIS states “The unique qualities of the site that support high concentrations of DT [desert tortoise] and MGS [Mohave ground squirrel] genetic linkage are irreplaceable and cannot be fully mitigated. Because construction of the project would permanently destroy this important biological resource, staff, based on an extensive analysis of the project, cannot recommend that the RSPP be approved.” DEIS at pg.19. Furthermore, we concur with staff that “this site should be protected because of its importance to the DT population and its unique and critical benefits to the MGS” DEIS at pg. 20.
- DEIS fails to adequately consider a range of potential alternative plan amendments that would protect the most sensitive lands from future development. The DEIS nonetheless appears to be adequate to show that the “no action” alternative to adopt a land use plan amendment that will protect the resources of this area from future ROW applications should be adopted. “Do not approve the ROW grant and amend the CDCA Land Use Plan of 1980, as amended, to designate the area unsuitable for future solar development.” DEIS at B.2-3.
- The DEIS fails to consider an adequate range of alternatives that would avoid or minimize significant impacts to resources including alternative siting within the Western Mojave Desert, alternative siting on previously degraded lands in the Western Mojave desert or elsewhere in the CDCA regardless of land ownership,¹ alternative siting on previously degraded lands elsewhere in California, and alternative technologies (including distributed PV) that should have been fully considered in the DEIS, because they could significantly reduce the impacts to many species, soils, and water resources in the Mojave desert.
- The area of the proposed project is not part of any of the solar energy study area (“SESA”) being evaluated by the BLM for the solar PEIS for solar energy zones. As the Center has emphasized in our comments on the various large-scale industrial solar proposals in the California desert, planning should be done before site specific projects are approved in order to ensure that resources are adequately protected from sprawl development and project impacts are avoided, minimized and mitigated.

¹ Although the CEC analyzed an alternative at the Garlock Road site, the DEIS made it clear that BLM was not considering this alternative.

- Changes in the project site configuration and the proposal were made after the DEIS was issued that have not been incorporated into the DEIS and therefore a minimum the BLM will need to revise and recirculate the DEIS or prepare and circulate a supplemental DEIS.
- New information from surveys was acquired after the DEIS was issued that have not been incorporated into the DEIS and therefore at a minimum the BLM will need to revise and recirculate the DEIS or prepare and circulate a supplemental DEIS.
- The proposed project site is in MUC class L lands. DEIS at C.5-15. Under the CDCA Plan, Multiple-use Class L (Limited Use) “protects sensitive, natural, scenic, ecological, and cultural resources values. Public lands designated as Class L are managed to provide for *generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.*” CDCA Plan at 13 (emphasis added). The proposed project is a high-intensity, single use of resources that will displace all other uses and that will significantly diminish (indeed, completely destroy) of approximately 2,000 acres of occupied desert tortoise habitat and Mojave ground squirrel habitat (including over 800 acres within the MGS Conservation Area). On this basis as well as others the proposed project is inappropriate for a Limited Use area such as this one and the terms of the proposed plan amendment are inconsistent with the CDCA Plan.
- As is evident from the project proponent’s recent letter, the BLM does not have sufficient information about this area to make a decision on the application. BLM’s failure to acquire the needed information and inventory of public resources not only undermines the DEIS process but also violates FLPMA states that “[t]he Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values,” and this “[t]his inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values.” 43 U.S.C. § 1711(a). FLPMA also requires that this inventory form the basis of the land use planning process. 43 U.S.C. § 1701(a)(2). *See Center for Biological Diversity v. Bureau of Land Management*, 422 F.Supp.2d 1115, 1166-67 (N.D. Cal. 2006) (discussing need for BLM to take into account known resources in making management decisions); *ONDA v. Rasmussen*, 451 F.Supp. 2d 1202, 1212-13 (D. Or. 2006) (finding that BLM did not take a hard look under NEPA by relying on outdated inventories and such reliance was inconsistent with BLM’s statutory obligations to engage in a continuing inventory under FLPMA). It is clear that BLM should not approve a management plan amendment based on outdated and inadequate inventories of affected resources on public lands.
- The DEIS fails to provide adequate information to ensure that the BLM will prevent unnecessary and undue degradation of public lands. FLPMA requires BLM to “take any action necessary to prevent unnecessary or undue degradation of the lands” and “minimize adverse impacts on the natural, environmental, scientific, cultural, and other resources and values (including fish and wildlife habitat) of the public lands involved.” 43 U.S.C. §§ 1732(b), 1732(d)(2)(a). Without adequate information and analysis of the current status of the resources of these public lands, BLM cannot fulfill its duty to prevent unnecessary or undue degradation of the public lands and resources. Thus, the failure to provide an adequate current inventory of

- Purpose and need are too narrowly conceived and fails to provide a meaningful basis for a full and fair alternatives analysis in violation of NEPA.
- The environmental baseline information provided is incomplete and inaccurate for biological resources (including but not limited to desert tortoise, MGS, migratory birds, golden eagles, other raptors, rare plants, cryptogamic soils) and other resources.
- The DEIS fails to adequately identify direct, indirect and cumulative impacts to biological resources, soils, water resources, air quality (including GHG impacts), and other resources of these public lands. The DEIS as a result fails to adequately analyze the impacts to these resources as well.
- The DEIS fails to adequately address many of the impacts that are identified including but not limited to the following: significant impacts to a major wash (even if the avoidance proposals discussed in the DEIS are adopted) and many smaller washes in the area thereby significantly changing the water flow across these lands and other nearby public lands; significant impacts to occupied desert tortoise habitat and occupied Mojave ground squirrel habitat; significant impacts to major movement corridors for wildlife including, but not limited to, desert tortoise and Mojave ground squirrel.
- The DEIS fails to adequately identify and analyze the risk of fire from the proposed project and the likely impacts to these and neighboring wildlands from fire.
- The DEIS unlawfully defers the preparation of key plans including translocation plans, restoration plans, hazardous materials plans, predator control plans, avian protection plans, and other mitigation plans.

Thank you for the opportunity to submit these comments. We urge the BLM to adopt a land use plan amendment that will protect the resources of this area from future ROW applications as stated in the DEIS as one of the “no action” alternatives: “Do not approve the ROW grant and amend the CDCA Land Use Plan of 1980, as amended, to designate the area unsuitable for future solar development.” DEIS at B.2-3.

If the BLM, in contrast, allows the ROW application to be suspended for 2 years while an MGS study is undertaken, as the applicant requests, then we hope and expect the BLM will review and revise the DEIS and re-circulate it for public review and comment before making any decision to proceed with the approval process for the ROW for the proposed Ridgcrest Solar Power Project.

Please feel free to contact us if you have questions about these comments or for additional information.

Best regards,



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Ann McPherson, EPA, mcpherson.ann@epa.gov

Attachments:

CBD Comments dated May 21, 2010 submitted to the CEC with references (references provided on CD)

STATE OF CALIFORNIA

**Energy Resources Conservation
and Development Commission**

In the Matter of:

APPLICATION FOR CERTIFICATION
FOR THE (SOLAR MILLENIUM)
RIDGECREST SOLAR POWER
PROJECT

DOCKET NO. 09-AFC-9

**INTERVENOR CENTER FOR BIOLOGICAL DIVERSITY'S
COMMENTS ON THE STAFF ASSESSMENT**

May 21, 2010

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STATE OF CALIFORNIA

**Energy Resources Conservation
and Development Commission**

In the Matter of:

APPLICATION FOR CERTIFICATION
FOR THE (SOLAR MILLENIUM)
RIDGECREST SOLAR POWER
PROJECT

DOCKET NO. 09-AFC-9

**INTERVENOR CENTER FOR BIOLOGICAL DIVERSITY'S
COMMENTS ON THE STAFF ASSESSMENT**

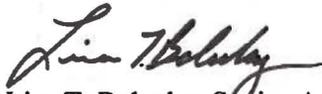
Eric K. Solorio, Project Manager
California Energy Commission
Siting, Transmission and Environmental Protection Division
1516 Ninth Street, MS-15
Sacramento, CA 95814

Dear Mr. Solorio,

Please find the following comment letter on the Ridgecrest Solar Power Project submitted on behalf of the Center for Biological Diversity. References will be included on a CD to be sent with the hardcopy of this letter.

Dated: May 21, 2010

Respectfully submitted,



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May 21, 2010

Eric K. Solorio, Project Manager
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RE: Comments on Staff Assessment for the Ridgecrest Solar Power Plant Application for
Certification 09-AFC-9, Kern County, March 2010, CEC-700-2010-008 DES-10-14

Dear Mr. Solorio,

The Center for Biological Diversity (“Center”) is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 255,000 members and online activists throughout California and the United States, including members that live nearby the vicinity of the proposed Ridgecrest Solar Power Plant (RSPP) and recreate there. On April 30, 2010, the Center was granted leave to intervene in this proceeding. The Center submits these comments regarding the March 2010 Staff Assessment (“SA”) for the Ridgecrest Solar Power Plant Project (“proposed project”) on behalf of our board, staff and members.

I. INTRODUCTION

The development of renewable energy is a critical component of efforts to reduce greenhouse gas emissions, avoid the worst consequences of global warming, and to assist California in meeting emission reductions set by AB 32 and Executive Order S-03-05. The Center strongly supports the development of renewable energy production, and the generation of electricity from solar power, in particular. However, like any project, proposed solar power projects should be thoughtfully planned to minimize impacts to the environment. In particular, renewable energy projects should avoid impacts to sensitive species and habitat, and should be sited in proximity to the areas of electricity end-use in order to reduce the need for extensive new transmission corridors and the efficiency loss associated with extended energy transmission. Only by maintaining the highest environmental standards with regard to local impacts, and effects on species and habitat, can renewable energy production be truly sustainable.

The current site proposed for this project near the town of Ridgecrest California, but the site itself is relatively devoid of human disturbance except for a few dirt roads and the existing Southern California Edison (SCE) transmission lines and associated structures. We concur with the Staff Assessment which states for the biological resources that, “The unique qualities of the site that support high concentrations of DT [desert tortoise] and MGS [Mohave ground squirrel] genetic linkage are irreplaceable and cannot be fully mitigated. Because construction of the

project would permanently destroy this important biological resource, staff, based on an extensive analysis of the project, cannot recommend that the RSPP be approved.” SA at pg.19. Furthermore, we concur with staff that “this site should be protected because of its importance to the DT population and its unique and critical benefits to the MGS” SA at pg. 20.

Because of the significant unmitigatable impacts, the Ridgecrest Solar Power Plant proposal should be denied as proposed. The following comments further address the inadequacies of the project proposal and impacts on biological resources:

II. COMMENTS ON THE DECEMBER 2010 STAFF ASSESSMENT

As stated above, the Center agrees with Staff’s recommendation to deny the proposed project, nonetheless, because the Commission continues to consider the proposed project application, the Center offers these comments on the SA.

A. The Alternatives Analysis Outlined in the SA Fails to Comply with CEQA or NEPA

Pursuant to CEQA, the “policy of the state” is that projects with significant environmental impacts may not be approved “if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects...” Pub. Res. Code § 21002; Guidelines § 15021(a)(2). A proposed project should not be approved if environmentally superior alternatives exist “even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.” Pub. Res. Code §§ 21002; Guidelines §§ 15021(a)(2), 15126.6. The proposed project must be rejected if an alternative available for consideration would accomplish “most [not all] of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.” Guidelines § 15126.6(c).

Accordingly, the environmental review documents must consider a range of alternatives that would achieve the basic objectives of the project while avoiding or substantially lessening significant environmental effects, and it is essential that the “EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.” CEQA Guidelines § 15126.6. Alternative sites must also be considered where relocating the project would substantially lessen the significant impacts of the project. Guidelines Section 15126.6(f)(2). *See Citizens of Goleta Valley v County of Santa Barbara* (1988) 197 Cal.App.3d 1167; *Save Round Valley Alliance v. County of Inyo* (2007) 157 Cal.App.4th 1437 (whether an alternative site may be feasible even where it requires a change in land use designation; to determine feasibility requires detailed analysis of the alternatives; and even if an alternative is less profitable than the project as proposed it may still be a feasible alternative).

NEPA similarly requires that a range of meaningful alternatives be explored in the environmental review process. 42 U.S.C. §§ 4332(C)(iii),(E). The agency must “study, develop, and describe appropriate alternatives to recommend courses of action in any proposal which

involves unresolved conflicts concerning alternative uses of available resources.” 42 U.S.C. § 4332(2)(E). This requirement applies whether the agency undertakes an environmental assessment (“EA”) or an environmental impact statement (“EIS”). 42 U.S.C. § 4332(2)(E); *see* 40 C.F.R. §§ 1501.2(c), 1508.9(b). In addition, pursuant to the BLM’s CDCA plan, impacts to wildlife from conflicting land uses should be avoided. CDCA Plan at 28. Avoidance can best be accomplished through alternative project siting and/or project design.

We concur with the Energy Commission Staff’s alternatives analysis that, based on the alternatives presented, “the No Project/No Action Alternative to be superior to the proposed project.” SA at pg.B.2-1. However, the range of alternatives actually analyzed in the SA is quite narrow and the SA should have included and analyzed additional alternatives including off-site alternatives and other alternative technologies for example distributed PV.

While the SA alternatives analysis originally considered 26 different alternatives, only four were selected for inclusion in the alternatives review – no project, proposed project, proposed project north of Brown Road and proposed project south of Brown Road. Because these alternatives fail to include review of alternative sites and technologies, the agency may not have as yet adequately explored a range of alternatives. The SA discusses a private lands alternative that appears to substantially reduce the biological impacts – the Garlock Road Alternative site - and an on-site Photovoltaic Technology/Utility Scale alternative, but it should have also fully explored other alternatives that would achieve the same level of renewable energy production—the basic objective of the project—but without the significant impacts of the proposed project. For example, other alternatives sites on previously disturbed lands closer to areas of consumption should be explored. The added costs and energy losses from transmission may make it more cost effective to locate a solar power generating facility closer to the point of use in the cities such as Los Angeles and San Diego which have significant “solarity”. In evaluating this factor the agency should assess whether re-use of disturbed sites near existing population centers could both meet the project objectives and avoid many of the significant environmental impacts of the project including impacts to rare and endangered species. Given the economic set-backs of past years, there are more and more large-scale industrial areas that are under-utilized in many parts of southern and central California. These industrial parks, malls and auto rows long ago replaced native habitat, they are connected to the power grid, and are readily accessible to workers. Converting these areas to solar centers is a feasible alternative that would have many societal benefits (including maintaining robust economic zones and avoiding urban blight) and would avoid nearly all of the environmental impacts of siting this project in intact, occupied, highly functional desert tortoise and Mohave ground squirrel habitat in the Mojave desert. Accordingly, the staff assessment should have also explored the use of distributed smaller-scale solar as an alternative. To the extent that such alternative sites may limit some impacts while increasing efficiency of production through minimization of line loss, they should also be explored as part of a meaningful range of alternatives.

The distributed PV alternative was dismissed from detailed consideration in the SA because “increased deployment of distributed solar photovoltaic technology faces challenges in manufacturing capacity, cost, and policy implementation.” While the Center agrees that current policy constraints may disadvantage distributed solar photovoltaic technology, these policies are

constantly evolving and distributed PV projects at a “mid-scale” of 20 MW or less are being proposed in many areas as well as aggregated projects with smaller distributed components such as the 500 MW project recently approved by the PUC for Southern California Edison. The other two challenges discussed in the SA are equally applicable to the on-site Photovoltaic Technology/Utility Scale alternative, and therefore are not a basis for dismissal.

The SA basically dismisses all of the alternatives except the no action and three on-site alternatives because “All offsite alternatives are considered unreasonable by the Bureau of Land Management because, ... none would accomplish the purpose and need for the proposed action” SA at pg. B.2-2. This statement shows that an unreasonably narrow framing of the objectives was used to develop the viability of alternatives for analysis rather than a proper consideration of the true objectives or purpose and need for the proposed project. The basic objectives of the project are to provide 250-MW of renewable power in California. This goal can be met in a number of ways by feasible alternatives that would avoid impacts to the desert tortoise and intact habitat, Mohave ground squirrel, its habitat and its connectivity, water resources, and waters of the state.

The agency is charged with considering alternatives to avoid and minimize impacts, it cannot lawfully fulfill this duty based on the limited alternatives analysis presented in the SA.

B. Additional Analysis is Needed to Assess All Impacts that Require Avoidance and Minimization

Some impacts that were not fully analyzed in the SA as follows:

Incomplete surveys: Because the proposed project boundaries are in flux, additional biological surveys are being completed to survey areas previously not surveyed as well as to supplement previous surveys (SA at C.2-5, C.2-9, C.2-28-29, C.2-32, C.2-34, C.2-37). That additional information needs to be included in a supplemental SA in order for decision-makers and the public to have access to information regarding the existing conditions of the actual proposed project and the public should be given an opportunity to respond to the new information.

According to the SA, only a single day (May 2, 2009) survey was done over the whole project site for some rare plants (C.2-16-17). This effort is insufficient to comprehensively survey the proposed project site.

Growth-Inducing Impacts: CEQA requires environmental analysis to consider the ways in which the proposed project could foster economic, housing, or population growth, whether directly or indirectly in the surrounding environment. Guidelines § 15126.2(d); *see also* 14 Cal. Code Regs § 15358(a)(1) (“Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems.”). The Guidelines specifically require that the EIR should “discuss the characteristics of [] projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.” Guidelines §

15126.2(d). Growth-inducing impacts from the proposed RSPP project in the Indian Wells Valley include encouraging additional large-scale solar projects to be sited in this same area and making it more likely that additional solar development projects could be approved in this same area. For example, the placement of one industrial project and new access roads may make it more likely that a second or third project will be sited in this area. Siting multiple projects in this area could lead to significant impacts to the listed species in the area due to a severe loss of habitat values in the valley from both habitat loss and fragmentation. This would be a significant change to an area which now contains occupied, essential, contiguous, high value, intact habitat for the desert tortoise, Mohave ground squirrel and other species. The two paragraph growth-inducing analysis (SA at pg. A-9) fails to adequately identify growth inducing impacts and assess them.

Fire Risk: The RSPP project is a solar thermal power plant, which is comprised of fields of mirrors focusing solar energy on tubes of that superheat fluids. The superheated liquids are a fire threat, particularly if flammable materials, like vegetation, are located nearby. Neither the Worker Safety and Fire Protection Section or the Biological Resources Section identify the potential impact to the adjacent habitat from fire originating on the site. Fire in desert ecosystems is well documented to cause catastrophic landscape scale changes¹ and impacts to the local species². Based on the valuable habitat adjacent to the projects site, habitat that would indeed become a refugia for many of the species currently found on site, recognition and evaluation of impacts from a “wildfire” needs to be included.

C. Desert Tortoise

The desert tortoise is continuing to decline throughout its range³ despite being under federal and state Endangered Species Acts protection as threatened. The SA provides an excellent review of the existing conditions and impact analysis from the project. As stated, the Center agrees with the SA that the impacts to desert tortoise from the project are significant and unmitigable and that the project should be denied.

However, the SA goes onto propose potential mitigation measures that could be put in place if the proposed project was approved; these comments address those proposed mitigation measures. Relocation/translocation is proposed to move desert tortoise out of harms way, if the project was to move forward. As experts explained at the workshop on May 3, 2010, translocation results in significant losses of animals (K. Berry), where to date only 41% of a subset of monitored translocated desert tortoises have survived since being moved in the spring of 2008 as part of the Fort Irwin translocation effort. The Scientific Advisory Committee of the U.S. Fish and Wildlife Service’s Desert Tortoise Recovery Office has concluded that

“translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a

¹ Brown and Minnich 1986, Lovich and Bainbridge 1999, Brooks 2000, Brooks and Draper 2006, Brooks and Minnich 2007

² Ducher 2009

³ USFWS 2009

management option. When considered, translocation should be part of a strategic population augmentation program, targeted toward depleted populations in areas containing “good” habitat. The SAC recognizes that quantitative measures of habitat quality relative to desert tortoise demographics or population status currently do not exist, and a specific measure of “depleted” (e.g., ratio of dead to live tortoises in surveys of the potential translocation area) was not identified. Augmentations may also be useful to increase less depleted populations if the goal is to obtain a better demographic structure for long-term population persistence. Therefore, any translocations should be accompanied by specific monitoring or research to study the effectiveness or success of the translocation relative to changes in land use, management, or environmental condition.”⁴

. Translocation may be appropriate as a tool to augment populations within depleted recovery units. While it maybe an impact minimization strategy it is not a successful mitigation strategy.

The Western Recovery Unit for the desert tortoise is the largest and most heterogeneous unit.⁵ Recent genetics investigations indentified three unique genotypes occurring within the Western Mojave Recovery Unit.⁶ In 1994, the Western Mojave unit was the only recovery unit that showed a statistically significant downward trend in population.⁷ The latest data from FWS on the trend in population shows an additional 23% decrease between 2005 and 2007 in the West Mojave Recovery Unit (as well as decreases in every other recovery unit).⁸ We also note that the project site lies in the same recovery unit as the ill-fated Fort Irwin desert tortoise translocation referenced above, which is also causing continuing additional significant mortality since 2008. The proposed project site supports a robust density of desert tortoises with good population age distribution that is actively reproducing in a genetically unique area of the Western Mojave Recovery Unit, whose general population has been on the decline for decades and continues to do so. In other words, the proposed project site is a success story for a species that is otherwise slipping closer to extinction.

Currently, it is our understanding that additional spring surveys are being undertaken for desert tortoise on the project expansion areas to the north of the original project footprint. It is unknown how many tortoise currently reside on the project site. No relocation/translocation plan has been provided for public review and recipient relocation/translocation areas have not been identified. Clearly site selection and the alternatives analysis comes into play here - selecting a better site for project implementation that is not in desert tortoise habitat or that is in lower quality habitat would eliminate the need for expensive and to-date unsuccessful relocation/translocation.

⁴ http://www.fws.gov/Nevada/desert_tortoise/documents/sac/20090313_SAC_meeting_summary.pdf

⁵ FWS 1994

⁶ Murphy et al. 2007

⁷ FWS 1994

⁸ FWS 2009

When a Relocation/Translocation plan is developed for the project all recommendations in the Desert Tortoise Recovery Plan⁹ regarding relocation/translocation should be incorporated into that document and it should be circulated for public review and comment.

In addition to the avoidance and minimization measures and translocation efforts, adequate mitigation at a rate of at least 5:1 to off-set the impacts to this unique location and high quality habitat for desert tortoise is required. In order to accurately mitigate for the unique desert tortoise population that will be affected by the proposed project, the mitigation needs to occur as close to the proposed project site as possible and before or simultaneously with project site development—mitigation should not lag behind development. Moreover, any mitigation/translocation/relocation sites need to be protected from other threats to the tortoise including future development, roads, and grazing and must be preserved in perpetuity. As staff is already aware, previous mitigation sites are now being proposed for renewable energy projects (CEC-700-2010-009-SA-DEIS [Calico] at pg. C.2-3) – essentially mooting the point of mitigation in perpetuity. Similarly, renewable energy projects have been proposed on lands that were donated to the BLM for conservation undermining the intent of the donors.

D. Mohave Ground Squirrel

The SA provides a good review of the existing conditions on the site and impact analysis from the proposed project, based on the proponent's agreement to recognize the site as occupied habitat for the Mohave ground squirrel (MGS) in order to avoid the expense and effort needed for appropriate surveys. As stated above, we agree with the SA that the impacts to the MGS from the project are significant and unmitigable and that the project should be denied. Connectivity is key to recovering MGS populations through their limited historic range. Further fragmentation of their habitat will increase isolation of existing populations. Conservation of the existing corridor between the Dixie Wash and Edwards Air Force Base along Highway 395, which includes the proposed project site, is recommended as an essential conservation strategy.¹⁰ In particular, the loss or restriction of movement corridors for MGS on this site could have long-term impacts to MGS survival and recovery.

As with the desert tortoise, these comments address the mitigations proposed in the SA. As discussed at the workshop on May 4, 2010, translocation/relocation of MGS is an experimental technique that is not a proven success. (P. Leitner). Recognizing that trapping and relocation is proposed as an avoidance measure, it is still unclear how successful this avoidance measure will be since there is currently no estimate of MGS density on the projects site (because no surveys were undertaken). However, the fact that 77% of the project site is considered medium to high quality habitat (SA at pg. 3.2-34), is evidence that the numbers of MGS individuals affected could be quite high. Clearly trapping and relocation would need to take place at an appropriate time of year when the MGS are most active and again when the young are dispersing.

E. Other Rare Species

⁹ FWS 1994

¹⁰ Leitner 2008

We remain concerned about the evaluation of impacts to the burrowing owl. Burrowing owls are not evenly distributed across the California deserts. The seven active burrows, at least one with juveniles and an additional four individuals (SA at pg. C.2-32) appears to represent a substantial number of burrowing owls for the northern Mojave desert area. Preliminary results from the 2006-7 statewide census identified very few burrowing owl pairs in the northern Mojave desert - only one pair out of 64 survey blocks.¹¹ The SA fails to evaluate the potential impact of the proposed project on the northern Mojave regional distribution of owls.

While “passive relocation” does minimize immediate direct take of burrowing owls, ultimately the burrowing owls’ available habitat is reduced, and “relocated” birds are forced to compete for resources with other resident burrowing owls and may be moved into less suitable habitat.

Additional survey information on golden eagle usage of the site needs to be included. While golden eagles are likely to use the site (SA at pg. C.2-26), it is unclear how close current nest sites are to the proposed project site and if/how golden eagles use the site for foraging, especially while rearing chicks, when foraging areas are reduced in size.¹² Golden eagles have also been documented to avoid industrialized areas that are developed in their territory.¹³ Because of the density of golden eagles in the general area, the SA needs to analyze the displacement of on-site territory. Decreasing the foraging area for golden eagles will likely result in a decrease in the number of eagles that can be supported by the remaining habitat.

As discussed at the workshop, cooling ponds are now being proposed on the project site—a significant change in the project description that was not addressed in the SA. Surface water in the desert is a magnet for wildlife and, therefore, a supplemental SA will be needed to address this issue as well as others. The supplemental SA must clearly identify the change in the project and analyze the impacts to wildlife including but not limited to migratory and resident birds and bats.

F. Water Resources

Because water is such a rare resource in California’s deserts and is being depleted by both development and changes in rainfall patterns, its availability is of concern for wildlife resources, especially groundwater overdraft. The mitigation options (SA at pg. C.9-28), that the staff has asserted are feasible, are in fact questionable. For example, “Water Supply through the LADWP” - no firm commitment is presented that LADWP would be interested or able to supply water to offset the groundwater pumping. The “cash for grass” xeriscaping of residential and commercial landscaped areas, appears to be a voluntary program and therefore can not be relied upon to mitigate for groundwater pumping. The same concern is true of the only other proposed mitigation – fallowing of agricultural land within the basin – relinquishment of water use for such programs is voluntary. In sum, the SA does not show that mitigation is feasible for the likely impacts of the proposed project’s projected water use.

¹¹ IBP 2008.

¹² Marzluff et al. 1997

¹³ Walker et al. 2005

Waters of the State: The SA indicates that the number of acres of Waters of the State that would be impacted by the proposed project are unknown (SA at pg. C.2-57). The impacts to streambeds and washes which are a critical component of this desert habitat must be fully evaluated. Again, the lack of information and evaluation indicates that the SA is incomplete and a supplemental SA that includes these and other important data must be prepared and circulated for public review.

G. Cumulative Impacts are Not Fully Disclosed and Analyzed

CEQA requires not only full disclosure of cumulative impacts but a full and fair effort on the part of the agency to first avoid such impacts, and then to ensure any remaining impacts are minimized and mitigated. While we agree with the staff conclusions that not all cumulative impacts can be mitigated, the SA suffers from a lack of adequate identification and analysis of these issues.

The cumulative impacts section needs to be updated to include additional projects that are currently going through CEQA review in the general area of the RSPP. Several projects are proposed in Kern County on undisturbed private lands that are not included in the cumulative analysis list including Mojave Solar (both the Barren Ridge project and the Cal City project), the Ridge Rider project and the Weldon solar projects¹⁴. In San Bernardino County, the Lightsource project near Kramer junction is also proposed on undisturbed private lands where desert tortoises occur¹⁵. Clearly there could be additional impacts to the desert tortoise, MGS and other rare species, as well as to water resources and other resources from these projects and all of these impacts need to be evaluated in a supplemental SA.

One focus for the cumulative impacts is to look at projects and other impacts (off-road vehicles impacts for example) within the confines of the western Mojave desert, and the cumulative impact on the western Mojave Recovery Unit for the desert tortoise, which as stated above is continuing to decline.

Additionally, the cumulative impacts need to identify the impacts to desert tortoise and MGS and other rare species that may occur due to translocation/relocation efforts associated with the cumulative projects. As the other potential projects get implemented, it will push higher and higher numbers of desert tortoises and other species into smaller and smaller areas and more fragmented habitat.

III. CONCLUSION

For this and future proposed projects, mechanisms should be put in place that encourage solar facilities to be sited on disturbed lands instead of in fully ecologically functioning occupied habitat such as is found on the RSPP site, which supports a variety of rare and threatened species.

¹⁴ <http://www.co.kern.ca.us/planning/noticeprep.asp>

¹⁵ <http://www.co.san-bernardino.ca.us/landuseservices/Public%20Notices/Projects/Projects.htm>

We hope and expect that the Commission will carefully consider all meaningful alternatives and go beyond the admittedly "preliminary" information provided in the SA. The agency should revisit these issues in detail and provide a full range of alternatives as part of a supplemental SA for public review.

