

**U.S. Department of the Interior
Bureau of Land Management**

**Decision Record - Memorandum
DOI-BLM-NV-S010-2012-0146-EA**

March 5, 2013

**Techren Solar, LLC Aerial Transmission Line and Un-paved Graded Access Road
N-90395 and N-90395/01**

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
4701 N. Torrey Pines Drive
Las Vegas, NV
702-515-5000
702-515-5010



Techren Solar, LLC

Compliance

The proposed project is in conformance with the following plans and laws:

- National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-190, 42 United States Code [USC] 4321 et seq.);
- 40 CFR 1500 et seq.: Regulations for Implementing the Procedural Provisions of NEPA;
- 43 CFR subpart 2800, Use; Rights-of-Way
- BLM NEPA Handbook (H-1790-1) dated, January 30, 2008;
- FLPMA, as amended, Sections 103(c) and 501(a)(4);
- Boulder City Master Plan (Boulder City 2003);
- Clark County Multiple Species Habitat Conservation Plan (Clark County 2000); and Las Vegas Resource Management Plan (RMP) and Final Environmental Impact Statement (BLM 1998).

Selected Action

It is my decision to implement the proposed action with the mitigation measures identified in DOI-BLM-NV-S010-2012-0146 EA and all other stipulations as shown in the proposed ROW grant documents. The proposed action is for the BLM to authorize Techren's right-of-way application to construct, operate, maintain and terminate a 230kV aerial transmission line and an un-paved graded access road on public lands. The ROW will tie into private lands owned by the City of Boulder City, which would be considered a connected action (see EA Section 2.1.1, Non-federal connected action). Construction of the solar facility is dependent upon the BLM's approval of the aerial transmission lines because electricity generated at the solar facility would not reach the power grid without utilizing the BLM RMP designated utility corridors for nearly all of the possible aerial transmission line routes. Because the connected action can be prevented by the BLM decision, the effects of the connected action are properly considered indirect effects of the Proposed Action, and as such are analyzed as effects of the Proposed Action (40 CFR 1508.7 and 1508.25[c]).

Public Involvement:

The proposed project was reviewed and scoped by the BLM resource specialists in the Las Vegas Field Office, and the Renewable Energy staff between August 3, 2011 to February 13, 2013. The Environmental Assessment (EA) was made available for public comment period of September 17, 2012 through October 25, 2012 on the BLM's Southern Nevada District web site and interested parties were notified of the opportunity to comment. The BLM received seven (7) comments during the scoping period. Three (3) comments did not identify any issues; One (1) comment was addressed in the NEPA document; Three (3) comments will be converted into stipulations to address their issues with the Environmental Analysis or FONSI for the project. All comments were considered in making this decision on the Techren Solar, LLC project.

Rationale:

1. The proposed action is consistent with promoting the use for rights-of-way in common considering engineering and technological compatibility, national security, and land use plans (43 CFR 2801.2(c)).
2. The proposed action supports coordination with state and local governments, interested individual(s) and appropriate quasi-governmental entities (43 CFR 2801.2(d)).
3. The recommendation to authorize right-of-way grants on Federal lands meet the stated objective RW-1 and RW-1-h in the RMP, approved October 5, 1998.

Appeal or Protest Opportunities:

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4 and the enclosed Form 1842-1. If an appeal is taken, your notice of appeal must be filed in this office (at the above address) within 30 days from receipt of this decision. The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition (request) pursuant to regulation 43 CFR 2801.10 or 2881.10 for a stay (suspension) of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay

Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards:

- (1) The relative harm to the parties if the stay is granted or denied,
- (2) The likelihood of the appellant's success on the merits,
- (3) The likelihood of immediate and irreparable harm if the stay is not granted, and
- (4) Whether the public interest favors granting the stay.

Authorizing Official:



Vanessa L. Hice
Assistant Field Manager, Division of Lands

= MAR 21 2013

acting for

Contact Person

For additional information concerning this Finding, contact.

Brenda Wilhight, Realty Specialist
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Finding of No Significant Impact Techren Solar, LLC

230kV Gen-Tie Aerial Transmission Line and Un-paved Graded Access Road

DOI-BLM-NV-S010-2012-0146-EA

Based on the analysis of potential environmental impacts, I have reviewed Environmental Assessment (EA) DOI-BLM-NV-S010-2012-0146-EA, dated February 15, 2013. After consideration of the environmental effects as described in the EA, and incorporated herein, I have determined that the proposed action identified in the EA and the mitigation measures described below will not significantly affect the quality of the human environment and that an Environmental Impact Statement (EIS) is not required.

The Bureau of Land Management (BLM) prepared an Environmental Assessment (EA) (DOI-BLM-NV-S010-2012-0146-EA) that analyzed the effects of development of a aerial transmission line to facilitate power from the proposed Techren Boulder City Solar facility to the grid. The EA considered a range of development alternatives, including the following:

- Alternative 1 - proposed a 230 kV aerial transmission line from the proposed solar facility to the Eldorado Substation and McCullough Switching Station;
- Alternative 2 – proposed a 500 kV aerial transmission line from the proposed solar facility to Marketplace Substation; and
- No Action Alternative

Additionally, the EA analyzed the impacts of the solar facility as a non-connected federal action for each resource area.

I have reviewed the proposed action and determined that it is conformance with the approved Las Vegas Resources Management Plan (RMP) and Record of Decision, signed October 5, 1998. The proposed action is consistent with applicable plans and policies of county, state, tribal and Federal agencies. This finding and conclusion is based on my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the context and the intensity of impacts described in the EA.

Context:

The lands proposed for the Techren Boulder City Solar Aerial Transmission Line Project are parts of an existing Bureau of Land Management (BLM) Utility Corridor. The existing utility corridor is identified in the RMP and the proposed use is consistent with the RMP plan. The proposed action and alternative would not have any effect on the local environment as the proposed action is consistent with existing uses in the area.

Intensity:

1. Impacts that may be both beneficial and adverse.

The proposed right-of-way (ROW) is being built inside an existing utility corridor identified in the RMP; therefore, the proposed project is consistent with the BLM strategy for rights-of-way management. No adverse impacts would occur to the existing resources with the approval of this proposed aerial transmission line ROW. All impacts that have been identified in the EA have been

mitigated by the proponent at the BLM's request through the application of best management practices and standard ROW stipulations.

The primary beneficial impact is a small reduction in anthropogenic greenhouse gases that would otherwise been generated by fossil-fuel electricity generation. This reduction is a fraction of a percent of the total anthropogenic output and is not significant. Additionally, the local economy would benefit from additional employment opportunities and increases in tax revenues.

2. The degree to which the proposed action affects public health or safety:

The majority of the potential impacts to health and safety would occur during the construction and decommissioning phases of the project. No permanent impacts to public health and safety were identified in the EA associated with the approval of the proposed ROW. Temporary impacts to air quality resources and noise associated with construction activities were identified in the EA. During the construction period, mitigation measures, best management practices, and standard ROW stipulations will minimize these affects.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wildlife and scenic rivers, or ecologically critical areas:

The proposed aerial transmission line ROW is not near any park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. No historic or cultural resources would be impacted during the construction of the proposed aerial transmission line ROW.

4. The degree to which the effects on the quality of the human environment are likely to be controversial:

No controversies were identified by the public or the scientific community associated with the project or the EA as to the nature of the effect on the resources identified.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks:

No known risks or unknown risks on the human environment exist that are highly uncertain or unique or involve unknown risks associated with the construction of the proposed aerial transmission line ROW. The proposed project is not located near any residential areas or designed campgrounds.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:

The proposed action does not establish a precedent for future actions or represent a decision in principle for future consideration. The proposed aerial transmission line ROW is located in the BLM RMP designated utility corridor; therefore, consistent with BLM ROW management goals.

7. Whether the action is related to other actions with individually insignificant but cumulative significant impacts:

The construction of the proposed aerial transmission line ROW has a non-federal connected action with Techren LLC's proposal to construct and operate an up to 300MW solar energy generating facility to be located on approximately 2,200 acres of land owned by the City of Boulder City and leased to the applicant.

The solar energy facility is located within the City of Boulder City's Solar Energy Zone in the Eldorado Valley. The City of Boulder City has leased several areas for development and solar energy development.

It is reasonably foreseeable that similar connected actions project will occur in the immediate future, in which there will be energy project development on the private land by the City of Boulder City. Subsequent requests for development of aerial transmission line access through the existing BLM utility corridor have occurred and may occur in the future.

8. The degree to which the action may adversely affect districts, sites, highways, structures or objects listed in or eligible for listing in the NRHP or may cause loss or destruction structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources:

No sites eligible for listing on the NRHP were identified. Construction of the proposed aerial transmission line ROW would have no effects on districts, sites, highways, structures, or significant scientific, cultural, or historical resources.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (ESA) of 1973.

Mojave Desert Tortoise (*Gopherus agassizii*) was the only species listed under the ESA, as amended (16 U.S.C. 1531 *et seq.*) occurring in the project ROW. This species is currently classified as threatened under the ESA. A Biological Opinion (BO) for the action was signed December 28, 2012. The resultant incidental take and minimization measures for desert tortoise outlined in the BO is exclusive for BLM-managed lands; any potential take of the species that may occur on the private lands associated with the action would defer to Clark County's existing Section 10 permit.

10. Whether the action threatens a violation of Federal, state, or local law or requirements imposed for the protection of the environment. The proposed project does not violate Federal, state, or local law or requirements imposed for the protection of the environment. The proposed project and the EA were prepared in accordance with the following statutes and implementing regulations, policies, and procedures:

- National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-190, 42 U.S.C. 4321 *et seq.*);
- 40 CFR 1500 *et seq.*: Regulations for Implementing the Procedural Provisions of NEPA;
- 43 CFR Subpart 2800, Use; Rights-of-Way
- BLM NEPA Handbook (H-1790-1) (BLM 2008a);
- Federal Land Policy and Management Act, as amended, Sections 103(c) and 501 (a)(4);
- National Historic Preservation Act, as amended (16 USC 40 *et seq.*);
- Boulder City Master Plan (Boulder City 2003)
- Clark County Multiple Species Habitat Conservation Plan (Clark County 2000); and

- Las Vegas Resource Management Plan (RMP) and Final Environmental Impact Statement (BLM 1998).

Mitigation Measures:

1. Since the major source threshold emission rate is 70 tons per year, the project will be considered a major stationary emission source and would be subject to Prevention of Significant Deterioration (PSD) or New Source Review (NSR) permitting requirements under the Clean Air Act (CAA). Emission sources used to construct and operate the proposed Project will exceed major source thresholds. Prior to site construction it will be necessary for the developer to meet with Clark County Department of Air Quality (DAQ) and obtain the necessary air emission permits.

Construction activities that disturb soils and emit or have the potential to emit particulate matter must obtain a Dust Control Permit from the DAQ. As part of the Dust Control Permit, the applicant must also submit a Dust Mitigation Plan. This Enhanced Dust Mitigation Plan will specify the control measures that would be implemented during construction to reduce fugitive dust and minimize impacts to ambient air quality. Dust control measures would include; watering the disturbed soil areas and unpaved roads during construction, applying dust suppressants (on private property) during routine operations, applying soil stabilizers or crushed aggregate for wind erosion control, installing a construction entrance with track-out control devices, and stabilizing disturbed land surfaces with pavement, re-vegetation, or suppressants (on private property) directly after construction is completed in each area.

2. Before the start of construction, the construction contractor will obtain a dust control permit from the DAQ as required (Clark County DAQ 2003). Techren would also develop an Enhanced Fugitive Dust Plan with mitigation measures to reduce the potential for fugitive dust. In addition to the BMPs listed in Appendix B, potential mitigation measures may include, but are not limited to, the following: watering the site, applying soil stabilizers, installing a construction entrance with track-out control devices, and the stabilization of disturbed surfaces, after construction is completed.

Should biological soil crusts be detected during pre-construction surveys, appropriate measures would be taken to minimize disturbance of soil crusts. Suggested measures include: (1)-maintain the optimum amount of live vegetation, litter and biological crust relative to the site in order to maintain the content of organic matter, (2)-defer disturbance during periods when biological crusts are more susceptible to physical disturbance when soil is very wet, (3)-control the establishment and spread of invasive plants that can increase the risk of wildfire which may impact biological soil crusts. Should desert pavement be detected during pre-construction surveys, appropriate measures would be taken to minimize disturbance of desert pavement. Suggested measures might include limiting surface disturbance in desert pavement areas, replacement of desert pavement with similar gravel-sized layer over exposed underlying fine-grained soils or other BMPs.

3. No excavations greater than 30 feet in depth are planned during construction. Because the depth to static groundwater in the Project area is approximately 315 feet, no mitigation measures are necessary.

During construction, a sanitary service will be contracted to provide and maintain portable toilets on the solar facility site. With BMPs in place both during construction and operation, potential impacts from the sanitary discharges would be non-significant (Appendix B).

4. BMPs will reduce construction impacts on vegetation and wildlife habitat (Appendix B). No additional mitigation is proposed.
5. As some flexibility exists in the placement of aerial transmission line poles, cactus will be avoided to the extent possible. To further reduce impacts to cacti, cacti will be salvaged as described in the BMPs (Appendix B).
6. BMPs will reduce construction impacts on vegetation and wildlife habitat (Appendix B).
7. On June 11, 2012, the BLM had submitted a Biological Assessment to the USFWS as part of consultation under Section 7 of the ESA. The USFWS issued a Biological Opinion (BO) for the project on December 28, 2012 (Appendix E). Section 7 (a)(2) of the Act requires Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. After reviewing the effects of the proposed project and cumulative effects, the USFWS determined that the proposed project is not likely to jeopardize the continued existence of the species. Mitigation measures outlined in the BO will be implemented as part of the project to avoid, or reduce environmental impacts associated with the proposed action to Federal or state protected species. Mitigation measures and actions are to comply with the USFWS guidelines, the Clark County Multi-Species Habitat Conservation (MSHCP), and Nevada Department of Wildlife (NDOW) standards.

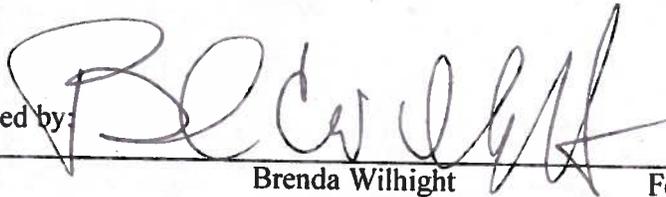
Associated development on private lands (i.e. those owned by the City of Boulder City) would utilize the existing Clark County MSHCP Section 10 permit for potential take of desert tortoise and limit disturbance to desert tortoise habitat to the minimum extent possible.

