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07-AFC-5
DATE MAR 19 2009
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March 19, 2009
File No.: 04.02.16.02
Project No. 357891

Mr. John Kessler, Project Manager
California Energy Commission
Systems Assessment and Facilities Siting Division
1516 9th Street, MS 15
Sacramento, CA 95814-5504

RE: Supplemental Data Response, Set 2A
Ivanpah Solar Electric Generating System (07-AFC-5)

Dear Mr. Kessler:

On behalf of Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC, please find attached one original and 12 hard copies of the Supplemental Data Response, Set 2A, which provides supplemental responses to Staff's questions raised at the January 9, 2009 Workshop in Primm, Nevada.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

Enclosure
c: POS List
Project File

Ivanpah Solar Electric Generating System (ISEGS)

(07-AFC-5)

Supplemental Data Response, Set 2A

Submitted to the

California Energy Commission

Submitted by

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC

March 19, 2009

With Assistance from

CH2MHILL
2485 Natomas Park Drive
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Sacramento, CA 95833

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Introduction

Attached is a supplemental response by Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC (Applicant) to the California Energy Commission (CEC) Staff's data request for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project (07-AFC-5). This data request was the result of the workshop discussion held at Primm, Nevada on January 9, 2009. As before, within each discipline area, the responses are presented in alphabetical order and are numbered for tracking and reference convenience. New graphics or tables are numbered in reference to the Supplemental Data Request number. For example, if a table were used in response to Data Request BR-5, it would be numbered Table BR5-1. The first figure used in response to Data Request BR-5 would be Figure BR5-1, and so on.

The Applicant looks forward to working cooperatively with the CEC and Bureau of Land Management (BLM) staff and the other resource agencies as the Ivanpah SEGS Project proceeds through the licensing process. We trust that these responses address the Staff's questions and we remain available to have any additional dialogue the Staff may require.

Biological Resources (BR-5)

BR-5 During the January 9, 2009 workshop held in Primm, Nevada, Brian Croft of the USFWS provided materials for use as guidance in developing a desert tortoise translocation/relocation plan. Such a plan needs to be prepared by the Applicant with input from the various resource agencies. It will then be included in the Biological Assessment.

Response: A Draft Desert Tortoise Translocation/Relocation Plan has been prepared for agency comment. It is provided as Attachment BR5-1.

Attachment BR5-1A

Draft Desert Tortoise Translocation/Relocation Plan for the Ivanpah Solar Electric Generating System

Prepared for

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC

March 2009

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2485 Natomas Park Drive, Suite 600
Sacramento, CA 95833

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Approvals:

Bureau of Land Management_____
Approval

California Department of Fish and Game_____
Concurrence

1.0 INTRODUCTION

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC and Solar Partners VIII, LLC (the Applicant), which are subsidiaries of BrightSource Energy, Inc., propose to develop a solar power project consisting of three adjacent solar energy facilities to be located in the Ivanpah Valley near the Interstate 15 (I-15) crossing of the California/Nevada border in San Bernardino County, California (Figure BR5-1, figures are located at the end of each section). The proposed project site is located on land administered by the Bureau of Land Management (BLM) and is less than 2 miles east of the Mojave National Preserve, less than 2 miles west of Ivanpah Dry Lake, less than a mile south of the Stateline Wilderness and Mesquite Wilderness areas of the Clark Mountains; approximately 0.5 miles west of the Primm Valley Golf Club; approximately 0.8 miles northwest of I-15; and approximately 4.5 miles southwest of the Primm Valley casinos.

This Desert Tortoise Translocation/Relocation Plan (Plan) has been prepared for the Bureau on behalf of the Applicant following guidelines developed by the U.S. Fish and Wildlife Service (Service).

1.1 Background

The Ivanpah SEGS site is located in Township 17N, Range 14E, and Township 16N, Range 14E on land administered by the BLM. Access to the site is via the Yates Well Road interchange on I-15 and Colosseum Road to the west of the Primm Valley Golf Club. The project will be built in three phases. The first 100-megawatt (MW) plant at the south end of the project, known as Ivanpah 1, would be owned by Solar Partners II, LLC. Solar Partners I, LLC, would own the middle 100-MW plant known as Ivanpah 2. The northernmost 200-MW plant, known as Ivanpah 3, would be owned by Solar Partners VIII, LLC. The three proposed facilities and their shared operations (owned by Solar Partners IV) are collectively known as the "Ivanpah Solar Electric Generating System" or "Ivanpah SEGS" (see Figure BR5-2).

In order to permit the three plants and the common facilities the Applicant has consulted the BLM, Service, California Department of Fish and Game (CDFG) and the California Energy Commission (CEC) the state lead agency under the CEC's California Environmental Quality Act (CEQA) equivalent certified regulatory program.

The total area required for construction and operation of all three solar plant sites including the shared infrastructure is approximately 4,065 acres (minus the acreage for existing established dirt roads equals about 4,060 acres, net). This includes approximately 3,760 acres of permanent effects and approximately 310 acres[1] of work area that would be subject to restoration following construction. Based on the protocol surveys, the proposed action would likely result in the need to relocate about 25 tortoises.

[1] These numbers may change once the stormwater plan is completed.

1.2 Plan Purpose

This Plan will be incorporated into the Ivanpah SEGS Biological Resources Mitigation, Implementation and Monitoring Plan (BRMIMP), as part of the proposed action. This Plan has incorporated the Guidelines for Clearance and Translocation of Desert Tortoises from the Ivanpah SEGS Project prepared by the Service's Ventura Office as technical assistance for the Project on December 12, 2008 (Service 2008). This document is provided in Appendix A. This Plan, in turn, conforms to the Translocation Guidelines specified in Appendix B of the Desert Tortoise Recovery Plan (Service 1994; reproduced here in Appendix B). Once this Plan meets BLM approval, it will become part of the project's proposed action upon which the Service would base its biological opinion. The BLM will seek CDFG concurrence with this Plan prior to initiating formal consultation Section 7 with the Service.

The Service's (2008) Guidance (Appendix A) defines "translocation" as when a tortoise must be moved more than 1000 meters to clear it from the project site, while a "relocation" requires a movement of less than 1000 meters. Both are referred to in the Guidance as well as this Plan. In the long-term interests of the tortoise requiring clearance from the site, the preference of all stakeholders is relocating tortoises as long as all other conditions can be met (e.g., density constraints).

1.2 Plan Goals

The goals of this translocation/relocation effort are to:

- Translocate/relocate all desert tortoises from the fenced sites to nearby suitable habitat;
- Minimize impacts on resident desert tortoises outside fenced areas; and
- Assess the success of the relocation effort through monitoring.