Thank you for the opportunity to submit these comments, and we look forward to participating in the process as it moves forward. Please feel free to contact me for additional information at 323-654-5943 or at ianderson@biologicaldiversity.org

Best regards,



Ilene Anderson
Biologist/Desert Program Director
Center for Biological Diversity

References:

Brooks, M.L. 2000. Competition Between Alien Annual Grasses and Native Annual Plants in the Mojave Desert. *Am. Midl. Nat.* 144:92-108

Brooks, M. L. and J. V. Draper. 2006. Fire effects on seed banks and vegetation in the Eastern Mojave Desert: implications for post-fire management, extended abstract, U.S. Geological Survey, Western Ecological Research Center, Henderson, Nevada, 3 p.

Brooks, M.L. and R.A. Minnich. In Press. Fire in the Southeastern Deserts Bioregion. Chp 16 in: Sugihara, N.G., J.W. van Wagtenonk, J. Fites-Kaufman, K.E. Shaffer and A.E. Thode (eds.). *Fire in California Ecosystems*. University of California Press, Berkeley.

Brown, D.E. and R. A. Minnich. 1986. Fire and changes in creosote bush scrub of the western Sonoran Desert, California. *American Midland Naturalist* Vol. 116: 411-422

Dutcher, K. E. 2009. The effects of wildfire on reptile populations in the Mojave National Preserve, California. Final Report to the National Park Service, California State University, Long Beach, 28 p.

Institute for Bird Populations (IBP) 2008. Breeding Burrowing Owl Survey Newsletter, Spring 2008. pgs.4.

Lovich, J. E., and D. Bainbridge. 1999. Anthropogenic Degradation of the Southern California Desert Ecosystem and Prospects for Natural Recovery and Restoration. *Environmental Management* Vol. 24, No. 3: 309-326

Marzluff, J.M., S.T. Knick, M.S. Vekasy, L.S. Schueck and T.J. Zariello. 1997. Spatial Use and Habitat Selection of Golden Eagles in Southwestern Idaho. *The Auk* 114(4): 673-687.

Murphy R.W., K.H.Berry, T. Edwards and A.M. McLuckiel. 2007. Genetic Assessment of the Recovery Units for the Mojave Population of the Desert Tortoise, *Gopherus agassizii*. *Chelonian Conservation and Biology* 6(2): 229-251.

United States Fish and Wildlife Service

1994 Desert tortoise (Mojave population) Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. 73 pages plus appendices.

2009. Range-wide Monitoring of the Mojave Population of the Desert Tortoise: 2007 Annual Report. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. Pgs. 77.

Walker, D., M. McGrady, A. McCluskie, M. Madders and D.R.A. McLeod 2005. Resident Golden Eagle Ranging Behaviour Before and After Construction of a Windfarm in Argyll. *Scottish Birds* 25: 24-40.

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CALIF. DESERT DISTRICT
MORENO VALLEY, CA

April 29, 2010

Eric Solorio
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

RE: Ridgecrest Solar Power Project (RSPP), Docket No. 09-AFC-9, Response to Daniel Burnett email regarding the potential for UXO hazards on the RSPP Site.

Dear Mr. Solorio:

Attached please find our response to Mr. Burnett's April 27, 2010 e-mail entitled "SAFETY ITEM Unexploded ordinance - Alice Karl document". This has been docketed in accordance with CEC requirements.

If you have any questions, please feel free to contact me at 510-809-4662 (office) or 949-433-4049 (cell).

Sincerely,



Billy Owens
Director, Project Development



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 *RIDGECREST SOLAR*
POWER PROJECT

Docket No. 09-AFC-9

PROOF OF SERVICE
(Revised 4/12/2010)

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DECLARATION OF SERVICE

I, Elizabeth Copley, declare that on April 29, 2010, I served and filed copies of the attached Ridgecrest Solar Power Project (Docket No. 09-AFC-9) Response to Daniel Burnett email regarding the potential for UXO hazards on the RSPP Site. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

[\[http://www.energy.ca.gov/sitingcases/solar_millennium_ridgecrest\]](http://www.energy.ca.gov/sitingcases/solar_millennium_ridgecrest)

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

(Check all that Apply)

For service to all other parties:

- sent electronically to all email addresses on the Proof of Service list;
- by personal delivery;
- by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

For filing with the Energy Commission:

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

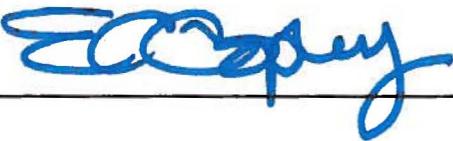
OR

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

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 09-AFC-9
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

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



To: Billy Owens
Subject: RE: SAFETY ITEM Unexploded ordinance - Alice Karl document

From: Billy Owens
Sent: Tuesday, April 27, 2010 9:07 PM
To: Daniel Burnett
Cc: Eric Solorio
Subject: RE: SAFETY ITEM Unexploded ordinance - Alice Karl document
Importance: High

I appreciate the suggestion, but we had the UXO removed by the US Navy sometime ago. SM's environmental contractor found three (3)UXO and reported this to the EOD at China Lake when it was found. BLM informed SM of the history of military use of the site and the potential UXO on the site. SM personnel and contractors are required to undergo training for explosive devices prior to being permitted on the site. This is a safety precaution.

There will be an official response file formally in the future to ensure all parties we take this seriously.

Thanks again.

Billy Owens
Director, Project Development
Solar Millennium, LLC

Office: 510-809-4662
Cell: 949-433-4049

From: Daniel Burnett [mailto:imdanburnett@verizon.net]
Sent: Tuesday, April 27, 2010 11:34 AM
To: Eric Solorio; Billy Owens
Cc: Elizabeth Copley; Lisa Belenky; Terri Middlemiss; California ISO; Alice Harron; Emmerich Kevin; Tim Olson; Anthony Eggert; Scott Galati; Peter Weiner; Tanya Gulesserian; Basin and Range Watch; Jennifer Jennings; Janet Eubanks; Brenda Burnett; Sidney Silliman; Michael J. Connor; Kourtney Vaccaro; Matthew Sanders; Ileene Anderson; James D. Boyd; Cunningham Laura
Subject: SAFETY ITEM Unexploded ordinance - Alice Karl document

Eric and Billy,

In the Alice Karl document - [Presentation from Alice E. Karl, Ph.D. - Analysis of Population and Species Impacts to the Desert Tortoise, Due to the Siting of this Project in its Current Location](#) - there is a photo (on about page 17) of what is indicated to be unexploded ordinance on the proposed RSPP site. I had discounted this as being untrue but, If this is true (which I doubt very much), I want to report it to the Explosive Ordinance Disposal Team at China Lake because it would be a very real hazard to life needing to be removed.

I believe that it is picture of a cannon round (155MM) and is very unlikely to be found at this location - (as would be the case with any unexploded ordinance). China Lake does not do much cannon work and none of it would be fired off of the base. But if this is really there we need to take steps to have it removed.

Dan Burnett
Kerncrest Audubon Society

From: [Janet Eubanks](#)
To: [Hector Villalobos](#); [Paul Rodriquez](#)
Cc: [Florence Smith](#)
Subject: Fw: Solar Millennium Ridgecrest - Comment Period
Date: 07/08/2010 11:11 AM
Attachments:

FYI,

Flo, please file with other comments.
Thanks

* ~ ~ ~ ~ * ~ ~ ~ ~ * ~ ~ ~ ~ * ~ ~ ~ ~ * ~ ~ ~ ~ * ~ ~ ~ ~ *
Janet Eubanks, Realty Specialist
U.S. Department of the Interior
Bureau of Land Management
California Desert District
22835 Calle San Juan de Los Lagos
Moreno Valley, CA 92553
(951) 697-5376 work
(951) 697-5299 fax

* ~ ~ ~ ~ * ~ ~ ~ ~ * ~ ~ ~ ~ * ~ ~ ~ ~ * ~ ~ ~ ~ * ~ ~ ~ ~ *

----- Forwarded by Janet Eubanks/CASO/CA/BLM/DOI on 07/08/2010 11:11 AM -----

Calvin.On@sce.com

07/08/2010 08:57 AM To Janet_Eubanks@ca.blm.gov
cc
Subject Solar Millennium Ridgecrest - Comment Period

Janet,
Attached is SCE's comment letter in response to Solar Millennium Ridgecrest's draft PSA/EIS. Should you have any questions going forward, please contact Hamid Arshadi for he'll be taking over as Project Manager.

His contact information is below.

Email: Hamid.Arshadi@sce.com
Phone: (626) 302-7151

Thank you.

Calvin On

Southern California Edison
Transmission Project Licensing
Tel: (626) 302-8846 / Pax 28846
Fax:(626) 302-5050 / Pax 25050
Cell: (626) 862-9419



calvin.on@sce.com Millennium Substation Final BLM Letter (07-7-10).pdf



July 8, 2010

Ms. Janet Eubanks
Project Manager
Bureau of Land Management
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553

RE: REQUEST FOR AGENCY COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED RIDGECREST SOLAR PROJECT

Dear Ms. Janet Eubanks:

Southern California Edison Company (SCE) appreciates the opportunity to review and provide comment on the Draft Environmental Impact Statement (DEIS) for the proposed Ridgecrest Solar Power Project planned by Solar Millennium LLC. The project is described as a proposal to develop a 250-megawatt (MW) solar parabolic trough power generating facility and associated infrastructure on a total of approximately 1,994 acres of land located in northeastern Kern County, along U.S. Highway 395, just west of the China Lake Boulevard exit. The site is approximately five miles southwest of Ridgecrest, California. Ridgecrest is at the southwestern boundary of the China Lake Naval Air Weapons Station (NAWS).

The DEIS indicates the power produced by the proposed project would connect to a new substation that would interconnect the project into the existing SCE owned Inyokern-Kramer Junction 220-kV transmission line that currently crosses the southwestern portion of the ROW boundary. Please note that the actual transmission line that will be interconnected to in this area is the BLM West-Kramer 220 kV transmission line. The DEIS also indicates that the existing 115 kV and 220 kV SCE-owned transmission lines would be required to relocate around the existing footprint of the proposed project. This may be subject to modification pending Solar Millennium's final solar field location and SCE's evaluation of the relocation which will be provided at a later date.

Solar Millennium LLC applied to the California Independent System Operator (CAISO) for interconnection of the Ridgecrest Solar Power Project, and requested and paid for Interconnection Studies in accordance with the CAISO Large Generation Interconnect Procedures (LGIP) Tariff.

SCE proposes to construct the Millennium Substation and associated transmission, distribution and telecommunication facilities to interconnect the Ridgecrest Solar Power project to SCE's existing BLM West-Kramer 220 kV transmission line. SCE has prepared a description of these interconnection facilities based on planning-level assumptions and this description has been provided to Solar Millennium LLC. To the extent that further detailed engineering results in significant changes to those facilities, SCE will coordinate with Solar Millennium and regulatory agencies as appropriate.

When interconnection studies indicate the need for SCE to build new or relocate existing electrical facilities that operate at or above 50 kV, SCE construction may have environmental consequences subject to CEQA review as required by the California Public Utilities Commission (CPUC). If those environmental impacts are identified and addressed in the CEQA process for the larger project, SCE may not be required to pursue a later, separate, mandatory CEQA review through the CPUC's General Order 131-D (GO 131-D) process. If the SCE facilities are not adequately addressed in the CEQA review for the larger project and/or the new facilities result in significant unavoidable environmental impacts, separate

CEQA review under GO 131-D could be required, potentially resulting in a delay of the approval of the SCE portion of the project for two years or longer, as the CEQA process is completed.

SCE's required interconnection facilities include a new 220 kV substation, transmission and subtransmission lines, distribution lines, and telecommunication facilities. A detailed description of these required interconnection facilities was included in SCE's Millennium Substation Project Description that was previously provided to Solar Millennium LLC. Inclusion of these SCE facilities in the Revised DEIS will expedite agency review of both the proposed Solar Millennium and SCE facilities for compliance with CEQA. We request that the Draft Environmental Impact Statement (DEIS) of the Ridgecrest Solar Power project include a description of all the elements the SCE facilities require for interconnection, environmental analysis of those facilities, and proposed mitigation measures where appropriate to reduce significant environmental impacts associated with SCE's facilities.

Please note that portions of SCE's proposed interconnection facilities will also cross Federal lands, requiring additional environmental review pursuant to NEPA.

We look forward to working closely with the Solar Millennium LLC and the BLM to support interconnection of this project into the CAISO grid. If you have any questions regarding this letter, please do not hesitate to contact me at (626) 302-8846 or via email at Calvin.On@sce.com.

Sincerely,



Calvin On
Licensing Project Manager
Transmission Projects Licensing, Renewables and Generator Interconnections
Southern California Edison Company

C: Ridgecrest Solar Power

Thomas Calabro, SCE
Charles Adamson, SCE
Tom Burhenn, SCE
Richard Tom, SCE
Wendy Miller, SCE
Hoorik Davoudian-Telle, SCE
Nathan Smith, SCE
Manuel Alvarez, SCE
Ryan Stevenson, SCE
Bhaskar Ray, SCE
Hamid Arshadi, SCE

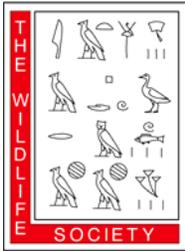
From: [Eric Solorio](mailto:Eric.Solorio)
To: CARSP@blm.gov; [Janet Eubanks@blm.gov](mailto:Janet.Eubanks@blm.gov)
Subject: Fwd:
Date: 07/06/2010 11:59 AM
Attachments: _____

>>> Jenna Jadin <Jenna@wildlife.org> 7/6/2010 10:53 AM >>>
Dear Mr. Solorio:

Please accept the attached comments from The Wildlife Society on the draft Environmental Impact Statement (DEIS) for Solar Millennium's Ridgecrest Solar Power Project (RSPP).

Thank you,
Jenna Jadin

Jenna Jadin, Ph.D.
Assistant Director of Government Affairs
The Wildlife Society
5410 Grosvenor Lane, Suite 200
Bethesda MD, 20814
p: 301.897.9770 x309
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www.wildlife.org
jenna@wildlife.org



THE WILDLIFE SOCIETY

5410 Grosvenor Lane • Bethesda, MD 20814-2197

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E-mail: twswildlife.org

6 July 2010

Eric Solorio

Project Manager

Siting, Transmission, and Environmental Protection Division

California Energy Commission

1516 Ninth Street, MS-15

Sacramento, California 95814

Email: esolorio@energy.state.ca.us and carspp@ca.blm.gov

Dear Mr. Solorio:

The Wildlife Society (TWS) appreciates the opportunity to submit scoping comments concerning the draft Environmental Impact Statement (DEIS) for Solar Millennium's Ridgecrest Solar Power Project (RSPP).

The Wildlife Society was founded in 1937 and is a non-profit scientific and educational association of over 9,100 professional wildlife biologists and managers, dedicated to excellence in wildlife stewardship through science and education. Our mission is to represent and serve wildlife professionals—the scientists, technicians, and practitioners actively working to study, manage, and conserve native and desired non-native wildlife and their habitats worldwide.

TWS believes that solar energy will be an important component of a clean-energy solution to climate change. However, we are concerned about the effects that solar projects may have on wildlife and wildlife habitat. Every form of energy development can have lasting effects on wildlife and habitat if not developed responsibly. Solar power development must take into account the potential loss of wildlife habitat in sensitive areas that house many vulnerable species. As solar power arrays continue to be developed in the Southwest, desert ecosystems are some of these sensitive areas that are increasingly under threat.

In desert ecosystems recovery from disturbances can be especially slow. Ecosystem damages that accompany energy development, such as hard-packing of the soil and destruction of plant cover, are obstacles to recovery. Compacted soil and the absence of plants' roots will prevent the soil from absorbing and holding water, further reducing water availability in an already arid environment. Disturbed habitat is also vulnerable to invasion by non-native species, which gain a competitive edge when native species are destroyed.¹ Maintenance and activity around the project site will continue to impede recovery even after construction is finished.

Roadways, an inherent feature of energy production, increase direct animal mortalities from vehicle strikes, provide access to remote areas for illegal collection of plants and animals, act as

an inroad for invasive species that thrive in disturbed areas, cause habitat fragmentation, restrict gene flow among native populations, and increase erosion.²

In respect to the RSPP project, the potential effects on the native – and threatened -- desert tortoise (*Gopherus agassizii*) are of particular concern. Native to the deserts of the American southwest, the species is recognized as having distinct populations in the Sonoran and Mojave deserts, respectively. The Sonoran population is listed as a species of concern by the Arizona Game and Fish Department, while the Mojave population was listed as threatened by the US Fish and Wildlife Service in 1990.³ The Mojave listing came after habitat loss and off-road vehicle use, along with an outbreak of upper respiratory disease, led to a decline in the tortoise population.⁴ Roads can cause significantly higher death rates, with one study finding lower population densities up to 400 meters from the road, likely as a result of car strikes.⁵ For a threatened animal like the desert tortoise, any population depressions can have devastating effects on diversity and the ultimate survival of the species.

Studies have shown that genetic diversity in the desert tortoise is likely supported by long-distance migrations of individuals between populations. Man-made obstacles, like highways and residential developments are known to decrease migration rates in animals. Keeping corridors open for exchange between populations will be critical to maintaining a healthy and diverse population, and in the event that roads must be built, fencing or barriers alongside roads can be used to guide tortoises to culverts for safe crossing.

The RSPP project would occupy 1,448 acres and create a disturbance area of 1,944 acres, all on previously undisturbed desert tortoise habitat. It has been proposed that one possible solution will be to relocate tortoises to unaffected habitat. However, a review of translocation attempts showed high mortality rates in many species,⁶ as initial capture, temporary captivity, and introduction to a new environment can all cause physiological and behavioral harm. Environmental disturbances like noise, vibration, and increased density can also cause behavioral distress, impinging on important biological functions like reproduction, foraging, and predator avoidance.⁷ A small, isolated population of tortoises with little ability to rapidly reproduce will be unable to recover from the large loss of adults that could result from translocation efforts.⁸ There are means by which the stress of relocation can be lessened, including using a “soft” release technique, where animals are kept in pens in the new habitat to acclimate before they are ultimately freed.

Because desert tortoises spend a large amount of time in underground burrows, it has been difficult to estimate the population density by direct survey.⁹ This loss of accuracy will complicate efforts to monitor tortoises’ response to development. Often, large relocations undertaken for commercial projects do not release data on the outcome of the affected populations: in the case of solar development this information will be critical in order to assess the ongoing conservation needs of the desert tortoise. Radiotelemetry will be an important tool to measure survival and determine causes of mortality as accurately as possible after release.¹⁰ The Desert tortoise is not the only native species at risk when desert is developed. The DEIS for the RSPP lists many other affected species, including the Mohave Ground Squirrel, kit fox, American badger, Loggerhead shrike, western burrowing owl, and a variety of snakes and lizards.

The Loggerhead shrike (*Lanius ludovicianus*), a songbird, is declining in the Sonoran Desert at a rate of 4.3% every year, faster than the background rate of decline for the species across North America.¹¹ Loggerhead shrikes need undeveloped open spaces to breed successfully, and could decline further if these habitats are lost.¹²

According to a BLM report on the Mohave Ground squirrel (*Spermophilus mohavensis*), urbanization and development have led to decline in the species in the Ridgecrest area.¹³ The report cites connectivity as one of the most critical elements of conserving the squirrels; small, isolated populations leave the species as a whole vulnerable to loss of genetic diversity.¹⁴ The DEIS states that impacts to the rare Mohave Ground Squirrel will be unavoidable and impossible to fully mitigate.

Climate change will imperil species across the United States and around the world. Alternative energy sources are an essential part of mitigating that change to protect our environment, but siting and development must be done carefully to ensure that the losses to wildlife and wild lands do not outweigh the benefits of clean energy. The Wildlife Society asks that you take into account these injurious effects on wildlife as you prepare the EIS for the Ridgecrest Solar Power Plant. Furthermore, it is crucial that the cumulative effects of all desert solar projects be considered: the damages of each project may be acceptable taken alone, but untenable in combination.

Thank you for considering the views of wildlife professionals. Please feel free to contact Laura Bies, Director of Government Affairs, at laura@wildlife.org or at (301) 897-9770 x 308 if you need further information or have any questions.

Sincerely,



Bruce D. Leopold, Ph.D.
President

¹ Lovich, J.E., & D. Bainbridge. 1999. Anthropogenic Degradation of the Southern California Desert Ecosystem and Prospects for Natural Recovery and Restoration. *Environmental Management* 24(3): 309–326. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/10486042> Accessed 4/22/10.

² Lovich, J.E., & D. Bainbridge. 1999. Anthropogenic Degradation of the Southern California Desert Ecosystem and Prospects for Natural Recovery and Restoration. *Environmental Management* 24(3): 309–326. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/10486042> Accessed 4/22/10.

³ Edwards, T., C.R. Schwalbe, D.E. Swann & C.S. Goldberg. 2004. Implications of anthropogenic landscape change on inter-population movements of the desert tortoise (*Gopherus agassizii*). *Conservation Genetics* 5: 485–499.

⁴ Cohn, J.P. 1996. The Sonoran Desert. *BioScience*, 46(2): 84–87. Available from: <http://www.jstor.org/stable/1312810>. Accessed: 13/05/2010

⁵ Boarman, W.I., M. Sazaki. 2006. A highway's road-effect zone for desert tortoises (*Gopherus agassizii*). *Journal of Arid Environments* 65: 94–101.

⁶ Teixeira, C.P., C.S. De Azevedo, M. Mendl, C.F. Cipreste & R.J. Young. 2007. Revisiting translocation and reintroduction programmes: the importance of considering stress. *Animal Behaviour* 73: 1–13. Available from: [sciencedirect.com](http://www.sciencedirect.com). Accessed 4/28/2010.

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- ⁷ Teixeira, C.P., C.S. De Azevedo, M. Mendl, C.F. Cipreste & R.J. Young. 2007. Revisiting translocation and reintroduction programmes: the importance of considering stress. *Animal Behaviour* 73: 1-13. Available from: sciencedirect.com. Accessed 4/28/2010.
- ⁸ Edwards, T., C.R. Schwalbe, D.E. Swann & C.S. Goldberg. 2004. Implications of anthropogenic landscape change on inter-population movements of the desert tortoise (*Gopherus agassizii*). *Conservation Genetics* 5: 485-499.
- ⁹ Nussear, K.E., C.R. Tracy. 2007. Can modeling improve estimation of desert tortoise population density? *Ecological Applications* 17(2): 579-586. Available from: <http://www.jstor.org/pss/40061879> Accessed 4/28/2010.
- ¹⁰ Teixeira, C.P., C.S. De Azevedo, M. Mendl, C.F. Cipreste & R.J. Young. 2007. Revisiting translocation and reintroduction programmes: the importance of considering stress. *Animal Behaviour* 73: 1-13. Available from: sciencedirect.com. Accessed 4/28/2010.
- ¹¹ Sauer, J.R., J.E. Hines, I. Thomas, and J. Fallon. 2001. The North American breeding bird survey, results, and analysis 1966-2000, version 2001.2. United States Geological Survey, Patuxent Wild-life Research Center, Laurel, Maryland.
- ¹² Boal, C.W., T.S. Estabrook, A.E. Duerr 2003. Productivity and Breeding Habitat of Loggerhead Shrikes in a Southwestern Urban Environment. *The Southwestern Naturalist* 48 (4):557-562. Available from: <http://www.jstor.org/stable/3672768> Accessed 13/05/2010.
- ¹³ Department of the Interior Bureau of Land Management. Mohave Ground Squirrel. For general distribution. Available from: http://www.blm.gov/ca/pdfs/cdd_pdfs/Mgs1.pdf. Accessed 6/22/10.
- ¹⁴ Meffe, G.K., C.R. Carroll, and Contributors. 1997. Principles of Conservation Biology. Sinauer Associates, Inc. Sunderland, Massachusetts.

GALATI | BLEK LLP

RECEIVED
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CALIF. DESERT DISTRICT
MORENO VALLEY, CA

April 30, 2010

California Energy Commission
Docket Unit
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: **RIDGECREST SOLAR 1, LLC'S INITIAL COMMENTS ON THE
BIOLOGICAL RESOURCES SECTION OF THE STAFF
ASSESSMENT/ DRAFT ENVIRONMENTAL IMPACT STATEMENT
DOCKET NO. (09-AFC-9)**

Enclosed for filing with the California Energy Commission is the original of
**RIDGECREST SOLAR 1, LLC'S INITIAL COMMENTS ON THE BIOLOGICAL
RESOURCES SECTION OF THE STAFF ASSESSMENT/ DRAFT ENVIRONMENTAL
IMPACT STATEMENT**, for the Ridgcrest Solar Power Project (09-AFC-9).

Sincerely,



Marie Mills

Scott A. Galati
David L. Wiseman
GALATIBLEK LLP
455 Capitol Mall
Suite 350
Sacramento, CA 95814
(916) 441-6575

STATE OF CALIFORNIA

Energy Resources
Conservation and Development Commission

In the Matter of:

Application for Certification for the
RIDGECREST SOLAR POWER
PROJECT

DOCKET NO. 09-AFC-9

**RIDGECREST SOLAR 1, LLC'S INITIAL
COMMENTS ON THE BIOLOGICAL
RESOURCES SECTION OF THE STAFF
ASSESSMENT/DRAFT
ENVIRONMENTAL IMPACT
STATEMENT**

BIOLOGICAL RESOURCES

Page C.2-1

The Staff Assessment states that: (1) the RSPP site supports unique habitat and biological resources, and a high concentration of desert tortoise (DT); (2) represents an important geographic area that supports genetic linkage between populations of Mohave ground squirrel (MGS); and (3) the qualities of the site to support high DT concentrations and MGS habitat and population connectivity are unique and irreplaceable, and consequentially project impacts cannot be fully mitigated.

The Applicant's detailed responses regarding DT densities and importance of the RSPP site for DT are provided in the attached white paper prepared by Dr. Alice Karl, dated April 27, 2010.

The conclusions in the Staff Assessment regarding the importance of the RSPP site for MGS are largely unsubstantiated and conclusory. The Staff Assessment presents no empirical data or other substantial evidence (e.g., comparative habitat assessments or population data for nearby lands) to demonstrate that the site is "irreplaceable," particularly unique, or critical for local or regional MGS viability. As discussed below, the Staff Assessment also overestimates the potential impacts of the project on MGS with predictions that the project would "result in isolation of MGS population" and "lead to

excessive inbreeding." Without any site-specific MGS population data to support these conclusions, they can only be viewed as purely speculative. In addition to presenting unsubstantiated conclusions, the Staff Assessment is biased in that it presents only data that supports the conclusions that impacts on MGS would be so severe that they would be unmitigable.

Prior to development of the Staff Assessment, the Applicant provided CEC with an objective analysis regarding potential impacts that including the following factual information. MGS has not been previously documented within the Project area and no MGSs were detected within the Project area during wildlife surveys conducted during 2009, although no presence/absence trapping surveys were conducted as part of the RSPP site assessment. Because MGS trapping was not expected to accurately reflect MGS occurrence (or lack of occurrence) in the Project area given the species' tendency for dynamic population fluctuations in known occupied areas, and because the Applicant has chosen to assume that MGS is present on the site, a habitat assessment in lieu of trapping was conducted by Dr. Phil Leitner to quantify and map MGS habitat within the Project disturbance area and surrounding right-of-way (Leitner 2009). Dr. Leitner is an expert on the life history and habitat associations of MGS. The MGS habitat assessment included a visual evaluation of conditions within the Project area as well as at numerous locations in the vicinity where MGS have been previously documented (Leitner 2009). Of the 1,922.6 acres of the RSPP disturbance area mapped as potentially suitable for MGS, only 5% (102.6 acres) was identified as potentially high-quality habitat. Potentially high-quality areas are concentrated along El Paso Wash and a smaller wash in the southwest corner of the site. As discussed in the Page C-2.35 MGS habitat discussion, below, the current Project design avoids these areas to protect high-quality habitats and maintain north-south habitat connectivity for MGS through the site.

The Applicant has proposed compensatory mitigation that is intended to fully mitigate impacts to DT and MGS, meets or exceeds West Mojave Plan mitigation requirements, and is expected to be feasible. The Staff Assessment provides no substantial evidence for its opinion that project impacts to MGS habitat on the RSPP site, which includes a relatively low proportion of high-quality MGS habitat, cannot be fully mitigated.

The Applicant provides additional information in response to the Staff Assessment's conclusions regarding MGS habitat connectivity, below under the discussion of Page C-2.35.

Page C.2-1

The SA states that "The project site supports a high concentration of the state and federal listed desert tortoise (DT)." Please see the attached white paper prepared by Dr. Alice Karl, dated April 27, 2010 regarding DT density on the Project relative to elsewhere in the West Mojave based on current datasets. We request that the Setting/Existing condition section be revised to reflect this more detailed analysis of the DT status on site within the regional context (see comment on this topic for page C.2-20 below).

Page C.2-1

The text states that [the project site]... "represents an important geographic area which supports genetic linkage between populations of the state listed threatened Mohave ground squirrel (MGS)". There is very little data or evidence currently available regarding

MGS population connectivity and genetic exchange. Studies to support this claim have not been conducted for the site or adjacent lands. The text should therefore be revised to "[the project site] represents **"a potentially"** important geographic area which **could support** genetic linkages between populations of the state listed threatened Mohave ground squirrel (MGS)."