8. The mitigation measures for the construction minimization measures are identified in the BO. For a complete description, refer to the BO in Appendix E of the Environmental Assessment.
9. Because the proposed aerial transmission lines would not impact other land uses within the BLM-managed utility corridor no mitigation measures are necessary.
10. Noise generated from construction and operation of the aerial transmission line would not be audible at the nearest sensitive receptor; therefore, no mitigation is required.

11. A solid and hazardous waste management plan will be prepared and implemented for both construction and operation of the proposed project and connected action. Included in the solid and hazardous waste management plans will be stipulations and procedures regarding compliance with Federal, state, and local regulations for waste minimization, storage, and disposal. The construction contractor shall prepare BMPs that describe the methods for working with hazardous materials during construction. Construction contractor will prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan that describes methods for working with hazardous materials during construction, measures for avoiding spills, and mitigation measures if a spill were to occur.

Signatures:

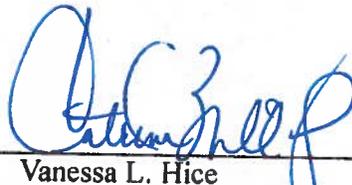
Recommended by:



Brenda Wilhight
Realty Specialist

February 15, 2013

Approved by:



MAR 21 2013

actg for
Vanessa L. Hice
Assistant Field Manager,
Division of Lands

**U.S. Department of the Interior
Bureau of Land Management**

**Environmental Assessment
DOI-BLM-NV-S010-2012-0146-EA**

February 15, 2013

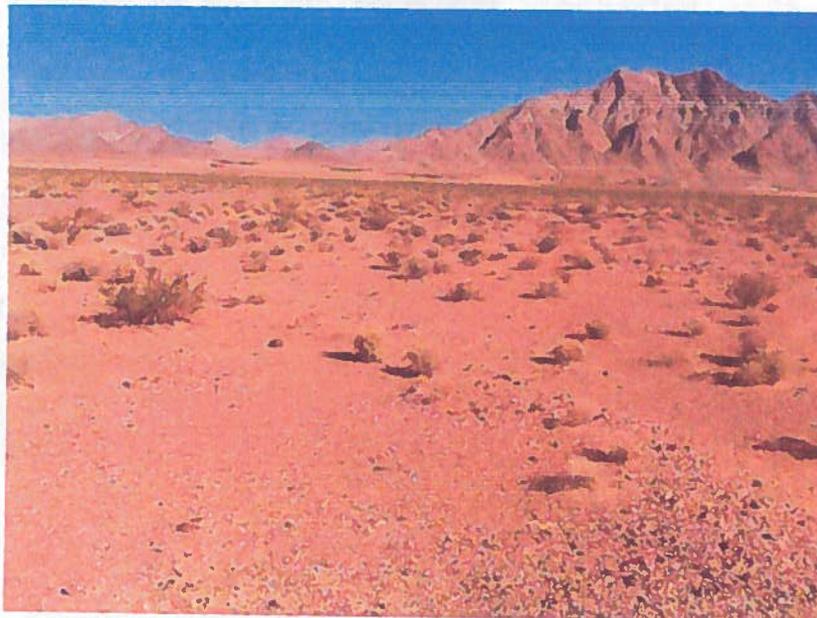
**Techren Solar, LLC Project 230kV Gen-Tie Transmission Line and Access Road
N-90395**

PREPARING OFFICE

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**Environmental Assessment
Techren Solar LLC
DOI-BLM-NV-S010-2012-0146-EA
N-90395**



Prepared For:



**U.S. Department of the Interior
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Southern Nevada District Office
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February 15, 2012

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Acronyms and Abbreviations

Acronym or Abbreviation	Description
BA	Biological Assessment
BO	Biological Opinion
BCCE	Boulder City Conservation Easement
BLM	Bureau of Land Management
BMP	Best Management Practices
CAA	Clean Air Act
CFR	Code of Federal Register
CO	Carbon monoxide
DAQ	Department of Air Quality
EA	Environmental Assessment
ESA	Endangered species act
EZ	Energy Zone designated by the City of Boulder City
GHG	Greenhouse gas emissions
MSL	Mean sea level
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NDOW	Nevada Department of Wildlife
NO ₂	Nitrogen dioxide
O ₃	Ozone
OHV	Off-road Vehicles
Pb	Lead
PM _{2.5}	Particulate matter equal to or less than 2.5 microns in diameter
PM ₁₀	Particulate matter equal to or less than 10 microns in diameter
ROW	Rights-of-way
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USC	United States Code
VOC	Volatile organic compounds

Identifying Information

Title: Techren Boulder City Solar Project

EA Number: DOI-BLM-NV-S010-2012-0146 EA

Type of Project: Transmission Line

Location of Proposed Action: Township 24 South, Range 63 East – Section 19
Township 24 South, Range 62 East – Sections 24, 25, 35, and 36
Township 25 South, Range 62 East – Sections 1 and 2

Preparing BLM Office: Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, NV 89130

Applicant Name: Techren Solar LLC

Identify the Subject Function Code, Lease, Serial, or Case File: Case File N-90395

1 Purpose and Need

1.1 Background

Techren Solar LLC has submitted a rights-of-way (ROW) application to and is seeking a ROW grant from the Bureau of Land Management (BLM) to construct a transmission line to connect the Techren Boulder City Solar Project to the Marketplace Substation or the McCullough Switching Station and Eldorado Substation. The transmission line would utilize a designated Federal utility corridor. The proposed project site is in Clark County, NV, approximately 7 miles southwest of the City of Boulder City (Figure 1.1-1).

1.2 Purpose and Need for the Action

In accordance with the Federal Land Policy and Management Act (FLPMA) (Section 103(c)), public lands are to be managed for multiple uses that take into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant right-of-ways (ROWs) on public lands for systems of generation, transmission, and distribution of electric energy (Section 501(a)(4)). Taking into account the BLM's multiple use mandate, the purpose and need for the proposed actions is to respond to a FLPMA ROW application submitted by Techren Solar, LLC to construct, operate and maintain, and decommission a transmission line on public lands administered by the BLM. Consideration of the ROW application would be in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws and policies. These actions would, if approved, assist the BLM in addressing the management objectives in the Energy Policy Act of 2005 (Title II, Section 211)

which establish a goal for the Secretary of the Interior to approve 10,000 MWs of electricity from non-hydropower renewable energy projects located on public lands. This proposed action, if approved, would also further the purpose of Secretarial Order 3285A1 (March 11, 2009) that establishes the development of environmentally responsible renewable energy as a priority for the Department of the Interior.

1.3 Scope of Analysis and Decisions to be Made

This Environmental Assessment (EA) presents two alternative transmission line routes for analysis, which are discussed in detail in Section 2.1.2, Detail of the Proposed Action.

Both alternatives consist of a transmission line that would connect the Techren Boulder City Solar Project to the Southern California Edison's (SCE) Eldorado Substation and the McCullough Switching Station or the Los Angeles Department of Water and Power's (LADWP) Marketplace Substation.

The BLM will decide whether to deny the proposed ROW, grant the ROW, or grant the ROW with modifications. Modifications may include modifying the proposed use or changing the route or location of the proposed facilities (43 Code of Federal Regulations (CFR) 2805.20[a][1]).

Techren Solar LLC is also proposing to construct a solar energy-generating facility on private land owned by the City of Boulder City, which would be considered a connected action (see Section 2.1.1, Non-federal connected action). Construction of the solar facility is dependent upon the BLM's approval of the transmission lines because electricity generated at the solar facility would not reach the power grid without utilizing the BLM utility corridors for nearly all of the possible transmission line routes. Because the connected action can be prevented by the BLM decision, the effects of the connected action are properly considered indirect effects of the Proposed Action, and as such are analyzed as effects of the Proposed Action (40 CFR 1508.7 and 1508.25[c]).

1.4 Relationship to Laws, Regulations, Policies, and Other Plans

This EA has been prepared in accordance with the following statutes, regulations, policies, and procedures:

- National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-190, 42 United States Code [USC] 4321 et seq.);
- 40 CFR 1500 et seq.: Regulations for Implementing the Procedural Provisions of NEPA;
- 43 CFR subpart 2800, Use; Rights-of-Way
- BLM NEPA Handbook (H-1790-1) (BLM 2008a);
- FLPMA, as amended, Sections 103(c) and 501(a)(4);
- Boulder City Master Plan (Boulder City 2003);
- Clark County Multiple Species Habitat Conservation Plan (Clark County 2000); and
- Las Vegas Resource Management Plan (RMP) and Final Environmental Impact Statement (BLM 1998).

The BLM lands in southern Nevada are managed under the Las Vegas Resource Management Plan (RMP) and Final Environmental Impact Statement (BLM 1998). This RMP provides management objectives and directions for lands within the Las Vegas District of the BLM. The BLM manages approximately 2.5 million acres of public land in Clark County. The Techren Boulder City Solar Project is in conformance with the RMP, specifically objective RW-1 (providing legal access to major utility transmission lines and related facilities) and management action RW-1-h (public land is available for ROW at agency discretion under the FLPMA).

1.5 Supplemental Authorities

To comply with NEPA, the BLM requires that compliance with other authorities is addressed in the NEPA document. Supplemental authorities may be executive orders or other Federal and state laws that provide procedural or substantive responsibilities relevant to the NEPA process and may "help identify issues for analysis." Table 1.5-1 presents a list of elements dictated by Supplemental Authorities and specifies if these elements are present in the proposed project area, and if they are present if they potentially would be affected by the proposed project or not affected by the proposed project and the rationale for that conclusion.

Table 1.5-1. Supplemental Authorities

Supplemental Authority*	Not Present**	Present/ Not Affected	Present/ may be Affected***	Rationale
Air Quality Clean Air Act			X	Addressed in Section 3.1
Cultural Resources National Historic Preservation Act			X	Addressed in Section 3.9
Fish Habitat Magnuson-Stevens Act Provision: Essential Fish Habitat	X			Not present
Forests and Rangeland Health Forests Restoration Act of 2003	X			Not present.
Migratory Birds Migratory Bird Treaty Act of 1918 EO 131186			X	Addressed in Section 3.8
Native American Religious Concerns American Religious Freedom Act of 1978	X			Not present
Threatened or Endangered Species Endangered Species Act of 1983			X	Addressed in Section 3.8
Wastes, Hazardous or Solid Resources Conservation and Recovery Act of 1976 Comprehensive Environmental Repose Compensation and Liability Act of 1980			X	Addressed in Section 3.12
Water Quality(Drinking/Ground) Safe Drinking Water Act Clean Water Act			X	Addressed in Section 3.4
Wild and Scenic Rivers Wild and Scenic Rivers Act	X			Not present
Wilderness Federal Land Policy and Management Act	X			Not present
Environmental Justice Executive Order (EO) 12898, Environmental Justice	X			Not present
Floodplains EO 11988, Floodplain Management			X	Addressed in Section 3.4
Wetlands-Riparian Zones EO 11990, Protection of Wetlands	X			Not present
* See H-1790 Appendix 1: Supplemental Authorities to be Considered (BLM 2008)				
** Supplemental Authorities determined to be "Not Present" were not analyzed in this document				
*** Supplemental Authorities determined to by "Present/May be Affected" are required to be carried forward for analysis in this document				

2 Proposed Action and Alternatives

2.1 Proposed Action

The “Proposed Action” refers to the transmission line for which Techren Solar, LLC has submitted a ROW application to the BLM.

2.1.1 Non-federal Connected Action

Techren Solar, LLC also proposed construct, operate, and maintain a solar energy-generating facility of up to 300 megawatts (MW) on 2,200 acres of private land owned by the City of Boulder City and leased by Techren Solar, LLC. At this time, Techren is considering of either fixed tilt or tracking solar photovoltaic (PV) solar arrays. All feasible transmission line routes from this facility would require utilizing BLM-managed utility easements. As such, construction and operation of this facility cannot proceed without BLM approval of the transmission line route to transport the electricity generated at the solar facility to the power grid. Because the non-federal connected action and its effects of the non-federal connected action are considered indirect effects of the Proposed Action and, as such, are analyzed as effects of the Proposed Action (40 CFR 1508.7 and 1508.25[c]).

2.2 Overview of Alternative 1 and Alternative 2

Techren Solar, LLC has developed two transmission line alternatives, which would connect the solar energy-generating facility to the Eldorado Substation and McCullough Switching Station, or would connect the project facility to the Marketplace Substation (Figure 2.3-1). Both Alternatives generally parallel existing transmission lines to the extent feasible and are located within the BLM Utility Corridor. Under either alternative, a 200-foot-wide permanent ROW is requested. Table 2.3-1 and Figure 2.3-1 illustrate the differences between the transmission line routes. Master title plats with the transmission line and solar-energy facility are contained in Appendix A.



Figure 2.3-1. Transmission Line Alternatives

Table 2.3-1. Comparison of Alternatives

	Alternative 1 Connecting to Eldorado Substation and McCullough Switching Station 230 kV	Alternative 2 Connecting to Marketplace Substation 500 kV
Total Length of the transmission line	4.6 miles	3 miles

Within BLM Easement

Transmission Line Length	4.3 miles	2.7 miles
Transmission Line ROW Width	200 feet	200 feet
<i>Total ROW Acres Requested for the Transmission Line</i>	<i>104 acres</i>	<i>65.5 acres</i>
Total ROW Acres Requested	104 acres	65.5 acres

Temporary Disturbance within BLM Easement

Wire Pulling Sites (2)	4 acres (2 acres each)	4 acres (2 acres each)
Transmission Line Poles (7 poles per mile, 400 square feet of disturbance per pole)	0.28 acre (12,400 square feet)	0.17 acre (7,600 square feet)
Total	4.3 acres	4.2 acres

Permanent Disturbance within the BLM Easement

Transmission Line Poles (7 poles per miles, 27 square feet per pole)	0.019 acre (810 square feet)	0.012 acre (513 square feet)
Total	0.019 acre	0.012 acre

Within Land Owned by the City of Boulder City

Transmission Line Length	0.3 mile	0.3 mile
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2.2.1 Alternative 1

Alternative 1 would consist of a 230kV double circuit transmission line that would originate at the southwest corner of that solar facility and extend approximately 3.3 miles south to a split point. At this point, the transmission line would split into two lines, one 0.8-mile-line would terminate at the Eldorado Substation and one 0.5-mile-line would terminate at the McCullough Switching Station. The total length of the line would be 4.6 miles long (Figure 1). For clarity Table 2.3-1 provides a comparison of the alternatives. Approximately 4.3 miles of the transmission line would be within the BLM easement. The 0.3 miles of transmission line outside the BLM easement would be on land owned by the City of Boulder City. Project activities within the BLM easement would require a ROW grant from BLM.