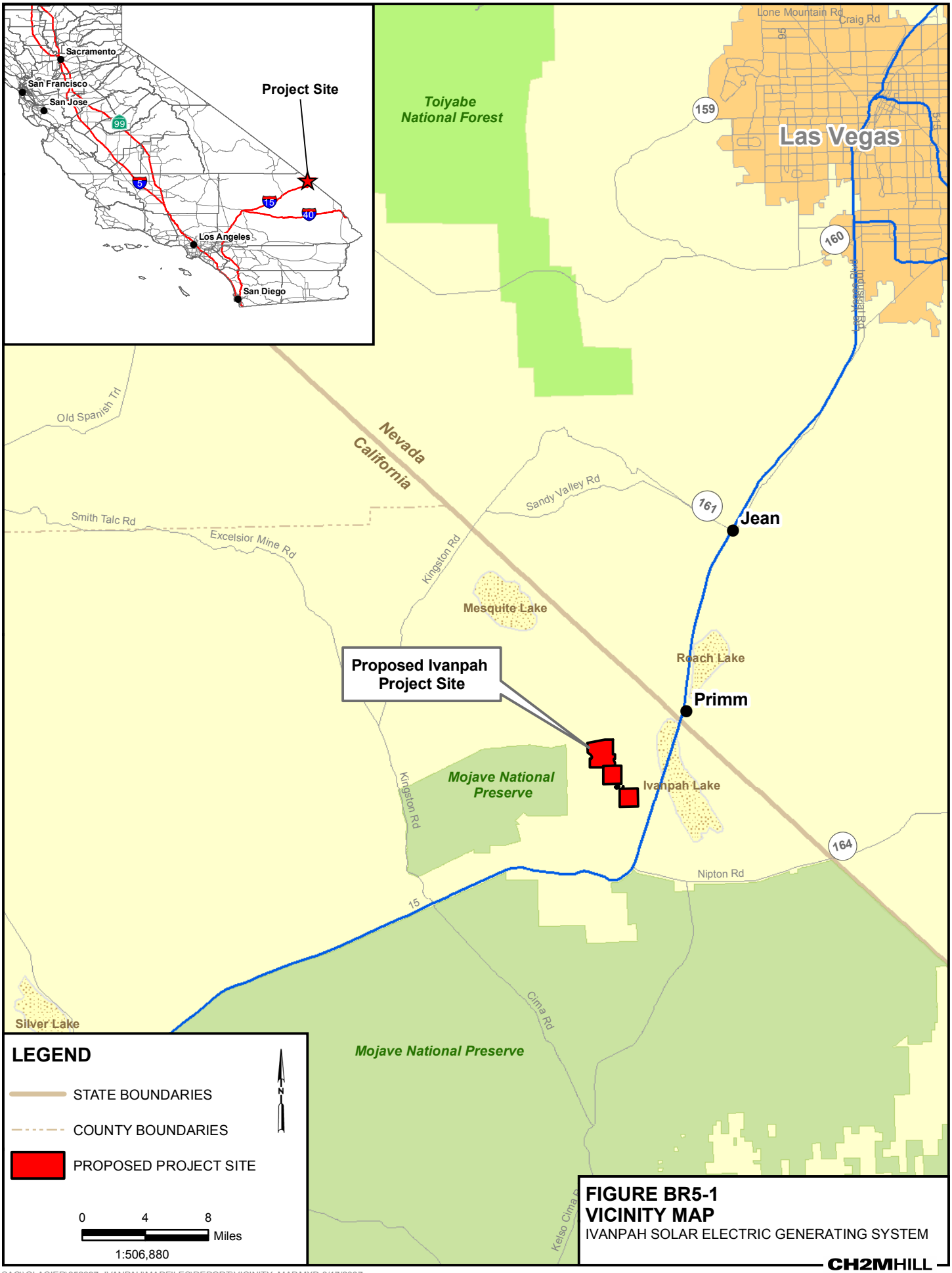

FIGURE BR5-1
VICINITY MAP
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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TAP STATION

IVANPAH 3

METERING SET

IVANPAH 2

METERING SET

REROUTED COLOSSEUM ROAD

Colosseum Road

ADMINISTRATION AND STORAGE

PROPOSED
MONITORING WELL

SUBSTATION

WELLS

IVANPAH 1

Colosseum Road

Colosseum Road

LEGEND

- WELLS
- DIRT ROAD
- PAVED ROAD
- UTILITIES CORRIDOR
- NATURAL GAS LINE
- GEN-TIE LINE
- KERN RIVER GAS LINE
- 4WD TOURING/TRAILS
- SECTION LINES
- PROJECT SITE

0 3,000 Feet

N

FIGURE BR5-2
SITE PLAN AND LINEAR FACILITIES
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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2.0 TRANSLOCATION/RELOCATION PLAN

2.1 Fencing

Prior to translocation/relocation activities the site boundary of the unit being developed would be permanently fenced with an 8-foot-high chain link fence for security purposes and permanent desert tortoise exclusionary fencing would either be attached to the base of the security fence or installed outside the security fence for construction of linear facilities. In areas where a security fence is not required, such as along Colosseum Road or the access road along the west side of the project going from Colosseum Road to the power blocks in Ivanpah 2 and 3, only a tortoise exclusion fence would be installed. A permanent I-beam design desert tortoise guard would be installed to allow equipment access to the fenced sites and exclude desert tortoises. The specifications for the proposed desert tortoise guard are included in Appendix C. Temporary tortoise fencing will be installed for construction of the gas line from the Kern River Gas Transmission line to the fenced Construction Logistics Area (CLA).

The boundaries of all areas to be disturbed would be flagged before beginning any activities, and all disturbances would be confined to the flagged areas. All project vehicles and equipment would be confined to the flagged areas. Survey crew vehicles would remain on existing roads. Disturbance beyond the construction zone would be prohibited except to complete a specific task within designated areas or emergency situations.

Once flagged, the next step prior to any site clearance work is fencing the perimeter of the area to be cleared. Within 24 hours prior to the initiation of construction of the desert tortoise-exclusion fence, a desert tortoise survey would be conducted using techniques providing 100-percent coverage of the construction area and an additional transect along both sides of the fence line transect to provide coverage of an area approximately 90 feet wide centered on the fence alignment. Transects would be no greater than 30 feet apart. Two passes of complete coverage would be conducted. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, would be examined to determine occupancy. Any burrow within the fence line would be collapsed after confirmation that it is not occupied by a desert tortoise, or if occupied, the desert tortoise has been removed (CH2M HILL 2008).

Next, an approximate 10-foot-wide linear swath of vegetation along the entire outer edge of the area to be developed would be cleared to create an internal perimeter path for installation of either the tortoise fencing, or combined tortoise and security fence. All fencing will be constructed with durable materials (i.e., 16 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Tortoise exclusionary fence material will consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches high. This fence material will be buried a minimum of 12 inches below the ground surface, leaving 22 to 24 inches above ground. A trench will be dug to allow 12 inches of fence to be buried below the natural level of the ground. Specifications

for desert tortoise-proof fencing are provided in Appendix C and can be found at the following website:

http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt/DT_Exclusion-Fence_2005.pdf

Where a combined security/tortoise fence is needed, 6-foot-high standard chain link fencing will be placed above the tortoise fence with about 1 inch overlap creating a combined security/tortoise fence about 8 feet tall. The top end of the tortoise fence will be secured to the security fence with hog rings at 12- to 18-inch intervals. Distance between posts will not exceed 10 feet. Concrete footings for metal posts will not be required. The fence is to be perpendicular to the ground surface, or slightly angled away from the road, towards the side encountered by tortoises. After the fence has been installed, excavated soil will be replaced and compacted to minimize soil erosion.