Page C.2-17, Desert Tortoise

The text states that "Further, the Mojave population [of DT] can be subdivided genetically into several separate genetic units, each ecosystem based." This statement does not have a reference cited and is not supported by information presented in the revised recovery plan (USFWS 2008). The recovery plan suggests a very contiguous population genetically even across many recovery units-isolation by distance gene flow is the dominant genetic pattern observed in the DT population (see page 51 of USFWS 2008). The recovery plan says that there could be some sub-structuring, but to be cautious in that interpretation. The DT Recovery Plan states: "There also may be some sub-structuring within the Western Mojave Recovery Unit (Murphy et al. 2007), which may be an artifact of discrete sampling within generally continuous habitat (Allendorf and Luikart 2007:400). In addition, up to 40 percent of individuals were incorrectly assigned to the appropriate subpopulation in assignment tests; habitat in California was well connected prior to human development, allowing gene flow to occur over long geographic distances and multiple vegetation types (Murphy et al. 2007)". We recommend that the statement in the SA be replaced with the 2 sentences from the DT recovery plan reproduced above.

C.2-18, Desert Tortoise.

Table 3 displays a comparison of DT density observed on the RSPP site to the "average" DT density reported from the USFWS line distance sampling (LDS) across all sample units within the West Mojave Recovery Unit (RU) over the past several years. Please refer to Dr. Alice Karl's white paper (attached) for a detailed response to this density comparison methodology. In addition, the RSPP density estimate used in the comparison should be revised from 9.8/km² to the updated value of 8.2 adult DT/km², with an explanation for the change (only adult DT > 160mm midline carapace length are to be included in the abundance/density estimate).

Page C.2-19, Estimation of Desert Tortoise Abundance

The SA reports that the ratio of juvenile to adult DTs at the RSPP site is greater than at other nearby sites: "This is a higher percentage of juveniles than was reported for the El Paso and Red Rock studies or the Jawbone-Butterbret Area of Critical Environmental Concern (ACEC) study." However, no data on those ratios/percentages is presented, nor a reference. Please report the data or the reference.

The number of DTs found above ground should be revised from 28 DTs to 23 adult DTs. The original value was reported in the AFC erroneously and included DTs of unknown size classes, abundance estimates are only supposed to be based on adult DTs greater than 160mm midline carapace length. The Application for Certification (AFC; AECOM 2009) reports 9.8 adult tortoises per km², but the density was revised to 8.1 based on subsequent data analysis. The preliminary estimated adult DT abundance and associated density reported in AFC (69 adult DTs were estimated, corresponding to 9.8 DTs/km²) included five observations of DTs of unknown size class in the calculation. These DTs of unknown size class were subsequently removed

from the calculation and estimates were revised (57 adult DTs were estimated, corresponding to 8.1 DTs/km²) prior to submittal of the Applicant's Responses to CEC Data Requests in January, 2010. As specified in the USFWS protocol, only tortoises that are greater than 160-millimeters (mm) midline carapace length (MCL) are to be used to estimate tortoise abundances within the survey area. This is because the parameters used in the equation are based on USFWS range-wide monitoring data collected for adult tortoises greater than 160-mm MCL (USFWS 2009); therefore estimated abundance calculations are valid only for adult DTs within this specified size class.

Page C.2-20. Desert Tortoise

The SA states: "The entire BRSA contains suitable habitat for DTs." Please revise to: "The entire BRSA contains suitable habitat for DTs, with the exception of developed areas."

Page C.2-22. Mohave Ground Squirrel.

Several statements on this page should be revised for additional clarification. 1) "As a result of these considerations, the applicant has chosen to assume presence of the species over the entire project site **where suitable habitat** occurs (SM 2009a)." 2) "In summary, the entire original proposed project site consists of suitable MGS habitat, **with the exception of steep rocky terrain in the central-eastern and southern portions of the project site** (SM 2009a). **However, these areas of steep terrain may be suitable for dispersal by MGS juveniles (Leitner, personal comm.)**. This reference to Phil Leitner was taken from the MGS Draft Conservation Strategy.. (Page 3); and 3) "Biologically, the habitat south and north of Brown Road is ~~the same~~ **similar and both include areas** of high value for MGS. ~~Therefore, the entire proposed project site likely represents suitable habitat for MGS.~~"

C.2-23. Mohave Ground Squirrel.

The first 2 sentences in the second paragraph on Habitat Connectivity is not specific to MGS (.e.g., MGS do not make seasonal migrations), and is not consistent with the main topic of the rest of the paragraph. We suggest revising these two (2) introductory sentences, and moving them up to follow after the end of the second paragraph under the MGS heading on page C.2-21, as they are relevant to the life history of the species. Recommended revised statement is as follows: "**MGS is a resident (i.e., non-migratory) species that occupies a relatively small home range; home range size averages approximately 0.91 acre and varies from 0.25 to 2 acres. The proposed RSPP site could be used by MGS for relatively short-distance movements, primarily dispersal (e.g., juvenile animals from natal areas, or individuals extending range distributions), and movements related to home range activities (e.g., foraging for food or water; defending territories; or searching for mates, breeding areas, or cover).**"

Page C.2-23. Mohave Ground Squirrel.

The second half of the habitat connectivity paragraph is missing some important relevant information about the state of the science regarding MGS movements and connectivity. This paragraph makes it sound as if it is known that the RSPP site is a corridor for MGS movement, which is highly speculative. Somewhere near the end of this paragraph, we suggest inserting the following text from the BRTR which emphasizes the state of the science on MGS movements and connectivity **"However, no studies have been conducted to determine to what extent past habitat loss and fragmentation in the vicinity of Ridgecrest may have altered MGS historic movement patterns. Additionally no detailed studies have been conducted on MGS movements in this area in general.** We also suggest revising the introductory sentence of this paragraph to: **"A review of the spatial context of the proposed RSPP site in relation to known populations in the Project vicinity** ~~MGS studies have identified~~ indicate that the proposed RSPP site as **may be a potentially a valuable habitat linkage for MGS."**

The SA states that there is only a narrow corridor (2.5 miles) available for MGS dispersal between north and south MGS known populations. As indicated above, this is highly speculative. Phil Leitner has indicated that juvenile MGS may use rocky, lower suitability habitat for dispersal; therefore, we request that this information be added into the discussion here. We request including the following statement (from the RSPP BRTS) prior to the last sentence in this section on Habitat Connectivity: **"However, steep rocky terrain occurring in the vicinity of the Project site may support dispersing juvenile MGS (Leitner 2009), perhaps widening the potential area for population linkages in the vicinity of the Project site."** In addition, the El Paso Wash is open between the solar array fields so dispersal could continue assuming this is an MGS corridor.

Page C-2. 24. Western burrowing owl.

For clarity, we suggest revising the following statement: "Seven active burrowing owl burrows were located on the project site in three separate regions of the BRSA, including five main or nest burrows and two satellite burrows; **all of these except one main burrow are located in the current disturbance area.**"

Page C.2-27. Kit Fox.

While adult kit foxes were not mentioned in the Project AFC they were detected in association with 2 of the 3 active complexes in which pups were also detected; therefore please add the following text: " A total of 75 burrows and burrow complexes were found within the original disturbance area, including 4 active complexes ~~and 3 complexes that,~~ **3 of which had pups. Adult kit foxes were also detected at 2 of the complexes with pups.**"

Page C.2-32. Impacts Western Burrowing Owl.

Data in the impacts section is not consistent with info in the setting section, or with AECOM reported results for WBO. Please revise the following statement to be consistent with the AFC: ~~"Seven Six~~ **Six** active burrows with at least one pair with juveniles and four individual owls were found within the original proposed disturbance area. An additional pair ~~and four additional individuals were with juveniles was~~ **found within the original buffer area."**

The SA should reference measure BIO-12 also for compensation for loss of WBO habitat, reducing impacts to WBO to less than significant.

Page C.2-34. Impacts Badger and Kit Fox.

Info reported regarding 2009 survey result for kit fox is inaccurate. While the AFC never reported adult kit fox detections, adult kit foxes were detected in association with 2 of the complexes that had pups. Please replace the following statement "Adult foxes were not observed during focused surveys in 2009." with **"Adult foxes were observed in association with 2 of the active complexes with pups."**

Page.C.2-34. Impacts MGS.

Please revise the following to be consistent with data presented in the AFC and habitat assessment produced by Phil Leitner: "The entire 1,944 -acre proposed RSPP project site is suitable habitat for the California threatened Mohave ground squirrel (MGS), **with the exception of steep rocky Terrain (approximately 13 acres) in the central-eastern and southern portions of the Project site. However, these areas of steep terrain may be suitable for dispersal by MGS juveniles (Leitner, personal communication).**

Page C-2.35, First Paragraph (Mohave Ground Squirrel Salvage Trapping and Translocation)

The Staff Assessment states that salvage trapping and translocation of MGS should occur prior to grading, to minimize fatalities to MGS. As described in the Data Request Responses provided on January 25, 2010, Dr. Phil Leitner, an expert on the life history of the MGS, has expressed serious concerns regarding the effectiveness of any attempt to translocate this species. Nonetheless, the Applicant directed Dr. Leitner to prepare a translocation plan to comply with the Data Requests. This MGS translocation plan is included in Data Request Response DR-BIO-59. Dr. Leitner incorporated many of his concerns regarding MGS translocation into his response. Based on these concerns, the feasibility of implementing an effective translocation program appears to be highly questionable. The Applicant is committed to implementing reasonable avoidance and minimization measure to reduce Project impacts to MGS. However, rather than attempting to implement a translocation program that would have little, if any, chance of success, the Applicant proposes to proceed with grading without trapping, recognizing that any incidental take of MGS must be covered by a California Endangered Species Act (CESA) incidental take permit and compensatory mitigation and associated securities would be required to satisfy CESA.

Page.C.2-35. Impacts MGS.

Please clarify: "The applicant's biologist, **Dr. Phil Leitner (local MGS expert)**, doubts the feasibility of implementing a translocation plan for MGS."

Page C-2.35, Second Paragraph (Mohave Ground Squirrel Habitat Connectivity)

The Staff Assessment states that: (1) the RSPP would substantially reduce connectivity between the core MGS population to the west (Little Dixie Wash) and the population to the east (Ridgecrest area), and between the Olancho core population to the north and populations to the south; and (2) the project will result in isolation of MGS populations and lead to excessive inbreeding and decrease their ability to withstand random catastrophic events or disease, which could cause the reduction or elimination of these populations.

The Applicant understands that maintaining MGS habitat connectivity is important for regional viability. In the Project AFC and preliminary Habitat Mitigation and Monitoring Plan, the Applicant acknowledges potential impacts of the RSPP on MGS habitat connectivity, and proposes compensatory measures to fully mitigate this potential impact. The Applicant has also responded to Agency staff concerns about connectivity that were expressed in 2009, by redesigning the RSPP to avoid high-quality MGS habitat, including the El Paso Wash. The Project redesign also included reconfiguring the solar fields to avoid a smaller wash in the southwest corner of the RSPP site that has been identified by Dr. Leitner as providing high-quality MGS habitat. In combination, these design modifications would provide adequate MGS habitat connectivity through the RSPP. In addition, BLM land located east and west of the RSPP is expected to remain suitable for MGS movement for the foreseeable future. Thus, habitat connectivity would be retained through the RSPP, as well as east and west of the RSPP, which would continue to provide potential north-south movement opportunities for MGS. For reasons unknown, the Staff Assessment declined to acknowledge these facts.

The Staff Assessment implies that the existing RSPP site is the only potentially suitable corridor for movement between MGS populations; it does not recognize other potential areas for connectivity that exist and have been identified on various maps. For example, Figure DR-58-4 of the Data Request Responses, which was prepared in collaboration with Dr. Leitner, and Biological Resources Figures 4 and 5 of the Staff Assessment, show the RSPP site in relation to potential east-west and north-south MGS habitat linkages. Even with construction of the RSPP, undeveloped areas to the north of the RSPP would remain and connect MGS populations to the west and east. As shown in the figures, these undeveloped areas to the north provide a wider and more direct connection between MGS populations to the west and east than the RSPP site, which is positioned slightly to the south of these populations as mapped.

The Staff Assessment does not acknowledge that north-south connectivity through El Paso wash, which supports most of the high quality MGS habitat found on the RSPP site, would be maintained. While construction of the Project would result in loss of suitable MGS habitat, the recent reconfiguration of the Project would avoid El Paso Wash. This would provide a north-south habitat connection through the wash and would allow wildlife movement through the Project area. Reconfiguration has also resulted in reduced impacts to another wash in the southwest corner of the Project area, allowing for an additional north-south habitat corridor along the western edge of the Project area. These two connections are shown in the figures. While the Project would clearly result in some habitat loss and fragmentation, habitat connectivity would be maintained within the Project area. In addition, north-south habitat corridors exist along both the west and east boundaries of the Project area that can provide connectivity. It should be possible to maintain linkages from Indian Wells Valley to the south even with construction of the RSPP. Additionally, opportunities for MGS movement around the perimeter of the Project area would remain, as would suitable habitat, after Project construction.

The Staff Assessment states that mountains near the RSPP site create natural barriers to MGS movements, and the RSPP site's low-relief topographic position makes it a "visible funnel" for north-south MGS movement. Although MGS typically occurs in flat to moderate terrain, dispersing juveniles can traverse steep terrain ("Draft Mohave Ground Squirrel Conservation Plan"; Desert Managers Mohave Ground Squirrel Working Group [unpublished] *citing* Leitner, pers. comm.); and the steeper terrain adjacent to the RSPP could possibly be used by juvenile MGS for dispersal ("Ridgecrest Habitat Assessment",

Leitner 2009). Therefore, the extent to which natural landscape features near the RSPP site function as genetic barriers is unknown. It should also be noted that mountainous terrain runs east-west between the RSPP and MGS populations to the south. If this type of terrain functions as a movement barrier between MGS populations as Staff has stated, movements between populations north and south of the RSPP site would be impeded or impaired under existing conditions; and the importance of the RSPP site in the context of north-south MGS population connectivity may be diminished.

While the Staff Assessment chose to present only information supportive of its conclusions, what is most concerning is that the effects of reduced connectivity are unsubstantiated and based on speculation. For example, no scientific evidence is presented in the Staff Assessment to support the statement that the project will result in isolation of MGS populations and lead to excessive inbreeding. Given the paucity of empirical data on MGS dispersal, genetic exchange, regional movement patterns and requirements, and use of the RSPP site by resident or dispersing MGS, the dire prediction presented in the Staff Assessment raises concerns regarding the objectivity of the analysis.

Page C.2-37. Impacts Desert Tortoise.

Again the adult DT abundance estimate needs to be revised. See the same response as for page C.2-19 above.

The following statement is speculative and does not acknowledge that the reconfigured project area also eliminates some area where DT was detected. Therefore, we request revising the statement to **"Estimated adult DT abundance in the current Project disturbance area will be updated"** once additional surveys in 2010 have been completed. ~~may determine DT within the current proposed disturbance area is higher than 69 because several that the actual number of hundred acres of suitable habitat have not been fully surveyed.~~

Page C.2-38. Impacts Desert Tortoise.

Update all the density estimates and discussion based on responses from above. For example, update adult DT density estimate from 9.8/km² to 8.2/km², and update any relative density conclusions (moderate/high densities). Please see the response to Page C.2-19 to explain the revision in this value.

Page C.2-38-C.2-39 Impacts Desert Tortoise. Climate Change Discussion.

The SA discusses the uniqueness of the Mojave DT population with respect to the broad range of climate conditions they can persist under relative to DT elsewhere in their range and that this could be a potentially important genetic trait to maintain in the population given the global climate change predictions. Please see Dr. Alice Karl's white paper (attached) for a discussion of other populations of DT in the vicinity of the RSPP and existing disturbance factors that may already affect populations on site.

The Applicant does not agree with the determination that project impacts are "unmitigatable". Please see the response above for Page C-2.35 which addresses maintenance of a potential movement corridor for MGS by the project redesign and Dr. Alice Karl's analysis of the site's value to the DT in the attached white paper. The project was redesigned to reduce impacts to MGS. Numerous additional avoidance and minimization measures will be employed to reduce impacts to biological resources and compensatory mitigation will be provided to compensate for impacts to DT and MGS.

Page C.2-53. Compensatory Mitigation.

The SA indicates a required mitigation ratio of 5:1 for all RSPP impact acres (in total). This is inconsistent with the mitigation ratios outlined in the WEMO Plan which require 1:1 compensation outside of Conservation Areas and 5:1 compensation within Conservation Areas. The following text is from the WEMO Plan:

Within the Habitat Conservation Area the fee would be based on a compensation ratio of 5:1 (five times the average value of an acre of land within the HCA). Outside of the HCA on lands delineated as disturbed habitat, the mitigation fee would be based on a compensation ratio of 0.5:1 (one half the average value of an acre of land within the HCA). Within all other areas outside of the HCA, the mitigation fee would be based on a 1:1 compensation ratio... The mitigation fee would not be additive where multiple species exist on site, or where conservation areas for species overlap.

A 5:1 ratio is proposed by Staff for the whole site despite the fact that only the portion south of Brown Road is within the MGS Conservation Area. The SA argues that the MGS conservation area boundary at Brown Road is biologically irrelevant and impacts should be mitigated at the same ratio on both sides of the road which are viewed as equally valuable.

The Applicant has proposed the following mitigation strategy for DT and MGS that is consistent with WEMO and accounts for varying MGS habitat quality on the portion of the site that is not within the MGS Conservation Area:

Mitigation for impacts to 1,922.6 acres of MGS habitat will consist of acquisition, preservation, and enhancement through management of a minimum of 7,078.2 acres or acreage equivalent fees to achieve a 5:1 compensation ratio for all potential habitat within the WEMO MGS Conservation Area, (impacts = 794.7 acres), a 3:1 ratio for moderate- and high-quality habitat outside the WEMO MGS Conservation Area (impacts = 988.4 acres), and a 1:1 ratio for low-quality habitat outside of the WEMO MGS Conservation Area (impacts = 139.5 acres). A 5:1 compensation ratio is proposed for low-, moderate-, and high-quality habitat within the WEMO MGS Conservation Area to maintain consistency with WEMO Plan requirements. However, the ratios required by the WEMO Plan do not account for finer scale habitat variability as demonstrated by the MGS habitat quality analysis completed for the RSPP site by Phil Leitner PhD (2009). As shown on figures submitted as part of the January 25 Data Responses, a higher concentration of low-quality habitat is present within the WEMO designated MGS Conservation Area, suggesting that a 5:1 ratio for the Project impacts in this area likely overcompensates for Project effects on the species.

Mitigation for impacts to 1,944.1 acres of DT habitat will consist of acquisition, preservation, and enhancement through management of a minimum of 5,816.5 acres or acreage equivalent fees to achieve a 3:1 compensation ratio for DT occupied habitat (impacts = 1,936.2 acres), with the exception of low quality habitat (highly disturbed, adjacent to roads) that is proposed at a 1:1 ratio (impacts = 7.9 acres). The mitigation ratio (3:1) for occupied DT habitat is consistent with current trends on large-scale solar projects (e.g., Ivanpah), though the RSPP has greater inherent threats than other solar sites and would warrant consideration of lower ratios. The mitigation ratio proposed for highly disturbed lands is also considered to be conservative as the WEMO would dictate a 0.5:1 ratio for DT impacts associated with disturbed lands.

Page C.2-55. Alternatives.

The SA analysis of all No Project Alternatives concludes no significant impacts to listed DT or MGS. However, with "no project" alternatives, there would be no compensatory mitigation implemented to preserve habitat for DT, MGS (north of Brown Rd.), and other desert species. With increased urban pressure at the RSPP, it is likely that this area will be subject to degradation over time. Please see Dr. Alice Karl's attached white paper for further discussion. Thus, the No Project Alternatives would not contribute to regional conservation and habitat management as the RSPP would with implementation of the COC. Please see the response above for Page C-2.35 regarding MGS connectivity and Dr. Alice Karl's attached white paper regarding DT populations.

Page C.2-71, Biological Resources Table 5

The footnote highlights the fact that not all of the projects which were depicted in the table will be constructed and many of them will not use the entire ROW area. Please adjust this table should to show where these projects are in the process and the ones which have not filed with any of the appropriate agencies. It would be helpful if the table identified what stage the project's are currently in.

Page C.2-88, Noteworthy Public Benefits

We recommend that this section be revised to recognize the contribution of the compensatory mitigation requirements to DT and MGS populations in the region. The RSPP would set aside and preserve more suitable lands in perpetuity that are managed for the benefit these species than the project will impact. .

Page C.2-89, Verification to Condition of Certification BIO-1

The second paragraph of the Verification to Condition BIO-1 requires submittal of the approved Designated Biologist within 7 days of receiving the Energy Commission Decision. RSI requests this be modified consistent with other conditions that measure the verification timeline "prior to" an activity such as mobilization or construction. In addition, language has been added to the verification for clarification. RSI requests the Verification be modified as follows.

The Project Applicant shall submit "to" the CPM and BLM's Authorized Officer "the approved Designated Biologist ***no less than 30 days prior to construction***" ~~within 7 days of receiving the Energy Commission Decision.~~ No construction-related or decommissioning/project closure ground disturbance, grading, boring, or trenching shall commence until an approved Designated Biologist is available to be on site.

Page C.2-94, Verification to Condition of Certification BIO-6

The first paragraph of the Verification to this Condition of Certification requires submittal of the final WEAP within 7 days of docketing of the CEC's Final Decision or BLM's ROD. RSI requests this be modified consistent with other conditions that measure the verification timeline "prior to" an activity such as mobilization or construction. We request the Verification be modified as follows.

Verification: "**No less than 30 days prior to construction**" ~~Within 7 days of docketing of the Energy Commission's Final Decision, or publication of BLM's Record of Decision/ROW Issuance, whichever comes first,~~ the Project owner shall provide to BLM's Authorized Officer and the CPM a copy of the final WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

Page C.2-94-96, Condition of Certification BIO-7

See above response regarding relocation of Mohave ground squirrel. In the first paragraph of this condition, we request removal of the Mohave ground squirrel relocation plan from the list of BRMIMP avoidance and minimization measures.

Revisions to the disturbance area calculations are currently in progress based on the project reconfiguration and updates to the alignment of linear project features, such as the ROW, transmission line, and communication lines. Updated habitat impact and disturbance area calculations will be provided to the CEC subsequent to completion of biological resource surveys currently being conducted this spring for the transmission line corridor, reconfigured project area, and additional Project Disturbance Areas not previously identified in prior surveys to date. Therefore, impacts to biological resources will be revised again and reported to the CEC in separate reports forthcoming later this spring. Because the Project Disturbance Area may be revised from that described in the SA/DEIS, RSI requests the third paragraph of the Verification to this Condition of Certification be modified as shown below.

Suggested Edits to third paragraph of the verification:

...To verify that the extent of the construction disturbance does not exceed that described in ~~this analysis,~~ **these Biological Resources Conditions of Certification**, the Project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM and BLM's Authorized Officer.

In addition, Point No. 8 in the COC and the third paragraph of the Verification to this Condition of Certification requires verification that the extent of construction disturbance does not exceed that described in the Staff Assessment by submitting aerial photographs before and after completion. Aerials can be used to verify boundaries, but they are difficult to use for acreage calculations to 10th's of an acre. We suggest using whole acreage numbers in making this comparison. Revisions to the disturbance area calculations are currently in progress based on survey and project design updates.

Suggested Edits to Point No. 8 in the COC:

...Provide a final accounting of the estimated and actual impact acreage and a determination of whether additional habitat compensation is necessary.
"Construction acreages shall be rounded to the nearest acre".

Pages C.2-96-100, Condition of Certification BIO-8

The second paragraph of the Verification to this Condition of Certification requires submittal of a Revegetation Plan no less than 30 days after the CEC issues the License or BLM issues the ROW. RSI requests this be modified consistent with other conditions that

measure the verification timeline "prior to" an activity such as mobilization or construction. We request the Verification be modified as follows.

No less than 30 days "**prior to construction**" following the publication of the Energy Commission License Decision or the Record of Decision/ROW Issuance, whichever comes first, the project owner shall submit to the CPM and BLM's Authorized Officer a final agency-approved Revegetation Plan that has been reviewed and approved by BLM's Authorized Officer and the CPM. All modifications to the Revegetation Plan shall be made only after approval from BLM's Authorized Officer and the CPM.

Pages C.2-100-103, Condition of Certification BIO-10

This condition requires tortoise exclusion fencing to be included in the permanent security fencing for the plant site and allows temporary tortoise exclusion fencing for linear features. In order to facilitate construction and meeting the ARRA funding start of construction deadline, it would be helpful to be allowed to install temporary exclusion fencing around some portion of the plant site so that clearance surveys and construction could begin within a subset of the site. In addition, transect surveys over a 90-foot width can be excessive depending upon the area of disturbance and RSI is requesting flexibility based on impact area for surveys prior to exclusionary fencing installation. Therefore RSI recommends the following modification to the proposed condition.

1. Desert Tortoise Exclusion Fence Installation. To avoid impacts to desert tortoises, permanent desert tortoise exclusion fencing shall be installed along the permanent perimeter security fence and temporarily installed along the ~~utility corridors~~ **linear features or around any subset of the plant site where construction would be localized**". The proposed alignments for the permanent perimeter fence and **alignments of temporary fencing along linear features or any subset of the plant site where construction would be localized** ~~utility rights-of-way~~ fencing shall be flagged and surveyed within 24 hours prior to the initiation of fence construction. Clearance surveys of the perimeter fence **alignment and the alignment of any temporary fencing along linear features or around any subset of the plant site where construction would be localized** and ~~utility rights-of-way~~ alignments shall be conducted by the Designated Biologist(s) using techniques outlined in the USFWS' 2009 *Desert Tortoise Field Manual*. And may be conducted in any season with USFWS and CDFG approval. Biological Monitors may assist the Designated Biologist under his or her supervision. These fence clearance surveys shall provide 100% coverage of all areas to be disturbed and an additional transect along both sides of the fence line. **"Disturbance associated with fence construction shall not exceed 30 feet on either side of the proposed fence alignment. Prior to the surveys the project owner shall provide to the CPM, CDFG and USFWS a figure clearly depicting the limits of construction disturbance for the proposed fence installation. The fence line survey area shall be 90 feet wide centered on the fence alignment. Where construction**

disturbance for fence line installation can be limited to 15 feet on either side of the fence line, this fence line survey area may be reduced to an area approximately 60 feet wide centered on the fence alignment". This fence line transect shall cover an area approximately 90 feet wide centered on the fence alignment. Transects shall be no greater than 15 feet apart. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with the USFWS'2009 *Desert Tortoise Field Manual*. Any desert tortoise located during fence clearance surveys shall be handled by the Designated Biologist(s) in accordance with the USFWS'2009 *Desert Tortoise Field Manual*.

- a. Timing, Supervision of Fence Installation. The exclusion fencing shall be installed "***in an area***" prior to the onset of site clearing and grubbing "***in that area***". The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.
2. Desert Tortoise Clearance Surveys within the Plant Site. Following construction of the permanent perimeter security fence and the attached tortoise exclusion fence, the permanently fenced power plant site shall be cleared of tortoises by the Designated Biologist, who may be assisted by the Biological Monitors. "***Portions of the power plant site may be fenced with temporary tortoise exclusion fence to facilitate construction of the power plant site in stages and in such cases the area within the temporary tortoise exclusion fence shall be cleared of tortoises.***" Clearance surveys shall be conducted in accordance with the USFWS'2009 *Desert Tortoise Field Manual* (Chapter 6 – Clearance Survey Protocol for the Desert Tortoise – Mojave Population) and shall consist of two surveys covering 100% the project area by walking transects no more than 15-feet apart. If a desert tortoise is located on the second survey, a third survey shall be conducted. Each separate survey shall be walked in a different direction to allow opposing angles of observation. Clearance surveys of the power plant site ***are encouraged to*** ~~may only be~~ conducted when tortoises are most active (April through May or September through October). "***Clearance surveys of the power plant site that contain no desert tortoise sign may be conducted throughout the year. Clearance surveys of the power plant site that are occupied (have documented desert tortoise sign) may only be conducted when tortoises are most active***". Surveys outside of these time periods "***in occupied desert tortoise habitat*** require approval (***via e-mail or authorization letter***") by USFWS and CDFG. Any tortoise located during clearance surveys of the power plant site shall be relocated and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan.

This Condition is impracticable and not biologically beneficial to the species. There is no feasible way to exclude MGS from returning to the site after being relocated. The rationale for this has been provided previously by Dr. Phil Leitner in the Data Request responses and is summarized above. See response to the Staff Assessment, Page C-2.35.

Page C.2-104, Condition of Certification BIO-12, Desert Tortoise and Mohave Ground Squirrel habitat Compensatory Mitigation and CESA Incidental Take Authorization

The discussion in paragraph 1 on Page C.2-47 of the Staff Assessment states: "Full mitigation for the loss of this high value location for DT is not possible. The loss of this high density site will result in residual effects even with the acquisition of compensation lands. If the site is permitted, the following conditions of certification will reduce impacts but not below a significant level." The Staff Assessment makes a determination that the DT habitat is of high quality with high densities of DT and that the impacts cannot be fully mitigated. The applicant does not agree with the Staff conclusions regarding the value of this resource or the unmitigable finding. For a more detailed discussion on the rationale for the Applicant's position, please see the Page C.2-35 response above and Dr. Alice Karl's attached white paper.