The 230 kV overhead transmission line would be designed for a double circuit from the solar site, to the split point, where a single circuit would connect to the McCullough Switching Station and the Eldorado Substation. It would be comprised of single, wood-pole (or tubular steel) structures. The span length between structures would range from between 500 feet and 1,200 feet except in areas where the proposed

transmission line would cross under existing greater capacity transmission lines such as within BLM ROWs.

2.2.2 Alternative 2

Alternative 2 would consist of a 3-mile-long 500kV transmission line that would originate at the southwest corner of that solar facility and terminate at the Marketplace Substation. It would be comprised of single, wood-pole (or tubular steel) structures. The span length between structures would range from between 500 feet and 1,200 feet except in areas where the proposed transmission line would cross under existing greater capacity transmission lines such as within existing BLM ROWs.

The 500kV overhead transmission line would be comprised of single, wood-pole (or tubular steel) structures. The span length between structures would range from between 500 feet and 1,200 feet except in areas where the proposed transmission line would cross existing greater capacity transmission lines such as within BLM ROWs.

2.2.3 No Action Alternative

The No Action Alternatives means that ROW grant would not be approved, and the proposed transmission line would not be constructed. Without the transmission line, the Techren Boulder City Solar Project would not be able to deliver energy generated from the solar facility to the grid; therefore, the solar facility would not be constructed.

2.2.4 Alternatives Considered but not Analyzed in Detail

No other alternatives routes were identified. The proposed routes were identified because they represented the shortest routes with the least environmental impacts because there were located within the BLM-managed easement, followed existing transmission lines, and crossed the least number of existing ROWs (such as existing gas and power lines).

2.3 Proposed Project Facilities

Typical design characteristics are listed in Table 2.4-1. Refer to Figure 2.4-1 below for a diagram with dimensions.

Table 2.4-1. Typical Design Characteristics for a 230 and 500 kV Transmission Line

Feature	Characteristics
Type of structure	Single-pole wood or tubular steel structures
Structure height	Approximately 90 - 100 feet
Span length	Approximately 500 feet to 1,200 feet, except in areas where crossing other transmission lines, then the poles may be more closely spaced.
Number of structures per mile	7
Base of structure	27 square feet
ROW width	200 feet
Access roads	No new roads needed
Voltage	230 or 500 kV
Circuit configuration	Delta
Conductor size	795 nominal amp rating
Ground clearance of conductor	27 feet
Pole foundation depth	10% of pole height + 4 feet

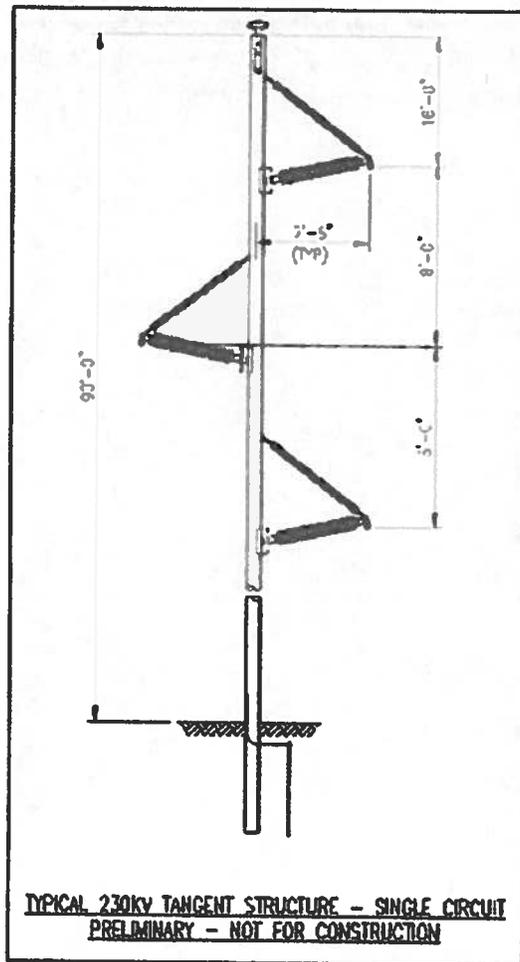


Figure 2.4-1. Typical Transmission Structure

Design characteristics would be the same for Alternative 1 and Alternative 2. Assembly and erection of each transmission line pole would require approximately 400 square feet of disturbance around the base

of each pole; 27 square feet of which would be permanent disturbance (see Table 4.3.1). Additionally, two 2-acre wire pulling sites would be needed to install the transmission line wire upon each pole. The disturbance in these areas would be temporary during construction.

Access to the transmission line during construction (temporary) and operation (permanent) would be via existing roads, including U.S. Highway 95 and existing paved and dirt roads within BLM utility corridor. No equipment storage areas would be located within the transmission line ROW. No other transmission line components are anticipated.

2.3.1 Site Preparation and Mobilization Activities

For the transmission line, site preparation consists of clearing a small area (approximately 27 square feet) so that a hole for the transmission line pole can be excavated most likely using an auger. Transmission line pole assembly would occur at each pole structure location. Vegetation may be temporarily crushed so that installation equipment can get from the main road to the pole locations. Specific structure locations would be determined during final design and construction. Structure assembly and mounting of associated line hardware would take place within the 27 square foot permanent disturbance area at each structure location. An additional temporary disturbance area of approximately 400 square feet may be utilized during assembly, but would be reclaimed post-construction. The assembled structure would be raised and placed in the pre-dug holes.

No turn-around pads would be constructed.

Additionally, two 2-acre wire pulling sites would be required to install the transmission lines. Tensioning and pulling sites would be specifically located on a map and provided to the BLM prior to construction. The tensioning site is an area approximately 150 feet by 60 feet. The tensioner, line truck, and wire trailer that are needed for stringing and anchoring the conductors would be located at this site. The tensioner, along with the puller, maintains tension on the conductor. Maintaining tension ensures adequate ground clearance and is necessary to avoid damage to the conductor or any objects below them during the stringing operation. The pulling site requires two-thirds the area of the tension site. A puller and trucks are needed for the pulling and temporary anchoring of the ground wire and conductor.

2.3.2 Waste and Hazardous Materials Management

No hazardous materials are associated with the operation of the transmission line. However, during maintenance of the transmission line the potential for a vehicle petroleum spill exists. Spill cleanup kits would be available on equipment so that spills or leaks of vehicle fluids could be quickly cleaned up for proper disposal.

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash, including stakes and flags, would be removed from the sites and disposed of in an approved manner. No construction equipment oil or fuel would be drained on the ground. Oils or chemicals would be hauled to an approved site for disposal. No open burning of construction trash would occur on BLM-administered lands.

The contractor would be required to have a continuous cleanup program throughout construction. Construction sites (located at the solar facility) and access roads would be kept in an orderly condition and free of trash and rubbish throughout the construction period. Trash and rubbish would be stored in

predator-proof storage containers on-site. Waste materials and debris from construction areas, would be collected, hauled away, or disposed of at approved landfill sites.

An operational Environmental Health and Safety Plan would be prepared for the proposed project and solar facility (connected action). The Safety Plan would outline all project activities, identify all hazardous substances and chemicals used at the site, and ensure compliance with Occupational Safety and Health Administration (OSHA) Standards, the Nevada Division of Industrial Relations requirements, and all other local, state, and Federal regulatory requirements. The Safety Plan would identify site-specific safety control measures, site health and safety roles and responsibilities, speed limits, and site safety hazards and controls.

2.3.3 Reclamation

Following construction and cleanup, reclamation of temporarily disturbed areas within the ROW would be completed. Temporarily disturbed areas include additional construction staging/laydown area as required. The disturbed surfaces would be restored to the appropriated contour of the land surface.

The Techren Boulder City Solar Project and Transmission Line Project are designed to function for a minimum of 40 years. When the project is decommissioned, the transmission line and poles would be removed. Stabilization and re-vegetation strategies would be developed in the reclamation plan six months prior to the decommissioning of the transmission line.

2.3.4 Best Management Practices

To minimize effects to biological resources, the Applicant would adhere to the Best Management Practices (BMPs) presented in Appendix B. These BMPs were adapted from a nearby solar transmission line project and approved by the BLM (BLM 2011).

2.4 Project Construction Schedule

Techren Solar LLC anticipates that transmission line construction would begin in the first quarter of 2013 and last approximately 15 weeks. Construction of the solar facility would begin also in the first quarter of 2013 and continue for approximately 18 months. Typical construction work schedules are expected to be from 7:00 A.M. to 5:00 P.M., Monday through Friday, which complies with the local noise ordinance restrictions for construction activity of 7:00 AM to 7:00 PM, except Sundays and Federal holidays. Anticipated workforce and equipment needed for construction of the transmission line is described in Table 2.5-1.

Table 2.5-1. Transmission Line Construction Estimated Personnel and Equipment Required

Activity	Number of Workers	Type of Equipment
Survey	3	2 pickup trucks
Hole digging	2	1 auger 1 pickup truck
Pole haul	2	1 flatbed
Structure erection	4	1 line truck 1 crane
Conductoring (Wire pulling)	12	1 drum puller 1 splicing truck 1 double-wheeled tensioner 1 wire reel trailer 1 line truck 1 sagging equipment 2 pickup trucks
Clean-up	4	2 pickup trucks
Rehabilitation	2	1 pickup truck
TOTAL	31*	

* More personnel may be used in order to meet schedule

3 Affected Environment, Environmental Consequences, and Mitigation Measures

3.1 Proposed Project General Setting

The proposed project site is located in the Boulder City Solar Energy Zone in the Eldorado Valley, Clark County, Nevada. This area is approximately 15 miles southeast of Las Vegas and 7 miles southwest of the city of Boulder City, Nevada.

The Eldorado Valley is within the southern portion of the Basin and Range province characterized by north-south trending valleys. Specifically this portion of the Eldorado Valley is flanked by the McCullough Mountain Range directly west and the Eldorado Range directly to the east.

Resources analyzed in this EA include the following:

Air Quality and Climate, Section 3.2

Geology, Minerals and Soils, Section 3.3

Water Resources, Section 3.4

Vegetation, Section 3.5

Special Status Vegetation, Section 3.6

Wildlife, Section 3.7

Special Status Wildlife Species, Section 3.8

Cultural Resources, Section 3.9

Land Use, Section 3.10

Visual Resources, Section 3.11

Recreation, Section 3.12

Noise, Section 3.13

Socioeconomics, Section 3.14

Waste Management and Hazardous Materials, Section 3.15

3.2 Air Quality and Climate

3.2.1 Affected Environment

For the analysis, air quality is characterized by the existing concentrations of various pollutants and those conditions that influence the quality of the ambient air surrounding the proposed project. The primary factors that determine the air quality of the region are the locations of air pollution sources, the type and magnitude of pollutant emissions, and the local meteorological conditions. This analysis takes into account these factors and provides a reliable and conservative prediction of the air impacts that would occur during construction and operation of the proposed project. The Federal Clean Air Act (CAA) and subsequent amendments have provided the authority and framework for United States Environmental Protection Agency (USEPA) regulation of air emission sources. The USEPA regulations serve to establish requirements for the monitoring, control, and documentation of activities that affect ambient concentrations of certain pollutants that may endanger public health and the environment.

As an enforcement tool, the CAA established National Ambient Air Quality Standards (NAAQS), which have historically applied to six criteria pollutants—sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter equal to or less than 10 microns in diameter (PM₁₀), ozone (O₃), and lead (Pb) (Table 3.2-1). These standards are defined in terms of threshold concentration (e.g., micrograms per cubic meter [µg/m³]) measured as an average for specified periods of time (averaging times). Short-term standards (i.e., 1-hour, 8-hour, or 24-hour averaging times) were established for pollutants with acute health effects, while long-term standards (i.e., annual averaging times) were established for pollutants with chronic health effects. More recently, additional standards for 8-hour average O₃ concentrations and particulate matter equal to or less than 2.5 microns in diameter (PM_{2.5}) were added.

Table 3.2-1. National Ambient Air Quality Standards

Pollutant	Averaging Periods	NAAQS	
		Primary	Secondary
Sulfur dioxide (SO ₂)	3-hour	--	0.5 ppm
	24-hour	0.14 ppm*	--
	Annual	0.03 ppm	--
Particulate matter equal to or less than 10 microns in diameter (PM ₁₀)	24-hour	150 µg/m ³ *	150 µg/m ³
	Annual	50 µg/m ³	50 µg/m ³
Particulate matter equal to or less than 2.5 microns in diameter (PM _{2.5})	24-hour	65 µg/m ³	65 µg/m ³
	Annual	15 µg/m ³	15 µg/m ³
Carbon monoxide (CO)	1-hour	35 ppm	--
	8-hour	9 ppm	--
Nitrogen dioxide (NO ₂)	Annual	0.053 ppm	0.053 ppm
Lead (Pb)	Quarterly	1.5 µg/m ³	1.5 µg/m ³
Ozone (O ₃)	1-hour	0.12 ppm	0.12 ppm
	8-hour	0.08 ppm	0.08 ppm

Sources: U.S. Environmental Protection Agency 2005b, 2005c, 2005d, 2005e, 2005f, 2005g, 2005h, and 2005i

*ppm - parts per million

**µg/m³ - micrograms per cubic meter

Geographic areas are designated as attainment, non-attainment, or unclassified for each of the six criteria pollutants with respect to the NAAQS. If sufficient monitoring data are available and air quality is shown

to meet the NAAQS, the USEPA may designate an area as an attainment area. Areas in which air pollutant concentrations exceed the NAAQS are designated as non-attainment for specific pollutants and averaging times. Typically, non-attainment areas are urban regions and/or areas with higher-density development. As a result, an area's status is designated separately for each criteria pollutant; one geographic area may have more than one classification.

Clark County was redesignated to attainment for carbon monoxide in 2010 (Federal Register Vol. 75, No. 145, July 29, 2010). Clark County was also redesignated to attainment for PM₁₀ in 2010 (Federal Register Vol. 75, No. 148, August 3, 2010), and was redesignated to attainment for ozone in 2011 (Federal Register Vol. 76, No. 60, March 29, 2011).

The United States Department of the Interior (Department), Secretary of Interior Order Number 3289, made effective September 14, 2009, establishes a "Climate change Response Council" that will execute a coordinated Department-wide approach for applying scientific tools in an effort to increase understanding of climate change. The Council will establish an effective response to impacts on tribes as well as on the land, water, ocean, fish and wildlife and cultural heritage resources that the Department manages.