Prior to translocation/relocation activities, the Applicant (or Caltrans) will fence the north side of I-15 with desert tortoise-proof fencing from Nipton Road to the Primm Valley Golf Club. The Applicant will work with Caltrans regarding the appropriate location for this fencing along the I-15. The Applicant will also coordinate the location of the proposed Joint Port of Entry in locating this fencing.

Any damage to the permanent fencing will be repaired immediately. Following installation, the permanent fencing would be inspected annually and after major rainfall events.

2.2 Clearance Surveys

Once the area to be cleared is fully enclosed with combined security and/or tortoise fencing, a desert tortoise clearance survey would be performed per Service protocol (Service 1992) and recent Guidelines (Service 2008). Two complete passes with complete coverage would be conducted as described above. If no desert tortoises are observed during the second survey, a third survey would not be conducted. Each separate survey would be walked in a different direction to allow opposing angles of observation. If a desert tortoise is located on the second survey, a third survey would be conducted. Once the area surveyed is deemed free of desert tortoises the areas may be open to a vegetation salvage program, if the BLM desires to do so (CH2M HILL 2008).

The Authorized Biologists (ABs) would be primarily responsible for the clearance surveys. Some ABs may be substituted with Tortoise Monitors (TMs) who would be placed between ABs during the surveys. Once the sites are deemed free of desert tortoises after at least two consecutive clearance surveys—and after the plant salvage program is completed, if such a program is deemed necessary—then heavy equipment would be allowed to enter the construction site to perform earth work such as clearing or cutting vegetation, grubbing, leveling, and trenching. A TM would monitor initial clearing and grading activities to find and relocate any tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, then the AB would be responsible for relocating it outside the fence or translocating it.

The ABs will maintain a record of all desert tortoises encountered and relocated or translocated during project surveys and monitoring. This information would include for

each individual: the locations (narrative, vegetation type, and maps) and dates of observations; general conditions and health; any apparent injuries and state of healing; if moved, the location from which it was captured and the location in which it was released (whether animals voided their bladders); and diagnostic markings (i.e., identification numbers).

All potential desert tortoise burrows located would be excavated by hand by an AB, desert tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. If excavation is permitted during May through July, the AB would search for desert tortoise nests/eggs, which are typically located near the entrance to burrows. All desert tortoise handling and removal, and burrow excavations, including nests, would be conducted by ABs in accordance with the Service-approved protocol (Desert Tortoise Council 1994, revised 1999). If the Desert Tortoise Council releases a revised protocol for handling of desert tortoises before initiation of project activities, the revised protocol would be implemented for the project (CH2M HILL 2008).

All Service (2008) Guidelines for clearance surveys (Appendix A) will be followed.

2.3 Transportation and Release

Activities addressed here include excavation, handling, and artificial burrow construction.

All potential desert tortoise burrows within the fenced area would be searched for presence. In some cases, a fiber optic scope may be used to determine presence or absence within a deep burrow. Burrows inhabited by tortoises would be excavated by ABs or by TMs supervised by an AB using hand tools. To prevent reentry by a tortoise or other wildlife, all burrows would be collapsed once absence has been determined. Tortoises excavated from burrows would be relocated or translocated to unoccupied natural or artificial burrows outside the fenced site immediately following excavation.

Tortoise excavation, handling, artificial burrow construction, egg handling and other procedures would follow those described in the *Guidelines for Handling Desert Tortoise During Construction Projects* (Desert Tortoise Council, 1994 (Revised 1999)).

Tortoise gender, carapace length, mass, overall condition, capture site location and description will be recorded for all tortoises handled. All tortoises handled will also be photographed and closely examined for clinical signs of animal disease at the time of capture. Desert tortoises will be transported in clean cardboard boxes. A new box would be used for each individual tortoise and would be properly discarded after a single use. The new burrow would be located at least 300 feet from the outside of the permanently fenced sites and would be of similar size, shape and orientation to the original burrow. The new burrow locations would be determined by the AB. Relocated tortoises would not be placed in existing occupied burrows.

The ABs would wear disposable surgical gloves when handling desert tortoises. A new pair would be donned for each tortoise handled to avoid the transmission of upper respiratory tract disease (URTD). Shell notching would not be performed. Any equipment used on the tortoises would be sterilized between each use.

All Service (2008) Guidelines for transportation and release (Appendix A) will be followed unless modified herein.

Per the protocol, tortoises that can be relocated will be moved less than 1,000 meters to the other side of the project fencing within the relocation area (see Figure BR5-3). The translocation area will be used to accommodate all project-site desert tortoises that cannot be moved to safe locations within 1000 meters of their capture location. The proposed translocation area will be subdivided into three areas to coincide with the three phases of solar site development (Figure BR5-3). The corresponding translocation area segment will be surveyed to characterize habitat prior to the translocation activities. Characterizing habitat will be based on field reconnaissance. Habitat mapping will include characterizing soils, topography, shelter opportunities, forage, and vegetation. Tortoise biologists will also describe the presence or absence of potential desert tortoise predators based on observations during field surveys. Areas of suitable desert tortoise habitat will then be surveyed to estimate tortoise densities and the distribution of resident tortoises. Surveys will be conducted using Service protocols. The results will be used to determine the placement of translocated tortoises with an emphasis on avoiding resident tortoises and active burrows as well as areas supporting potential predators, most notably ravens. The survey results and proposed translocation locations will be submitted to the Bureau for each construction phase to determine if the proposed translocation area is sufficient to accommodate tortoises subject to translocation for each construction phase.

2.5 Scheduling

Construction of the generating facility, from site preparation and grading to commercial operation, is expected to take place from the Fourth Quarter of 2009 to the Fourth Quarter of 2013 (48 months total). It is anticipated that Ivanpah 1 (southern site) will be constructed first, followed by Ivanpah 2 (middle site), then Ivanpah 3 (northern site), though the order of construction may change. Construction of the shared facilities would occur with the first plant.