Condition of Certification BIO-12 provides the framework and criteria for habitat compensation and land acquisition. The applicant believes that funding of programs in lieu of strict land acquisition could provide a great benefit to the Desert Tortoise conservation and discussed such an approach in its mitigation proposals in response to Staff data requests. We understand that CDFG is considering implementing a "in lieu fee" program and advanced mitigation strategies intended for renewable energy projects seeking ARRA funding pursuant to new authorizing State legislation. While this fee is voluntary and the amount is unknown at this time, the applicant requests that the Staff revise this condition to allow flexibility in mitigation strategies beyond mere land acquisition. The applicant would like to explore alternative mitigation strategies such as those outlined in our mitigation proposal in the upcoming Staff Assessment Workshop. A fee equivalent compensation option would provide funding for recovery actions. These actions include securing habitat within desert wildlife management areas or conservation areas, rehabilitation or closure of roads within DWMA's, removal of wild horses and burros, cleanup of illegal dumps, fencing of roads, providing movement corridors under roads, and desert revegetation projects. It is reasonable that compensation could be land acquisition, equivalent fees, or a combination of lands and equivalent fees.

The applicant also requests that this condition be revised to allow the mitigation to more closely match the timing of construction. We have revised the condition for Staff's consideration in a manner to allow funding and acquisition to be independently tied to timing of construction of each power plant unit.

Requested changes to the condition are provided below.

BIO-12: To fully mitigate for habitat loss and potential take of desert tortoise, Mohave ground squirrel and other special status species, the RSPP owner shall provide compensatory mitigation at a 5:1 ratio for impacts to 1,944 acres or the area disturbed by the final Project footprint. **Mitigation may include compensation lands purchased in fee or in easement, equivalent fees, or a combination thereof.** The requirements for **compensatory mitigation** acquisition of ~~10,010~~ acres of compensation lands shall include the following:

1. **Responsibility for Acquisition of Lands:** The responsibility for acquisition of lands **"(through fee or easement)"** may be delegated by written agreement from the Energy Commission to a third party, such as a non-governmental organization supportive of habitat conservation. Such delegation shall be subject to approval by the CPM in consultation with CDFG, BLM, and USFWS, prior to land acquisition, enhancement or management activities. If habitat disturbance exceeds that described in this analysis, the Project Applicant shall be responsible for funding acquisition, habitat improvements and long-term management of additional compensation lands or additional funds required to compensate for any additional habitat disturbances. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. Water and mineral rights shall be included as part of the land acquisition. Agreements to delegate land acquisition to CDFG or an approved third party and to manage compensation lands shall be implemented within 18 months of the Energy Commission's License Decision. **"Alternatively, the project may implement/participate in the equivalent fee program"**,
2. **Selection Criteria for Compensation Lands.** The compensation lands selected for acquisition shall:
 - a. be within the Western Mojave Desert, with potential to contribute to desert tortoise and Mohave ground squirrel habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise and Mohave ground squirrel, and/or other preserve lands;
 - b. provide habitat for desert tortoise and Mohave ground squirrel with capacity to regenerate naturally when disturbances are removed;
 - c. **"to the extent feasible,"** be **"prioritized"** near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;
 - d. **"to the extent feasible"**, be connected to lands currently occupied by desert tortoise and Mohave ground squirrel, ideally with populations that are stable, recovering, or likely to recover;
 - e. not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible;
 - f. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration; and
 - g. not contain hazardous wastes.
3. **Review and Approval of Compensation Lands/"Equivalent Fee Program" Prior to Acquisition.** A minimum of three months prior to acquisition of the property **or "implementing/participating in the equivalent fee program"**, the Project

owner shall submit a formal acquisition proposal to the CPM, CDFG, USFWS and BLM describing the parcel(s) intended for purchase ***and/or the in lieu fee "or species recovery programs to be funded"***. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise and Mohave ground squirrel in relation to the criteria listed above ***"and/or the contribution to the program or fund for the recovery of the species as well as documentation of the proposed compensation equivalency"***. Approval from the CPM, in consultation with CDFG, BLM, and the USFWS, shall be required for acquisition of all parcels comprising the ***"compensation lands 10,010 acres and/or implementing/participating in the equivalent fee program"***.

4. **Commission Mitigation Security:** The Project owner shall provide financial assurances to the CPM with copies of the document(s) to CDFG, BLM, and the USFWS, to guarantee that an adequate level of funding is available to implement the Energy Commission Complementary Mitigation Measures described in this condition. These funds shall be used solely for implementation of the measures associated with the RSPP. Alternatively, financial assurance can be provided to the CPM and CDFG in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") prior to initiating ground-disturbing Project activities. Prior to submittal to the CPM, the Security shall be approved by the CPM, in consultation with CDFG, BLM, and the USFWS, to ensure funding in the amount of (TBD) be provided. This Security amount was calculated as follows and may be revised upon completion of a Property Analysis Record (PAR) or PAR-like analysis of the proposed compensation lands:
 - a. land acquisition costs for compensation lands, calculated at TBD /acre = TBD;
 - b. costs of initial habitat improvements to compensation lands, calculated at TBD/acre = TBD; and
 - c. costs of establishing an endowment for long-term management of compensation lands, calculated at TBD/acre = TBD.

5. **Compensation Lands Acquisition Conditions:** The Project Applicant shall comply with the following conditions relating to acquisition of the compensation lands after the CDFG and the CPM, in consultation with BLM and the USFWS, have approved the proposed compensation lands and received Security as applicable and as described above.
 - a. **Preliminary Report:** The Project Applicant, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary documents for the proposed ***"compensation lands" 10,010 acres***. All documents conveying or conserving compensation lands and all conditions of title/easement are subject to a field review and approval by the CPM, in consultation with CDFG, BLM, and the USFWS, California Department of General Services and, if applicable, the Fish and Game Commission and/or the Wildlife Conservation Board.

¹ The mitigation programs include potential BLM lands as defined by the REAT Agencies. REAT Agencies have proposed mechanisms such as deed restrictions, conservation easements, or right-of-way exclusion areas that would provide permanent protection for acquired mitigation lands under BLM management.

- b. Title/Conveyance: The Project Applicant shall transfer fee title or a conservation easement to the 10,010 acres of compensation lands to CDFG under terms approved by CDFG. Alternatively, a non-profit organization qualified to manage compensation lands (pursuant to California Government Code section 65965) and approved by CDFG and the CPM may hold fee title or a conservation easement over the habitat mitigation lands. If the approved non-profit organization holds title, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If the approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary. If a Security is provided, the Project owner or an approved third party shall complete the proposed compensation lands acquisition within 18 months of the start of Project ground-disturbing activities.
- c. Initial Habitat Improvement Fund. The Project Applicant shall fund the initial protection and habitat improvement of the "**compensation lands**" 40,040 acres. Alternatively, a non-profit organization may hold the habitat improvement funds if they are qualified to manage the compensation lands (pursuant to California Government Code section 65965) and if they meet the approval of CDFG and the CPM. If CDFG takes fee title to the compensation lands, the habitat improvement fund must go to CDFG.
- d. Long-term Management Endowment Fund. Prior to ground-disturbing Project activities, the Project Applicant shall provide to CDFG a non-wasting capital endowment in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis that would be conducted for the "**compensation lands**" 40,040 acres. Alternatively, a non-profit organization may hold the endowment fees if they are qualified to manage the compensation lands (pursuant to California Government Code section 65965) and if they meet the approval of CDFG and the CPM. If CDFG takes fee title to the compensation lands, the endowment must go to CDFG, where it would be held in the special deposit fund "**established solely for the purpose of managing compensatory lands in perpetuity**" pursuant to ~~California Government Code section 16370~~. If the special deposit fund is not used to manage the endowment, the Desert Tortoise Preserve Committee or similarly approved entity identified by CDFG shall manage the endowment for CDFG and with CDFG supervision.
- e. Interest, Principal, and Pooling of Funds. The Project Applicant, CDFG and the CPM shall ensure that an agreement is in place with the endowment holder/manager to ensure the following conditions:
- i. Interest. Interest generated from the initial capital endowment shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by CDFG designed to protect or improve the habitat values of the compensation lands.

- ii. **Withdrawal of Principal.** The endowment principal shall not be drawn upon unless such withdrawal is deemed necessary by the CDFG or the approved third-party endowment manager to ensure the continued viability of the species on the "**compensation lands**" ~~10,010~~ acres. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision shall be deposited in a special deposit fund established "**solely for the purpose of managing compensatory lands in perpetuity**" pursuant to ~~Government Code section 16370~~. If the special deposit fund is not used to manage the endowment, the California Wildlife Foundation or similarly approved entity identified by CDFG would manage the endowment for CDFG with CDFG supervision.
- iii. **Pooling Endowment Funds.** CDFG, or a CPM and CDFG approved non-profit organization qualified to hold endowments pursuant to California Government Code section 65965, may pool the endowment with other endowments for the operation, management, and protection of the "**compensation lands**" ~~10,010~~ acres for local populations of desert tortoise and Mohave ground squirrel. However, for reporting purposes, the endowment fund must be tracked and reported individually to the CDFG and CPM.
- iv. **Reimbursement Fund.** The Project shall provide reimbursement to CDFG or an approved third party for reasonable expenses incurred during title, easement, and documentation review; expenses incurred from other state or state approved federal agency reviews; and overhead related to providing compensation lands.

The Project is responsible for all compensation lands acquisition/easement costs, including but not limited to, title and document review costs, as well as expenses incurred from other state agency reviews and overhead related to providing compensation lands to the department or approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures.

Verification: No less than 90 days prior to acquisition of the property, the Project Applicant shall submit a formal acquisition proposal to BLM's Authorized Officer, the CPM, CDFG, and USFWS describing the parcels intended for purchase "**and/or funding of the in lieu fee or species recovery programs.**"

No later than 18 months following the publication of the Energy Commission License Decision the Project Applicant shall provide written verification to BLM's Authorized Officer, the CPM, USFWS and CDFG that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient(s). Alternatively, no later than 30 days prior to beginning Project ground-disturbing activities, the Project owner shall provide written verification of Security in accordance with this condition of certification. If Security is provided, the Project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition "***(through purchase or easement) and/or the in lieu fee or species recovery programs to be funded***" within 18 months of the start of Project ground-disturbing activities." ***If land acquisition is proposed, w*** Within 180 days of the land or easement purchase, as determined by the date on the title, the Project Applicant, or an approved third party, shall provide BLM's Authorized Officer, the CPM, CDFG and USFWS with a management plan for the compensation lands and associated funds. BLM's Authorized Officer and the CPM shall review and approve the management plan, in consultation with CDFG and the USFWS.

Within 90 days after completion of Project construction, the Project Applicant shall provide to the CPM and CDFG an analysis with the final accounting of the amount of habitat disturbed during Project construction.

Page C.2-110, Condition of Certification BIO-15, Monitoring Impacts of Solar Technology on Birds

The Verification to this Condition of Certification requires submittal of a Bird Monitoring Study no less than 10 days after the CEC issues the License or BLM issues the ROW. The applicant requests this be modified consistent with other conditions that measure the verification timeline "prior to" an activity that gives rise to the potential impacts. In the case of potential impacts to birds from facility features the appropriate timeline would be operations.

Verification: ~~No less than 10 days following the publication of the Energy Commission License Decision or the Record of Decision/ROW Issuance, whichever comes first~~ "***No later than 30 days prior to commercial operation of the facility,***" the project owner shall submit to the CPM, BLM's Authorized Officer, USFWS and CDFG a final Bird Monitoring Study. Modifications to the Bird Monitoring Study shall be made only after approval from BLM's Authorized Officer and the CPM.

BIO-13: The Raven Monitoring, Management and Control Plan shall include a funding mechanism for support of the USFWS regional raven management program. (Amount still to be determined.)

RSPP will agree to a specific amount, but we cannot accept an open ended financial obligation. We would prefer to discuss with USFWS to justify an amount relevant to our site.

Pages C.2-112-113, Condition of Certification BIO-17

This condition requires preconstruction burrowing owl surveys. To facilitate staged construction, RSI requests the following modifications so that the surveys can be concentrated to only those portions of the project site that may be undergoing construction. In addition, the condition as written requires surveys of lands within 1 mile of the project to identify relocation sites and requires enhancement of small mammal burrows on the relocation site; however, the recommended relocation methods involve passive relocation, which does not involve active relocation of WBO to specific burrows. Some lands adjacent to the disturbance area are privately owned and will not likely be accessible for this purpose. Therefore, identifying and enhancing a relocation site is not practical or relevant to the relocation of owls from the site. The Project Applicant will construct new or enhance existing burrows at a suitable offsite location to support the passive relocation of WBO or other WBO in the region. The location of those burrows will be defined in the Burrowing Owl Mitigation Plan that will define passive relocation procedures. Given that it will not be possible to determine where passively relocated WBO disperse and establish, the Applicant does not agree with the requirement to monitor relocation lands and submit yearly reports. RSI requests that the Condition of Certification be revised to clarify this.

Condition of Certification BIO-12 provides the framework and criteria for habitat compensation and land acquisition. The applicant believes that funding of programs in lieu of strict land acquisition could provide a great benefit to the Burrowing Owl conservation. We understand that CDFG is considering implementing a "in lieu fee" program and advanced mitigation strategies intended for renewable energy projects seeking ARRA funding pursuant to new authorizing State legislation. While this fee is voluntary and the amount is unknown at this time, the applicant requests that the Staff revise this condition to allow flexibility in mitigation strategies beyond mere land acquisition.

RSI requests the following modifications:

- BIO-17** The Project Applicant shall implement the following measures to avoid, minimize and offset impacts to burrowing owls:
1. Pre-Construction Surveys. The Designated Biologist or Biological Monitor shall conduct pre-construction surveys for burrowing owls in accordance with CDFG guidelines (California Burrowing Owl Consortium 1993). The survey area shall include the Project Disturbance Area and surrounding 500 foot survey buffer. ***"If the project is constructed in stages then the pre-construction surveys should be conducted for the disturbance area and a 500- foot buffer for each stage of construction."***
 2. ...
 3. Timing of Site Grading and Offsite Land Preparation. ~~In conjunction with the preconstruction surveys for burrowing owl described above, the project owner shall perform field surveys within a 1 mile buffer area surrounding the Project Disturbance Areas in order to record the number and location of existing, abandoned~~

~~ground squirrel burrows for relocated owls and the location of any offsite resident burrowing owls. Any existing small mammal burrows identified within the offsite areas shall be enhanced (enlarged or cleared of debris) or new burrows will be created (by installing artificial burrows) at a ratio of 2:1 on offsite lands. Therefore, the project owner shall provide at least two natural or artificial burrows per owl that will be relocated "from the project site" (CDFG 1995). If artificial burrows are deemed necessary, they shall be installed during the non-breeding season and will be installed following Arizona Game and Fish Department burrowing owl management guidelines (Burrowing Owl Working Group 2007) which recommends that artificial burrows be placed within 100 meters of the original burrow. "The artificial burrows will be installed greater than 500 feet from the project area to allow an adequate non-disturbance buffer from construction activities in the breeding and non-breeding seasons."~~

The project Applicant shall allow for approximately two weeks for the passive relocation process to take place and to allow relocated owls to acclimate to new, off-site burrows. The timing of the Project Disturbance Area grading and owl passive relocation shall be timed to coincide concurrently to the extent possible to discourage owls from moving back to the impact site. Staff recommends that once owls that would be impacted by project construction have been determined to have vacated their burrows "**and/or successful passive relocation has occurred**"; site grading must begin within five working days. If construction of the facility or transmission line is delayed for more than 30 days, a follow-up clearance survey for burrowing owl shall be performed.

4. Implement Avoidance Measures. If an active burrowing owl burrow is detected within 500 feet from the Project Disturbance Area and Transmission Line and water pipeline Disturbance Area boundaries, the following avoidance and minimization measures shall be implemented:
 - a. Establish Non-Disturbance Buffer. Fencing shall be installed at a 250-foot radius from the occupied burrow to create a non-disturbance buffer around the burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1st through January 31st). Following preconstruction surveys, owls and/or if active burrows are found in the Project

Disturbance Areas (including transmission line), the appropriate non-disturbance buffer area described above shall be implemented. Signs shall be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer.

- b. Monitoring: If construction activities will occur within 500 feet of the occupied burrow during the nesting season (February 1 – August 31st) the Designated Biologist or Biological Monitor shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall make recommendations to minimize or avoid such disturbance.

Verification: Within 30 days of any ground disturbing activities, the project owner shall submit to BLM's Authorized Officer, the CPM, CDFG and USFWS an approved Burrowing Owl Relocation/~~Translocation~~ Plan based on the applicant's plan submitted in January 2010 (SM 2010a).

Prior to the start of site mobilization activities, construction related ground disturbance, grading, boring, or trenching on the project site, the project owner shall submit to the CPM and BLM's Authorized Officer, a final Burrowing Owl Relocation ~~Area Management~~ Plan that reflects review and approval by Energy Commission staff and BLM in consultation with CDFG and USFWS.

If preconstruction surveys detect burrowing owls within 500 feet of proposed construction activities, the Designated Biologist shall provide to the CPM and BLM's Authorized Officer documentation indicating that non-disturbance buffer fencing has been installed at least 10 days prior to the start of any project related site disturbance activities. The project owner shall report monthly to BLM's Authorized Officer, the CPM, CDFG, and USFWS for the duration of construction on the implementation of burrowing owl avoidance and minimization measures. Within 30 days after completion of construction, the project owner shall provide to the CDFG, BLM's Authorized Officer, and the CPM a written construction termination report identifying how mitigation measures described in the plan have been completed.

~~On January 31st of each year following construction, the Designated Biologist shall provide a report to the CPM, BLM's Authorized Officer, USFWS, and CDFG that describes the results of monitoring and management of the burrowing owl relocation area.~~

Page C.2-114, Condition of Certification BIO-18, Lake or Stream Impact Minimization and Compensation Measures

The applicant requests that this condition be revised to allow for mitigation to be achieved by land acquisition or contribution to an in lieu fee or species recovery program. The applicant also requests changes to the condition section regarding biological conditions to

remove the reference to non-native vegetation becoming a listed species. Non-native vegetation in the desert should not become a listed resource. Proposed changes to the condition are presented below.

1. Acquire Off-Site Desert Wash: The project owner shall ***“provide compensatory mitigation, which may include compensation lands purchased in fee or in easement, equivalent fees, or a combination thereof, for impacts to state jurisdictional ephemeral washes determined in the verified delineation”***~~—, acquire, in fee or in easement, a parcel or parcels of land that includes ephemeral washes with at least the number of acres of state jurisdictional waters determined in the verified delineation....~~ ***If land acquisition is proposed, the*** The terms and conditions of this acquisition or easement shall be as described in Condition of Certification “BIO-12” with the additional criteria that the desert wash mitigation lands...
2. Review and Approval of Compensation Lands Prior to Acquisition: The project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase ***“and/or the in lieu fee or species recovery programs to be funded². If acquisition (through fee or easement) is proposed”***, ~~—~~ this acquisition proposal shall include a description and delineation of waters of the state within the parcels(s); shall describe the floodplain and immediate watershed in the vicinity of the drainage; and shall identify the area of lands surrounding the drainage needed to adequately manage the waters of the state to protect and enhance their biological functions and values. Approval from the CPM, in consultation with CDFG, shall be required for acquisition of all parcels comprising the compensation lands in advance of purchase ***“and/or for implementing/participating in the equivalent fee program.”***
3. Security for Implementation of Mitigation:
4. Right of Access and Review for Compliance Monitoring: The CPM reserves the right to enter the project site or allow CDFG to enter the project site at any time, with reasonable prior notice to ensure compliance with these conditions.
5. ...
6. Notification:
 - a. Biological Conditions: a change in biological conditions includes, but is not limited to the following: 1) the presence of biological resources within or adjacent to the Project area, whether native or non-native, not previously known or occur in

² The mitigation programs include potential BLM lands as defined by the REAT Agencies. REAT Agencies have proposed mechanisms such as deed restrictions, conservation easements, or right-of-way exclusion areas that would provide permanent protection for acquired mitigation lands under BLM management.

the area or 2) the presence of biological resources within or adjacent to the Project area, ~~whether native or non-native~~, the status of which was changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

7. ...

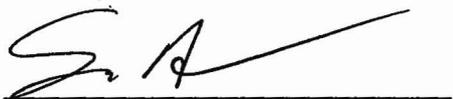
Verification: No fewer than 30 days prior to the start of work potentially affecting waters of the state...

"If land acquisition is proposed", Draft agreements to delegate land acquisition to the CDFG or an approved third party and agreements to manage compensation lands shall be submitted to Energy Commission staff for review and approval (in consultation with CDFG) prior to land acquisition. Such agreements shall be mutually approved and executed at least 60 days prior to start of any project-related ground disturbance activities. The project owner shall provide written verification to the CPM that the compensation lands have been acquired and recorded in favor of the approved recipient(s). Alternatively, before beginning project ground disturbance activities, the project owner shall provide Security in accordance with this condition ***"and/or contribute funds into an in lieu fee or species recovery program"***.

No less than 90 days prior to acquisition of the parcel (s) containing the compensation acres of waters of the state determined in the verified delineation, the project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase.

"If compensation lands are acquired", ~~W~~within 90 days after the land purchase, as determined by the date on the title, the project owner shall provide the CPM with a draft management plan for review and approval, in consultation with CDFG for the compensation lands and associated funds. No later than ***"18"*** 42 months after ***"start of ground-disturbing activities"*** ~~publication of the Energy Commission Decision~~ the project owner shall submit a final Management Plan for review and approval to the CPM and CDFG.

April 30, 2010



Scott A. Galati
Counsel to Ridgecrest Solar I, LLC

April 29, 2010

Eric Solorio
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

RE: Ridgecrest Solar Power Project (RSPP), Docket No. 09-AFC-9, Analysis of Population and Species Impacts to the Desert Tortoise, prepared by Alice E. Karl, Ph.D.

Dear Mr. Solorio:

As requested, attached please find the Analysis of Population and Species Impacts to the Desert Tortoise Due to the Siting of this Project in its Current Location, prepared by Alice E. Karl, Ph.D. This is an update to the March document, which was docketed in draft on April 7, 2010. This has been docketed in accordance with CEC requirements.

If you have any questions, please feel free to contact me at 510-809-4662 (office) or 949-433-4049 (cell).

Sincerely,



Billy Owens
Director, Project Development



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 *RIDGECREST SOLAR
POWER PROJECT***

Docket No. 09-AFC-9

**PROOF OF SERVICE
(Revised 4/12/2010)**

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DECLARATION OF SERVICE

I, Elizabeth Copley, declare that on April 29, 2010, I served and filed copies of the attached Ridgecrest Solar Power Project (Docket No. 09-AFC-9) Analysis of Population and Species Impacts to the Desert Tortoise Due to the Siting of this Project in its Current Location. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

[http://www.energy.ca.gov/sitingcases/solar_millennium_ridgecrest].

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

(Check all that Apply)

For service to all other parties:

- sent electronically to all email addresses on the Proof of Service list;
- by personal delivery;
- by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

For filing with the Energy Commission:

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

OR

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

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 09-AFC-9
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

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



RIDGECREST SOLAR POWER PROJECT
ANALYSIS OF POPULATION AND SPECIES IMPACTS TO THE DESERT TORTOISE,
DUE TO THE SITING OF THIS PROJECT IN ITS CURRENT LOCATION

Alice E. Karl, Ph.D
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BACKGROUND

The Ridgecrest Solar Power Project (RSPP or Project) is located in Indian Wells Valley, approximately 8 km (5 mi) from the city of Ridgecrest and approximately 9.6 km (6 mi) from the town of Inyokern, in Kern County, California (Figure 1). The 702 ha (1734.8 acre) RSPP abuts State Highway 395, a major north-south commerce and transportation route in California, and crosses Brown Rd., a locally-used two-lane paved road. A complete Project description can be found in the Project Application for Certification (AECOM 2009a).

Desert tortoise surveys were completed in Spring 2009 and observed 23 adult desert tortoises within the Project footprint. Using the current USFWS (2009) calculations, the estimated adult tortoise abundance was 57, or 8.1 adult tortoises per square kilometer (km²)¹.

The discussion presented herein provides an objective assessment of the relative value of the tortoises at the RSPP site to species persistence and recovery, based on the available tortoise data. This analysis is specifically to assist the resource agencies and Project proponents in determining whether the Project's effects on tortoises can be mitigated, and what mitigation measures might be appropriate. Further, there is a brief discussion of specific Project design that could decrease both the Project effects on tortoises at this site, as well as potentially assist in desert tortoise recovery.

ANALYSIS

Several factors are important in assessing the inherent value of a group of tortoises to both the local population and to the species, irrespective of mitigation measures that may be employed to minimize a project's impacts. These include the following:

1. Abundance of tortoises relative to other locations within the population
2. Identified importance of the area for recovery and tortoise conservation, by CDFG and USFWS
3. Existing impacts to the site's tortoises and relative longevity of the population in light of these impacts, irrespective of the project

¹ Note: The Application for Certification (AFC; AECOM 2009a) reports a density estimate of adult tortoises, 9.8 adult tortoises/km². The density was revised to 8.1, based on subsequent data analysis (Solar Millennium, LLC, 2010a, b).

4. Disruption to genetic connectivity within the population that would occur due to the project
5. Cumulative population fragmentation, including the project, that could result in decreased value of the habitat surrounding the project
6. Heightened anthropogenic or other impacts that could result should the project be built

Each of these factors is discussed in detail below.

Tortoise Abundance

Tortoise abundance at the RSPP is examined in this paper relative to the following questions:

- Could the absolute value of 8.1 tortoises/km² be considered a high tortoise density by historic standards, when tortoise densities were higher throughout their range?
- What does a density of 8.1 mean in the context of tortoise populations?

RSPP Tortoise Density Compared to Other Relevant Sites. Historically, a density of 8.1 adult tortoise/km² would have been considered a low tortoise density. Table 1 shows the five trend plots studied by BLM in the western Mojave Desert that historically had the highest tortoise densities. Adult tortoise densities from the period 1979-1982 ranged from 36-92 adult tortoises/km². The three plots closest to the RSPP (the two Desert Tortoise Natural Area [DTNA] plots and Fremont Valley) had the highest densities. The other recognized high-density plots in California, outside the western Mojave Desert, had 38-83 adult tortoises/km². So, historically, 8.1 would have been considered to be very low.

Populations of desert tortoises have declined dramatically since the mid-1980's (Karl 2004a, Tracy et al. 2004, McLuckie et al. 2006, Boarman et al.), so RSPP tortoise density is also examined in the context of current tortoise densities. There are few recent (i.e., within the ten years prior to the 2009 RSPP surveys) available data for localized sites *where tortoises are expected*. Table 2 lists 19 locations in tortoise habitat, and excludes locations that were specifically chosen by project developers based on their anticipated lack of tortoises and other costly resources (e.g., solar project sites). Adult tortoise densities at these 19, western Mojave Desert sites range from 0-28 adult tortoises/km² (Table 2). The RSPP tortoise density of 8.1 falls slightly above the median density value (7.7) of these 19 sites and slightly below the mean value (8.5). The relative density of these sites in the context of tortoise density rangewide is unknown because no data are available to complete the analysis.

Table 1. Estimated adult tortoise densities for historically high density plots in California¹.

Historically High Density Plot	#Adults/km ²	Year
Western Mojave Desert		
DTNA ² Interior Plot	92	1982
DTNA Interpretive Center	69	1979
Fremont Valley	45	1981
Kramer Hills	42	1980
Lucerne Valley	36	1980
Elsewhere in California		
Chuckwalla Bench	75	1979
Goffs	83	1983
Upper Ward Valley	38	1980
Ivanpah	42	1979

1. Data Source: BLM (2005), Berry (1990, 1997)

2. Desert Tortoise Natural Area (DTNA)

Two regional sampling programs may further elucidate RSPP tortoise abundance in the context of the tortoise's geographic range in California. Density transects for the Ridgecrest area in the late 1970's estimated 8-19 tortoises/km² in the Project vicinity (Berry and Nicholson 1984). This was considered a relatively low tortoise density at the time because during this same sampling program, 7640 km² in California were estimated to have over 19 tortoises/km² and nine areas were estimated to have over 58 tortoises/km². While the validity of those earlier estimates in the strict context of a mathematical representation of tortoise density (i.e., number of tortoises per unit area) has been rejected, the 1970's sampling program was nonetheless valuable in predicting areas of *relatively* high, medium, and low tortoise abundance. The RSPP area was consistently shown to be a relatively low density.

More recent transects conducted for the West Mojave Plan (WMP) in 1999 again consistently found very low sign counts in the RSPP vicinity and remainder of Indian Wells Valley (U.S. Bureau of Land Management [BLM] 2005). On 23 of the 25 transects throughout the valley, zero to three sign were observed; on the remaining two transects (north of the RSPP), four to eight sign were observed². Sign on transects in the immediate vicinity of the RSPP site totaled one to three per transect. During this same sampling program, there were many areas in the WMP planning area that had higher (9-16 sign) to substantially higher (17-50 sign) sign counts, indicating that the RSPP vicinity (i.e., the RSPP site and surrounding Indian Wells Valley) is a low tortoise density

² Note: The WMP transects did not attempt to estimate tortoise density. They merely reported sign counts as a measure of relative tortoise abundance. A total sign count was reported for each transect.

Table 2. Available desert tortoise density estimates on localized sites in the western Mojave Desert. Sites were generally small, 1 km² or 1 mi², unless noted. All sites were expected to be occupied by desert tortoises based on habitat.