Currently there are no emission limits for so-called greenhouse gases (GHG), and no technically defensible methodology for predicting potential climate changes from GHG emissions. However, there are, and will continue to be, several efforts to address GHG emissions from Federal activities, including BLM authorized uses.

Ongoing scientific research has identified the potential impacts on the global climate of anthropogenic (manmade) GHG emissions and changes in biological carbon sequestration due to development and land management activities. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect on the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back to space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused carbon dioxide concentrations to increase dramatically, and have the potential to contribute to overall global climatic changes

3.2.2 Environmental Consequences

3.2.2.1 No Action Alternative

Under the No Action Alternative, the project would not be built; therefore, no project related effects on air quality would occur.

3.2.2.2 Alternative 1

For the construction of the 4.6-mile 230 kV transmission line from the solar facility (i.e. connected action) to the Eldorado Substation and McCullough Switching Station, Criteria pollutant emissions would result from employee and construction vehicles, and heavy equipment moving across the site and along the ROW during construction of the high-voltage transmission line. Those emissions from worker travel to and from the project site have been included in this analysis. Exhaust from construction vehicles and heavy equipment would also result in localized, short-term increases in CO and NO_x emissions. Construction of the entire transmission line facility is expected to take approximately 15 weeks. This analysis is based on an assumed transmission line constructed on steel poles. The potential emissions from transmission line construction are included in Table 3.2-2.

Table 3.2-2. Total Emissions for Construction of the Transmission Line

Source Category		TSP	CO	NOx	VOC	SO2	PM	PM ₁₀	PM _{2.5}
Transmission Line Construction (Unpaved Roads)	Unpaved roads	27.8	0.63	0.06	0.06	0.00	0.00	8.2	0.82
Transmission Line Construction (U.S. Highway 95)	Paved roads	1.14	4.05	0.36	0.23	0.00	0.00	0.20	0.06
Transmission Line Construction (Eldorado Valley Dr.)	Paved roads	0.83	0.58	0.05	0.06	0.00	0.00	0.00	0.04
Transmission Line Construction - Nonroad Vehicles	Exhaust	0.55	1.5	11.6	0.54	1.48		0.55	0.55
Total Emissions for Transmission Line Construction		30.3	6.76	12.1	0.9	1.5	0.00	9.0	1.5

3.2.2.3 Alternative 2

The impacts to air quality for Alternative 2, which is a 3-mile 500 kV transmission line from the solar facility (i.e. connected action) to the Marketplace Substation, would be the similar to those as described for Alternative 1. Due to slightly less disturbance, emission would be slightly less, but would not significantly change the figures presented in Table 3.2-2.

3.2.2.4 Connected Action

This section analyzes the air quality impacts of the solar facility as described in Section 2.2 Non-federal Connected Action. An air quality impact is caused by changes in the concentrations of ambient air pollutants as a result of specific actions. Construction of the solar facility is projected to take approximately 18 months. Construction traffic is estimated at 350 trips per day and 400 workers during peak construction. Truck traffic during construction is expected to average approximately 30 truck trips per day. The emissions for the paved road components were based upon maximum trucks per month and number of workers at peak construction.

Emissions of criteria pollutants for the proposed project were calculated for three distinct project elements. Those elements considered were:

- The initial land disturbance that includes clearing, grading, grubbing, etc.
- Construction of the solar array.
- Operation and maintenance of the facility following construction.

The solar facility would be constructed in phases. Four phases are anticipated. The first phase would include the substation and transmission line. The first phase would also deliver 200 MW to the Eldorado substation or the McCullough switching station. Power delivery would commence with the completion of the first phase. Phases 2 through 4 would be developed in 100 MW increments and would deliver power to either the Eldorado substation or McCullough Switching Station.

During site development, the project would include grading the approximately 2,200 acre, for all phases, resulting in localized, short-term increases in fugitive dust (PM₁₀ emissions). The increase in PM₁₀ would be primarily from soils disturbed during clearing and grubbing of vegetation and grading the site as well as vehicle and road travel. The other criteria pollutants associated with this phase would result in negligible quantities of emissions associated with the combustion of fuel from the various construction equipment.

Criteria pollutant emissions during construction activities would result from employee and construction vehicles, and heavy equipment moving across the site during construction of the solar array. Emissions from worker travel to and from the project site have been included in this analysis. Exhaust from construction vehicles and heavy equipment would result in localized, short-term increases in CO and NOx emissions.

During operations and maintenance of the solar facility, vehicle traffic would produce criteria pollutant emissions. These emissions can be characterized as *de minimis* and would result in no long-term impact on the existing ambient air quality.

The methodologies and calculated criteria pollutant emissions data associated with the aforementioned phases are further discussed below. Each element of site development and its associated mass emissions were calculated as worst-case scenarios using USEPA and/or Clark County DAQ-approved pollutant emission factors and methodologies.

Emission estimates were compiled for construction of the facility and routine ongoing operations and maintenance. Primary sources of criteria pollutant emissions for construction activities are related either to fuel use in internal combustion engines or to dust emitted into the air from various activities. Criteria pollutant emissions from both of these source types are described in detail below and are summarized in Table 3.2-3.

Table 3.2-3. Total Emissions for Construction and Operation of the Solar Facility

Source Category		TSP	CO	NOx	VOC	SO2	PM	PM ₁₀	PM _{2.5}
Construction Emissions (Initial)	Construction	682						242	24.2
Solar Panel Construction (Exterior Road)	Unpaved roads	159	5.0	1.9	0.57	0.00	0.05	41	4.1
Solar Panel Construction (Interior Roads)	Unpaved roads	129	2.5	0.96	0.29	0.00	0.02	38	3.8
Solar Panel Construction	Wind erosion	314						157	23.5
Solar Panel Construction (U.S. highway 95)	Paved roads	40	198	19.5	11.3	0.06	0.41	7	2.3
Solar Panel Construction (Non-road Vehicles)	Exhaust	13	224	175	14.9	24.02		12.9	12.9
Operation and Maintenance (Exterior Road)	Unpaved roads	3.4	0.18	0.01	0.02	0.00	0.00	0.9	0.09
Operation and Maintenance (Interior Roads)	Unpaved roads	2.8	0.09	0.01	0.01	0.00	0.00	0.8	0.08
Operation and Maintenance	Wind erosion	13.3						6.7	1.0
Operation and Maintenance (U.S. Highway 95)	Paved roads	0.12	1.3	0.08	0.07	0.00	0.00	0.02	0.01
Total Emissions - Construction	Tons /18 months	1337	429	197	27	24.1	0.5	498	70.9
Total Emissions - O&M	Tons/year	19.62	1.6	0.1	0.1	0.0	0.0	8.4	1.2

The PM₁₀ emission factor for construction (0.11 tons/acre-month) was obtained from the March 2001 Clark County PM₁₀ State Implementation Plan (SIP). Based on the emissions factors for unpaved roads (Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Areas Sources [AP-42], EPA 2008, Section 13.2.2), the PM_{2.5} emission factor is 10% of the PM₁₀ factor. For the purpose of this inventory, it was assumed that 2,200 acres would be disturbed by construction activities.

Emissions associated with constructing the solar panels and the transmission line are from heavy trucks delivering materials and employee vehicles. Emission sources include fugitive dust emissions for vehicle travel on paved and unpaved roads, motor vehicle exhaust, and wind erosion. Fugitive dust emissions from paved and unpaved roads were calculated using AP-42 emission factors, the estimated number of vehicles, vehicle parameters, paved and unpaved road travel distances, and an estimated 55 percent control factor for watering the unpaved roads during construction (AP-42 Section 13.2.1 and Section 13.2.2). Wind erosion emissions for the disturbed area were calculated, based on an AP-42 emission factor (Section 11.9), and an AP-42 particle size distribution for PM₁₀ and PM_{2.5} (Section 13.2.5).

Emissions associated with operating the facility are from employee vehicles and wind erosion. Emission sources include fugitive dust emissions for vehicle travel on paved and unpaved roads, motor vehicle exhaust, and wind erosion. Fugitive dust emissions from paved and unpaved roads were calculated using AP-42 emission factors, the estimated number of vehicles, vehicle parameters, paved and unpaved road travel distances, and an estimated 55 percent control factor for dust suppressants planned for the facility (private property) roads (AP-42 Section 13.2.1 and Section 13.2.2). Wind erosion emissions for the area were calculated, based on an AP-42 emission factor (Section 11.9), an AP-42 particle size distribution for PM₁₀ and PM_{2.5} (Section 13.2.5), and an estimated 90 percent control factor for the planned mitigation measures.

Vehicle exhaust emissions (NO_x, SO₂, CO, PM₁₀, PM_{2.5}, and VOC,) can come from on-road and non-road motor vehicles. On-road vehicles would include heavy trucks and employee vehicles. It was assumed that both the trucks and employee vehicles would travel 30 miles each way. On-road motor vehicle emissions were calculated using the DAQ mobile source (MOBILE5b) emission factors (DAQ, 2001). Non-road vehicles include backhoes, augers, forklifts, cranes, line trucks, bucket trucks, tensioner and puller vehicles, and other support equipment. Emissions from these vehicles were estimated using estimated number of vehicles and non-road emission factors from the state SIP for Clark County, Nevada (2001).

The estimated cumulative PM₁₀ potential to emit exceeds the major source threshold of 70 tons per year for a major source under Clark County DAQ rules. Prior to site construction it will be necessary for the developer to meet with DAQ and obtain the necessary air emission permits.

3.2.3 Mitigation

Since the major source threshold emission rate is 70 tons per year, the project will be considered a major stationary emission source and would be subject to Prevention of Significant Deterioration (PSD) or New Source Review (NSR) permitting requirements under the CAA. Emission sources used to construct and operate the proposed Project will exceed major source thresholds. Prior to site construction it will be necessary for the developer to meet with DAQ and obtain the necessary air emission permits.

Construction activities that disturb soils and emit or have the potential to emit particulate matter must obtain a Dust Control Permit from the DAQ. As part of the Dust Control Permit, the applicant must also submit a Dust Mitigation Plan. This Enhanced Dust Mitigation Plan will specify the control measures that would be implemented during construction to reduce fugitive dust and minimize impacts to ambient air quality. Dust control measures would include; watering the disturbed soil areas and unpaved roads during construction, applying dust suppressants (on private property) during routine operations, applying soil stabilizers or crushed aggregate for wind erosion control, installing a construction entrance with track-out control devices, and stabilizing disturbed land surfaces with pavement, re-vegetation, or suppressants (on private property) directly after construction is completed in each area.

3.3 Geology, Minerals, and Soils

3.3.1 Affected Environment

The Eldorado Valley is within the southern portion of the Basin and Range Province characterized by north-south trending valleys, bounded by normal faults, with alluvial fill underlain by older bedrock units. The proposed facility will be located on alluvial soils in the Eldorado Valley. The Valley is situated on an alluvial fan and consists of alluvial, aeolian, and playa deposits which are surrounded by steeply sloping alluvial aprons of gravel and sand deposits (US Department of Agriculture, Natural Resources Conservation Service 2006). The thickness of the alluvium below the site is approximately 1,000 feet, where it is underlain by bedrock of the Bridge Spring formation, a Miocene-age rhyolitic ash-flow tuff.

Eldorado Valley is a closed drainage basin bounded to the west by the McCullough Range, to the north by the River Mountains, and the east by the Eldorado Mountains and the Opal Mountains. In the McCullough, River, and Eldorado Mountains mid-Tertiary volcanic and plutonic rocks occur. The southern part of the McCullough Range and the Opal Mountains are formed primarily of Pre-Cambrian foliated metamorphic rock. The Eldorado Mountains were uplifted during the Miocene Basin and Range Uplift.

The soil textures in the project area are very gravelly, loamy sand, and very gravelly, fine sandy loam. There is a potential for soils in the Eldorado valley to be corrosive and reactive to concrete. The soil slopes range from 0 to 8 percent. The soil erosion potential for the entire project area is low. The project area has a moderate wind erosion potential, soils with rapid permeability, and very deep soil depths.

Biological soil crusts are formed by living organisms and their by-products, creating a crust of soil particles bound together by organic material. They are commonly found in semiarid and arid environments. Crusts are well adapted to severe growing conditions, but poorly adapted to disturbance. Recovery of biological soil crusts may require hundreds of years. Preventing degradation by minimizing disturbance is an important consideration. The presence of biological soil crusts in the proposed project area has not been documented. Locations that may be disturbed would be examined for the presence of biological soil crusts prior to site development.

Desert pavement is a unique formation of a shallow surface layer of rock overlying fine soil that is commonly found in arid environments. Desert pavement may be created as a lag deposit of larger stones left behind by the wind which blows away the fine-grained material (Cooke and Warren, 1973). Desert pavements may also be developed by detachment and uplifting of clasts from bedrock surfaces as eolian fines accumulate in fractures (McFadden and Wells, et al, 1987). Studies of development of desert pavement on volcanic bedrock (Valentine and Harrington, 2005) has shown that desert pavement has developed by eolian processes of infiltration of fine material down into the larger rock fragments and accretion of fine sediments that lift and protect the pavement-forming clasts. The presence of desert pavement has not been documented in the project area. Disturbance of desert pavement may result in exposure of fine-grained material that would be subject to wind and water erosion. Locations that may be disturbed would be examined for the presence of desert pavement prior to site development.

According to the Supplemental Environmental Impact Statement for the Clark County Regional Flood Control District (BLM 2004), the Quaternary alluvial deposits that cover most of the valley floors (Las Vegas Valley and Boulder City), including the Project site, have little or no paleontological potential.

3.3.2 Environmental Consequences

3.3.2.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed; therefore, no project related effects to geologic resources would occur.

3.3.2.2 Alternative 1

The erosion susceptibility of the soils in Eldorado Valley ranges from low to moderate) under Alternative 1 (BLM, 1992). Most of the erosion conditions range from slight to moderate, but two areas of critical erosion condition have been identified within the basin. Soils disturbed by grading and excavation will have a higher potential for erosion by wind and water. The presence of biological soil crusts in the Alternative 1 area has not been documented. Locations that may be disturbed would be examined for the presence of biological soil crusts prior to site development. Locations that may be disturbed in the Alternative 1 area would be examined for the presence of desert pavement prior to site development.

3.3.2.3 Alternative 2

The impacts to geologic resources for Alternative 2 would be the same as those described for Alternative 1.