To the extent practicable, translocations/relocations will take place in the fall (i.e., late August to early October), in the spring (i.e., March– May), or winter if necessary (i.e., December–February) to avoid extremely high thermal conditions (Cook et al. 1978, Nussear 2004, *in* Esque et al. 2005). However, per the Desert Tortoise Council Guidelines (1994), desert tortoise may be translocated/relocated in the summer pursuant to the temperature guidelines. If translocated/relocated in the summer months, desert tortoises would be treated in a manner to ensure that they do not overheat, exhibit signs of overheating (e.g., gaping, foaming at the mouth, etc.), or are placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises would be kept shaded at all times until it is safe to release them. No desert tortoise would be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95ºF (35ºC). Ambient air temperature would be measured in the shade, protected from wind, at a height of 2 inches (5 centimeters) above the ground surface. No desert tortoise would be captured if the ambient air temperature is anticipated to exceed 95ºF (35ºC) before handling and relocation can be completed. If the ambient air temperature exceeds 95ºF (35ºC) during handling or

processing, desert tortoises would be kept shaded in an environment that does not exceed 95ºF (35ºC), and the animals would not be released until ambient air temperature declines to below 95ºF (35ºC).

2.6 Translocation/Relocation Area

Tortoises will be translocated/relocated in the Ivanpah Valley adjacent to the site areas as depicted in Figure BR5-3. This area meets the Guidelines provided by the Service (2008). Tortoises excavated from burrows would be relocated to unoccupied natural or artificial burrows outside the fenced sites immediately following excavation. Prior to translocation and relocation activities this area will be surveyed to locate suitable unoccupied burrows and/or construction of a sufficient number artificial burrows. Ideally all tortoises would be relocated to within 1000 meters of the site(s). The primary constraint is that resident and relocated desert tortoises do not exceed 39 individuals per square kilometer.

All Service (2008) Guidelines for the selection of translocation/relocation area (Appendix A) will be met.

2.8 Monitoring and Reporting

To monitor for survivorship and health, for a period of 1 year following their translocation/relocation, the desert tortoises will be located at least monthly by the AB during the periods of activity (spring: March – May and fall: August – October) and once during the two non-active periods (summer: June - July and winter: November –February). For the following 2-years, they will be located at least once in the spring and once in the fall. In order to locate all translocated/relocated tortoises, it will be necessary that they be marked and fitted with radio transmitters.

Upon locating the translocated/relocated tortoises, all pertinent information will be recorded, such as behavior, physical characteristics, health characteristics and any visible signs of URTD, as well as any potential anomalies the individual desert tortoise might display. All observations will be reported to the AB who will record the following information for the monthly compliance report: (1) species name; (2) location (global positioning system coordinates, narrative and maps) and dates of observations; (3) general condition and health, including injuries and state of healing; (4) diagnostic markings, including identification numbers or markers; and (5) locations moved from and to.

All Service (2008) Guidelines for monitoring and reporting (Appendix A) will be followed unless modified herein.

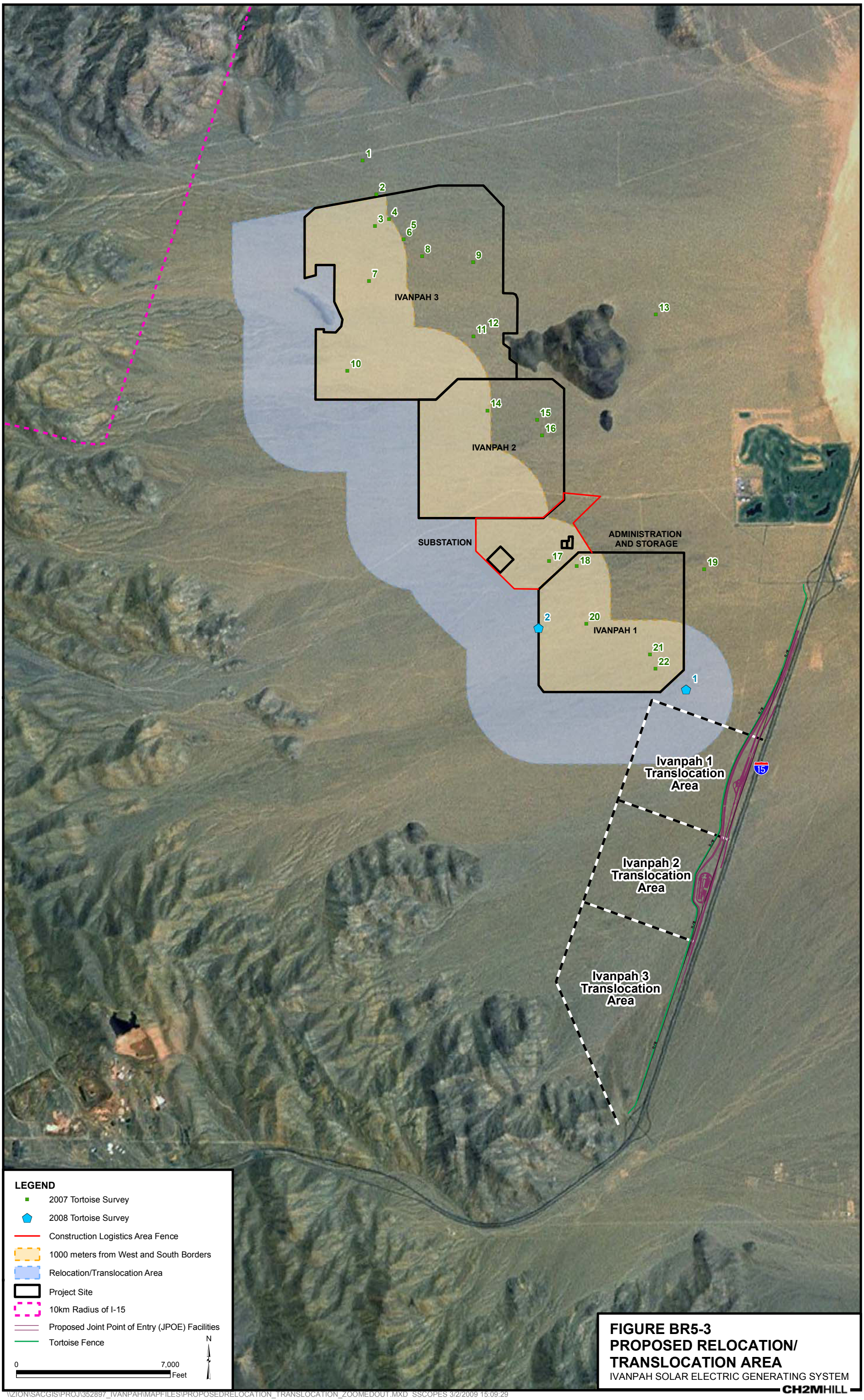

FIGURE BR5-3
PROPOSED RELOCATION/ TRANSLOCATION AREA
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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ES062007009SAC Figure_2_MAR_2009.ai 03.10.09 tdaus

3.0 REFERENCES

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_____. 1992. Field Survey Protocol for Any Federal Action That May Occur within the Range of the Desert Tortoise. January.