Site	#Adults/km ²		Time or Time Span for Estimates ¹	Reference
	Time 1	Time 2		
USGS Plots				
DTNA Interior Plot	92.0	5.0	1979, 1982, 1988, 1992 1996, 2002	BLM (2005), Berry (2003)
DTNA Interpretive Center	69.9	18.1	1979, 1985, 1989, 1993, 2002	BLM (2005), Berry (2003)
Fremont Valley	44.8	12.7	1981, 1987, 1991, 2001, 2007	BLM (2005), Jones (2008)
Fremont Peak	27.0	1.9	1980, 1985, 1989, 1993, 2001, 2007	BLM (2005), Jones (2008)
Kramer Hills	44.0	13.1	1980, 1982, 1987, 1991, 1995, 2007	BLM (2005), Jones (2008)
Lucerne Valley	35.9	25.1	1980, 1986, 1990, 1994, 2005	BLM (2005), Jones (2008)
Johnson Valley	26.6	6.2	1980, 1986, 1990, 1994, 2008	BLM (2005)
Stoddard Valley	47.9		1981, 1987, 1991	BLM (2005)
Fort Irwin Expansion Project				
MT-1	28.0		1999	Karl (1999)
NL-1	10.0		1999	Karl (1999)
Plot 1	14.0		2001	Karl (2002a)
Plot 2	5.0		2001	Karl (2002a)
Plot 3	0+		2001	Karl (2002a)
Plot 4	7.7		2001	Karl (2002a)
Plot 5	7.0		2001	Karl (2002a)
Plot 6	5.0		2001	Karl (2002a)
Plot 8	10.8-12.0		2001, 2002	Karl (2002a, b)
Plot 9	13.2-13.9		2002	Karl (2002b)
MCAGCC Land Acquisition Project:				
Johnson Valley Plot 1	7.8		2009	B. Henen, NREA, pers. comm.
Johnson Valley Plot 2	6.0		2009	B. Henen, NREA, pers. comm.
Johnson Valley Plot 3	12.5		2009	B. Henen, NREA, pers. comm.
Twentynine Palms Plot 4	10.6		2009	B. Henen, NREA, pers. comm.
Cadiz Valley Plot 5	5.0		2009	B. Henen, NREA, pers. comm.
Cadiz Valley Plot 6	0.0		2009	B. Henen, NREA, pers. comm.
Johnson Valley Plot 7	4.0		2009	B. Henen, NREA, pers. comm.

Table 2, continued.

Site	#Adults/km ²		Time or Time Span for Estimates ¹	Reference
	Time 1	Time 2		
Emerson Lake	3.0		2009	B. Henen, NREA, pers. comm.
Acorn	10.6		2009	B. Henen, NREA, pers. comm.
Larger Sites:				
Fort Irwin: Southern Expansion Area Clearance – 32 km ²	7.2		2006-7	A. Walde, pers. comm.
Hyundai Motor America Mojave Test Track – 18.3 km ²	1.5		2004	Karl (2004b)

1. The years listed are all the years that each site was studied. The years in bold type are those presented in the previous columns of tortoise density, with the (a) first bold-font year in the list representing the year with the highest historic density and the second bold-font year representing the most recent available data. Note that while the sites may have been surveyed in years subsequent to the most recent year in bold type, density data for adult tortoises are not available.

However, that tortoises are present at densities of 8.1 adults/km² has prompted conclusions that this must be high quality habitat. Most of the site is not high quality habitat, however, even El Paso Wash and the smaller wash along the southern border of the Project site. Rather than being distributed relatively evenly throughout the site, tortoises are concentrated in the better habitats on the site, those that provide greater abundance of cover and forage species. I completed a habitat assessment on 25 February by walking the entire Project site's original footprint (AECOM 2009a) and recording and assessing all habitat variables (shrub species richness, evenness, composition, density, robustness; soil consistence and texture; substrate; hydrology; topography; anthropogenic influences). The eastern portion of the site is the best habitat on the site, with a moderately diverse shrub community (*Larrea tridentata*, *Ambrosia dumosa*, with *Senna armata*, *Eriogonum inflatum*, *Cylindropuntia echinocarpa*, *Ericameria cooperi*, *Acamptopappus sphaerocephalus* and occasional *Ambrosia salsola*, *Psorothamnus fremontii*, and *Lycium andersonii*) of about 12-14% cover, gently undulating terrain with numerous runnels, soft coarse-sandy loam, and a 10-15% substrate cover of fine gravel. Proceeding west and south, habitat quality declines rapidly. The topography is relatively flat, with broad, relatively sparsely vegetated rises and long, linear swales. The shrub community has low species richness, generally represented by three species on the rises *L. tridentata* and *A. dumosa* with occasional *E. echinocarpa*; the long troughs, which carry water through the valley, contain *S. armata* and *A. salsola* as well. El Paso Wash is the largest of these troughs and has essentially the same species; they are simply more robust and appear to be slightly more dense, thus providing more cover. The lack of increased species richness and cover was surprising, as El Paso Wash has been represented as a high quality wash in several discussions about the Project site. The smaller wash along the southern border of the Project site is similar to El Paso Wash, simply smaller.

In conclusion, the habitat appears to be generally a medium to moderately low quality on most of the site, with higher quality in the northeast and slightly higher quality in the long swales and washes. Tortoise distribution on RSPP is consistent with this observation.

Even though current densities have declined dramatically on formerly high density study plots (see Table 2), many or most of those areas have the potential to increase again because the habitat that supported the higher densities still exists in most cases. On RSPP, there is no evidence that a habitat that would support higher densities was present in at least the last several decades, so tortoise densities aren't likely to rise to a higher density if the site is left undisturbed, simply based on current habitat quality.

Existing Anthropogenic Impacts

The site is next to Highway 395, a heavily traveled, major commerce and transportation route in California. Heavily traveled roads are known mortality sinks for tortoises and other wildlife (Nicholson 1978, Karl 1989, Boarman 1992 and 2009, LaRue 1993, Marlow and von Seckendorff Hoff 1997, Rosen et al. 2007), so it is highly likely that Highway 395 has resulted in continual tortoise mortalities, simultaneously fragmenting the population.

area compared to other locations in the tortoise's range. Consistent with the sampling results in Indian Wells Valley, recent sampling near Red Rocks State Park, west of the RSPP, suggested very low tortoise densities there as well, fewer than four adult tortoises/km² (Keith et al. 2005).

The WMP transects are significant in the analysis of tortoise abundance because the WMP data are relatively recent. Compared to other areas in the WMP planning area, tortoise abundance in the RSPP vicinity was low to moderately low. In other words, if the RSPP estimated tortoise density is 8.1 adults/km², then there are other areas that have substantially higher tortoise densities in the WMP planning area.

In summary, regional sampling studies indicate that tortoise densities have remained consistently relatively low in the RSPP area for 30 years, compared to other areas where tortoise abundance has been sampled. Even assuming that tortoise densities at the RSPP were likely to have been somewhat higher several decades ago than they are now, consistent with the rangewide pattern of tortoise declines (Karl 2004a, Tracy et al. 2004, McLuckie et al. 2006, Boarman et al. 2008), the evidence strongly supports historic low densities, not the dramatic declines seen on the high density areas (see Table 2 - "USGS Plots"). WMP transects indicate that recent tortoise densities in the RSPP vicinity remain relatively low compared to several other areas in the WMP planning area, indicating that 8.1 adult tortoises/km² is a relatively low density. A specific RSPP site density comparison to the specific tortoise densities in 19 locations in the western Mojave Desert where tortoises were expected based on suitable habitat, and which were previously assessed during the WMP transects to be areas of moderate to medium tortoise abundance, suggests that the RSPP tortoise density of 8.1 is a moderate to medium tortoise density. Based on available data, then, it can be concluded that the RSPP is, and historically has been, in a relatively low tortoise density area, with the Project site itself considered a moderate to medium tortoise density by current comparisons.

Comparison of RSPP to USFWS Line Distance Sampling Densities. In an earlier California Energy Commission workshop on the RSPP, Mr. Richard Anderson compared RSPP tortoise density to those from the USFWS' Line Distance Sampling (LDS) program that has been implemented to determine regional and rangewide trends in tortoise densities (Attachment 1). This comparison resulted in the RSPP site appearing higher than any area within the desert tortoise's range in California, Nevada, and Utah. However, the comparison is invalid because the sampling units for the LDS program are thousands of square kilometers (Table 3), up to 9298 km², compared to the 7.02 km² RSPP site. Notwithstanding that the LDS program surveyed critical habitat units within the recovery units, where tortoise densities are assumed to achieve their highest levels, sampling in those critical habitat units included both non-tortoise habitat and occupied habitat:

"The expectation was that most of the rugged terrain would be sampled in this way, and the transect locations would be representative, not purposefully in better areas for encountering tortoises" (USFWS 2009b:10).

“Estimates of density for 2007 ... coincide(s) with increasing efforts to sample all areas managed for desert tortoises; the new areas of interest were excluded in the past as potentially low or no suitability to desert tortoises....many areas added to the sampling frame contain lower densities of tortoises than the core areas sampled among all years” (USFWS 2009b: 8).

The goal of the LDS program is to provide density for each broad sampling stratum, so no information is provided in the LDS report (USFWS 2009b) that would permit the reader to determine the percentage of the area within each broad sampling stratum that comprises non-habitat or varying levels of tortoise abundance. However, an examination of the smaller sampling units within the major sampling strata shows a high degree of variation in tortoise density (Table 3; USFWS 2009b: Tables 8 and 9), including densities that are higher than at RSPP.

Finally, caution should be used when making comparisons to exact density estimates provided by the LDS program. According to the most recent LDS report:

“There is considerable variability from year to year in the same recovery unit. For instance, in the Western Mojave the [revised] estimate is 4.4 tortoises/km² in 2004, ...6.1 in 2005, and 4.7 tortoises/km² in 2007. This does not reflect realistic changes in population size in such a large area over one-year periods, but is a consequence of the relatively imprecise annual estimates” (USFWS 2009b:39).

There is enough variability in the program’s methods and precision of estimates, as well as expressed difficulties with the data, that comparing 8.1 tortoises/km² to densities that are different by only a few tortoises/km² may be too fine-grained a comparison.

In summary, the LDS program’s goal of identifying density trends in broad recovery units does not permit applicability of their results, as presented in their summary report (USFWS 2009b), to very small sites such as the RSPP. LDS numbers are not comparable because of the size of the LDS sampling units compared to small units such as the RSPP, because an undisclosed percentage of the sampled sites are not tortoise habitat, and because of other aspects of the methods. The data show that smaller units can have different individual densities (both higher and lower) that are masked by averaging all densities across a unit that includes both non-habitat and suitable habitat.

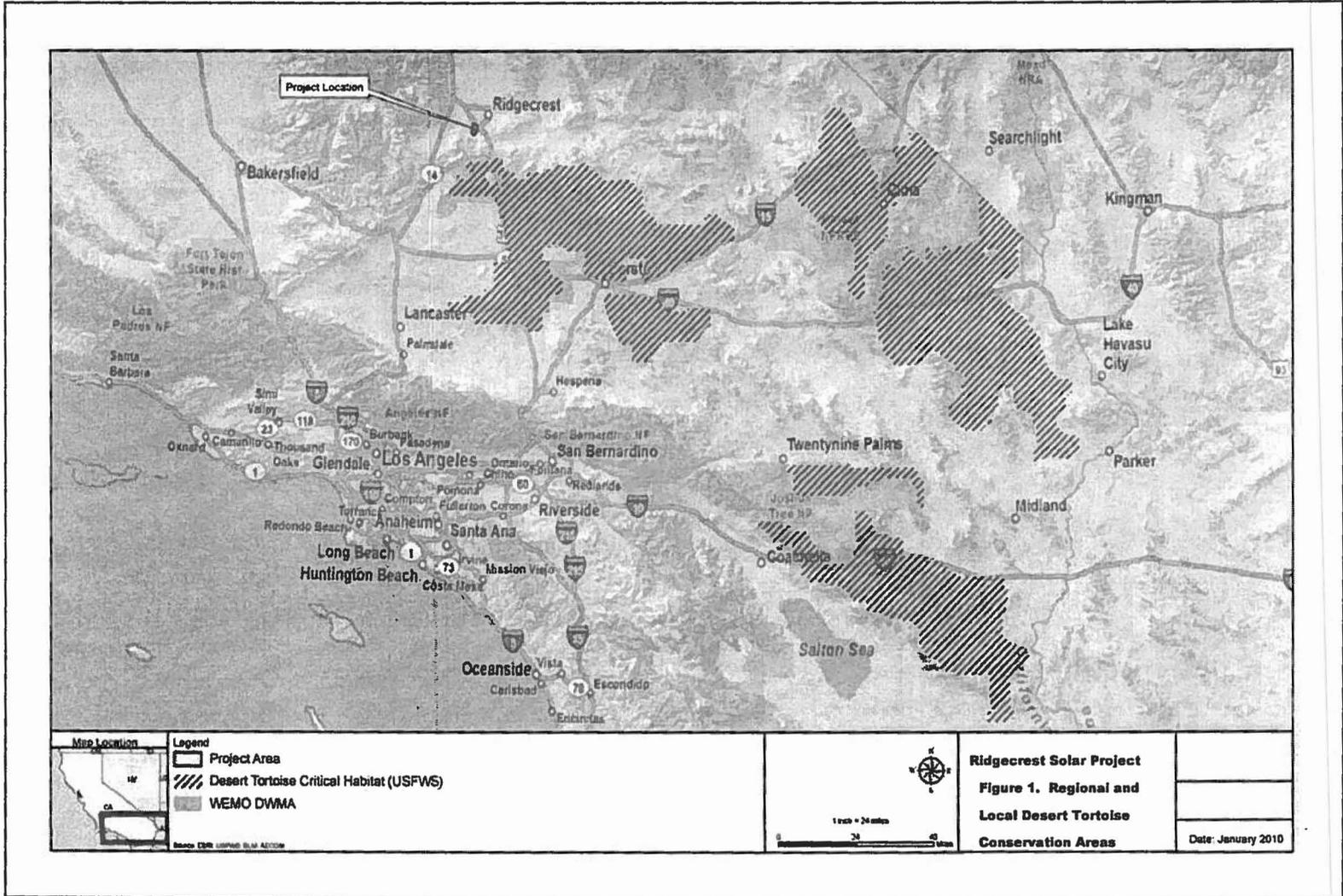
Designated Conservation Areas for the Desert Tortoise

The RSPP and surrounding area have not been identified by the U.S. Fish and Wildlife Service (USFWS 1994a and b) and the BLM (2005) as an important area for desert tortoise recovery and population persistence (Figure 1). Desert Wildlife Management Areas (DWMAs) and designated critical habitat are both about 11 km (7 miles) south of the RSPP. These designations appear to be consistent with tortoise density information from the RSPP studies, in the context of the remainder of the species range in the Mojave and Sonoran (California) Deserts (see above). The data on tortoise distribution and abundance provide the hard data from which population impacts can be analyzed.

Table 3. Broad sampling strata used to estimate tortoise density in the federally listed portion of the species range. All but the last sampling stratum are USFWS LDS sampling strata. Major strata are in bold font, followed by monitoring strata within each major stratum. Size of each stratum is shown.

Sampling Stratum	#Adults/km²	Sampling Unit Size (km²)	Date	Source
West Mojave RU¹	4.7	9298.0	2007	USFWS (2009b)
5 sampling strata within the RU used for calculating RU values	2.4-8.2	608-3447	2007	USFWS (2009b)
Eastern Mojave RU	5.8	6681.0	2007	USFWS (2009b)
3 sampling strata within the RU used for calculating RU values	4.2-6.6	1862-2567		
Northeastern RU	1.7	4917.0	2007	USFWS (2009b)
4 sampling strata within the RU used for calculating RU values	1.2-3.3	968.0		
Eastern Colorado RU	5.0	4263.0	2007	USFWS (2009b)
3 sampling strata within the RU used for calculating RU values	4.5-7.1	755-3509		
Northern Colorado	4.6	4038.0	2007	USFWS (2009b)
Upper Virgin River	14.9	114.0	2007	McLuckie et al (2008) in USFWS (2009)
Fort Irwin: Southern Expansion Area	6.8	32	2001-2	(Karl 2002)
32, one km ² sampling units	>0-25.1	1		

1. RU = Recovery Unit



In addition, the towns of Ridgecrest and Inyokern, the “ranchette” community that has expanded away from the towns proper, and local agriculture (Inyokern, mostly) degrade and fragment the area’s tortoise habitat. Not only is habitat removed, in a fragmented pattern, but dogs (which prey on desert tortoises), children, and motor-based recreational activity typically expand to areas immediately outside desert towns. The result of these activities is increased loss and degradation of habitat and increased tortoise depredations and collections. Ravens, which are common in the area (pers. obs.), undoubtedly due to the subsidies provided by the town and agriculture (e.g., trash, roadkills, harvesting and tilling practices that provide prey and forage, water) are likely to already exert an influence on recruitment in the local tortoise population, the effects of which could occur at RSPP. For instance, clearance of tortoises for the Hyundai Test Track south of California City, where ravens are common due to the nearby towns (California City and Mojave) and the Mojave landfill, found no tortoises between the reproductive-sized tortoises and the very small (<a few years old) juvenile stage (Karl 2004). There appeared to be total lack of recruitment into this population, possibly due to raven predation. At RSPP, small tortoises were observed, so some recruitment is occurring. But, Ridgecrest-area ravens are probably still impacting recruitment to some extent.

Connectivity

It is reasonable to ask whether this population could be a source population because of its high habitat quality, high density, security from threats to population viability, and/or some other unidentified quality. And, if so, would the Project restrict the flow of genes to other areas of the population? Based on the above analysis and aerial photographs, development of this site would not appear to impair connectivity within the population. First, the relatively low to medium tortoise densities in the RSPP vicinity, a moderate quality habitat that is already impacted by anthropogenic factors, would not suggest that this is an unusually important population segment. While one might further speculate that this population could hold genetic or phenotypic characters that would promote species and population persistence and recovery, there is no evidence to support that speculation. Second, with the updated project footprint refinement (Figure 2), connections to the El Paso Mountains pass to the south could be conserved by minimizing impacts to El Paso Wash, assuming that Project mitigation also ensures that (a) tortoises are not funneled onto the highway along these corridors, and (b) OHV traffic does not increase in these washes. Undoubtedly, the Project would affect tortoise movements, which would subsequently affect connectivity and gene flow, but the RSPP location and surrounding habitats and anthropogenic features do not suggest that the effect would be critical to population functioning.

Cumulative Population Fragmentation

The RSPP would further fragment occupied tortoise habitat. Unlike some species of birds and mammals that might abandon an area if habitat fragmentation were to reach a certain threshold, the threshold at which fragmented habitat would become undesirable or unusable by tortoises is unknown. Furthermore, mere habitat fragmentation (i.e., patch

size and connectivity) is typically difficult to separate from the suite of impacts affecting tortoise use of an area. (For instance, tortoises occupying fragmented habitats around towns are also subject to the other negative influences associated with towns [see above]). It does not appear that development of the RSPP would result in a level of fragmentation that would reduce surrounding habitat to unusable fragments. From aerial photographs, there appears to be ample habitat, even if somewhat degraded by anthropogenic activities, in the surrounding area to support the use of the area by tortoises should the RSPP be built.

Heightened Anthropogenic or Other Impacts That Could Result

No new types of resources for tortoise predators would be added by the RSPP that are not currently in the Project vicinity. Water, food, and nesting resources are all abundant and readily available in the surrounding communities of Ridgecrest and Inyokern.

CONCLUSION

This paper analyzes variables that are important in the analysis of RSPP impacts to this tortoise population. There may be other variables that could be important, but for which the data are currently lacking. At this juncture, an objective assessment of the RSPP's impacts to the species must rely on available data, with a reasonable consideration of the likelihood of unknown factors.

Based on the Project site tortoise abundance in the context of the rest of the species' range through the Mojave and Sonoran (California) Deserts and existing recovery and conservation approaches, as well as its location relative to existing anthropogenic effects, it is difficult to conclude that the siting of this Project in its current location would result in a biologically significant effect on the species persistence or recovery. Furthermore, while the Project would have indisputable effects on tortoises by removing habitat and disrupting movements, behavior and existing social systems, even resulting in some tortoise losses, careful mitigation (well-executed clearances, translocation, and follow-up monitoring) is likely to minimize Project-related tortoise mortality and costs to the population.

More importantly, off-site mitigation has the potential to provide mitigation that will enhance tortoise recovery. Fencing Highway 395 with tortoise exclusion fencing and adequately spaced culverts would eliminate tortoise mortality on Highway 395, decrease the current population fragmentation caused by that highway, and make available many hectares of safe habitat for use by tortoises. Even though tortoise conservationists have consistently agreed that highway fencing, with culverts to permit genetic flow, is an important mitigation measure, it has rarely been achieved. Over 15 years have passed since this measure was identified in the desert tortoise recovery plan (USFWS 1994a). Private mitigation funds are a way to accomplish this. If USFWS and CDFG feel that the tortoise population in the RSPP vicinity is important for tortoise recovery, then it would be important to eliminate the highway mortality and decrease the population

fragmentation. This could be a reasonable trade for the loss of some tortoise habitat in the area and disruption of the tortoise population.

In summary:

- Data show that this is and historically has been a low to moderate or medium density population.
- The revised Project footprint will recede from two of the three best tortoise habitats on the original Project site, thereby permitting continued connectivity to the south.
- Because of the revised Project footprint, it is likely that a large percentage of the tortoises will not require relocation, but will be automatically excluded from the Project.
- If the Project is built, an opportunity exists to eliminate an important mortality sink and population fragmenting feature currently impacting the population. This conservation measure is unlikely to be accomplished in the near future without dedicated funding. History has shown that most heavily traveled roads through tortoise habitat remain unfenced, despite this being a strongly advocated measure for decades.

LITERATURE CITED

- AECOM. 2009b. Ridgecrest Solar Power Project Application for Certification. Prepared for Palo Verde Solar I, LLC. Submitted to the California Energy Commission on August 31, 2009. 900 pp.
- AECOM. 2009b. Solar Millennium Ridgecrest Solar Power Project desert tortoise technical report, Kern County, California. Unpub. report prepared for Solar Millennium, LLC, Berkeley, CA. 22 pp plus attachments.
- Anderson, R. 2009. Presentation of desert tortoise density comparisons for the Ridgecrest Solar Power Project (figure).
- Berry, K.H. 1990. Status of the desert tortoise in California in 1989. Unpub. report. U.S. BLM, Riverside, CA.
- . 1997. Demographic Consequences of Disease in Two Desert Tortoise Populations in California, USA. New York Turtle and Tortoise Society. Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles - An International Conference, pp. 91-99.
- . 2003. Declining trends in desert tortoise populations at long-term study plots in California between 1979 and 2002: Multiple causes. Paper presented at the 2003 Desert Tortoise Council Symposium, Las Vegas, Nevada.
- and L.L. Nicholson, 1984. The distribution and density of desert tortoise populations in California in the 1970's. Chapter 2 in K.H. Berry (ed.) Status of the Desert Tortoise (*Gopherus agassizii*) in the United States. Unpubl. rept. from Desert Tortoise Council to U.S. Fish and Wildlife Service, Sacramento, California. Order No. 11310-0083-81.
- Boarman, W.I. 1994. Effectiveness of fences and culverts for protecting desert tortoises along California State Highway 58: summary of the 1993 field season. Draft. Unpub. rept. to the California Energy Commission. Contract No. 700-90-015, Phase 3, Task 3-3. 23 pp. plus appendices.
- , W.B. Kristan, III, and A.P. Woodman. 2008. Neither here nor there: current status of Sonoran desert tortoise populations in Arizona. Paper presented at the 2008 Desert Tortoise Council Symposium, Las Vegas, NV.
- Karl, A. E. 1989. Investigations of the desert tortoise at the California Department of Health Services' proposed low-level radioactive waste facility site in Ward Valley, California. Unpub. rept. submitted to U.S. Ecology and Ecological Research Services. 116 pp.
- . 2002. Desert tortoise abundance in the Fort Irwin National Training Center expansion area: second-year studies. 45 pp. plus appendices.

- . 2004a. Drought: acute effects and impacts to recovery of the desert tortoise. Paper presented at the 2004 Desert Tortoise Council Symposium, Las Vegas, NV.
- . 2004b. Initial summary of tortoise translocation from the Hyundai facility. Memorandum to California Department of Fish and Game, U.S. Fish and Wildlife Service, and Hyundai Motor America. 2pp.
- Keith, K., K. Berry, and J. Weigand, 2005. Surveys for desert tortoises in the Jawbone-Butterbrecht Area of Critical Environmental Concern, Eastern Kern County, California. Unpub. rept. 50 pp.
- Jones, R. 2008. Desert tortoise, our state reptile. Presentation at the 2008 Desert Tortoise Council Symposium, Las Vegas, Nevada.
- LaRue, E.L. 1993. Distribution of desert tortoise sign adjacent to Highway 395, San Bernardino County, California. Draft. Unpub. rept. from Tierra Madre Consultants to Gratten, Gersick, Karp, and Miller, Sacramento, CA. 17 pp.
- Marlow, R. W., K. von Seckendorff Hoff, and P. Brussard. 1997. Management of wild tortoise populations is complicated by escape or release of captives. Pp. 479-480 in J. van Abbema (ed.), Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles – an International Conference. Joint publ. of the New York Turtle and Tortoise Society and the WCS Turtle Recovery Program.
- McLuckie, A.M., M.R.M. Bennion, R.A. Fridell, and R. Radant. 2006. Status of the desert tortoise in the Red Cliffs Desert Reserve. Paper presented at the 2006 Desert Tortoise Council Symposium, Las Vegas, NV.
- , M.M. Reitz, and R.A. Fridell. 2008. Regional desert tortoise monitoring in the Red Cliffs Desert Reserve, 2007. Utah Division of Wildlife Resources, Salt Lake City, UT. Publ. No. 08-19. 57 pp.
- Nicholson, L.L. 1978. The effects of roads on desert tortoise populations. Pp. 127-129 in M. Trotter (ed.) Proceedings of the 1978 Desert Tortoise Council Symposium.
- Rosen, P.C., P.A. Holm, and E.B. Wirt. 2007. Studies of drought and highway effects on tortoises at Organ Pipe Cactus national Monument, Arizona. Paper presented at the 2007 Desert Tortoise Council Symposium, Las Vegas, NV.
- Tracy, C.R., R.C. Averill-Murray, W.I. Boarman, D. Delehanty, J.S. Heaton, E.D. McCoy, D.J. Morafka, K.E. Nussear, B.E. Hagerty, and P.A. Medica. 2004. Desert Tortoise Recovery Plan assessment. Report to U.S. Fish and Wildlife Service, Reno, Nevada.
- U.S. Bureau of Land Management. 2005. 2005. West Mojave Plan, A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment,

Final Environmental Impact Report and Statement. California Desert District Office, Moreno Valley, CA. Available online at: http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/.

- U.S. Fish and Wildlife Service. 1994a. Desert tortoise (Mojave population) recovery plan. U.S. Fish and Wildlife Service, Portland, Oregon.
- . 1994b. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Mojave Population of the Desert Tortoise. Federal Register 59(26):5820-5866.
- . 2009a. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*). April 2009. 16 pp. Desert Tortoise Recovery Office, Reno, NV.
- . 2009b. Range-wide monitoring of the Mojave Population of the desert tortoise: 2007 annual report. Desert Tortoise Recovery Office, Reno, NV.
- Solar Millennium, LLC. 2010a. Response to Basin and Range Watch Set 0, Data Requests #1 to #7. Docketed March 30, 2010.
- . 2010b. Ridgecrest Solar Power Project Draft Biological Assessment. In prep.

Attachment 1.

**Presentation by Mr. Richard Anderson at the California Energy Commission Workshop
for the Ridgecrest Solar Power Project.**

Desert Tortoises Densities (USFWS 2009)

NE Mojave	Density (km ²)	E Colorado	Density (km ²)
2001	2.4	2001	
2002	-	2002	7.7
2003	3.7	2003	4.0
2004	1.2	2004	6.4
2005	1.8	2005	7.9
2007	1.7	2007	5.0
E Mojave		N Colorado	
2001	6.2	2001	7.2
2002	4.1	2002	-
2003	-	2003	6.3
2004	5.3	2004	6.9
2005	7.2	2005	
2007	5.8	2007	4.6

Desert Tortoises Densities (USFWS 2009)

W Mojave	Density (km ²)		Density (km ²)
2001	5.6		
2002	5.8	Ivanpah SPP	1.6 (no correction)
2003	3.8		
2004	4.4		
2005	6.1		Raw Data (no correction)
2007	4.7	Ridgecrest	5.1 (km²)
		Ivanpah	1.6 (km²)



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APPLICATION FOR CERTIFICATION
For the RIDGECREST SOLAR
POWER PROJECT

Docket No. 09-AFC-9

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(Revised 4/12/2010)

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DECLARATION OF SERVICE

I, Marie Mills, declare that on April 30, 2010, I served and filed copies of the attached **RIDGECREST SOLAR 1, LLC'S INITIAL COMMENTS ON THE BIOLOGICAL RESOURCES SECTION OF THE STAFF ASSESSMENT/ DRAFT ENVIRONMENTAL IMPACT STATEMENT**, dated April 30, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [http://www.energy.ca.gov/sitingcases/ridgecrest_solar].