3.3.2.4 Connected Action

The types of impacts associated with the connected action would be similar to those described under Alternative 1, but would occur over a larger area. In addition to the BMPs described in Appendix A, all required permits would be obtained and an Enhanced Fugitive Dust Plan with mitigation measures would be developed to minimize impacts. The presence of biological soil crusts associated with the connected action has not been documented. Locations that may be disturbed would be examined for the presence of biological soil crusts prior to site development. Locations that may be disturbed by the connected action would be examined for the presence of desert pavement prior to site development.

3.3.3 Mitigation

Before the start of construction, the construction contractor will obtain a dust control permit from the Clark County Department of Air Quality as required (Clark County DAQ 2003). Techren would also develop an Enhanced Fugitive Dust Plan with mitigation measures to reduce the potential for fugitive dust. In addition to the BMPs listed in Appendix B, potential mitigation measures may include, but are not limited to, the following: watering the site, applying soil stabilizers, installing a construction entrance with track-out control devices, and the stabilization of disturbed surfaces, after construction is completed.

Should biological soil crusts be detected during pre-construction surveys, appropriate measures would be taken to minimize disturbance of soil crusts. Suggested measures include: (1)-maintain the optimum amount of live vegetation, litter and biological crust relative to the site in order to maintain the content of organic matter, (2)-defer disturbance during periods when biological crusts are more susceptible to physical disturbance when soil is very wet, (3)-control the establishment and spread of invasive plants that can increase the risk of wildfire which may impact biological soil crusts. Should desert pavement be detected during pre-construction surveys, appropriate measures would be taken to minimize disturbance of desert pavement. Suggested measures might include limiting surface disturbance in desert pavement areas, replacement of desert pavement with similar gravel-sized layer over exposed underlying fine-grained soils or other BMPs.

3.4 Water Resources

Water resources include groundwater, surface water, and wetlands. Under the authority granted in Nevada Revised Statutes 533 and 534, the State Engineer oversees groundwater quality and issues permits for the use of both surface and groundwater. The US Army Corps of Engineers has authority and responsibility for wetlands.

3.4.1 Affected Environment

3.4.1.1 Groundwater

Eldorado Valley is a designated groundwater basin. The depth to water in Eldorado Valley is believed to be highly variable. Nevada Division of Water Resources (<http://water.nv.gov>) on-line records list a borehole, Well Driller's Report Number 58575, approximately 1 mile southwest of the site. The depth to static groundwater in the borehole was measured at 315 feet below land surface in March, 1994. In 2009, Ninyo & Moore advanced a soil boring to 15 feet below land surface on land located approximately 1.5 miles south of the proposed site. No perched groundwater was encountered. No registered groundwater wells are located on the proposed transmission alignment.

Groundwater in Eldorado Valley is predominantly a sodium-bicarbonate type with high concentrations of total dissolved solids and a medium to high salinity hazard (Rush and Huxel, 1966). Historic analyses of the groundwater in some areas of Eldorado Valley indicate that concentrations of total dissolved solids, sulfate, and chloride exceed drinking water standards. The presence of historic mining districts suggests that soluble metals and other trace constituents may be present in portions of the aquifer, most probably originating in the mountains to the southwest of the site. According to information on file with the Clark County Department of Health Services, iron, lead, manganese, mercury, and nitrate have been detected in groundwater at levels exceeding their respective maximum contaminant levels in the Searchlight area (Buqo and Giampaoli, 1988).

3.4.1.2 Surface Water

The surface water resources of Eldorado Valley are very limited. Although not known, the annual runoff within the basin has been estimated at less than 100 acre-feet/year (Scott et al., 1971). Surface runoff is very infrequent, occurring as ephemeral flow in the streambeds and, even less often, as ponded water on the playa lake bed adjacent to the site. Surface water runs from the Boulder City Sewage Treatment Plant to the Eldorado Dry Lake. Flooding characteristics are probably similar to those in adjacent basins; i.e., shallow flash flooding over large areas.

Eldorado Valley is a closed basin; surface water runoff from the surrounding mountains is directed to the Eldorado Dry Lake. There are no permanent surface water sources or wetlands in the project area. Several narrow and shallow ephemeral drainage swales or washes cross the site, predominantly in a west to east direction toward the Eldorado Dry Lake. The flow of water in these small drainage systems occurs only during infrequent storm events and has no nexus to the Colorado River system, and therefore would not be regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. A request for a jurisdictional determination has been submitted to the U.S. Army Corps of Engineers for this project.

3.4.2 Environmental Consequences

3.4.2.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed; therefore, no project related effects to surface and groundwater would occur.

3.4.2.2 Alternative 1

Groundwater

The Project will obtain water from the existing Boulder City Public Works Department main, which runs north to south along the western boundary of the Solar One PV facility to the west of the site. Boulder City Public Works Department obtains its public water supply from intakes at Lake Mead, not from underground sources. During the 15 week transmission line construction period, water would be primarily utilized for dust suppression along the access road. Total anticipated water usage for the entire transmission line construction period would be less than one acre foot. Excavations during construction are not expected to be deep enough to intercept groundwater.

Surface Water

The proposed project would not divert flows from areas of perennial flow or ephemeral washes, nor would the project divert water from downstream habitat dependent on that water. During construction, increased surface disturbance could result in an increased level of erosion. With BMPs in place, impacts from increased erosion and sedimentation due to ground-disturbance activity would be reduced to a level of non-significance (Appendix B).

3.4.2.3 Alternative 2

The impacts described under Alternative 1 would be the same under Alternative 2.

3.4.2.4 Connected Action

The types of impacts associated with the connected action would be similar to those described under Alternative 1, but would occur over a larger area. Excavations during construction are not expected to be deep enough to intercept groundwater. The potential adverse impacts to surface water from increased erosion and sedimentation will be less than for the solar facility and would be short term. Water for construction would be provided by connection to the Boulder City Public Works department water main located west of the site or the Boulder City Wastewater Treatment Plant which is located approximately 1.5 miles north of the site. Water from one of these sources would be trucked or piped to tanks or a temporary lined pond. During construction activities, water would be used mainly for grading and dust control. As most of the grading is expected in the first 6-9 month of construction, approximately 70-80 acre feet of water would be used. For the remaining construction period, water would be used dust control. It is anticipated that 30-40 acre feet would be utilized for the remaining 6-9 months of construction.

Water for operations and maintenance of the solar facility would be provided by a connection to the Boulder City Public Works department water main. Approximately 15 acre feet of water per year would be used during operations primarily for dust control and panel maintenance.

3.4.3 Mitigation

3.4.3.1 Groundwater

No excavations greater than 30 feet in depth are planned during construction. Because the depth to static groundwater in the Project area is approximately 315 feet, no mitigation measures are necessary.

During construction, a sanitary service will be contracted to provide and maintain portable toilets on the solar facility site. With BMPs in place both during construction and operation, potential impacts from the sanitary discharges would be non-significant (Appendix B).

3.4.3.2 Surface Water

A general permit for stormwater discharge associated with construction will be required. The general permit requires the preparation and implementation of a SWPP. With BMPs in place for control of on-site surface flows, impacts from increased erosion, and sedimentation due to ground disturbance activities would be reduced to non-significance (Appendix B).

3.5 Vegetation

3.5.1 Affected Environment

Mojave creosote bush scrub is the main vegetation community in the transmission line area. This vegetation community forms the matrix throughout Eldorado Valley. This community typically is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) with some other species such as four-winged salt brush (*Atriplex canescens*), cheesebush (*Hymenoclea salsola*), and broom snakeweed (*Gutierrezia sarothrae*). Also, Sahara mustard (*Brassica tournefortii*), a plant species designated by the Nevada Department of Agriculture as a Category B weed species, was found within the area. Category B species are defined as “weeds established in scattered populations in some counties of the state; actively excluded where possible, and actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur.”

Vegetation within proposed project area previously has been disturbed by various activities including Off-Highway Vehicle recreation, construction of the nearby Nevada Solar-One power plant, construction of existing power lines, and the construction of the historic Highway 5. These disturbed areas possess urban and construction related trash and display high rates of erosion.

3.5.2 Environmental Consequences

3.5.2.1 No Action Alternative

Under the No Action Alternative the project would not be constructed; therefore, no project related impacts to vegetation would occur.

3.5.2.2 Alternative 1

Vegetation may be crushed temporarily during construction activities at the two 2-acre wire pulling sites and around each transmission line pole (approximately 400 square feet per pole), which is approximately 4.3 acres in total. Approximately 0.019 acres of vegetation would be permanently removed and replaced with transmission tower structures.

Additionally, construction activities could facilitate the introduction or spread of noxious or invasive weed that species can displace native vegetation, increase fire frequency, and reduce the quality of wildlife habitat.

3.5.2.3 Alternative 2

Vegetation may be crushed temporarily during construction activities at the two 2-acre wire pulling sites and around each transmission line pole (approximately 400 square feet per pole), which is approximately 4.2 acres in total. Approximately 0.012 acres of vegetation would be permanently removed and replaced with transmission tower structures.

3.5.2.4 Connected Action

The entire 2,200 acre solar facility would be graded causing direct removal of vegetation and wildlife habitat.

3.5.3 Mitigation

BMPs will reduce construction impacts on vegetation and wildlife habitat (Appendix B). No additional mitigation is proposed.

3.6 Special Status Vegetation

Cactus and Yucca are protected under NRS 527.060-527.120, Nevada State Protection of Christmas Trees, Cacti, and Yucca and addressed in this section.

Additionally, the USFWS requested that a list of At-Risk Plant and Animal Species be obtained from the State of Nevada Natural Heritage Program (NNHP). Newfields submitted the request and on July 7, 2011, the NNHP replied to the request. The NNHP identified three additional sensitive species that could be in the proposed project area including the chuckwalla (*Sauromalus ater*), a BLM sensitive species; Las Vegas bear poppy (*Arctomecon californica*), a BLM sensitive species and Nevada state protected under Nevada Revised Statute (NRS) 527.260-300, and Littlefield milkvetch (*Astragalus preussii* var. *laxiflorus*), a taxon determined to be Critically Imperiled by the NNHP. These species are addressed in this section.

3.6.1 Existing Condition

Cactus and Yucca

During field surveys, only a few cactus plants were observed in the proposed project area including silver cholla (*Cylindropuntia echinocarpa*) and pencil cholla (*Cylindropuntia ramosissima*). No yucca was observed within the proposed project area.

Rosy Two-tone Beardtongue

Rosy Two-tone Beardtongue has been deemed a species of concern by the USFWS and has been listed as a sensitive species by both the BLM and USFWS. Its habitat is rocky calcareous, granitic, or volcanic soils in washes, roadsides, scree at outcrop bases, rock crevices, or similar places receiving enhanced runoff, in the creosote-bursage, blackbrush, and mixed-shrub zones (NNHP 2001). Although potential habitat may be found in the proposed project area, no Rosy Two-tone Beardtongue plants were observed in the proposed project area. Therefore, Las Vegas Rosy Two-tone Beardtongue will not be addressed further in this EA.

3.6.2 Environmental Consequences

3.6.2.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed and no project related effects to special status vegetation species would occur.

3.6.2.2 Alternative 1

Very few cacti were observed in the proposed project area; however, it is possible that a cactus could be crushed or removed during construction activities.

3.6.2.3 Alternative 2

Under Alternative 2, impacts to cacti would be the same as those discussed under Alternative 1.

3.6.2.4 Connected Action

The entire 2,200 acre solar facility would be graded causing direct removal of a few cactus plants below the threshold of requiring notification under NRS.570.070.

3.6.3 Mitigation

As some flexibility exists in the placement of transmission line poles, cactus will be avoided to the extent possible. To further reduce impacts to cacti, cacti will be salvaged as described in the BMPs (Appendix B).

3.7 Wildlife

3.7.1 Affected Environment

The proposed project area supports wildlife characteristic of the north-eastern Mojave Desert. Common wildlife observed during surveys is described below.

Several reptile species were observed during the 2011 desert tortoise field surveys including the Great Basin whiptail (*Cnemidophorus tigris*), and desert horned lizard (*Phrynosoma platyrhinos*). Migratory birds observed were recorded during desert tortoise surveys and it is assumed that the action area contains potential nesting and foraging habitat for a wide range of migratory birds including the burrowing owl. Bird species observed included the common nighthawk (*Chordeiles minor*), and the common raven (*Corvus corax*). The only mammal species observed was the black-tailed jack rabbit (*Lepus californicus*), but evidence of kit fox (*Vulpes macrotis*) and coyote (*Canis latrans*) and various rodents were observed. Other evidence suggested the presence of common Mojave Desert rodent inhabitants such as cactus mice (*Peromyscus* spp.), and kangaroo rats (*Dipodomys* spp.). Although not observed during field surveys, additional species have been observed in the project area by Nevada Department of Wildlife (NDOW). Refer to Table 3.7.1 below for a species list provide by NDOW.

Table 3.7-1. Species recorded by NDOW in the project area.

Common Name	Scientific Name
Common kingsnake	<i>Lampropeltis getula</i>
Zebra-tailed lizard	<i>Callisaurus draconoides</i>
Desert banded gecko	<i>Cleonyx variegatus</i>
Mojave rattlesnake	<i>Crotalus scutulatus</i>
Western whiptail	<i>Aspidoscelis tigris</i>

Additional reptiles and birds may also frequent the project vicinity as residents or as seasonal migrants and have not been observed so are not included in resident databases.

3.7.2 Environmental Consequences

3.7.2.1 No Action Alternative

Under the No Action Alternative, the project would not be constructed; therefore, no project related impacts to wildlife would occur.

3.7.2.2 Alternative 1

During transmission line construction, ground-disturbing activities could directly result in mortality to various wildlife species. Some species that are particularly mobile might be able to avoid injury or mortality by leaving the area. However, some wildlife, such as nocturnal species or species that use burrows, might be more susceptible to injury or mortality.

Although temporary in nature, noise and activity associated with construction could cause animals to avoid the area, thus altering their normal behavior patterns.

Increased traffic on established roads could result in more vehicle/wildlife collisions, thereby resulting in injury or death to wildlife. This might be of particular concern for reptiles and species that utilize roads for heat sources or for other small wildlife.

3.7.2.3 Alternative 2

Under Alternative 2 impacts to wildlife would be the same as discussed under Alternative 1.

3.7.2.4 Connected Action

The types of impacts associated with the connected action would be similar to those described under Alternative 1, but would occur over a larger area, approximately 2,200 acres of private land. This entire solar facility site would be graded and fenced to exclude wildlife.

3.7.3 Mitigation

BMPs will reduce construction impacts on vegetation and wildlife habitat (Appendix B).