Sundance Biology, Inc. 2008. Presence/Absence Survey for the Desert Tortoise (*Gopherus agassizii*), on the proposed Ivanpah Solar Electric Generating System in Ivanpah Valley, San Bernardino County, CA. Prepared for: CH2MHill, Inc. June.

http://www.fws.gov/ventura/sppinfo/protocols/deserttortoise_fedsurveyprotocol.pdf

Appendix A
Guidelines for Clearance and Translocation of Desert Tortoises from the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project

December 12, 2008

GUIDELINES FOR CLEARANCE AND TRANSLOCATION OF DESERT TORTOISES FROM THE IVANPAH SOLAR ELECTRIC GENERATING SYSTEM (ISEGS) PROJECT

U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, 2493 Portola Road, Suite B, Ventura, California, 93003

The Fish and Wildlife Service (Service) is providing these guidelines for clearance and translocation of desert tortoises as technical assistance to permitting agencies and project proponents for developing a comprehensive set of procedures to follow for translocating desert tortoises from the ISEGS project. Upon issuance of our biological opinion, all procedures to be used in translocation activities and subsequent monitoring will become mandatory and must be fully implemented to avoid violating the provisions against the taking of federally listed species, as defined in section 9 of the Endangered Species Act.

All methods used for handling desert tortoises during translocation must be in accordance with the *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1999) or the most recent handling guidance provided by the Service. Biologists that handle desert tortoises during translocation activities must have the appropriate authorizations from the Service and the California Department of Fish and Game.

In this document, we refer to both translocation and relocation activities and the specific instances when each is appropriate. For the purpose of this guidance, a translocation is required when a desert tortoise must be moved more than 1000 meters to clear it from the project site, while a relocation requires a movement of less than 1000 meters.

Bureau of Land Management (Bureau) will direct Bright Source Energy (BrightSource) to prepare a desert tortoise translocation plan that adopts the guidance below. The Bureau-approved plan will be part of the proposed action for which the Service will render its biological opinion. The Bureau will seek California Department of Fish and Game (CDFG) concurrence with the plan prior to initiating formal consultation, and will obtain CDFG input during plan implementation.

I. Translocation Area Identification

A. Prior to clearance of desert tortoises from the project site, BrightSource, must identify a specific translocation area(s) with boundaries that encompass an area of desert tortoise habitat of sufficient size to accommodate resident and translocated desert tortoises at a density that will not exceed 39 individuals per square kilometer. This density is consistent with that identified in the Fort Irwin translocation plan. This translocation area will be used to accommodate all project-site desert tortoises that cannot be moved to safe locations within 1000 meters of their capture location (see I.E below).

B. Translocation areas must be on Federal or State lands in California that are located outside of desert tortoise critical habitat, off-highway vehicle management areas, and desert wildlife management areas that the Bureau of Land Management (Bureau) has

established through its resource management plans. The translocation area(s) must not have any proposed rights-of-way or other encumbrances at the time of its establishment.

C. To minimize potentially adverse genetic effects and to provide suitable habitat for translocated individuals, the translocation area(s) must be in Ivanpah Valley, below 4200 feet, and it must be composed of desert tortoise habitat that resembles the habitat on the project site. Analysis of the habitat must consider precipitation, soils, vegetation community, vegetation density and abundance, perennial plant cover, forage species, geomorphology, and slope.

D. To minimize the potential for loss of desert tortoises due to vehicle strikes, the translocation area must be at least 10 kilometers away from major highways (e.g. Interstate 15) to provide a safety buffer for long-distance movements that some desert tortoises are likely to make following translocation. If BrightSource cannot identify a suitable translocation area (i.e., area that meets I.A. through I.C) outside of this buffer distance, it must fence the highway with desert tortoise proof fencing prior to translocation of desert tortoises. BrightSource should work with CalTrans regarding the appropriate location for this fencing along the I-15 if it is required. To effectively prevent movement of desert tortoises onto I-15 the fence should at least cover the distance between Nipton Road and the Ivanpah Lake. BrightSource should also consider the location of the proposed Joint Port of Entry in this area when planning this fencing.

E. Desert tortoises that the authorized biologist can relocate outside of the project site to an area that meets the requirements of I.A through I.D within 1000 meters of their capture location must not be translocated to the more remote translocation area. BrightSource must identify zones within the project site where these shorter distance relocations would apply. Other desert tortoises within the project site that will require movement of greater than 1000 meters to meet the requirements of I.A through I.D must be translocated to the identified translocation area. This measure will help to minimize the number of project-site desert tortoises that are moved outside of their natural home range.

F. BrightSource must obtain approval of the translocation area and timing of the translocation activities from the Service, CDFG, and the Bureau prior to initiating any translocation activities. Translocations shall not be permitted if these agencies determine that environmental conditions such as an extended drought might significantly reduce the survival of the translocated desert tortoises.

Note: Based on our own cursory analysis of the translocation issue for ISEGS, we believe that fencing of I-15 will probably be necessary to minimize the loss of desert tortoises. We also believe that desert tortoises will have to be translocated to the west and/or south of the proposed facility to avoid another proposed solar facility. If it become necessary to fence I-15 in order to translocate desert tortoises from the project site, we recommend that the translocation area be located as close to the fence line as possible to minimize adverse effects to resident populations. As discussed in I.E, desert tortoises that can be relocated to an appropriate location (i.e., one that complies with I.A through I.D) outside of the project site without moving them more than 1000 meters must not be translocated to the identified translocation site.

II. Translocation Procedures and Guidance

A. Clearance surveys

1. BrightSource must not commence clearance surveys on any portion of the project site unless it has fenced that area with desert tortoise-proof fencing. Specifications for desert tortoise-proof fencing can be found at the following website:

   http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt/DT_Exclusion-Fence_2005.pdf

   Clearance surveys must consist of two consecutive surveys of the site using 10-foot wide transects. The direction of transects from the second survey must run perpendicular to those of the first. BrightSource must perform all clearance survey and translocation procedures for any portion of the project site during the spring (i.e., March - May) or fall (i.e., late August to early October) to avoid extreme temperatures. Two consecutive clearance surveys will be sufficient to declare the site free of desert tortoise as long as the site is completely fenced with desert tortoise exclusion fencing prior to the surveys. BrightSource must perform clearance surveys to coincide with each phase of development as opposed. Clearing all three phases at one time will allow for adaptive management on each phase's translocation to benefit from the monitoring information gathered from the previous phases. Any desert tortoises found within the project area fencing after completion of the official clearance surveys must be removed from harm's way and moved to the translocation area as described below.
2. BrightSource must mark and affix transmitters to all desert tortoises cleared from the project site, so that they can be located and identified during post-translocation monitoring (see below).
3. During clearance, the authorized biologist(s) may remove desert tortoises that are in burrows through tapping or careful excavation following the *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1999). Multiple visits will be necessary if desert tortoises are inaccessible in burrows during clearances. Construction must not proceed until BrightSource has cleared all desert tortoises from the project site.
4. All clearance and translocation activities (capture, transportation, release, etc.) must occur when ambient temperatures are below 35°C and not anticipated to rise above 35°C before handling and processing are completed. Temperature must be measured in the shade at a height of 5 centimeters above the ground. If additional guidance on temperature tolerances becomes available, the Service will provide it to BrightSource for use.
5. Prior to translocation, authorized biologist(s) for BrightSource, trained to identify clinical signs of disease in desert tortoise, must evaluate all desert tortoises to be translocated from the project site for overall condition, trauma, and clinical signs of upper respiratory tract disease (URTD), herpes virus, and cutaneous dyskeratosis. The authorized biologist(s) must remove and quarantine any desert tortoises showing clinical signs of disease. They must then contact the Service within 24 hours to determine the disposition of these individuals. Desert tortoises that are relocated based on I.E do not require health assessments prior to relocation.