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

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

- sent electronically to all email addresses on the Proof of Service list;
 by personal delivery;
 by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

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

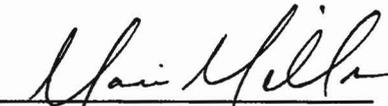
OR

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

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 09-AFC-9
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.


Marie Mills

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10 JUL 13 AM 9:41

CALIF. DESERT DISTRICT
MORENO VALLEY, CA

NATIONAL PUBLIC LANDS NEWS

A non-partisan, non-profit California Corporation

P.O. Box 403. Inyokern, California 93527

<http://www.nplnews.com>

July 6, 2010

Ms. Janet Eubanks, jeubanks@ca.blm.gov
BLM California Desert District
22835 Calle San Juan de Los Lagos
Moreno Valley, CA 92553

California Energy Commission
Attention: Erick K. Solorio, Project Manager, esolorio@energy.state.ca.us
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

Ref: January 22, 2010 ltr docket number
March 12, 2010 ltr BLM Receipt to Air Resources Board
July 28, 2009 letter to local BLM Ridgecrest Office
May 21, 2010 ltr to CEC

Re: Ridgecrest Solar Power Project Staff Assessment – Draft Environmental
Impact Statement

Dear Ms. Eubanks,

NPLNEWS is neither opposing nor endorsing the Solar Millennium Project. We are a non-profit, non-partisan, public interest organization. NPLNEWS focuses its interest on the integrity of the public land management processes including CEQA, NEPA and the pre and post permit disclosure requirement programs.

NPLNEWS has long advocated for the balanced special management of the California desert resources. NPLNEWS goal is to assure the public that publicly owned resources would not be unduly degraded.

NPLNEWS staff has been involved in federal land management issues in the California Desert area since 1975 and some of us have been commenting as private citizens and as chairmen of organizations with interest in public land

BLM RIDGECREST FC

6 JUL 10 PM 12:08

REC'D

issues including the Federal Land Policy & Management Act (FLPMA) and the California Desert Conservation Plan of 1980 and Amendments, including the West Mojave Plan (WEMO).

Congress mandated, and BLM prepared, a comprehensive land management plan to manage the resources with the CDCA in accordance with FLPMA and NEPA.

NPLNEWS is commenting specifically on the Solar Millennium Ridgecrest Project. This project is on public lands within the California Desert Conservation Area (CDCA), specifically, the WEMO amendment. From the outset, the BLM has out-sourced its responsibilities under FLPMA and NEPA to the California Energy Commission (CEC) by delegating the responsibility to comply with the federal acts to that agency. This is contrary to the letter and spirit of FLPMA and NEPA as legislated by Congress. The CEC is a permitting agency not a land management agency and is not responsible to the American people for the management of the CDCA.

The BLM is required to strike the right balance between use and conservation of the CDCA, as mandated by Congress. The CEC has no such mandate and therefore not administratively and technically equipped to lead the NEPA process.

The process, as conducted by the CEC during the past couple of years, in processing the federal right of way application for the solar project is fundamentally flawed for the following reasons:

1. NEPA has primacy in this case since this is a federal action on federal lands administered by the BLM under the CDCA Plan of 1980 and amendments, including WEMO. Designating a state agency as the lead for a federal agency is inconsistent with federal law. The CEC's responsibility is limited and only focuses on licensing of solar projects 50 MW and larger.
2. BLM is the lead agency under NEPA and is the only legal entity for this federal action. Other federal and state agencies can participate as cooperating agency under NEPA (40 CFR 1501.6). The reason BLM must be the lead is due to the fact that BLM is a federal land and resource management agency. In other words BLM must manage the project within the context of a larger more comprehensive resource management

planning process in order for the project to be compatibility with other land uses within local and regional areas.

3. Delegating the responsibility to the CEC for federal actions, within the CDCA, is unworkable – evident by project-related problems and issues raised by the public to date, and it's most recent petition to ask for more time to get more data.
4. The federal Council of Environmental Quality (CEQ) promulgated regulations implementing NEPA at 40 CFR 1500. Part 1502 dedicates an entire section of the regulations addressing the Environmental Impact Statement (EIS) process. Not a single provision of 40 CFR 1502 was followed by BLM during presentation of the Solar project.
5. Some specific comments regarding the content of the DEIS.
 - a. The Draft was written in March of 2010 and there has been numerous workshops where the draft was substantially re-written and not purview to the public.
 - b. The Draft has not been circulated to the public in a meaningful way that is generally used for comment periods under NEPA. Regulation at 40 CFR 1502.10 requires that "agencies shall use a format for EIS's each will encourage good analysis and clear presentation of the alternatives including the proposed action". This has not been adhered to with the presented Staff Assessment and Draft Environmental Impact Statement and Draft California Desert Conservation Area Plan Amendment dated March 2010 Report.
 - c. BLM did not share the above-mentioned report with the public until requested to do so. This is evident by a link that was just posted by the BLM on the BLM California Website to the CEC Website the week of June 15, 2010 on a document that is four inches thick (1500 pages) with a deadline of July 8, 2010.
 - d. Two historical asserted road rights by Kern County were not discovered until June 24, 2010. Other rights of ways issued related to Cal Trans and private citizens properties still need to be examined and are not included in the above-mentioned report.
 - e. A complete water study needs to be included in the EIS, including alternatives to the proposed water usage. There are major water management issues in the Indian Wells Valley and the EIS process is

the only appropriate framework for timely disclosure and analysis of the impacts of this project on the water resources. For example, it is a well known fact that the Indian Wells Valley is over-drafting the basin by 2 to 6 feet a year, which will eventually lead to degradation of the water qualities that could start reflecting more arsenic and total solids in their water. Water Quantity may not be defined as significant, but Water Quality is. We understand that the water consumption has been cut significantly, however, we question the quality of water that will be left in the Indian Wells Valley as the decrease to the aquifer will at some time be exponential and not linear.

- f. The DEIS socio economics section does not clearly define the impacts to the Indian Wells Valley's largest employer, the Naval Air Warfare Center Weapons Division at China Lake.
- g. The Naval Air Warfare Center Weapons Division at China Lake expressed concerns regarding air clarity impacts associated with the cooling tower plumes, thermal signatures, glint, fugitive dust, light pollution, radio frequency encroachment, impact to navy water resources and encroachment into military influence areas.
- h. The applicant proposes to utilize 165 acre-feet of water for maintenance and operations of the facility plus 1500 acre-feet of water for construction. This has been pointed out at numerous workshops (after the DEIS) that this number is too low to move and grade 7.5 million cubic yards of material that may possibly contain Valley Fever spores. Numerous people in the industry estimate 6000-8000 acre-feet is needed.
- i. Under Cultural Resources and Native American values, letters were sent out to the Tule River Indian Tribe, Tejon Indian Tribe, Kern Valley Indian Council and Tubatulabals. The analysis of pre-historic and native resources associated with this area overlooks the ties between this area and other significant resource districts, including the Coso District to the north. The DEIS excludes the Terese Petroglyph and significant papers such as dating Classic Coso Style Sheep Petroglyphs in the Coso Range and El Paso Mountains; Implications for regional prehistory dated 2/15/04. This significant find dictates that the tribes to the north and east should be added to the consultations; i.e. the Bishop Paiute Tribe, Big Pine Paiute Tribe of the Owens Valley, the Fort Independence Paiute Tribe, the Lone Pine Paiute-Shoshone Tribe, the Panamint Indian Tribe, and the Timbisha Shoshone Tribe.

The BLM should continue the dialogue with Tule Indian Tribe, the Tejon Tribe, The Kern Valley Indian Council and the Tubatulabals, but add the other tribes for consultation.

- j. Many of the safety aspects of the proposed solar plant have not been adequately discussed with Kern County - as discussed in the workshops on April 22 and 23, 2010. The applicant had set up a meeting with the County regarding fire and police safety but these meetings were not to occur before the thirty day deadline that superimposed the discretionary 45 day period as per CEQA and were not disclosed to the public before the July 8, 2010 NEPA deadline.
- k. Many changes regarding hazardous waste and air quality were scheduled in workshops in April and still have not been documented in the DEIS.
- l. Changes in wet cooling towers from 16 hours to 24 hours have not been adequately addressed in the document.
- m. The addition of two 4-acre ponds has not been adequately addressed.
- n. The additional acreage that was added to the first proposal straddling the watercourse has not been adequately addressed. There has not been adequate scientific data provided by the Corp of Engineers nor the United States Geological Survey regarding the possibility of actually changing a watercourse which was instrumental in a flood that damaged personal property and Naval Air Warfare Center Weapons Division Property in the 1980's nor is it documented anywhere in above mentioned report.

Recently Bob Abbey, Bureau of Land Management (BLM) Director said at a recent presentation, "*The fast-track process is about focusing our staff and resources on the most promising renewable energy projects, not about cutting corners, especially when it comes to environmental analyses or opportunities for public participation*".

Greg Miller of the BLM California Desert District Renewable Energy Manager said to the District Advisory Council on June 19, 2010 that the fast track projects include only the applications that are far along in the permitting process. By any standard of measurement, Ridgecrest Solar has not published a single page of a NEPA EIS. It is not clear what criteria BLM used to determine that this project warrants fast-track status?

Please see our referenced letters for more specifics that although some were docketed, they were not acknowledged received in the text. These letters do have date stamps by the local BLM Office.

It is still unclear how this water-intensive project located on federal lands can possibly be properly managed when the federal permitting agency has no jurisdiction over the most critical aspect of the project: water quality and quantity.

In other words, the agency that is issuing the permit is not the agency that manages the water. This leaves the public with no clear single regulatory agency to manage the water resources or our aquifer.

To reiterate, the CEC and the BLM is required under CEQA and NEPA to prepare an EIS that fully analyzes the impacts of Alternatives, including the Proposed Action, in order to disclose to the public the impacts of the project on the public lands.

Respectfully



Sophia Anne Merk

Public Coordinator for NPLNEWS.COM

Cc: BLM Ridgecrest Field Office, BLM California District Office, BLM State Office, BLM National Office
California Fish and Game Department
US Fish and Wildlife Services
Environment Protection Agency
Kern County Planning Department, Kern County Water Agency (Terry Rogers)
Kern County Water Resources
Lahonton Water District, Indian Wells Valley Water District
California Resources Branch
Native American Tribes
USGS at Menlo Park

From: [kim bauer](#)
To: carspp@blm.gov; esolorio@energy.state.ca.us
Subject: negative comment on Proposed Ridgecrest Solar Power Project
Date: 04/17/2010 12:03 PM

my comment on the ridgecrest project is negative on construction of this project as it will disturb too much habitat that is already been disrupted by construction in this area. these type of projects should be built in the cities that need the electrical plants not in this sensitive area of the desert.

 **EMAILING FOR THE GREATER GOOD**
[Join me](#)

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Penelope LePome, M.S. 10 MAY 24 AM 10: 20
635 North Rio Bravo Street
Ridgecrest, CA 93555 CALIF. DESERT DISTRICT
(760) 375-5287 MORENO VALLEY, CA
Email: plepome@earthlink.net

May 18, 2010

Eric Solorio, Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, California 95814-5512

Docket Number: 09-AFC-9
Ridgecrest Solar Power Project
Comment on SA/DEIS

I am submitting my comments on the Ridgecrest Solar Power Project SA/DEIS.
Areas of concern include:

AIR QUALITY I don't believe that the applicant has a plan that will prevent dust and Coccidiomycosis spores, the cause of Valley Fever, from being blown. The applicant says that they will apply water and other palliatives and shut down work if these do not work after 30 minutes. If they haven't worked for 30 minutes, why would they work for minutes, hours and DAYS afterward? Ridgecrest is downwind and directly in the path of the prevailing winds from the project site. Will there be someone from the Kern County Air Quality Control Board on the site after hours and on the weekend? Who will be applying water after the project is shut down and on the weekends?

WATER I do not believe the applicant has adequately projected their water needs, based on the projected needs used by similar sites, specifically the Beacon project. Even by extending the construction period and building in phases to ration the water, there will not be an adequate amount of water. The Indian Wells Valley Water District cannot deliver more water.

Amortizing the water to be used over the life of the project when calculating mitigation implies that water used at the beginning of the project is of the same quality as that used at the end. Experience in our valley shows that water is gradually degrading as levels in wells are dropping. The proposed "Cash for Grass" will take at least a couple years to begin the mitigation. Meanwhile, the best water will have been used. One to one mitigation is not sufficient to account for the degraded water quality the residents will be left with. Any water that is conserved should be used to mitigate our overdraft. Has there been an accounting of the how much water will be used during decommissioning?

TRAFFIC MANAGEMENT Until the water pipeline is built, trucks will have to transport water to the site. Since the CalTrans widening will not be completed and no special access road to the site is planned, this will require the trucks to cross Hwy 395. There is

a rise in the highway south of the intersection. Much of the traffic is through traffic traveling at or above the speed limit. I am concerned that cross-traffic will increase the risk of accidents. Other traffic will include workers coming to and from the site on a staggered schedule, delivery of materials, as well as the actual equipment on the site. The intersection cannot withstand this increased traffic.

PROPANE I did not see how the amount of propane was calculated. Janet Westbrook sent a letter to Billy Owens of Solar Millennium dated May 6, 2010. She referenced <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4278> and said, "**the Average Min. Temperature ... is 30.7°F and 30.2°F.** Please note that Jan, Feb, Mar, Apr, and May, and Oct, Nov, Dec. all have average MIN temps below the desired 55°F. Note also that we can get snow in January and March. This January we had snow on the ground for most of a day twice." Given the low temperatures we have at night and, sometimes for extended periods, it appears that the amount of propane needed is significantly underestimated. The SA/DEIS says that propane will be obtained locally. What range constitutes locally? Bakersfield about 110 miles away? Has the amount of fuel needed to deliver the propane and the exhaust delivering the fuel been calculated in determining the amount of air pollution from exhaust and the carbon footprint?

In addition, I am concerned about the amounts of propane and flammable HTF stored on the site. If there were an accident, prevailing winds would blow toxic, hazardous fumes directly to our homes and schools. I am also concerned that Kern County has only one HAZMAT unit to address such an accident and it is two hours away.

BIOLOGICAL I agree with the findings of the experts that the biological concerns for protecting desert tortoise, Mojave ground squirrel, burrowing owls, other birds, lizards, other animals and plants, and maintaining connectivity for the animals can not be mitigated.

ALTERNATIVES The SA/DEIS does not adequately address the alternatives. The discussion is superficial.

While I support solar power, I do not think this is the right location for this project. In my opinion, the project's impacted resources have not been fully disclosed, evaluated, and can't be reasonably mitigated to the level of insignificance.

Sincerely,



Penelope LePome

cc: Janet Eubanks
BLM California Desert District Office
c/o Ridgecrest Solar Power Project
22835 Calle San Juan De Los Lagos
Moreno Valley, CA 92553

Commenter sent in copyrighted material which could not be posted without breaking copyright law. For your convenience, bibliographic information is included below.

Rogers, Alexander K. and Frances G. Rogers. "Rock Art Analysis of the Terese Site, El Paso Mountains, California." *American Indian Rock Art, Volume 30*. Joseph T. O'Connor, ed. American Rock Art Association, 2004. 57-67.

From: dennis_burge
To: carspp@blm.gov; esolorio@energy.state.ca.us
Subject: Scoping Comments for Proposed Solar Millenium-Ridgecrest Project
Date: 04/28/2010 12:45 PM

The Executive Committee of the Owens Peak (Ridgecrest) Group of the Sierra Club has voted to oppose the proposed Solar Millenium-Ridgecrest Solar Power Project. Sierra Club policy on siting of large solar power projects is that they should be located on already disturbed lands and avoiding ecologically sensitive lands. The proposed Ridgecrest site is good quality habitat for threatened and endangered species, such as the desert tortoise, and so should not be approved.

We are also concerned about the use of scarce water and the large amounts of dust that are likely to be created during construction. We believe Solar Millenium has underestimated the amount of water needed during construction. Also we are opposed to the "fast tracking" of the Project since it does not allow for the careful consideration of important issues as required by CEQA.

Dennis Burge
Owens Peak Group (Sierra Club) Chairperson

FIRE EFFECTS ON SEED BANKS AND VEGETATION IN THE EASTERN MOJAVE DESERT: IMPLICATIONS FOR POST-FIRE MANAGEMENT

Matthew L. Brooks

Julie V. Draper

U.S. Geological Survey

Western Ecological Research Center

Las Vegas Field Station

Henderson, NV USA

INTRODUCTION

Limited information is currently available on the short-term effects of fire on soil seed banks and vegetation in the Mojave Desert. This information is critical for determining if postfire seedings are potentially beneficial, or even necessary, in this ecosystem. Of all the management tools, aerial seeding is potentially the most cost-effective over large areas because it requires the least amount of lead time. There are clearly many questions associated with this technology, but the more immediate question is whether seeding treatments are necessary in the first place. This question hinges on understanding the short-term effects of fire on the abundance and species composition of soil seed banks and germinated plants immediately following the 70,736 acre Hackberry Fire Complex which occurred at the Mojave National Preserve in the eastern Mojave Desert during late June 2005. Support for this project was provided by the Joint Fire Science Program (project #06-1-2-02).

METHODS

Six sites in the Hackberry Fire Complex were used as replicate sampling blocks, each containing one burned and one unburned experimental unit with 5 non-overlapping sampling units randomly established inside each. This randomized blocks study design consists of 6 blocks X 2 fire treatments X 5 sampling units = 60 total sampling plots. Sampling plots were set up in October 2005 and consisted of a 5 x 30m FMH brush belt transect (USDI National Park Service 2003), overlaid with a 20 x 50m modified Whittaker plot (Stohlgren et al. 1995). Burn severity measurements were collected on the brush belt transects, following FMH protocols (USDI National Park Service 2003). Four 6cm diameter x 3cm deep (volume = 85cm³) soil samples were collected at each corner of the brush belt transect for determination of seed bank density and species richness and composited into a single soil sample. A ½ cup (111cm³) portion was grown in a greenhouse during winter 2005-06 following methods adapted from Brenchley and Warrington (1939) and modified by Young and Evans (1975). Seed bank density and species richness were measured by counting the number of germinated seedlings for each species.

Above-ground density, cover, and species richness of herbaceous and woody plants were measured during the phenological peak for annual plants in April and early May, 2006, following National Park Service FMH protocols (USDI National Park Service 2003). Spatially nested modified-Whittaker plots were used to measure plant species richness at 1, 10, 100, and 1,000m² scales. We focus specifically on the results of the seed bank and herbaceous plant sampling.

Data was analyzed as a randomized blocks analysis of variance (ANOVA) statistical model. The predictor variable was fire (burned, unburned). The response variables included seed bank density by groups of plants (non-native, native), above-ground vegetation density by groups, and species diversity of the seed bank and above-ground vegetation. The data was log transformed since it was not normally distributed and analyzed with SAS Proc GLIMMIX.

RESULTS AND DISCUSSION

Seed banks

Total seed bank density was significantly lower in burned (2,494 seeds/m²) than unburned (12,460 seeds/m²) areas ($P < 0.0001$) (Fig. 1). This translates into a seed bank depletion (mortality) rate of 80%. Recent aerial seedings of postfire landscapes in the Mojave Desert have ranged from 140 seeds/m² (13 seeds/ft²) (Christiana Lund, BLM, pers. comm.) to 646 seeds/m² (60 seeds/ft²) (Karen Prentice, BLM, pers. comm.), and postfire drill seedings are typically applied at a rate of 323 seeds/m² (30 seeds/ft²) (Karen Prentice pers. comm.). If these seeding rates were applied after the Hackberry Fire Complex, they would have only reduced the depletion rate of the seed bank to 79% if 140 seeds/m² were added, or 75% if 646 seeds/m² were added. To completely ameliorate seed bank depletion rates (to a 0% net loss), 9,966 seeds/m² (926 seeds/ft²) would have to have been added, an increase of 1,543% over the highest aerial seeding rates typically used.

Non-native seed densities (dominated by *Erodium cicutarium*) were significantly lower in burned (345 seeds/m²) than unburned (5,667 seeds/m²) areas ($P < 0.0001$) (Fig. 1) (94% depletion rate). Native seed densities were also significantly lower in burned (2,012 seeds/m²) than unburned (6,701 seeds/m²) areas ($P = 0.0020$) (70% depletion rate). Seed bank species richness per 483cm² soil sample was significantly lower where burned (3 species) than unburned (6 species) ($P < 0.0001$).

Above-ground herbaceous plants

Total herbaceous plant density was significantly lower in burned (107 plants/m²) than unburned (329 plants/m²) areas ($P < 0.0001$) (Fig. 2). Non-native density was lower in burned (62 plants/m²) than unburned (156 plants/m²) areas ($P < 0.0001$). Similarly, native density was lower where burned (45 plants/m²) than unburned (174 plants/m²) ($P < 0.0001$). Thus, plant densities were reduced 67% during the first postfire spring, and these reductions were similar for native and non-native species. Species richness of herbaceous plants was also significantly lower in burned than unburned areas at 1m² (7 species vs. 10 species), 10m² (14 vs. 16), 100m² (27 vs. 30), and 1,000m² (40 vs. 45) spatial scales.

SUMMARY AND CONCLUSIONS

These first year results indicate that the Hackberry Fire Complex of June 2005 had the immediate effects of reducing soil seed bank and herbaceous plant density and diversity during the first postfire fall (October 2005) and spring (April-May 2006) respectively. Typical postfire seeding rates for the Mojave Desert would not have resulted in appreciable increases in seed bank densities if they had been applied after this fire, although our data do not allow us to that these differences would have not have been ecologically significant. The broader implications of these results will be better known after we evaluate results from postfire years 2 and 3.

LITERATURE CITED

- Brenchley, W. E., and K. Warington. 1930. The weed seed population of arable soil. 1. Numerical estimation of viable seeds and observations on their natural dormancy. *Journal of Ecology* 18: 235-272.
- Stohlgren, T.J., M.B. Falkner, and L.D. Schell. 1995. A Modified-Whittaker nested vegetation sampling method. *Vegetatio* 117:113-121.

USDI National Park Service. 2003. Fire monitoring handbook. Boise (ID): Fire Management Program Center, National Interagency Fire Center.
http://www.nps.gov/fire/fire/fir_eco_monitoring.html.

Young, J. A., and R. A. Evans. 1975. Germinability of seed reserves in a big sagebrush community. *Weed Science* 23: 358-364.

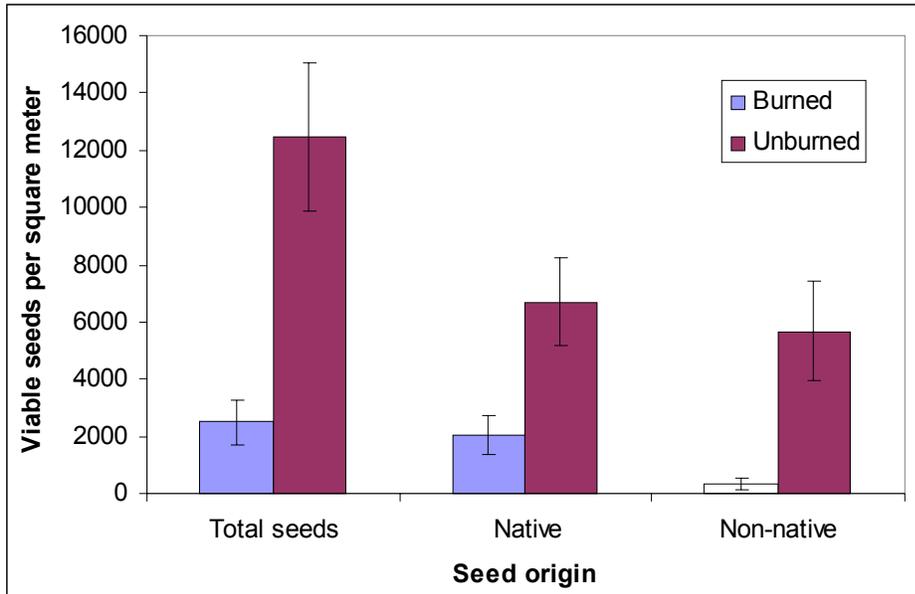


Fig. 1. Density of viable seeds in the seed bank during October 2005 following the June 2005 Hackberry Fire Complex (+/-1 SE, n=6).

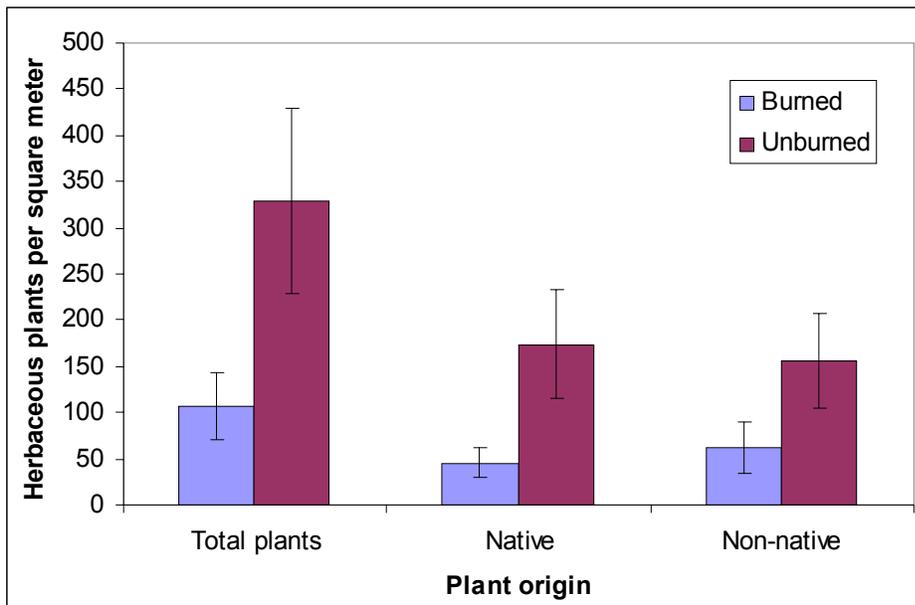


Fig. 2. Herbaceous plant density during April-May 2006 following the June 2005 Hackberry Fire Complex (+/-1SE, n=6).

Commenter sent in copyrighted material which could not be posted without breaking copyright law. For your convenience, bibliographic information is included below.

Brown, David E. and Richard A. Minnich. "Fire and Changes in Creosote Bush Scrub of the Western Sonoran Desert, California" *The American Midland Naturalist*, Vol. 116, No. 2. The University of Notre Dame, Oct., 1986. 411-422.

Commenter sent in copyrighted material which could not be posted without breaking copyright law. For your convenience, bibliographic information is included below.

Brooks, Matthew L. "Competition between Alien Annual Grasses and Native Annual Plants in the Mojave Desert." *American Midland Naturalist* 144. University of Notre Dame, 2000. 92-108.

Commenter sent in copyrighted material which could not be posted without breaking copyright law. For your convenience, bibliographic information is included below.

Brooks, M.L. and R.A. Minnich. "Fire in the Southeastern Deserts Bioregion."
Chp 16 in: Sugihara, N.G., J.W. van Wagtendonk, J. Fites-Kaufman, K.E. Shaffer, and A.E. Thode (eds.). *Fire in California Ecosystems*. University of California Press, Berkeley, In Press.

**THE EFFECTS OF WILDFIRE ON REPTILE POPULATIONS
IN THE MOJAVE NATIONAL PRESERVE, CALIFORNIA**

Final Report
January 2009

Prepared By:
Kirsten E. Dutcher
California State University, Long Beach

ACKNOWLEDGEMENTS

I cannot express enough appreciation for the generous funding provided by the California Desert Research Fund at the Community Foundation, the California Desert Studies Consortium, and California State University. Also, to the Desert Studies Center at Zzyzx, for use of equipment and facilities.

I would also like to thank the individuals at the Mojave National Preserve who made this research possible, particularly David Nichols and Debra Hughson. Also, my advisor Dr. James W. Archie who introduced me to the study area and supported my research decisions. My sincere gratitude goes to Dr. Dessie Underwood, Dr. Esteban Fernandez-Juricic, Dr. Simon Malcomber, Dr. Lynn Zimmerman, Terry Christopher, and Alicia Fox for assistance with experimental design and proofreading.

I am grateful to Marcello Aguirre, Matt Baxter, James Dutcher, Robert Dutcher, Cristina Francois, Erin Guinn, Ashley Jones, Stephen Jones, Sara Louwsma, Jeff Putzi, Jim Toenjis, and members of the California Conservation Core for field assistance and willingness to work long hours on this project.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	ii
LIST OF TABLES	iv
LIST OF FIGURES	v
ABSTRACT	vi
INTRODUCTION	1
Ecological Role of Wildfire.....	1
Fragmentation, Wildfire, and Reptile Communities.....	1
Wildfire and Exotic Plants in Desert Regions	2
Wildfire in the Mojave Desert	2
Objectives.....	2
MATERIALS AND METHODS	4
Site Selection	4
Temperature Data Collection.....	4
Transect Design	4
Vegetation Point-Intercept Transect Surveys	4
Reptile Transect Surveys.....	5
Pitfall Trapping.....	5
Statistical Analysis.....	6
RESULTS	7
Ambient Air, Ground Surface, and Subterranean Temperatures.....	7
Vegetation Point-Intercept Transect Surveys	7
Reptile Transect Surveys.....	8
Pitfall Trapping	9
DISCUSSION	10
Temperature and Vegetation	10
Comparison of Transect and Pitfall Data	10
Future Research Recommendations.....	10
Conservation Implications.....	11
TABLES	12
FIGURES	19
LITERATURE CITED.....	25

LIST OF TABLES

1. Transect Locations in the Hackberry Region, Mojave National Preserve	12
2. Locations of Pitfall Trap Arrays in the Hackberry Region of the Mojave National Preserve	13
3. Percent Vegetation Cover in Unburned and Burned Habitats by Height Class	14
4. Reptile Species Observed During Transect Surveys	15
5. Reptile Species Captured During Pitfall Trapping	16
6. Mammal Species Captured During Pitfall Trapping	17
7. Invertebrate Families Captured During Pitfall Trapping	18

LIST OF FIGURES

1. Habitat patch locations within the Hackberry region of the Mojave National Preserve	19
2. Transect design	20
3. Pitfall array design	21
4. Ambient, ground, and subterranean temperatures ($\bar{x} \pm SD$)	22
5. Total number of <i>Uta stansburiana</i> observed during transect surveys in each habitat type by year	23
6. Total number of <i>Uta stansburiana</i> captured in pitfall traps moving into or out of habitat patches by year	24

ABSTRACT

During the summer of 2005, lightning caused wildfires in the Mojave National Preserve, California. The fires burned 287 km² and left unburned patches surrounded by burned vegetation.