3.8 Special Status Wildlife Species

On June 27, 2011, the USFWS responded to NewFields' request for a species list for the Techren Boulder City Solar Project (previously known as the Nevada 300 Solar Project). The desert tortoise (*Gopherus agassizii*) (Mojave population) was the only federally listed species identified by the USFWS. However, the USFWS was concerned about other species in the proposed project including migratory birds specifically the Western burrowing owl (*Athene cunicularia hypugea*) and the Nevada state-protected banded Gila monster (*Heloderma suspectum cinctum*); therefore, these species are addressed in this section. Additionally per Nevada Department of Wildlife's (NDOW) request, Nevada Species of Conservation Priority are addressed in this section.

3.8.1 Affected Environment

3.8.1.1 Desert Tortoise

During April 2012 (and May 2012 for the connected action), regionally experienced biologists conducted pre-project tortoise surveys within the entire action area in accordance with 2010 USFWS protocols (USFWS 2010). The survey area was located using topographical maps, aerial photographs, and global positioning system (GPS) coordinates. Physical landmarks such as roads, surveyor markers, existing transmission lines, solar power plants and substations were also used for orientation.

According to the USFWS, the objective of the field surveys is to determine presence or absence of desert tortoise, estimate the number of tortoises (abundance), and assess the distribution of tortoises within the action area (USFWS 2010). Within the Proposed Action area a minimum of 132 feet were surveyed on each side of the proposed centerline with 100 percent coverage. Additionally, the perimeter of both the Eldorado and Marketplace substations were surveyed.

No live tortoises were found within the Proposed Action area; therefore, relative tortoise abundance could not be estimated using the USFWS model. One tortoise carcass and three burrows were found within the survey area (Figure 4). Two burrows were in good condition and possibly utilized by desert tortoise (i.e. Condition Class 4). One Condition Class 3 burrow was found, meaning it was definitely a tortoise burrow but in deteriorated condition.

In addition, Zone-of-Influence (ZOI) surveys were completed because linear facilities may overlap only part of a tortoise's annual home range. ZOI surveys account for the possibility that a resident tortoise was outside the project area at the time surveys are conducted. This included completion of three additional 10-m (~30-ft) belt transects spaced at 200-m (~655-ft) intervals parallel to the alignment (200-m, 400-m, and 600-m). Tortoises and/or tortoise sign encountered during these surveys were recorded however, these transects were only used for the presence/absence determination and are not included in the estimation of tortoise abundance within the project area. ZOI surveys were completed on BLM managed lands only.

Although no tortoise and limited tortoise sign were found in the Proposed Action area, the entire action area is within desert tortoise habitat; therefore, a tortoise could potentially be affected by the proposed project.

3.8.1.2 Gila Monster

The Gila monster is classified as a State sensitive reptile (NAC 503.080) and is protected under Nevada state law (NAC 503.090 and NAC 503.093). The geographic range and habitat of the Gila monster overlaps with that of the desert tortoise. This venomous lizard is found below 5,000 feet elevation on

rocky slopes and landscapes of upland desert scrub interspersed with desert washes (NDOW 2012). No Gila monsters were observed during the biological surveys; however, this species could be encountered during construction activities in the action area.

3.8.1.3 Additional Nevada Species of Conservation Priority: Reptiles

Although not observed during field surveys, additional species have been observed in the project area by Nevada Department of Wildlife (NDOW), some of which are State of Nevada Species of Conservation Priority (SOCP). Refer to *Table 3.8-1* below for a species list.

Table 3.8-1. Nevada Species of Conservation Priority in the project area.

Common Name	Scientific Name
Chuckwalla	<i>Sauromalus ater</i> ¹
Desert iguana	<i>Dipsosaurus dorsalis</i> ¹
Long-nosed leopard lizard	<i>Gambelia wislizenii</i> ¹
Sidewinder	<i>Crotalus cerastes</i> ¹
Mojave shovel-nosed snake	<i>Chionactis occipitalis</i>
Desert glossy snake	<i>Arizona elegans eburnata</i>
Mojave Desert sidewinder	<i>Crotalus cerastes cerastes</i>
Greater western mastiff bat	<i>Eumops perotis californicus</i>
Allen's big-eared bat	<i>Idionycteris phyllotis</i>
Western red bat	<i>Lasiurus blossevillii</i>
California leaf-nosed bat	<i>Macrotus californicus</i>
California myotis	<i>Myotis californicus</i>
Cave myotis	<i>Myotis velifer</i>
Yuma myotis	<i>Myotis yumanensis</i>
Big free-tailed bat	<i>Nyctinomops macrotis</i>
¹ State of Nevada Species of Conservation Priority	

3.8.1.4 Migratory Birds

Executive Order (January 11, 2001) defines the responsibilities of the Federal Agencies to protect migratory birds; under the MBTA of 1918 and subsequent amendments (16 U.S.C. 703–711) state that it is unlawful to take, kill, or possess migratory birds. Numerous bird species travel through Nevada during spring and fall migrations. A complete list is published at the USFWS web site (USFWS 2006). A list of those that are protected birds is in 50 CFR 10.13. The list of birds protected under this regulation is extensive and the project area has potential to support many of these species. Many of these birds have additional state protections. Birds of conservation priority such as the American avocet (*Recurvirostra Americana*) and white-faces ibis (*Plegadis chihi*); and Nevada species of conservation priority such as LeConte's thrasher (*Toxostoma lecontei*) and Brewer's sparrow (*Spizella breweri*) may be found in the project area. Typically, the breeding season is when these species are most sensitive to disturbance, which generally occurs from March 15 through July 30.

Migratory birds were recorded during desert tortoise surveys and it is assumed that the action area contains potential nesting and foraging habitat for a wide range of migratory birds including the burrowing owl.

The burrowing owl, a USFWS species of concern, is known to occur in the project area and is protected by the MBTA and the State of Nevada (NRS 503.620). This species is a day-active bird of prey

specialized for grassland and shrub-steppe habitats in western North America. The owls are widely distributed throughout the Americas and are found from central Alberta, Canada to Tierra del Fuego in South America.

Burrowing owl habitat typically consists of open, dry, treeless areas on plains, prairies, and desert floors (Haug et al. 1993). Burrowing owls most frequently use mammal burrows created by other animals such as kit fox, coyotes or desert tortoises. Burrow presence is the limiting factor to burrowing owl distribution and abundance (Coulumbe 1971; Martin 1973; Green and Anthony 1989; Haug et al. 1993). The burrows are used for nesting, roosting, cover, and caching prey (Coulumbe 1971; Martin 1973; Green and Anthony 1989; Haug et al. 1993).

In recent decades, the range and species count have been declining primarily due to agricultural, industrial, and urban development that reduce burrow availability. The owls also face increased mortality rates from pesticides and edge-effect predation (Haug et al. 1993).

Although burrowing owls were not observed during the May 2011 field surveys, the proposed project contains burrowing owl habitat. Therefore, burrowing owls potentially could be affected by the proposed project.

3.8.2 Environmental Consequences

3.8.2.1 Desert Tortoise

No Action Alternative

Under the No Action Alternative, the project would not be built; therefore, no project related effects on desert tortoise would occur.

Alternative 1

Tortoises may be injured or killed during construction activities. Biological monitors would be present at all active construction locations to locate tortoises and, if necessary, direct the contractor to cease construction activities until the tortoise moves out of harm's way. Only 400 square feet of disturbance is associated with each transmission pole installation site. This small area is readily surveyed for the presents of tortoises and burrows. If a tortoise in a burrow is encountered, the transmission line poles may be able to be shifted to avoid tortoises in burrows. This will limit the handling of tortoises. If avoidance is not possible, an authorized biologist would relocate tortoises. Capturing, handling and relocating desert tortoises from transmission line installation locations may result in harassment and possibly injury or death (Blythe et al. 2003). Additionally, if capture and relocation methods are performed improperly, the tortoise could void its bladder, which would lower its chances of survival (Averill-Murray 2001). Another risk is that if multiple tortoises are improperly handled by the same biologist, pathogens for upper respiratory disease could be spread amongst the tortoise.

Increase human activity and construction vehicle traffic may also result in tortoise/vehicle collisions that result in tortoise injury or death. Tortoise may take shelter under parked vehicles and be killed, injured, or harassed. Minimization measures such as the WEAP and speed limits on roads would reduce or eliminate these effects.

Indirect effects could be caused by access roads and transmission lines include increased predation. Predators such as ravens, coyotes, or other raptors may be attracted to the construction site due to an increase in food opportunities including construction site litter and voluntary feeding from construction staff; an increased number of perching opportunities due to new transmission lines, fences, or other

opportunities; or increased water sources due to dust control protocols. An increased presence of predators could lead to a predation increase on smaller, more vulnerable tortoises. Minimization measures such as a litter control program and Raven Management Plan will reduce these effects.

Ground disturbing activities during construction may result in an increase of noxious and invasive plant species in the area. Construction machinery may facilitate the spread of existing noxious or invasive species throughout the site, or may facilitate the introduction of new noxious weeds or invasive species. Noxious and invasive plants may displace native species that provide forage for tortoises. A Noxious Weed Control Plan would reduce or eliminate these effects.

Alternative 2

Effects to desert tortoise under Alternative 2 would be the same as those described under Alternative 1.

Connected Action

The types of impacts to desert tortoise associated with the connected action would be similar to those described under Alternative 1, but would occur over a larger area, approximately 2,200 acres of private land. However, during surveys conducted in May 2011, no tortoise or tortoise sign was found in the solar facility site. Much of the habitat in the solar facility is dry lakebed; therefore, not suitable for desert tortoise. Development of the solar facility is on private lands (i.e. those owned by the City of Boulder City) and therefore would utilize the existing Clark County MSHCP Section 10 permit for potential take of desert tortoise and limit disturbance to desert tortoise habitat to the minimum extent possible.

3.8.2.2 *Gila Monster*

No Action Alternative

Under the No Action Alternative, the project would not be built; therefore, no project related effects on Gila monsters would occur.

Alternative 1

Gila monsters could be injured or killed during construction activities. Indirect effects may include habitat fragmentation and disruption of normal activity patterns. Gila monsters also may be disturbed by noise from construction.

Alternative 2

Effects to Gila monsters under Alternative 2 would be the same as those described under Alternative 1.

Connected Action

The types of impacts associated with the connected action would be similar to those described under Alternative 1, but would occur over a larger area, approximately 2,200 acres of private land.

3.8.2.3 *Additional Nevada Species of Conservation Priority: Reptiles*

No Action Alternative

Under the No Action Alternative, the project would not be built; therefore, no project related effects on desert iguanas, long-nosed leopard lizards, sidewinders, and chuckwalla would occur.

Alternative 1

Desert iguanas, long-nosed leopard lizards, sidewinders, and chuckwalla could be injured or killed during construction activities. Indirect effects may include habitat fragmentation and disruption of normal activity patterns. These species also may be disturbed by noise from construction.

Alternative 2

Effects to desert iguanas, long-nosed leopard lizards, sidewinders, and chuckwalla under Alternative 2 would be the same as those described under Alternative 1.

Connected Action

The types of impacts associated with the connected action would be similar to those described under Alternative 1, but would occur over a larger area, approximately 2,200 acres of private land.

3.8.2.4 Migratory Birds

No Action Alternative

Under the No Action Alternative, the project would not be built; therefore, no project related effects on migratory birds would occur.

Alternative 1

Migratory birds could be injured or killed during vegetation removal and grading activities. Adult birds may be able to flee the area; however, during migratory bird nesting season, eggs and juvenile birds that are confined to nests may be killed. During operation of the facility birds may be injured, electrocuted, or killed from collisions with power lines or construction vehicles.

Only a small amount (< 0.02 acre) of native plant communities that provide habitat to nesting migratory birds would be eliminated as a result of the proposed project.

Alternative 2

Effects to migratory birds under Alternative 2 would be the same as those described under Alternative 1.

Connected Action

The types of impacts associated with the connected action would be similar to those described under Alternative 1, but would occur over a larger area, approximately 2,200 acres of private land.

3.8.3 Mitigation

3.8.3.1 Desert Tortoise

On June 11, 2012, the BLM had submitted a Biological Assessment to the USFWS as part of consultation under Section 7 of the ESA. The USFWS issued a Biological Opinion (BO) for the project on December 28, 2012 (Appendix E). Section 7 (a)(2) of the Act requires Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. After reviewing the effects of the proposed project and cumulative effects, the USFWS determined that the proposed project is not likely to jeopardize the continued existence of the species. Mitigation measures outlined in the BO will be implemented as part of the project to avoid, or reduce environmental impacts associated with the proposed action to Federal or state protected species. Mitigation measures and actions are to comply with the USFWS guidelines, the Clark County Multi-Species Habitat Conservation (MSHCP), and Nevada Department of Wildlife (NDOW) standards.

Associated development on private lands (i.e. those owned by the City of Boulder City) would utilize the existing Clark County MSHCP Section 10 permit for potential take of desert tortoise and limit disturbance to desert tortoise habitat to the minimum extent possible.

Construction Minimization Measures

The following is a summary of the mitigation measures in the BO. For a complete description, refer to the BO in Appendix E.

1.a. Applicant-Committed Measures – BLM shall ensure that the applicant and their contractors implement all the applicant-committed measures, as modified by the USFWS and the BLM, and the BLM terms and conditions of the ROW grant.

1.b. Timing of Construction - BLM shall ensure that when possible, the applicant schedules and conducts construction, operation, and maintenance activities within desert tortoise habitat during the less-active season.

1.c. Field Contact Representative – BLM shall ensure a Field Contact Representative (FCR) is designated for the project. The FCR will serve as of the BLM and USFWS to ensure that all instances of noncompliance or incidental take are reported.

1.d. Authorized Desert Tortoise Biologist – An approved desert tortoise biologist along with the FCR shall be responsible for: (1) conducting and supervising desert tortoise clearance surveys; (2) enforcing the litter-control program; (3) ensuring that desert tortoise habitat disturbance is restricted to authorized access; (4) ensuring that all equipment and materials are stored within the boundaries of the construction zone or within the boundaries of previously disturbed areas or designated areas; (5) ensuring that all vehicles associated with construction activities remain within the proposed construction zones; (6) and ensuring compliance with the conservation measures of the BO and reporting actual take.

1.e. Desert Tortoise Monitor – Desert tortoise monitors will assist the authorized desert tortoise biologist to ensure proper implementation of protective measures, and record and report desert tortoise and sign observation in accordance with terms and conditions of the BO.

1.f. Desert Tortoise Education Program – A desert tortoise education program shall be presented by an authorized desert tortoise biologist to all personnel on-site during construction activities.