B. Transportation and release

1. During translocation, BrightSource must move desert tortoises to the translocation area and distribute them evenly through the site. The specific location of each desert tortoise release point must be recorded for use in analyzing data gathered through post-translocation monitoring.
2. During translocation, authorized biologists will transport all desert tortoises in clean protective containers to ensure their safety. These containers must be sterilized using a 10 percent bleach solution before being used to translocate other desert tortoises.
3. Immediately prior to release, all desert tortoises must be provided drinking water for 15 to 20 minutes (preferably by placing water a few centimeters deep directly into each tortoise's plastic tote), after which they must be released into an unoccupied desert tortoise burrow (if available) or in the shade of a shrub. If the desert tortoises tote is fouled by urine or feces during transportation, it must be cleaned prior to use for desert tortoise hydration.
4. All clearance and translocation activities (capture, transportation, release, etc.) must occur when ambient temperatures are below 35°C and not anticipated to rise above 35°C before handling and processing are completed. Temperature must be measured in the shade at a height of 5 centimeters above the ground.
5. If workers locate desert tortoises during construction activities that the initial clearance surveys missed, BrightSource must utilize an authorized biologist to complete translocation of the desert tortoise according to these guidelines.

III. Post-translocation Monitoring and Reporting

1. Following translocation, the translocated and relocated desert tortoises must be located at least once per month for 3 years to monitor for homing behavior and to determine how translocated animals are adapting to their new location. These surveys must note the location of the translocated tortoises, overall condition, health status, translocation area threats (type and intensity), and identify any mortalities among the translocated population. All mortalities within the translocation area should be reported to the Ventura Fish and Wildlife Office, California Department of Fish and Game (Victorville Office), and the Bureau's Needles Field Office within 48 hours of discovery. BrightSource in coordination with the Service will use the information gathered through this monitoring to inform adaptive management decisions for the translocation program on subsequent phases of the project.
2. In addition, adaptive management of the translocation area may be required if monitoring identifies abnormally high mortality rates among the translocated desert tortoises. If monitoring shows a mortality rate of 10 percent or higher among the translocated population, BrightSource will consult with the Service, CDFG, and the Bureau to develop a remedial action plan prior to further phased translocation activities.
3. BrightSource must submit annual translocation area monitoring reports to the Ventura Fish and Wildlife Office and California Department of Fish and Game (Victorville Office) that detail the results of the radio telemetry and transect

monitoring by January 31 of each year. These reports should analyze the effectiveness of the translocation program and identify any needed adaptive management strategies.

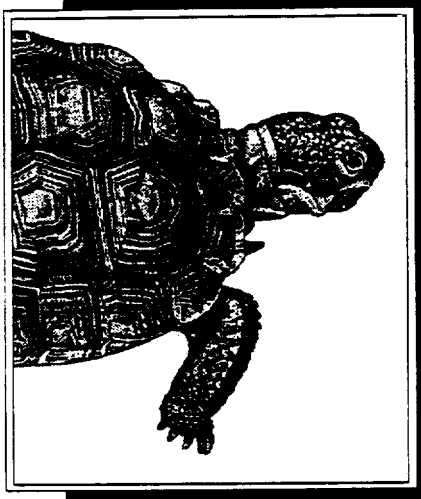
References Cited

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

Appendix B
Appendix B of the Desert Tortoise Recovery Plan

Appendix B

Desert Tortoise
(Mojave Population)



Recovery Plan

Appendix B: Guidelines for Translocation of Desert Tortoises

(1) Experimental translocations should be done outside experimental management zones. No desert tortoises should be introduced into DWMAs—at least until relocation is much better understood.

(2) All translocations should occur in good habitat where the desert tortoise population is known to be substantially depleted from its former level of abundance. Translocation of reproductively competent adults into depopulated areas can have beneficial effects on population growth. Before population growth can occur, however, individuals must establish home ranges and enter into any existing social structure. Desert tortoises should be periodically evaluated against a defined health profile (proportional weight/size, fecal scans, and blood panels).

(3) Areas into which desert tortoises are to be relocated should be surrounded by a desert tortoise-proof fence or similar barrier. The fence will contain the desert tortoises while they are establishing home ranges and a social structure. If the area is not fenced, past experience suggests that most animals will simply wander away from the introduction site and eventually die. (Fencing is not cheap; estimates range from $2.50 to $5.00 per linear foot). Once animals are established some or all of the fencing can be removed and probably reused.

(4) The best translocations into empty habitat involve desert tortoises in all age classes, in the proportions in which they occur in a stable population. Such translocations may not always be possible, since young desert tortoises are chronically underrepresented in samples, often due to observer sampling error, and may now actually be underrepresented in most populations due to poor recruitment and juvenile survivorship during the last several years. Desert tortoises smaller than the 7-year age-size class are particularly vulnerable to predation and may be a poor investment for translocation, unless predator exclusion (fencing, for example) is incorporated into such endeavors. Mature females would probably be the best sex/age class to introduce into below carrying capacity extant populations because of their high reproductive value (low potential mortality, high potential fecundity for many years).

(5) The number of desert tortoises introduced should not exceed the pre-decline density (if known). If the pre-decline density is not known, introductions should not exceed 100 adults or 200 animals of all age classes per square mile in category 1 habitat (Bureau of Land Management designation for management of desert tortoise habitat) unless there is good reason to believe that the habitat is capable of supporting higher densities. Post-introduction mortalities

might be compensated by subsequent introductions if ecological circumstances warrant this action.