This study examined the effects of the wildfires on reptile diversity and *Uta stansburiana* (side-blotched lizard) abundance by conducting transect surveys at patches and along the fire perimeter in burned and unburned habitats. Temperature and vegetation cover data were recorded at each site. Pitfall trapping was conducted at patch sites to monitor *U. stansburiana* movements.

The wildfires resulted in higher temperatures in burned areas and more cover in unburned areas. Burned and unburned habitats had comparable reptile diversity and *U. stansburiana* was most abundant. *U. stansburiana* in unburned perimeter locations were constant, indicating this population was the least impacted. In 2006 the most were found along the burned side of the perimeter where high temperatures may have allowed for optimal basking sites. In 2007 the temperatures increased and the individuals in this area decreased by half.

The number of individuals moving out of patches was consistent but the number moving in increased, indicating a preference for unburned areas. The low numbers recorded in this study suggest that the wildfire negatively impacted the herpetological community.

INTRODUCTION

Ecological Role of Wildfire

Disturbance is common to all ecosystems and results in altered landscapes that differ from original habitat in floral and faunal composition and abundance (Reice, 2001). Natural disturbance, particularly wildfire, causes habitat changes by killing mature plants, seedlings, and seeds. Fire also alters the nutrient levels and water absorption abilities of soil. The effects of fire result in changes in microclimate, particularly post-fire soil temperature and moisture, and drastically reduce ground cover (Brooks, 2002; Odion and Davies, 2000).

In systems that are fire adapted this disturbance is essential for floral and faunal persistence (Parr and Chown, 2003). However, in areas that have not historically been subjected to frequent or intensive fire regimes, such as arid ecosystems, species diversity and abundance suffer due to mortality during the fire and the subsequent alteration of habitat (Brooks and Matchett, 2003; Taylor and Fox, 2001).

The unpredictable nature of wildfires often creates a habitat framework of small unburned patches within what was once contiguous habitat (Parr and Chown, 2003; Turner et al., 1997). Wildfire thus fragments habitat by creating small patches that are separated from one another by a habitat type that no longer resembles original conditions. Fragmentation due to wildfire does not necessarily indicate permanent habitat loss (Fahrig, 2003). The effects of wildfire are unpredictable and recovery is highly variable depending on location, burn severity, intensity, and post-fire plant succession (Davies et al., 2001; McKenzie et al., 2004; Reice, 2001; Turner et al., 1997).

Fragmentation, Wildfire, and Reptile Communities

A review of herpetofaunal response to fire found that many animals exhibit panic and experience high rates of mortality (Russell et al., 1999). Because of the need for thermoregulatory, foraging, and protected sites, reptiles are highly dependent on habitat structure and fire has been shown to reduce their abundance and limit movements (Setser and Cavitt, 2003; Valentine et al., 2007). However, unburned habitat patches may serve as refugia for reptile populations that survive in the patch, nearby rock outcroppings, or burrows in the ground (Faria et al., 2004; Friend, 1993).

While vegetated areas produce shaded microclimates where soil temperatures are less extreme and moisture is preserved, disturbed habitats generally show reduced vegetation complexity (Patten and Smith, 1975). Habitats dominated by invasive plants also show decreased numbers of invertebrates. This reduction in thermoregulatory and food resources results in a decrease in total reptile abundance. Studies in disturbed areas in southern California, Australia, and Egypt have indicated that reptile abundance and diversity were positively correlated with vegetation percent cover and native vegetation (Attum et al., 2006; Russell et al., 1999; Valentine et al., 2007).

Wildfire and Exotic Plants in Desert Regions

Historically, large wildfires in desert communities have been uncommon because without a relatively large, continuous fuel source, wildfires tend to have reduced size and intensity (Hanes, 1971; Reice, 2001). However, in North American deserts, wildfires have become increasingly frequent since the 1970s. This is because of the introduction of exotic plant species, particularly *Erodium cicutarium* (fillaree), *Bromus sp.* (foxtail, cheatgrass) and *Schismus sp.* (Mediterranean grass). These species, native to Europe, Africa, and Asia, are adapted to fire regimes in arid ecosystems and create a blanket of dry vegetation that facilitates the spread of wildfire by creating a layer of dry, fast burning fuel. Recurrent fire in the American southwest amplifies the presence of these alien species, which have been shown to replace long-lived natives, changing the floral composition (Brooks, 1999, 2000a, 2000b; Brooks and Matchett, 2003; Esque, 1999; Young, 2000). Because of these effects wildfire is currently considered one of the main threats to native species in the Mojave (Brooks, 2002).

Wildfire in the Mojave Desert

The Mojave Desert is subjected to frequent lightning strikes during the summer monsoon season (May-August) and wildfires are generally caused by dry lightning storms during this period (Esque et al., 2003). Large fires are infrequent events in areas with native vegetation. Consequently, wildfires in the Mojave have not been well studied, and their effects have yet to be well documented (National Park Service, 2003).

On 22 June 2005, a series of dry seasonal storms passed through the Mojave National Preserve (MNP), San Bernardino County, California. Dry lightning caused multiple fires that merged to become the Hackberry complex of wildfires. The fires burned for seven days and were contained on 28 June 2005. A total of 287 km² burned within the Preserve between elevations of 1097-2012 m (http://www.nps.gov/moja/parkmgmt/upload/Hackberry_BAER_Plan%2006-05.pdf). Within the Hackberry region the dominant form of vegetation affected by the fires was juniper woodland (Mojave National Preserve Maps, 2005). However, the fire did not consume all of the vegetation and the burned landscape contained several patches of unburned habitat. These habitat islands were surrounded on all sides by burned vegetation resulting in a fragmentation of the habitat.

Objectives

The Mojave is home to an incredible array of reptiles and the Hackberry region supported many species. The objective of this study was to determine the effects of the Hackberry wildfires on the herpetofaunal community. Based on previous research, most of which indicates increased mortality as well as limited habitat utilization and movement following a wildfire, it was reasonable to expect populations in the Mojave would show similar responses. I expected to find increased ground and subterranean temperatures and decreased vegetation cover in burned areas, with cover increasing through time, but not

achieving pre-burn proportions or composition. The burned locations were expected to support fewer reptile species based on the resources available. As density increased with time, more individuals were expected to disperse from unburned habitat patch locations. I tested the hypothesis that movement into and out of unburned habitat patches would change with time. I predicted that in the first year of this study more individuals would migrate into unburned habitat patches and that in the second year the individuals would disperse out of patches as lizard density and vegetation in burned areas increased.

MATERIALS AND METHODS

Site Selection

The Mojave National Preserve (MNP) lies in the eastern portion of the Mojave Desert of California. The Preserve is located to the south of Death Valley and north of Joshua Tree National Parks, between Interstates 15 and 40. The infrequency of large wildfires, remoteness of the area, and limited impact from development make the MNP an excellent area to study. Permits were obtained from the National Park Service, California Department of Fish and Game, and California State University (IACUC number 279).

Sampling for this study was concentrated in what was predominantly juniper woodland between the elevations of 1,370 m-1,675 m (Mojave National Preserve Maps, 2005). Sites were located near Cedar Canyon and Black Canyon roads, in the Mid-Hills area (Figure 1). Seven unburned habitat patches, that were surrounded by burned landscape on all sides, and seven perimeter locations along the fire edge were surveyed. Patch sites were mapped using a handheld Global Positioning System (GPS) unit and ranged in size from approximately 1,527-36,580 m².

Temperature Data Collection

Ambient, ground, and subterranean temperatures were collected using a handheld Ashcroft dial thermometer. All temperatures were recorded after the thermometer was placed in a temporarily shaded area for 2 minutes and collected at the start of each transect survey on both the burned and unburned sides. Air temperature was recorded after holding the thermometer several feet above the ground, ground temperature was recorded after placing the thermometer on the soil surface, and subterranean temperature was recorded after placing the tip of the thermometer 3-5 cm into the soil.

At one habitat patch an Eastman maximum/minimum thermometer was installed on a wooden stake 50 cm above the ground to determine air temperature extremes.

Transect Design

Transects were used to assess species diversity and abundance across distinct habitat types with clearly defined borders (Morris, 1995). At each sampling site three parallel transects that crossed the transition zone from burned into unburned habitat were monitored. Each transect was a straight-line 50 m in length, and bisected the habitat, with 25 m in each habitat type. Transects were separated from replicates by 20 m (Figure 2). Transects were measured out using a 25 m Lufkin tape measure. I used GPS waypoints to mark the start and end locations of each transect (Table 1).

Vegetation Point-Intercept Transect Surveys

Vegetation point-intercept transects were conducted by walking the transect lines described above and recording vegetation height every five meters. At each point a 7-cm

diameter pole was placed directly on the point and the height of each plant that touched recorded (Barbour et al., 1999). Plant height was classified as <10 cm, 10-30 cm, 30-50 cm, 50 cm-1 m, and >1 m. Dead or severely burned vegetation was not recorded. I recorded vegetation once a month from May-October 2006 and March-August 2007. A total of 504 vegetation transects were conducted (14 sites x 3 replicates x 12 times).

Reptile Transect Surveys

During the fall and spring, transect surveys were conducted throughout the day; however, in the summer, when temperatures were at their highest, transect surveys were conducted in the morning and late afternoon. In order to find lizards by direct observation in both burned and unburned areas, each transect line was walked two times and a snake stick used to flush lizards from grasses and shrubs. Sighting effort was concentrated to 5 m on either side of the transect line. Reptile species were identified, and distance along the transect line was documented in 5 m segments. During the course of this study I conducted a total of 1,542 transects (14 sites x 3 replicates x 36 times).

Pitfall Trapping

Pitfall arrays were established at the seven habitat patches to determine the diversity of reptile species in patches and monitor movements (Table 2). At each patch six 5-gallon plastic buckets were buried so the rims were flush with the soil surface. Three drainage holes were drilled into the bottom of all traps to prevent the accumulation of water. Each trap was fitted with a cover to provide shade and protection. The covers were inverted plastic bucket lids with three 5 by 5 cm tall pieces of wood attached at equal distances along the edge (Fisher et al., 2004). Attached to each cover was a 50 cm long piece of jute that served as a rodent escape string to minimize mortality. The pitfall traps were stocked with two to three small pieces of kibble, a 12 cm long by 5 cm diameter PVC pipe piece lined with small amounts of batting, and a 3-5 cm piece of wet sponge to keep trapped animals hydrated (Karraker, 2001; Persons and Nowak, 2006). When the wet sponge attracted ants it was temporarily removed (Fisher et al., 2004). When in use, traps were checked every 12 hours. When not in use, the bucket lid was securely fastened, rocks placed on the lid, and soil placed loosely over the lid to seal the trap.

Each bucket trap was separated by 7.5 m of 30 cm tall tan cloth drift fencing, which guided reptiles differentially into traps from burned and unburned habitats. Each array was arranged in a zigzag pattern, providing more intercept angles (Fisher et al., 2004). The buckets were completely fenced on three sides, with three buckets fenced on the patch side and three buckets fenced on the burn side (Figure 3). This design allowed for the study of directional movement, as individuals captured in buckets fenced on the patch side came from the burn area and individuals captured in buckets fenced on the burn side were moving away from the patch. The fencing was held in place by wooden stakes and buried 7-12 cm into the ground.

The array and trap numbers of all captured lizards were recorded. A small tissue sample was taken from the tail tip and preserved in 95% ethanol for possible later genetic

analysis (Hirsch et al., 2002). For easy recognition of an individual from a distance captured lizards were marked, based on their site location, with nail polish. Because they were captured in higher numbers, *Uta stansburiana* (side-blotched lizard) were also marked by toe clipping one digit (Ferner, 1979; Swingland, 1978). Small mammals (that did not escape via the escape string) and captured invertebrates were recorded to species and family, respectively. No mortalities occurred during the course of this study and all individuals were released at the site of capture.

Trapping was conducted on a monthly basis, between temperatures of 2-42°C. Traps were closed during heavy rains and when temperatures reached 0°C to prevent mortality. Trap effort for this study was defined as the number of open traps per trap session, with a session being 12 hours. Trap effort was 5,324 trap days/nights (7 arrays x 6 buckets in each array x 135 trap sessions-346 trap closures due to unforeseen circumstances).

Statistical Analysis

A Shapiro-Wilk test for normality was conducted, and when data were not normally distributed transformations using $\log(x)$, $\ln(x)$, x^2 , and \sqrt{x} were performed. Analyses involving herpetological community structure were conducted using PRIMER. All other analyses were completed using PRISM statistical software.

The mean, standard deviation, and minimum/maximum temperatures were calculated for temperature data. Air and ground surface temperatures in warm (May-August 2006 and 2007) and cold seasons (September-October 2006 and March-April 2007) were analyzed using paired *t*-tests.

Vegetation data were analyzed using χ^2 , with the means and standard deviations of each plant height class calculated to compare plant heights in burned and unburned areas.

The observation rate of reptile species seen during transect surveys was calculated. ANOSIM (analysis of similarity) of species diversity between years and in burned and vegetated habitats and SIMPER (similarity percentages) analyses were conducted (Clarke, 1993). Transect data collected on *U. stansburiana* locations by line segment through time in each habitat type were analyzed using Friedman randomized block test, χ^2 , and Fisher's Exact tests.

The capture rate of each lizard species caught during pitfall trapping was calculated along with the recapture rate for *U. stansburiana*. ANOSIM and SIMPER analyses were conducted to determine dominance in the herpetological community. Abundance data collected on trapped *U. stansburiana* were analyzed with a paired *t*-test and a Fisher's Exact test. Species of mammal and family of invertebrate captured were also tallied.

RESULTS

Ambient Air, Ground Surface, and Subterranean Temperatures

The mean ambient air temperature ($\pm SD$) for the 2006 and 2007 warm seasons combined was $31.1 \pm 5.0^\circ\text{C}$ and for cold seasons was $20.6 \pm 7.2^\circ\text{C}$. Ambient air temperatures in the warm season of 2007 were significantly higher than 2006 ($t = 5.420$, $df = 195$, $p < 0.0001$, \bar{x} 2006 = 29.6 ± 5.1 , \bar{x} 2007 = 32.4 ± 4.5). The means of the cold seasons were not significantly different ($t = 0.3196$, $df = 55$, $p = 0.7505$, $\bar{x} = 20.6 \pm 7.2$) from one another (Figure 4a).

Ground surface temperature data for 2006 and 2007 were divided by habitat type, season, and year creating data sets for 2006 and 2007 of warm season unburned, warm season burned, cold season unburned, and cold season burned. Unburned habitats were not found to be significantly different between years in the warm season ($t = 0.0206$, $df = 194$, $p = 0.9836$, $\bar{x} = 31.5 \pm 5.9$). Significant differences were found in the cold season ($t = 3.570$, $df = 55$, $p = 0.0007$, \bar{x} 2006 = 19.3 ± 5.2 , \bar{x} 2007 = 16.7 ± 6.9), with 2006 being warmer. In burned habitat significant differences were not found between years in the warm season ($t = 1.091$, $df = 193$, $p = 0.2767$, $\bar{x} = 32.5 \pm 6.1$), while the 2006 cold season showed a significant difference in means between years ($t = 8.877$, $df = 52$, $p < 0.0001$, \bar{x} 2006 = 19.5 ± 5.6 , \bar{x} 2007 = 17.5 ± 7.0). Also, burned habitats in the warm season had significantly higher temperatures ($t = 11.61$, $df = 415$, $p < 0.0001$, \bar{x} unburned = 31.5 ± 5.9 , \bar{x} burned = 32.5 ± 6.0) than unburned. The cold season ($t = 0.6167$, $df = 112$, $p = 0.5387$, $\bar{x} = 18.2 \pm 6.3$) did not have significantly higher temperatures in burned habitats (Figure 4b).

Subterranean temperatures in the warm season of 2007 were significantly higher in both habitat types (unburned $t = 2.003$, $df = 195$, $p = 0.0466$, \bar{x} 2006 = 30.6 ± 8.2 , \bar{x} 2007 = 31.2 ± 5.6 , and burned $t = 2.239$, $df = 195$, $p = 0.0263$, \bar{x} 2006 = 32.4 ± 8.3 , \bar{x} = 32.8 ± 5.4). I found that 2006 was significantly colder in the cold seasons in both habitats (unburned $t = 10.61$, $df = 55$, $p < 0.0001$, \bar{x} 2006 = 15.2 ± 4.5 , \bar{x} 2007 = 11.9 ± 6.4 , and burned $t = 9.739$, $df = 55$, $p < 0.0001$, \bar{x} 2006 = 15.7 ± 4.1 , \bar{x} 2007 = 12.6 ± 6.2). In the warm season subterranean temperatures in the burned area were significantly higher than in the unburned area ($t = 50.08$, $df = 417$, $p < 0.0001$, \bar{x} unburned = 30.9 ± 6.9 , \bar{x} burned = 32.6 ± 6.9). Subterranean temperatures in burned habitats were also higher in the cold season ($t = 7.641$, $df = 111$, $p < 0.0001$, \bar{x} unburned = 13.5 ± 5.5 , \bar{x} burned = 14.2 ± 5.1) during this study (Figure 4c).

During pitfall trapping the minimum air temperature recorded was 0°C and the maximum temperature was 42°C .

Vegetation Point-Intercept Transect Surveys

I found that only counts of plants < 10 cm tall at one site in the burned area along the fire perimeter and one site in the burned area around a habitat patch, were normally

distributed. The total number of plants in the unburned areas (1,440; 68.58% total cover) was higher than in burned areas (846; 40.28% total cover). There were differences in the distribution of vegetation heights in each habitat ($\chi^2 = 389.9$, $df = 1$, $p < 0.0001$). There were significantly more plants in the burned area under 10 cm than in any other height class in either habitat (Table 3). The number of plants in burned areas in this height class increased from 2006-2007 (264 and 345 total plants). For all heights, except <10 cm, unburned habitats had more plants per site than burned. Although all plants seen were not recorded to species, of those recorded 2% and 21% were noted as *Erodium cicutarium* or a grass species in unburned areas. In burned areas this trend was reversed with *E. cicutarium* accounting for 31% and grasses making up only 7%.

Reptile Transect Surveys

During transect surveys five lizard and one snake species were observed (Table 4). Multi dimensional scaling (MDS) showed that transect sites clustered together by habitat type with the exception of two sites; one unburned patch and one burned perimeter transect location. These two sites were removed from the analysis because they had significantly more zero values and were outliers that made it impossible to determine how locations clustered. I found no significant differences in the species assemblages between years (ANOSIM, $R = 0.018$, $p = 0.271$ and $R = -0.043$, $p = 0.888$) or between unburned and burned habitats ($R = 0.053$, $p = 0.109$ and $R = 0.010$, $p = 0.333$) along the perimeter and in the patch locations, respectively. Therefore, data from 2006 and 2007 were combined and reanalyzed using ANOSIM. Species found at perimeter and patch sites did not differ significantly ($R = 0.038$, $p = 0.272$); however, differences were found ($R = 0.220$, $p = 0.022$) between unburned and burned locations. A SIMPER analysis showed that in the unburned areas, *U. stansburiana* accounted for 88.0% of individuals, with *A. tigris* and *S. occidentalis* making up 14.7% and 13.5% of individuals, respectively. In the burned areas *U. stansburiana* comprised 98.6% of individuals.

U. stansburiana abundance data were not normally distributed and a normalizing transformation could not be found. A Friedman randomized block test found no significant differences in the number of individuals seen by segment location along transects in each habitat type through time (Friedman statistic = 6.500, $p = 0.0897$). Differences were found between habitat types ($\chi^2 = 9.952$, $df = 3$, $p = 0.0190$). Burned areas around patches in 2006 and outside the perimeter in 2007 had the fewest individuals. Most *U. stansburiana* were recorded in burned areas along perimeter sites in 2006, followed by unburned patch sites in 2007 (Figure 5). Although combining perimeter and patch sites yielded more individuals found in unburned habitat ($n = 77$ compared to $n = 62$), there were no significant differences in the number of *U. stansburiana* in unburned and burned habitats (Fisher's Exact test; $p = 0.0624$). Also, no detectable differences were found when year data were combined (Fisher's Exact test; $p = 0.1201$), although burned patches had the fewest ($n = 22$), while burned perimeter and unburned patch habitats had the most individuals (both had $n = 39$). Surprisingly, significant differences were found when unburned and burned sites along the perimeter and at patch locations were combined (Fisher's Exact test; $p = 0.0258$).

Pitfall Trapping

During pitfall trapping six lizard species were captured (Table 5). MDS showed that pitfall trap sites clustered together by year with the exception of one site in a patch location in 2006, which had more zero data points than other sites. This site was removed in order to see patterns in the remaining data. Species abundance did differ significantly between years (ANOSIM, $R = 0.216$, $p = 0.044$). More individuals were captured in 2007 ($n = 60$) than 2006 ($n = 36$). Also, 2006 had one single species not captured in 2007, while 2007 had two that were not present in 2006. *U. stansburiana* dominated the herpetofaunal assemblages in both years; however, this species was represented in a higher percentage in the 2007 (SIMPER, 2006 = 92.6% and 2007 = 98.2%).

Of the 80 *U. stansburiana* captured over the course of this study, 19 were recaptures, resulting in a recapture rate of 23.75%. In 2006 there were very few recaptures (10.71%); however, 2007 saw an increase in recaptured individuals (30.77%). Recaptures of individuals were removed from statistical analyses. The total number of *U. stansburiana* captured by site were normally distributed in both years (2006 $p = 0.2601$ and 2007 $p = 0.7222$). No significant differences in the number of individuals caught between years ($t = 1.135$, $df = 12$, $p = 0.2787$) was found. No significant differences in the direction of movement of individuals was found when these data were combined for analysis (Fisher's Exact test; $df = 4$, $p = 0.2968$), even though the number of *U. stansburiana* moving into patches actually doubled (9 to 18) from 2006-2007 (Figure 6). During trapping more juveniles were captured (66%) than adults (34%), with most *U. stansburiana* being captured in 2007.

I also recorded the numbers of mammals and invertebrates captured in pitfall traps. As these individuals could easily climb the drift fencing their direction of movement could not be determined. Interestingly, the number of mammalian species captured decreased, as did the total number of individuals captured from the first to the second year (Table 6). Conversely, the number of invertebrate families and the total number of individuals captured increased from 2006-2007 (Table 7).

DISCUSSION

Temperature and Vegetation

Due to air temperature variation, 2007 was warmer than 2006, but both ground surface and subterranean temperatures were higher in burned areas than in unburned areas in both years.

The plant community in unburned areas had almost 30% more cover than burned areas and remained relatively stable through time. However, the burned areas had more than twice the number of plants in the <10 cm height class, and very few grew to over 10 cm during the course of this study. This indicates that most were low growing ground cover species. This is consistent with long term studies of plant communities in the Southwest that have found areas affected by wildfire are rapidly colonized by low growing ground cover species that are predominantly alien (Brooks, 2002; Brooks and Matchett, 2003). Additionally, soil nutrient research in the Mojave found that grasses were better competitors and often become dominant following disturbance (Brooks, 1999).

Comparison of Transect and Pitfall Data

Transect and pitfall surveys had comparable species diversity with each other. *Uta stansburiana* was the dominant species in all locations. I found the highest number along the fire perimeter on the burned side in 2006, which is similar to a study conducted after a wildfire in Arizona that found reptiles exhibited a preference for disturbed sites (Cunningham et al., 2002). However, in 2007 the number of individuals found in this area decreased by more than half. It may be that individuals utilized this area more heavily initially because the higher ground temperatures allowed for optimal basking sites. In 2007 temperatures may have become too high creating a less than ideal habitat type that did not provide a thermoregulatory gradient or enough cover (Wilson, 1991). The number of *U. stansburiana* in unburned perimeter locations was relatively constant through time, indicating that this population was the most stable. The numbers found at patches increased in burned and unburned areas, with unburned sites having more individuals.

The directional design of the pitfall arrays allowed me to assess whether individuals were moving into or out of habitat patches. However, no directional pattern was detected, likely because of the low numbers of individuals captured. However, in 2006 the number of *U. stansburiana* captured in pitfall traps at patch sites ($n = 28$) was comparable to the number seen during transect surveys at the same locations ($n = 25$). In 2007 more were captured ($n = 52$) than seen ($n = 37$). It may be that the increased temperatures in 2007 altered the movements of *U. stansburiana*, decreasing their daily activity.

Future Research Recommendations

This research would have benefited from a longer study period. Two years is not a sufficient amount of time to accurately determine trends in a fragmented system that is

undergoing post-wildfire successional stages. Many environmental parameters, including yearly temperature and rainfall fluctuations, could account for the trends seen and result in notable year-to-year variability (Hirsch et al., 2002).

Conservation Implications

Although the results of a study conducted in a single location and affected by a single event may not be fully extrapolated to other locations or events, it is clear that wildfire is a serious threat to biodiversity in the Mojave. The effects of large desert fires are poorly understood, largely because this is a relatively new problem (Brooks, 2002; Brooks and Matchett, 2003). Information on floral community succession and faunal survival is useful to help understand the long-term consequences of altering landscapes, and could lead to increased control of invasive species. These species have created a positive feedback system, or a grass-fire cycle, in the Mojave. The resulting habitats are increasingly homogeneous, and provide few resources (Esque, 1999; Esque et al., 2003; Valentine et al., 2007).

The presence of *U. stansburiana* is a good indicator of the possible establishment of healthy populations of many other species. *U. stansburiana* is an abundant and widespread lizard that is a food source for many species that cannot reoccupy an area until suitable numbers of prey are present (Stebbins, 2003). Low numbers will negatively impact the community, decreasing both diversity and abundance. This study suggests that wildfire in the Mojave negatively affects the reptile community.

Due to the hostile conditions and already limited resources, desert environments are not able to maintain dense populations of wildlife, creating fragile systems composed of highly specialized species. Deserts, although coming under increasing pressure from human expansion and activities, are some of the most inhospitable and therefore remote and unexploited areas in the continental United States. Wildlands are becoming increasingly rare worldwide and few ecosystems contain organisms with such unique adaptations to extreme conditions as desert regions, making conservation in these areas a critical concern.

TABLE 1. Transect Locations in the Hackberry Region, Mojave National Preserve

Site	Starting Easting	Starting Northing	Ending Easting	Ending Northing	Elevation (m)
Patch 1	645412	3892561	645405	3892517	1596
	645409	3892565	645438	3892531	
	645431	3892589	645438	3892543	
Patch 2	645425	3892203	645476	3892204	1591
	645422	3892195	645470	3892178	
	645438	3892181	645467	3892157	
Patch 3	642829	3887189	642812	3887237	1661
	642821	3887185	642789	3887221	
	642806	3887173	642777	3887208	
Patch 4	642810	3887316	642814	3887365	1665
	642786	3887307	642798	3887350	
	642754	3887298	642787	3887342	
Patch 5	642814	3887533	642841	3887575	1670
	642788	3887525	642821	3887566	
	642708	3887531	642806	3887571	
Patch 6	645913	3887650	642933	3887695	1684
	642929	3887649	642944	3887699	
	642954	3887662	642962	3887709	
Patch 7	643023	3887958	643039	3887909	1679
	643050	3887969	643049	3887917	
	643077	3887972	643063	3887927	
Perimeter 1	646600	3892811	646555	3892819	1594
	646598	3892786	646549	3892794	
	646586	3892763	646540	3892786	
Perimeter 2	646545	3892659	646493	3892658	1604
	646552	3892636	646500	3892638	
	646536	3892610	646488	3892620	
Perimeter 3	646524	3892565	646480	3892567	1656
	646522	3892553	646480	3892546	
	646538	3892529	646492	3892526	
Perimeter 4	646513	3892468	646465	3892474	1660
	646506	389245	646457	3892448	
	646498	3892431	646458	3892678	
Perimeter 5	646586	3892634	646587	3892681	1580
	646595	3892616	646611	3892668	
	646623	3892625	646623	3892678	
Perimeter 6	645283	3892595	645259	3893556	1582
	645262	3892604	645247	3893560	
	645244	3892615	645237	3893568	
Perimeter 7	645167	3893604	645186	3893568	1580
	645153	3893610	645175	3893571	
	645132	3893600	645150	3893554	

Note: All locations in map datum NAD83, UTM zone 11.

TABLE 2. Locations of Pitfall Trap Arrays in the Hackberry Region of the Mojave National Preserve

Array	Easting	Northing	Elevation (m)
1	645395	3892528	1596
2	645456	3892203	1591
3	642811	3887222	1661
4	642804	3887343	1665
5	642873	3887558	1670
6	642942	3887683	1684
7	643035	3887924	1679

Note: All locations in map datum NAD83, UTM zone 11.