1.g. Vehicle Travel - Project personnel shall exercise vigilance when commuting to the project area to minimize risk for inadvertent injury or mortality to desert tortoises encountered on paved and unpaved roads leading to and from the project site. Speed limits will be clearly marked, and all workers will be made aware of these limits.

1.h. Desert Tortoise Clearance - Prior to surface-disturbing activities, an authorized desert tortoise biologist, potentially assisted by desert tortoise monitors, shall conduct a clearance survey to locate and remove all desert tortoises from harm's way or from areas to be disturbed, using techniques that provide full coverage of all areas (Service 2009). No surface-disturbing activities shall begin until two consecutive surveys yield no individuals.

1.i. Desert tortoise in harm's way - Any project-related activity that may endanger a desert tortoise shall cease if a desert tortoise is found on the project site. Project activities may resume after an authorized desert tortoise biologist or desert tortoise monitor (see restrictions in Term and Condition 1.e.) removes the desert tortoise from danger or after the desert tortoise has moved to a safe area on its own.

1.j. Handling of Desert Tortoise - Desert tortoises shall only be moved by an authorized desert tortoise biologist or desert tortoise monitor (see restrictions in Term and Condition 1.e.) solely for the purpose of moving the tortoises out of harm's way.

- 1.k. Penning** – Penning of desert tortoise shall follow the specific guidelines presented in the BO.
- 1.l. Dust Control** - Water applied to the construction ROW and topsoil piles for dust control shall not be allowed to pool. Similarly, leaks on water trucks and water tanks will be repaired to prevent pooling water.
- 2.a. Litter Control** - A litter-control program shall be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit foxes, coyotes, and common ravens.
- 2.b. Deterrence** - The applicant will implement best management practices to discourage the presence of predators on-site (coyotes, ravens, etc.).
- 2.c. Monitoring and Predator Control** - The applicant will inspect structures annually for nesting ravens and report observations of raven nests to the USFWS. If sign of predation is found under a nest, a control plan will be implemented.
- 2.d. Pets** – Dogs will be prohibited in all project work areas.
- 3.a. Minimizing New Disturbance** - Cross-country travel and travel outside designated areas shall be prohibited. All work area boundaries shall be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities.
- 3.b. Weed Prevention** - Vehicles and equipment shall be cleaned with a high-pressure washer prior to arrival on the ROW and prior to departure from areas of known invasive weed and nonnative grass infestations to prevent or at least minimize the introduction or spread of these species.
- 3.c. Chemical Spills** – Any leak or accidental release of hazardous or toxic materials will be stopped immediately and cleaned up at the time of occurrence.
- 3.d. Residual Impacts from Disturbance** – BLM shall ensure that remuneration fees are paid to offset residual impacts to desert tortoise from project-related disturbance to desert tortoise habitat. The current rate is \$810 per acre of disturbance, as indexed for inflation. The fee rate will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) on January 31 of each year.
- 4.a Desert Tortoise Deaths** - The deaths of desert tortoises shall be investigated as thoroughly as possible to determine the cause of death. The USFWS and appropriate State wildlife agency must be informed immediately verbally and within five business days in writing (electronic mail is sufficient).
- 4.b. Noncompliance** – Incidences of noncompliance shall be immediately documented by an authorized desert tortoise biologist and immediately reported to the BLM and the USFWS at (702) 515-5230
- 4.c. Construction Completion** - Within 90 days following completion of construction, a written assessment report shall be submitted to the USFWS, outlining the schedule that was followed for implementing the minimization measures.
- 4.d. Operation** - A written assessment report shall be submitted to the USFWS, outlining the maintenance activities that occurred over the past year.

3.8.3.2 *Gila Monster*

Gila monsters, if observed, will be removed in accordance with Nevada Department of Wildlife (NDOW) protocols issued September 2012 (Appendix C). Additionally, Gila monster identification and notification protocols will be included in the Desert Tortoise Education Program.

3.8.3.3 *Additional Nevada Species of Conservation Priority: Reptiles*

Mitigation presented for desert tortoise and BMPs (Appendix B) also would reduce the impacts on these species; therefore, no further mitigation is proposed.

3.8.3.4 *Migratory Birds*

In compliance with the Migratory Bird Act of 1918, habitat-altering projects or portions of projects should be scheduled outside bird breeding season (between March 1st and August 31st) whenever possible. For work occurring during the nesting period, a qualified biologist would survey the area for nests within 15 days prior to initial grading and vegetation removal. This shall include eagles and hawks, as well as burrowing and ground-nesting species in addition to those nesting in vegetation. If any active nests (containing eggs or young) are found, a 200-foot buffer area would be avoided until the young birds fledge.

To reduce impacts to burrowing owls, Techren Solar LLC would implement the protocols in the USFWS's pamphlet *Protecting Burrowing Owls at Construction Sites in Nevada's Mojave Desert Region* (Appendix C). Additionally, preconstruction nest surveys will be conducted to identify occupied burrows and reduce potential impacts on western burrowing owl. Preconstruction surveys will be in accordance with the USFWS 2007 burrowing owl guidance.

To reduce the risk of electrocution, all transmission poles would be designed in accordance with the *Suggested Practices for Avian Protection on Power Lines; the State of the Art in 2006* (Avian Power Line Interaction Committee 2006). Perch management attempts to control where birds land or nest on transmission structures.

Several devices are designed to discourage birds from landing at dangerous structure locations. It is important to note that perch guards do not always keep raptors off structures. Placing perch guards on the top of vertical construction may contribute to inadvertent electrocutions as the birds may choose to roost lower on the pole, near energized conductors. Perch guards can also shift problems onto other line segments. It is more desirable to allow raptors to safely use the structures rather than shifting them off preferred perches to other structures that may be more lethal.

Post-construction bird monitoring will be conducted along transmission lines in conjunction with the Raven Management Plan (see Section 3.8.3.1), followed by reporting to the appropriate agencies. Bird collisions, electrocutions, and nesting avoidance measures will be recorded using a one-page reporting form that identified date, time, location, and disposition of the activity. Raptor electrocutions and power line collisions will be reported to BLM and USFWS within 24 hours of discovery or notification of a carcass.

3.11.4 Mitigation

No mitigation measures would be necessary for either of the proposed transmission line alternatives.

3.9 Cultural Resources

3.9.1 Affected Environment

Regulatory Framework

Section 106 of the National Historic Preservation Act, as amended (16 USC 40 *et seq.*), requires Federal agencies to take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places (NRHP). The National Park Service defines archaeological and historic resources as “the physical evidences of past human activity, including evidences of the effects of that activity on the environment. What makes a cultural resource significant are its identity, age, location, and context in conjunction with its capacity to reveal information through the investigatory research designs, methods, and techniques used by archeologists.” Ethnographic resources are defined as any “site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it” (National Park Service 1998).

The BLM’s Proposed Action is subject to compliance with Section 106 of the NHPA as it is considered a Federal undertaking. Section 106 requires Federal agencies to consider the effects of their actions on historic properties and to consult with the State Historic Preservation Office. The BLM is waiting for SHPOs concurrence to complete section 106.

Area of Potential Effects

The area of potential effects (APE) is defined in 36 CFR 800.16(d) as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. The APE for the project includes 3-4.6 miles of transmission line from the two alternatives. The proposed transmission line is located within a BLM designated ROW and has been surveyed numerous times from 1975 to 2008. Only one site is located within the APE and it has been determined not be eligible for inclusion in the NRHP.

3.9.2 Environmental Consequences

3.11.2.1 No Action Alternative

Under the no action alternative, the transmission lines would not be constructed, and there would be no project induced changes in the cultural resources in the project area.

3.11.2.2 Alternative 1

Because there are not any sites eligible for listing on the NRHP and no effects to cultural resources are anticipated.

3.11.2.3 Alternative 2

Because there are not any sites eligible for listing on the NRHP and no effects to cultural resources are anticipated.

3.11.3 Connected Action

No sites recommended eligible for listing on the NRHP were recorded during survey for the adjacent solar array field. The survey was completed for both the public and private parcels of land. Nothing was found, and the BLM is waiting for SHPOs concurrence to complete section 106.

3.10 Land Use

3.10.1 Affected Environment

The proposed facility is located in a sparsely populated area of Clark County, Nevada, approximately 7 miles southwest of Boulder City. Surrounding land is characterized primarily by power generation facilities, energy transmission infrastructure, transportation infrastructure, and open space. The BLM-managed utility corridors where the transmission lines would be mostly located contain several ROWs for transmission lines, pipelines, and related facilities, which is consistent with the Management Objective RW-1 in the Las Vegas RMP (BLM 1998). Within the last 12 months, several private parties have applied to construct new transmission lines within the corridors.

The solar field site is located within Boulder City's Solar Enterprise Zone. The transmission line routes would follow existing roads and transmission line routes where possible, traversing a flat desert landscape typical of the area. The route would originate at the proposed solar field in the northern part of the project area and terminate at the existing Marketplace and Eldorado Substations. The transmission line routes would be contained within BLM-administered utility corridors.

3.10.2 Environmental Consequences

3.10.2.1 No Action Alternative

Under the no action alternative, the transmission lines would not be constructed; therefore, no project-related impacts to land use would occur.

3.10.2.2 Alternative 1

Development under Alternative 1 would not prevent other authorized land uses and would not impact future land use authorizations or ROWs in the project area, including any new transmission lines constructed by other private parties within the BLM-managed utility corridors.

3.10.2.3 Alternative 2

The impacts under Alternative 2 would be the same as described under Alternative 1.

3.10.2.4 Connected Action

All development on Boulder City property would occur on lands zoned ER – Energy Zone, which is the appropriate zoning classification for the proposed solar energy generation use (Boulder City 2011).

3.10.3 Mitigation

Because the proposed transmission lines would not impact other land uses within the BLM-managed utility corridor no mitigation measures are necessary.

3.11 Visual Resources

3.11.1 Affected Environment

The landscape character of Eldorado Valley is typical of the Great Basin. Regional topography consists of mountain ranges arranged in a north-south orientation, separated by broad valleys. The Eldorado Valley extends south of Henderson and the River Mountains between the McCullough Mountain Range and the Eldorado Mountain Range. These mountain ranges are dominant visual features. Another interesting feature near the proposed project area is the Dry Lake Bed, which is an area clear of vegetation, flat, and has a contrasting white color from the rest of the Valley.

Visible manmade features in the areas include U.S. Highway 95, two existing solar facilities, over 10 transmission lines, gravel quarries, and 3 electrical substations. Because of the amount of manmade cultural modifications, the scenic quality has been altered. An existing solar array adjacent to the proposed project area is clearly visible from US 95 from the junction of US 93 and south toward Laughlin. Unimproved and dirt roads cross the area, and recreational vehicle use in the dry lake bed has modified the natural environment in some locations.



Figure 4.5-1. Representative View in the Project Area

3.11.2 Environmental Consequences

3.11.2.1 No Action Alternative

Under the no action alternative, the transmission lines would not be constructed; therefore, no project-related impacts to visual resources would occur.

3.11.2.2 Alternative 1

No visual resources inventory has been completed for the project area. BLM has not developed Visual Resource Management Classification for the area.

The proposed transmission line would parallel existing transmission lines within the BLM-managed easement. Therefore, no substantive change in visual characteristics would occur as a result of the proposed project.

3.11.2.3 Alternative 2

The impacts from Alternative 2 would be the same as those described under Alternative 1.

3.11.2.4 Connected Action

The proposed project would alter the appearance of the area from vacant land to developed land; however, the solar facility would be located near existing solar facilities and substations. No private residences, schools, or other community facilities are near the proposed project area so the visual impacts from the solar facility would be minimal.

3.11.2.5 Mitigation

Because no impacts are anticipated, no mitigation is warranted.

3.12 Recreation

3.12.1 Affected Environment

Recreation in the area mostly consists of off-highway vehicle (OHV) usage throughout the area, especially near the Eldorado Dry Lake bed. OHV disturbance also is apparent along the utility corridors. Adjacent Boulder City lands are utilized primarily for energy development, though the Boulder City Conservation Easement (BCCE) allows casual recreational uses, including hiking, sightseeing, and driving for pleasure at speeds below 25 miles per hour. The BCCE overlaps portions of the gen-tie routes under both alternatives.

The project area is located within NDOW Hunt Unit 263 (NDOW 2010b). Big game hunting in this Hunt Unit consists of desert bighorn sheep (*Ovis canadensis nelsoni*), which are predominantly found at higher elevations such as between McCullough Pass and Black Mountain.

3.12.2 Environmental Consequences

3.12.2.1 Alternative 1

Because bighorn sheep are found at higher elevations, construction and operation of the transmission line would not affect hunting in the area.

Construction of the transmission line would not affect OHV recreation in the area because only small areas would be utilized for construction activities. These areas would be limited to 400 square feet for installation of each transmission line pole and two 2-acre wire-pulling sites. Each of the areas would be flagged and marked to alert recreationist to possible dangers.

3.12.2.2 Alternative 2

Under Alternative 2, impacts would be the same as those described under Alternative 1

3.12.2.3 Connected Action

The solar facility would be partially located on the dry lakebed. Though the solar field site would be fenced, OHV users could continue to access most of the dry lakebed and other OHV routes throughout the area; therefore, the solar facility would not inhibit access or recreational opportunities.

3.12.3 Mitigation

As no impacts are anticipated; no mitigation measures are proposed.

3.13 Noise

3.13.1 Affected Environment

Noise sources in the project area include wind, weather, and wildlife; the existing power generating stations; traffic on US Highway 95; and occasionally off-road vehicles. Ambient sound levels typical of rural areas range between 30 and 40 dBA (dBA represents A-weighted decibels, which measure sound in a manner that emphasizes the response of the human ear) (USEPA 1978).

No sensitive noise receptors are located within one mile of the project site. Sensitive noise receptors are generally considered to be homes, hospitals, schools, libraries, parks, and recreational areas.

The Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978 (42 USC §§ 4901-4918), delegates to the states the authority to regulate environmental noise. It also directs government agencies to comply with local community noise statutes and regulations, and to conduct their programs to promote an environment free of any noise that could jeopardize public health or welfare.

The Boulder City Municipal Code governs construction-related noise in the Energy Zone.

3.13.2 Environmental Consequences

3.13.2.1 Alternative 1

Construction

As previously mentioned, no sensitive receptors are within one mile of the project; therefore, impacts to sensitive receptors would occur.

The primary effect on the existing environment would be attributed to noise generated during construction activities. Typical construction equipment noise levels are presented in Table 3.16-1.