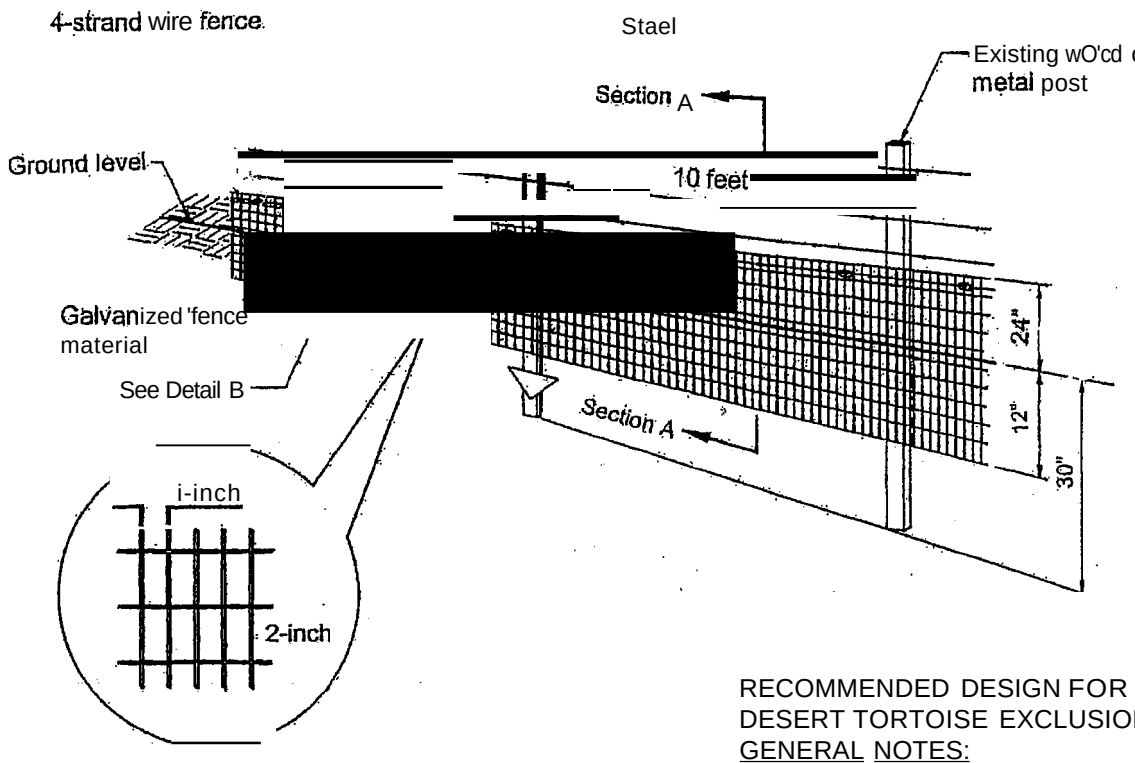
(6) All potential translocatees should be medically evaluated in terms of general health and indications of disease, using the latest available technology, before they are moved. All translocatees should be genotyped unless the desert tortoises are to be moved only very short distances or between populations that are clearly genetically homogeneous. All translocated animals should be permanently marked, and most should be fitted with radio transmitters so that their subsequent movements can be closely tracked.

(7) If desert tortoises are to be moved into an area that already supports a population--even one that is well below carrying capacity--the recipient population should be monitored for at least 2 years prior to the introduction. Necessary data include the density and age structure of the recipient population, home ranges of resident desert tortoises, and general ecological conditions of the habitat.

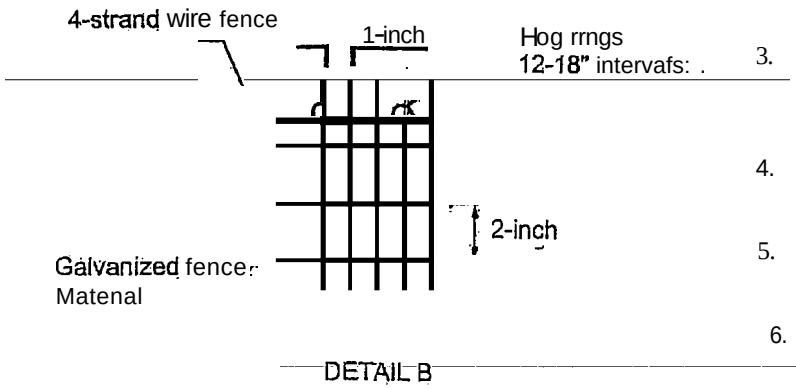
Areas along paved highways can serve as good translocation sites, if properly fenced. Many such areas support good habitats, but vehicle-caused mortalities and/or collecting have substantially reduced or totally extirpated adjacent desert tortoise populations. Any translocation sites should be isolated by a desert tortoise barrier fence or similar barrier next to the highway or road. The purpose of fencing the highway is obvious--to keep translocated animals from being crushed by vehicles on the road. However, fencing the other sides of the translocation area is critical for establishment. If a fenced area or strip of habitat approximately 0.125 to 0.25 mile wide is established along highways, some translocatees should establish home ranges and a social structure within this strip. When the inside fence is removed, the translocated desert tortoises and those from the extant population farther away from the road will eventually expand their home ranges into the remaining low-density areas. A second reason for inside fencing is to prevent any diseased, but asymptomatic, desert tortoises from infecting nearby, healthy populations. In the event that disease is an issue and a resident population is present nearby, double inside fencing should be considered.

Appendix C
Recommended Specifications for Desert Tortoise Exclusion Fencing and Tortoise Guard

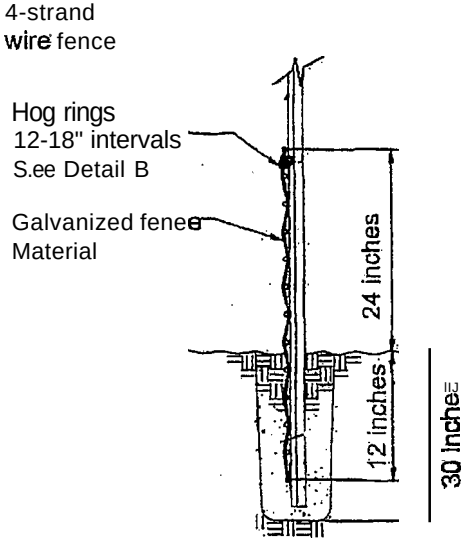
DESERT TORTOISE EXCLUSION FENCE (2005)



DETAIL A



DETAIL B



SECTION A

RECOMMENDED DESIGN FOR DESERT TORTOISE EXCLUSION FENCE

GENERAL NOTES:

1. Ensure that fence posts and materials conform to the standards approved by the U.S. Fish and Wildlife Service.
2. Ensure that the height above ground level is no less than 18 inches and no higher than 24 inches.
3. Ensure that the depth of fence material below ground level is about 12 inches but no less than 6 inches. (See SECTION A above)
4. Install additional steel posts when between existing fence posts exceed 10 feet.
5. Attach fence material to existing fence or wire using hog rings at 12-inch intervals.
6. Fasten fence material to posts with 3 tie wires with a wire near the top, bottom, and center of the fence material.
7. Backfill trenches with excavated material and compact the material.
8. Attach fence material to all gates. Ensure that clearance at base of gate achieves zero ground clearance.
9. Substitute smooth wire for barbed wire if additional support wires are necessary.
10. The number placement of support wires may be modified to allow sheep and deer to pass safely.
11. Erosion at the edge of the fence' material where the fence crosses washes may occur and requires appropriate and timely monitoring and repair.
12. Tie the fence into existing culverts and cattleguards when determined necessary to allow desert tortoise passage underneath roadways.