TABLE 3. Percent Vegetation Cover in Unburned and Burned habitats by Height Class

Height Class (cm)	Unburned		Burned	
	Number	Percent Cover	Number	Percent Cover
<10	220	10.48	631	30.05
10-30	295	14.05	133	6.33
30-50	248	11.81	63	3.00
50-100	345	16.43	16	0.76
>100	332	15.81	3	0.14
Total	1440	68.58	846	40.28

TABLE 4. Reptile Species Observed During Transect Surveys

Species	2006		2007		Unburned		Burned	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
<i>Aspidocelus tigris</i> Western whiptail	7	0.3684	4	0.2105	11	0.2895	0	0
<i>Gambelia wislizenii</i> Long-nosed leopard lizard	2	0.1053	0	0	1	0.0263	1	0.0263
<i>Masticophis taeniatus</i> Striped whipsnake	1	0.0526	0	0	0	0	1	0.0263
<i>Phrynosoma platyrhinos</i> Desert horned lizard	0	0	1	0.0526	0	0	1	0.0263
<i>Sceloporus occidentalis</i> Western fence lizard	8	0.4211	7	0.3684	5	0.1316	10	0.2632
<i>Uta stansburiana</i> Side-blotched lizard	80	4.2105	56	2.9474	75	1.9737	61	1.6053
Total	98	5.1579	68	3.5789	92	2.4211	74	1.7105

Note: Observation rates were calculated using number of observations/number of transects conducted (Persons and Nowak, 2006).

TABLE 5. Reptile Species Captured During Pitfall Trapping

Species	2006		2007	
	Number	Capture Rate	Number	Capture Rate
<i>Aspidocelus tigris</i> Western whiptail	5	0.0725	1	0.0145
<i>Gambelia wislizenii</i> Long-nosed leopard lizard	1	0.0145	0	0
<i>Sceloporus magister</i> Desert spiny lizard	0	0	3	0.0435
<i>Sceloporus occidentalis</i> Western fence lizard	2	0.0290	5	0.0435
<i>Uta stansburiana</i> Side-blotched lizard	28	0.4056	52	0.7536
<i>Xantusia vigilis</i> Desert night lizard	0	0	1	0.0145
Total	36	0.5216	62	0.8969

Note: Capture rates were calculated using number of captures/number of pitfall trap sessions conducted (Persons and Nowak, 2006).

TABLE 6. Mammal Species Captured During Pitfall Trapping

Species	2006	2007
<i>Dipodomys deserti</i> Desert kangaroo rat	6	3
<i>Lagurus curtatus</i> Sagebrush vole	3	0
<i>Perognathus longimembris</i> Little pocket mouse	1	1
<i>Perognathus penicillatus</i> Desert pocket mouse	0	1
<i>Peromyscus sp.</i> Pygmy mouse species	3	0
<i>Thomomys bottae</i> Valley pocket gopher	1	1
Total Number of Individuals	14	6
Total Number of Species	5	4

TABLE 7. Invertebrate Families Captured During Pitfall Trapping

Family	2006	2007
Caraboctonidae (Desert scorpions)	35	71
Cerambycidae (Long-horned beetles)	0	1
Cicadidae (Cicadas)	0	1
Eremobatidae (Windscorpions)	31	35
Gryllacrididae (Camel crickets)	98	152
Gryllidae (Crickets)	3	0
Mantidae (Mantids)	1	1
Mutillidae (Velvet ants)	0	2
Myrmeleontidae (Antlions)	0	1
Pompilidae (Tarantula hawks)	0	1
Reduviidae (Assassin bugs)	0	13
Scolopendridae (Multicolored centipedes)	2	0
Tenebrionidae (Darkling beetles)	483	623
Theraphosidae (Blonde tarantulas)	0	1
Total Number of Individuals	653	902
Total Number of Families	7	12

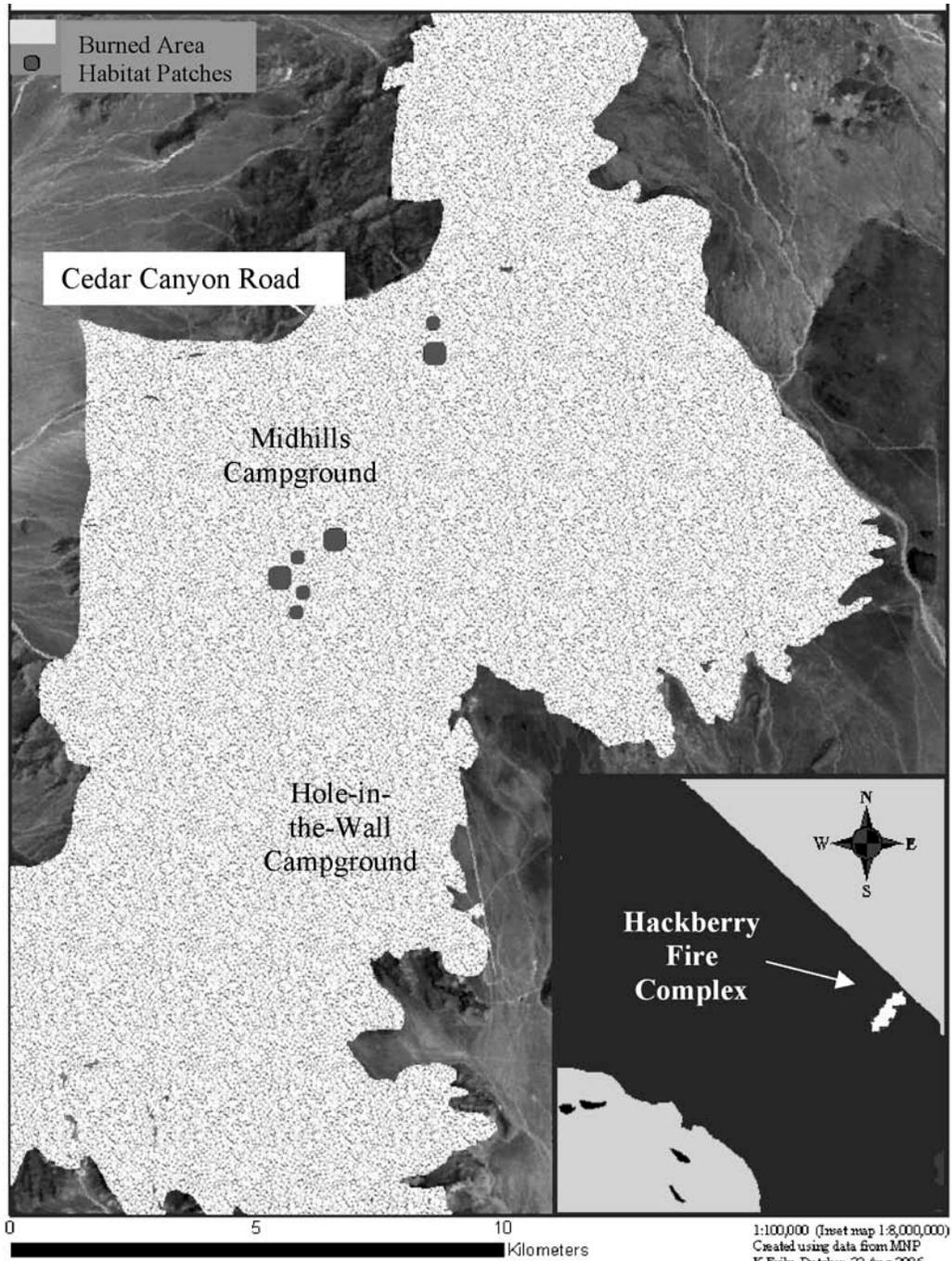


FIGURE 1. Habitat patch locations within the Hackberry region of the Mojave National Preserve. Habitat patch size not to scale. The subset map shows the location of the Hackberry wildfire in Southern California. Map created by K. Erika Dutcher and Dr. D. Underwood using data from the National Park Service, 2006.

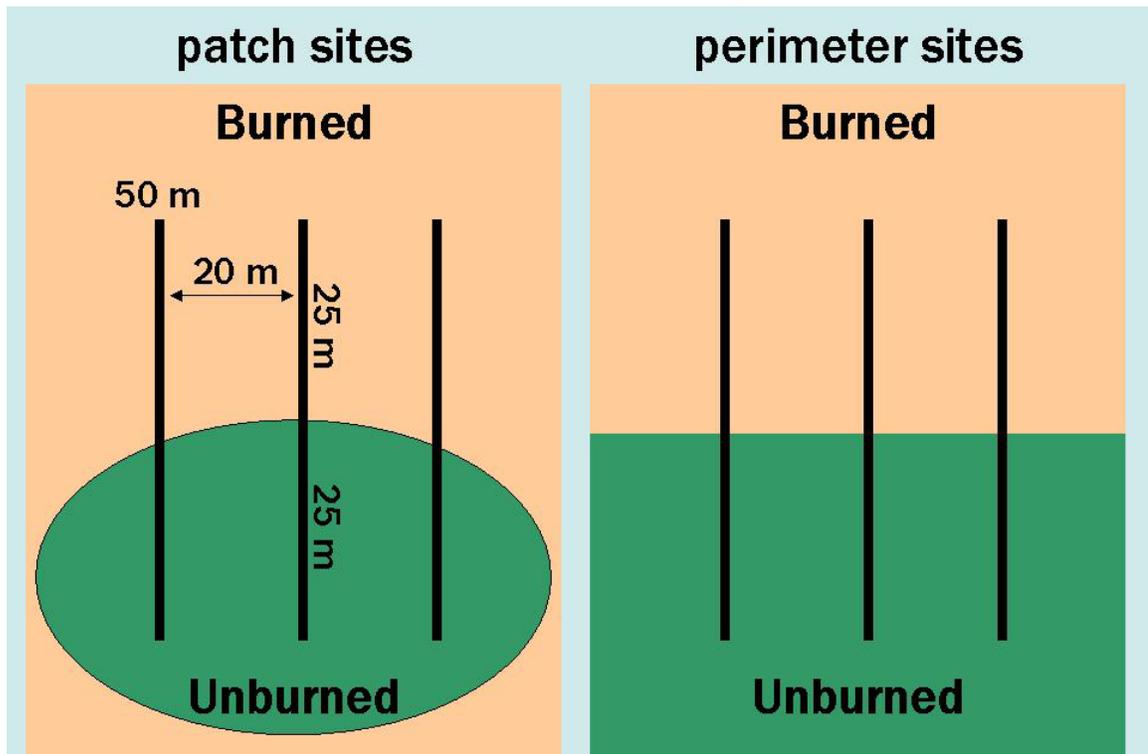


FIGURE 2. Transect design. Each site had three 50 m transects separated by 20 m. Half (25 m) of each transect was located in burned habitat and 25 m in unburned habitat.

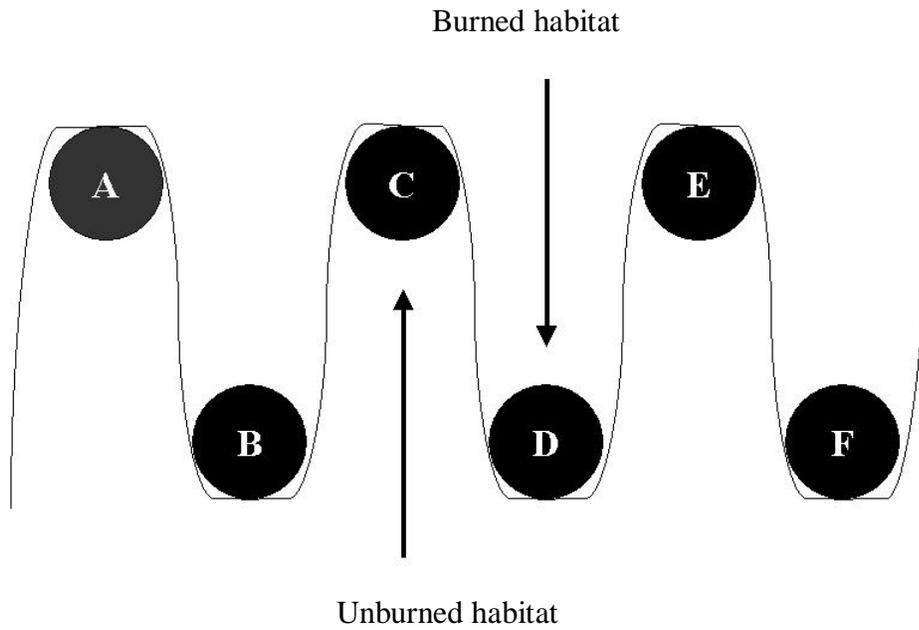


FIGURE 3. Pitfall array design. Buckets were fenced on three sides to prevent reptiles from the burned area entering traps A, C, and E and reptiles from the unburned area entering traps B, D, and F.

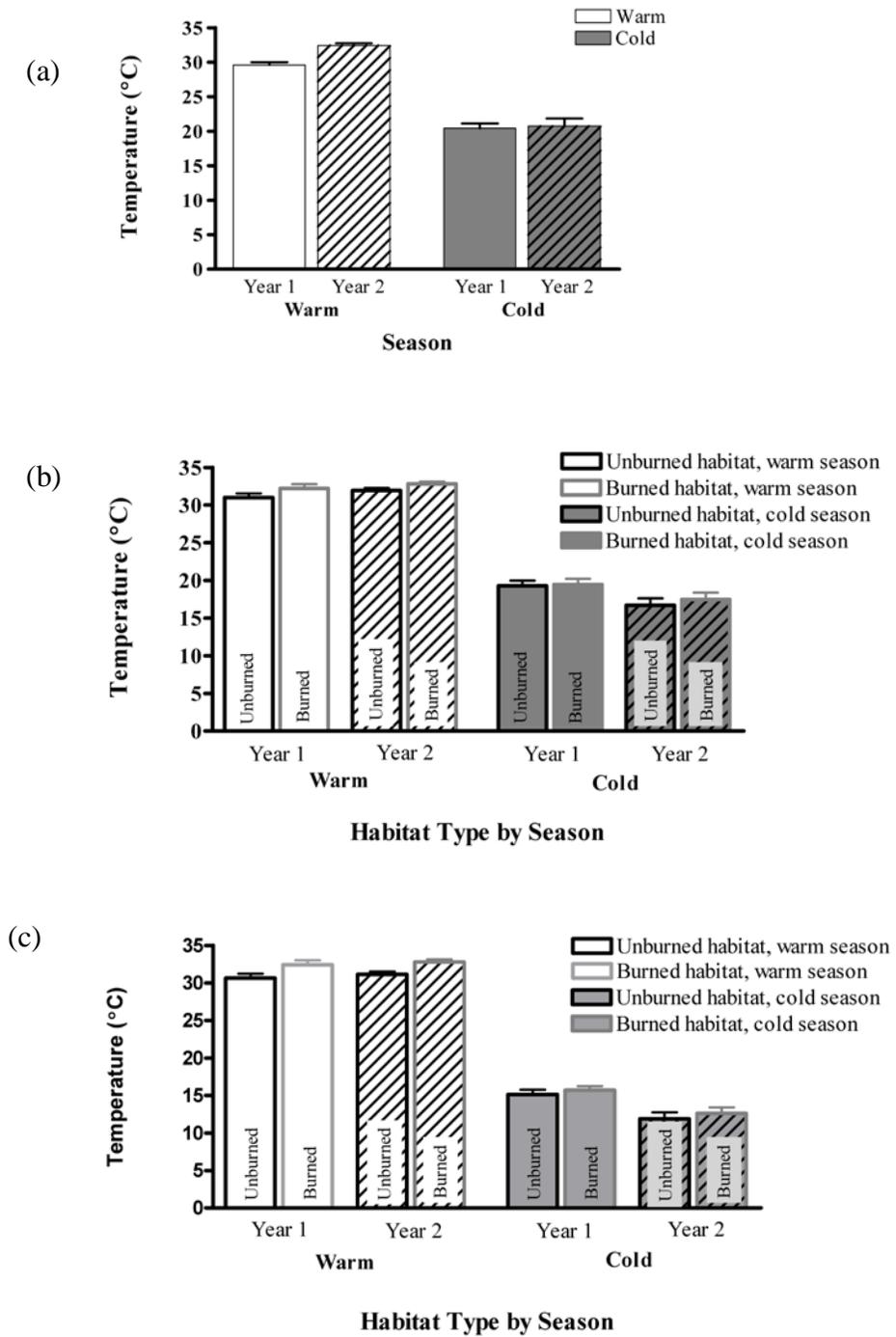


FIGURE 4. Ambient, ground, and subterranean temperatures ($\bar{x} \pm SD$). (a) Average ambient temperatures by year in the warm and cold seasons. (b) Average ground temperatures for unburned and burned habitats by year in each season. (c) Average subterranean temperatures for both habitats by year in each season.

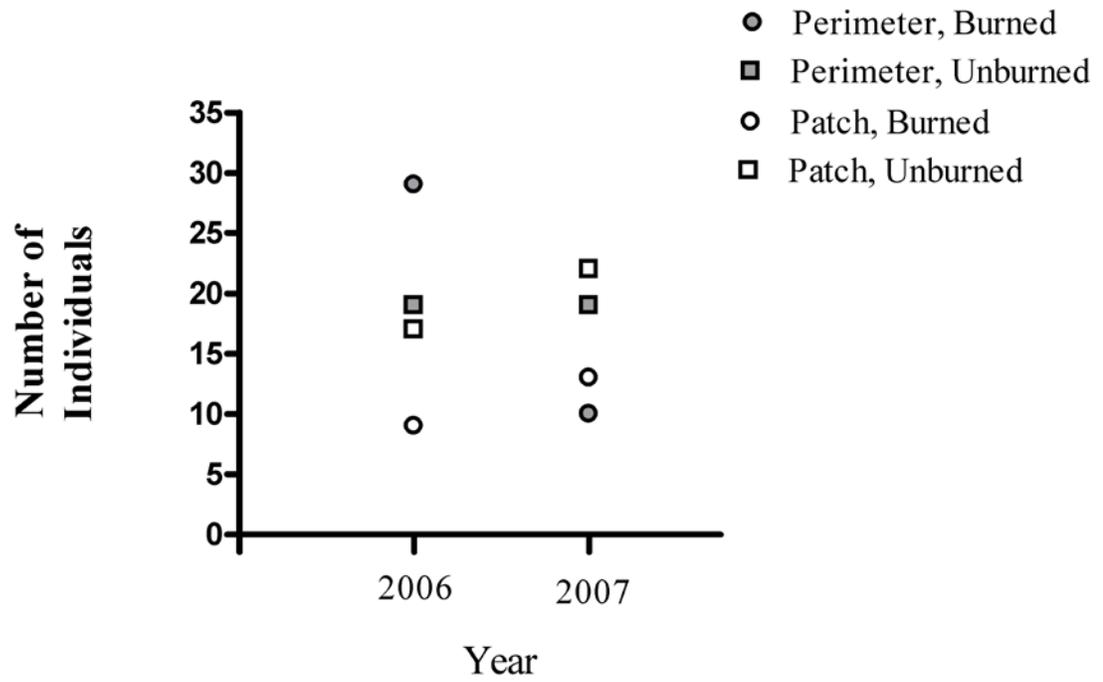


FIGURE 5. Total number of *Uta stansburiana* observed during transect surveys in each habitat type by year.

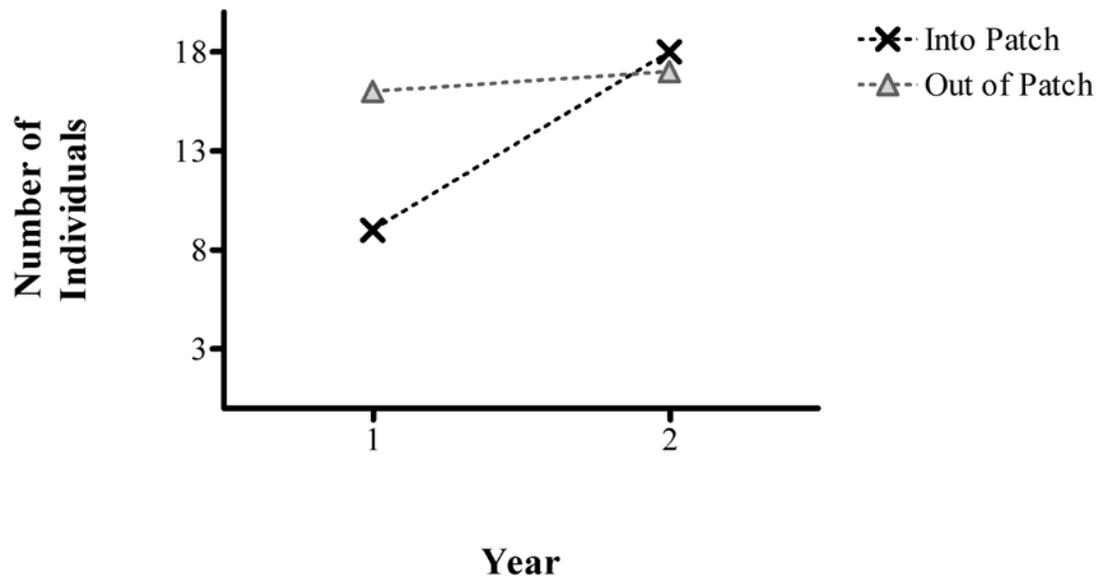


FIGURE 6. Total number of *Uta stansburiana* captured in pitfall traps moving into or out of habitat patches by year. Recaptured individuals were removed from the totals.

LITERATURE CITED

- Attum O, Eason P, Cobbs G, Baha El Din SM. 2006. Response of a Desert Lizard Community to Habitat Degradation: Do Ideas About Habitat Specialists/Generalists Hold? *Biological Conservation* 133:52-62.
- Barbour MG, Burk JH, Pitts WD, Gilliam FS, Schwartz MW. 1999. *Terrestrial Plant Ecology*. 3RD Edition. Menlo Park, California: Benjamin Cummings Press. 239pp.
- Brooks ML. 1999. Habitat Invasibility and Dominance by Alien Annual Plants in the Western Mojave Desert. *Biological Invasions* 1:325-337.
- Brooks ML. 2000a. *Bromus madritensis* spp. *rubens*. In: Bossard CC, Randall JM, and Hoshovsky MC, editors. *Invasive Plants of California's Wildlands*. University of California Press, Ltd., London. P. 72-76.
- Brooks ML. 2000b. *Schismus arabicus*, *Schismus barbatus*. In: Bossard CC, Randall JM, and Hoshovsky MC, editors. *Invasive Plants of California's Wildlands*. University of California Press, Ltd., London. P. 287-291.
- Brooks ML. 2002. Peak Fire Temperatures and Effects on Annual Plants in the Mojave Desert. *Ecological Applications* 12:1088-1102.
- Brooks ML, Matchett JR. 2003. Plant Community Patterns in Unburned and Burned Blackbrush (*Coleogyne ramosissima* torr.) Shrublands in the Mojave Desert. *Western North American Naturalist* 63:283-298.
- Clarke K. 1993. Nonparametric Multivariate Analyses of Changes in Community Structure. *Australian Journal of Ecology* 18:117-143.
- Cunningham SC, Babb RD, Jones TR, Taubert BD, and Vega R. 2002. Reaction of Lizard Populations to a Catastrophic Wildfire in a Central Arizona Mountain Range. *Biological Conservation* 107:193-201.
- Davies KF, Gascon C, Margules CR. 2001. Habitat Fragmentation: Consequences, Management, and Future Research Priorities. In: Soule ME, and Orians GH, editors. *Conservation Biology: Research Priorities for the Next Decade*. Society for Conservation Biology, Island Press, Washington. P. 81-98.
- Esque TC. 1999. Managing Fire and Invasive Plants in the Mojave Desert: Defining an Integrated Research Program to Address Knowledge Gaps. *Proceedings from the Mojave Desert Science Symposium February 25-27*. P. 18-20.

- Esque TC, Schwalbe CR, DeFalco LA, Duncan RB, Hughes TJ. 2003. Effects of Desert Wildfires on Desert Tortoise (*Gopherus agasizii*) and Other Small Vertebrates. *The Southwestern Naturalist* 18:103-110.
- Fahrig L. 2003. Effects of Habitat Fragmentation on Biodiversity. *The Annual Review of Ecology, Evolution, and Systematics* 34:487-515.
- Faria AS, Lima AP, Magnusson WE. 2004. The Effects of Fire on Behavior and Relative Abundance of Three Lizard Species in an Amazonian Savanna. *Journal of Tropical Ecology* 20:591-594.
- Ferner JW. 1979. A Review of Marking Techniques for Amphibians and Reptiles. Society for the Study of Reptiles and Amphibians, Herpetological Circular No. 9, Ohio. 42pp.
- Fisher R, Stokes D, Rochester C, Hathaway S, Brehme C, Case T. 2004. Reptile Biodiversity: Standard Methods for Inventory and Monitoring. UC San Diego, Department of Biology for the USGS: USGS Technical Report. 56pp.
- Friend GR. 1993. Impact of Fire on Small Vertebrates in Malle Woodlands and Heathlands of Temperate Australia: a Review. *Biological Conservation* 65(2):99-114.
- Hanes TL. 1971. Succession After Fire in the Chaparral of Southern California. *Ecological Monographs* 41(1):27-52.
- Hirsh R, Hathaway S, Fisher R. 2002. Herpetofauna and Small Mammal Surveys on the Marine Corps Air Ground Combat Center, Twentynine Palms, CA March 1999-October 2001. USGS Project End Report. Prepared by the Western Ecological Research Center for the Marine Corps Air Ground Combat Center. 20pp.
- [http:// www.nps.gov/moja/parkmgmt/upload/Hackberry_BAER_Plan%2006-05.pdf](http://www.nps.gov/moja/parkmgmt/upload/Hackberry_BAER_Plan%2006-05.pdf). (Last Modified 05 July 2005; Retrieved 04 December 2005; National Park Service, Hackberry_BAER_Plan.pdf.
- Karraker NE. 2001. String Theory: Reducing Mortality of Mammals in Pitfall Traps. *Wildlife Society Bulletin* 29(4):1158-1162.
- McKenzie D, Gedalof Z, Peterson D, Mote P. 2004. Climactic Change, Wildfire, and Conservation. *Conservation Biology* 18:890-902.
- Mojave National Preserve Maps. 2005. Hackberry Complex Fire Maps. Scale given at 1:50,000; generated by Dingman, Sandy. "GIS Files for Hackberry Fires and Mojave National Preserve".

- Morris DW. 1995. Habitat Selection in Mosaic Landscapes. In: Hansson L, Fahrig L, and Merriam G editors. *Mosaic Landscapes and Ecological Processes*. London: Chapman and Hall. P. 111-135.
- National Park Service. 2003. *Long-Range Interpretive Plan: Mojave National Preserve*. Barstow, California: Mojave National Preserve. 79pp.
- Odion DC, Davis FW. 2000. Fire, Soil Heating, and the Formation of Vegetation Patterns in Chaparral. *Ecological Monographs* 70(1):149-169.
- Parr CL, Chown SL. 2003. Burning Issues for Conservation: A Critique of Faunal Fire Research in Southern Africa. *Austral Ecology* 28:384-395.
- Patten DT, Smith EM. 1975. Heat Flux and the Thermal Regime of Desert Plants. In: Hadley NF, editor. *Environmental Physiology of Desert Organisms*. Academic Press, Pennsylvania. P. 1-19.
- Persons TB, Nowak EM. 2006. *Inventory of Amphibians and Reptiles at Death Valley National Park*. U.S. Department of the Interior, U.S.G.S. 32pp.
- Reice SR. 2001. *The Silver Lining: The Benefits of Natural Disasters*. Princeton University Press, Princeton. 218pp.
- Russell KR, Van Lear DH, Guynn DC Jr. 1999. Prescribed Fire Effects on Herpetofauna: Review and Management Implications. *Wildlife Society Bulletin* 27(2):374-384.
- Setser K, Cavitt JF. 2003. Effects of Burning on Snakes in Kansas, USA, Tallgrass Prairie. *Natural Areas Journal* 23:315-319.
- Stebbins RC. 2003. *A Field Guide to Western Reptiles and Amphibians*. 3RD Edition. New York: Houghton Mifflin Co. 533pp.
- Swingland IR. 1978. Marking Reptiles. In: Stonehouse B, editor. *Animal Marking: Recognition Marking of Animals in Research*. University Park Press, Baltimore. P. 119-132.
- Taylor JE, Fox BJ. 2001. Disturbance Effects from Fire and Mining Produce Different Lizard Communities in Eastern Australian Forests. *Austral Ecology* 26:193-204.
- Turner MG, Romme WH, Gardner RH, Hargrove WH. 1997. Effects of Fire Size and Pattern on Early Succession in Yellowstone National Park. *Ecological Monographs* 67(4):411-433.

Valentine LE, Roberts B, Schwarzkopf L. 2007. Mechanisms Driving Avoidance of Non-Native Plants by Lizards. *Journal of Applied Ecology* 44:228-237.

Wilson BS. 1991. Latitudinal Variation in Activity Season Mortality Rates of the Lizard *Uta stansburiana*. *Ecological Monographs* 6(14):393-414.

Young J. 2000. *Bromus tectorum*. In: Bossard CC, Randall JM, and Hoshovsky MC, editors. *Invasive Plants of California's Wildlands*. University of California Press, Ltd., London. P. 76-77.