FOR BEDROCK OR CALICHE SUBSTRATE

1. Use this fence design (see below) only for that portion of the fence where fence material cannot be placed 6 inches below existing ground level due to presence of bedrock, large rocks or caliche substrate.

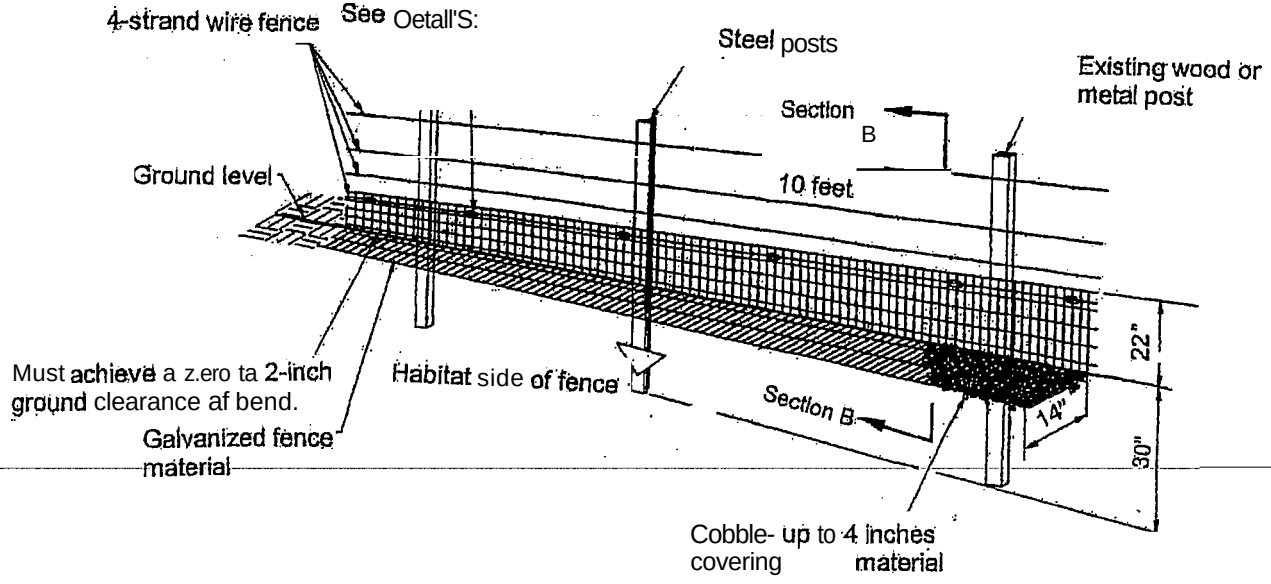
2. Ensure that the fence height above ground level is no less than 22 inches.

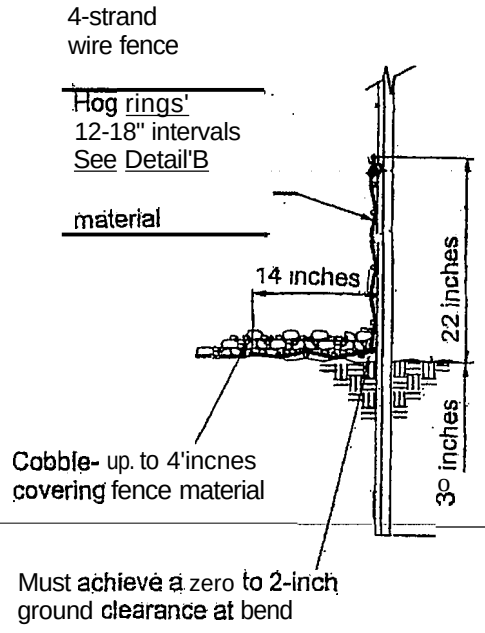
3. Ensure that there is a zero to 2-inch ground clearance at the bend.

4. Ensure that the bent portion of the fence is lying on the ground and pointed in the direction of desert tortoise habitat.

5. Cover the portion of the fence that is flush with the ground with cobble (rocks placed on top of the fence material to a vertical thickness up to 4 inches).

6. When substrate no longer is composed of bedrock or caliche, install fence using design shown above.





SECTIoN B

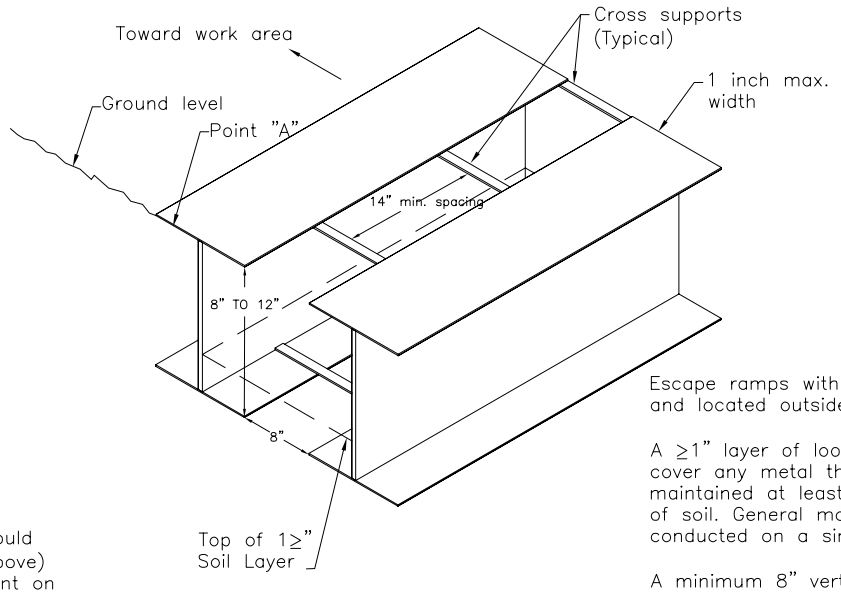
TEMPORARY TORTOISE GUARD

Parallel "I" beams are welded, using cross supports to maintain an 8" spacing, to create the tortoise guard.

Upper cross supports shall be spaced a minimum of 14" apart and have a horizontal width of no more than 1".

There must be a minimum 10–foot wide opening in the tortoise–exclusion fencing to accommodate the tortoise guard.

ISOMETRIC



Tortoise–proof fencing should terminate at Point "A" (above) and the corresponding point on the opposite end of the same "I" beam.

Escape ramps with a slope no steeper than 3:1, each at least 3 feet in length and located outside the work area, will be provided at each end of the tortoise guard.

A ≥1" layer of loose soil that is free of rock shall be placed in the trench bottom to cover any metal that may cause injury to a tortoise. The soil layer needs to be maintained at least quarterly and after rain events to prevent compaction or loss of soil. General maintenance of the guard and the escape ramps should also be conducted on a similar schedule.

A minimum 8" vertical clearance (12" max.) must be maintained between the soil in the bottom of the guard and the upper cross supports.

Temporary installation: Set "I" beams in compacted earth.

TOP VIEW