Table 3.13-1. Noise Levels at Various Distances from Typical Construction Equipment

Construction Equipment	Noise Level $L_{eq(1-h)}$ ^a at Distances (dBA)					
	50 ft ^b	250 ft	500 ft	1,000 ft	2,500 ft	5,000 ft
Bulldozer/scrapper	85	71	65	59	51	45
Concrete mixer	85	71	65	59	51	45
Concrete pump	82	68	62	56	48	42
Crane, derrick	88	74	68	62	54	48
Crane, mobile	83	69	63	57	49	43
Front-end loader	85	71	65	59	51	45
Generator	81	67	61	55	47	41
Grader	85	71	65	59	51	45
Shovel	82	68	62	56	48	42
Truck	88	74	68	62	54	48

Source: Final Programmatic EIS on Wind Energy Development on BLM-Administered Lands in Western U.S., Table 4.5-5.5.2-1 (BLM 2005b).

Note: An assumed propagation rate is 6 dBA per doubling of distance.

^a $L_{eq(1-h)}$ is the equivalent steady-state sound level that contains the same varying sound level during a 1-hour period

^b To convert feet to meters, multiply by 0.3048.

Construction noise may affect recreationalist or other visitors that may be in the area; however, this would be short term and noise impacts are expected to be below Clark County and Boulder City noise thresholds.

Operation

The potential sources of long-term operational noise would stem from the operation of electrical equipment primarily corona noise from the 230-kV transmission lines.

Transmission line corona noise is the noise generated from the strong electric field at the surface of a high-voltage power line conductor ionizing the nearby air, resulting in an audible, continuous, low-level noise or “buzz” during operation of transmission lines and substation equipment. The amount of corona produced by a transmission line is a function of the voltage of the line, the diameter of the conductor, the elevation of the line above sea level, the condition of the conductor and hardware, and the local weather conditions. Noise produced from the transmission line would not be audible at the closest sensitive receptor, which is greater than 1 mile from the proposed project.

3.13.2.2 Alternative 1

Under Alternative 2, impacts resulting from noise would be the same as those described under Alternative 1

3.13.2.3 Connected Action

Construction-related noise impacts at the solar field site would be similar to those experienced during construction of the transmission lines but in a more concentrated area.

Noise from operation of the solar facility would be limited to vehicle use and occasional equipment use during maintenance activities. These maintenance activities would be intermittent and would have little to no noise effects on visitors or recreationists.

3.13.3 Mitigation

Noise generated from construction and operation of the transmission line would not be audible at the nearest sensitive receptor; therefore, no mitigation is required.

3.14 Socioeconomics

The region of influence (ROI) for the proposed action is Clark County, Nevada. Selected socioeconomic indicators for the ROI and comparative data for the state are presented in Table 3.14-1.

Table 3.14-1. Selected Socioeconomic Indicators for the Region of Influence and State of Nevada

Geographic Area	Population (2010)	Population (2000)	Labor Force	Housing Units	Owner-Occupied Housing Units (percent)	Housing Vacancy Rate (percent)	Median Home Price
Clark County	1,951,269	1,375,765	957,102	775,520	59.0	13.5	\$278,500
Nevada	2,700,551	1,998,260	1,329,085	1,089,982	60.7	13.4	\$275,300

Source: US Census Bureau 2000, 2009

3.14.1 Environmental Consequences

3.14.1.1 No Action Alternative

Under the no action alternative, the gen-tie lines would not be constructed, and there would be no change in socioeconomic conditions. Temporary socioeconomic benefits from construction would not be realized.

3.14.2 Alternative 1

The proposed project would have a direct beneficial impact on the local and regional economy during the construction period. On average, 10 to 20 construction and supervisory personnel would be required on site to construct the transmission lines. The worker pool is expected to draw from Clark County. Operation of the transmission lines would be managed, remotely monitored, and controlled by the staff of the Techren Solar Generation facility.

3.14.3 Alternative 2

The impacts under Alternative 2 would be the same as those described in Alternative 1.

3.14.4 Connected Action

The connected action would have a direct beneficial impact on the local and regional economy during the construction period. On average, 80 to 120 personnel would be needed to construct the solar field.

Operation of the solar field would be managed, remotely monitored, and controlled by the staff of the Techren Solar Generation facility. When fully operational, approximately five additional employees would be hired for on-site maintenance of the proposed facility. Occasionally, there would be up to ten workers on site that are employed by contractors engaged by Techren Generation to conduct periodic maintenance or repair activities. The addition of five permanent jobs associated with the operation of the Techren Boulder City project would not represent a significant population increase. Because the potential long-term employment is relatively limited, the proposed action is not expected to directly or indirectly impact local housing market, schools, social services, or overall income and employment levels.

3.14.5 Mitigation

Only beneficial impacts are anticipated to result from construction of the proposed transmission line; therefore, no mitigation measures are warranted.

3.15 Waste Management and Hazardous Materials

3.15.1 Existing Environment

A Phase I Environmental Site Assessment was conducted of the project site in general accordance with ASTM E-1527-05 (Ninyo & Moore, 2011). That study included a review of the site history, historical aerial photographs, and interviews with representatives of the City of Boulder City, and review of environmental databases. The site is described as vacant desert land and transmission line corridors. No hazardous substances were observed on the property during the site reconnaissance and no hazardous substances were historically used or stored on the property. No on-site recognized environmental conditions (RECs) or off-site RECs were identified during that study. Ninyo & Moore (2011) concluded that no further investigation is warranted at this site.

The City of Boulder City operates a Class I Municipal Landfill for municipal solid waste. Municipal solid waste is collected under contract from residences and businesses and disposed of at the landfill located at the end of Utah Street at the southeast portion of the city. In addition, Republic Services operates the Apex Class I Landfill that operates under contract to handle commercial and municipal wastes from incorporated and un-incorporated areas of the Las Vegas Valley.

3.15.2 Environmental Consequences

3.15.2.1 Alternative 1

The construction of the proposed transmission line will generate solid waste in the form of soil and brush from limited clearing and grubbing, building materials from installation of the transmission line support structures, and the operation and maintenance of transmission lines. Solid waste generated during construction will be transported for disposal at a licensed waste management facility.

3.15.2.2 Alternative 2

The impacts under Alternative 2 would be the same as those described in Alternative 1.

3.15.2.3 Connected Action

Construction of the solar facility would generate solid waste in the form of soil and brush from clearing and grubbing (of the 2,200 acre site), building materials from installation of the solar generating facilities, transmission lines, the operation and maintenance facilities, and interior access road. Solid waste generated during construction will be transported for disposal at a licensed waste management facility.

The construction and operation of the proposed facility is not expected to require the transportation, use, or generation of hazardous materials or hazardous wastes that could create a significant hazard to the public or environment. The types of materials that would potentially be present during construction would be minimal volumes of vehicle fuels, lubricating oils, paints, adhesives, and sealants. Under ordinary use, none of these materials would result in the generation of hazardous wastes. As the construction contractors would be required to comply with environmental and work-place safety laws and procedures, no significant risks to public health and safety would be expected from the proposed action.

3.15.3 Mitigation Measures

A solid and hazardous waste management plan will be prepared and implemented for both construction and operation of the proposed project and connected action. Included in the solid and hazardous waste management plans will be stipulations and procedures regarding compliance with Federal, state, and local

regulations for waste minimization, storage, and disposal. The construction contractor shall prepare BMPs that describe the methods for working with hazardous materials during construction. Construction contractor will prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan that describes methods for working with hazardous materials during construction, measures for avoiding spills, and mitigation measures if a spill were to occur.

4 Cumulative Impacts

In 40 CFR 1508.7, the Council on Environmental Quality defines cumulative impacts in as “impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions.” Plainly stated, NEPA requires the consideration of cumulative impacts, which are the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal).

This cumulative impacts analysis addresses the cumulative effects on air quality and climate, water resources, soils, vegetation (including special status plant species), wildlife (including migratory birds and special status species), vegetation and invasive species/noxious weeds, visual resources land use, and socioeconomics that the proposed action would have in conjunction with other past, present, and reasonably foreseeable actions in the project area. The proposed action would not impact the remainder of the resources evaluated in Chapter 3, and these resources are therefore not included in the cumulative analysis.

4.1 Past and Present Actions

Current land use activities in the project vicinity include energy production, energy transmission, and dispersed recreation. In the past, mining claims were active in the vicinity, but there are currently no active mining claims. Most of the land in the Eldorado Valley is owned by Boulder City and deemed the “Energy Zone” which is zoned for energy production. There are three solar energy generation facilities south of the project site: The 10 MW Eldorado facility, the 48 MW Copper Mountain Solar I facility, the 150 MW Copper Mountain II (under construction) (all operated by Sempra Generation), and Nevada Solar One, a 64 MW facility, operated by Acciona North America. Several electrical substations (including the Marketplace, McCullough, and Eldorado substations) exist in the area to facilitate energy transmission.

4.2 Reasonably Foreseeable Projects

Reasonably foreseeable future actions are considered those actions that are known or could reasonably be anticipated to occur within the analysis area for each resource, within a time frame appropriate to the expected impacts from the Proposed Action. Reasonably foreseeable future actions include the following:

- 1 **Techren Boulder City Solar Project** - As described in Chapter 2, Techren also is proposing a 2,200 acre solar facility that will generate up to 300 MW of energy, under BLM policy this is considered a “connected action.” This connected action is included in the subsequent cumulative analysis section.
- 2 **Copper Mountain Solar North Project** - Sempra Generation is proposing to develop 1,400 acres for a solar facility that generates up to 220 MW. Additionally, Sempra is proposing to build a transmission line that would connect the solar facility to the McCullough and Marketplace Substations.
- 3 **Dry Lake Bed South** – This area has been leased to Korean Midland Power Company for solar facility development. It can be reasonable anticipated that the entire 1,500-acre site will be developed. No further details are available at this time.

- 4 **Townsite** – This area has been leased by the City of Boulder City to Korean Western Power Company for solar facility development. It can be reasonably anticipated that the entire 880-acre site will be developed. No further details are available at this time.

4.3 Air Quality and Climate

Construction of numerous solar facilities in the Boulder City Energy zone could have both short term and long term cumulative adverse effects on air quality. Removal of the vegetation that keeps soil in place would increase airborne particulate matter in the Eldorado Valley.

Operation of the proposed solar facilities and any future solar facilities in the Boulder City Energy Zone would have a cumulative beneficial impact on air quality because operation of solar generation facilities results in a reduction in emissions compared to other kinds of electricity generation facilities as well as less long-term emission than recreational OHV use.

4.4 Geology, Minerals, and Soils

Some potential for soil erosion exists from the proposed solar field site any other future solar facilities due to soil disturbance, biological soil crust, desert pavement, and removal of vegetation. The proposed solar field site would utilize BMPs for soil, biological soil crust and desert pavement protection thereby minimizing the contribution to cumulative impacts. In addition, a fugitive dust plan would be developed with mitigation measures to reduce the potential for fugitive dust.

4.5 Water Resources

Preparation of sites for solar energy facilities would typically include site grading and construction of channels, berms, or retention basins, resulting in potential impacts to area hydrology. The potential for erosion of disturbed soils would be minimized by incorporating erosion control BMPs into the grading activities and design of the project grading plan. Maintenance of historic drainage paths, as well as drywells to increase the rate of percolation of water from retention basins would minimize the contribution to cumulative impacts from the proposed solar field project.

4.6 Vegetation

Past, present and future solar development in the valley would contribute incrementally to vegetation disturbance and removal. In the cumulative impacts total, approximately 6,000 acres of predominately dry lake and Mojave creosote bush scrub vegetation would be removed for solar energy development and associated transmission lines.

Construction of these projects may introduce weed species and/or would contribute to the spread of weed species in the Eldorado Valley. If projects in the region were not successfully re-vegetated after decommissioning, native vegetation communities would be lost, or native vegetation communities might be converted term to communities that are dominated by invasive, nonnative species. Increased presence of invasive annual grass species could also promote unwanted wildland fires, which is very destructive to habitat and native vegetation. Infrastructure may become more at risk to wildland fire occurring on adjacent lands over time.

4.7 Wildlife

Past, present and future solar development in the valley could continue to displace wildlife, and as described under cumulative effects under vegetation, wildlife habitat. Most likely all the solar facilities

would be fenced, and therefore, wildlife including sensitive species would be excluded from approximately 6,000 acres of land. This may disrupt normal migratory patterns and fragment habitat. In addition, some of these projects and actions could increase traffic, conflicts with humans, and competition for available habitat. Some of these actions could also decrease forage quality and quantity as described under Section 4.6 Vegetation.

4.8 Cultural Resources

Recreational use of the project area currently has moderate adverse impacts on archeological sites, mainly through soil erosion and unauthorized collection, and these are expected to continue in the future. Reasonably foreseeable future actions proposed in the region, such as development of additional solar facilities, are likely to have additional adverse cumulative impacts on cultural resources. While such impacts can be partially mitigated through excavation or other means, archaeology is a destructive process. Once sites have been excavated, any data that is not captured would be lost.

4.9 Land Use

Because the proposed action and reasonably foreseeable future projects, including any additional transmission lines in the Eldorado Valley currently proposed by other parties, would be required to comply with adopted land use plans and zoning requirements, these projects would be consistent with the overall land use policies of the city of Boulder City and would not result in any cumulative effects that would be incompatible with existing or long-term land use patterns.

4.10 Visual Resources

Development of the Techren Boulder City project and reasonably foreseeable solar facilities in Boulder City's Energy Zone would result in a change to the existing visual landscape through the introduction of additional solar generating equipment and associated transmission infrastructure. While the proposed and connected action would alter the visual character of the project area (including the viewshed from portions of the Sloan Canyon National Conservation Area), the cumulative projects described in this analysis have already changed the visual character of the area from rural, open space to a more industrial feel both at the generating facilities and along transmission line routes.

4.11 Socioeconomics

The proposed action would have a short-term beneficial cumulative effect from the creation of construction jobs during the construction periods. Operation of the proposed facilities and any future solar energy generating facilities in the Boulder City Energy Zone would have a minor beneficial cumulative effect through the number of jobs created. The project would also have a moderate beneficial cumulative effect through the revenue accrued by the City for lease of the land.

Chapter 5. Tribes, Individuals, Organizations, or Agencies Consulted:

Table 5.1. List of Persons, Agencies and Organization Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
USFWS	BO consultation	BO issued 12/28/2012
NDOW	Encumbered Notification	Comments incorporated into EA
Bureau of Reclamation	Encumbered Notification	Negative comments

Table 6.1. List of Preparers

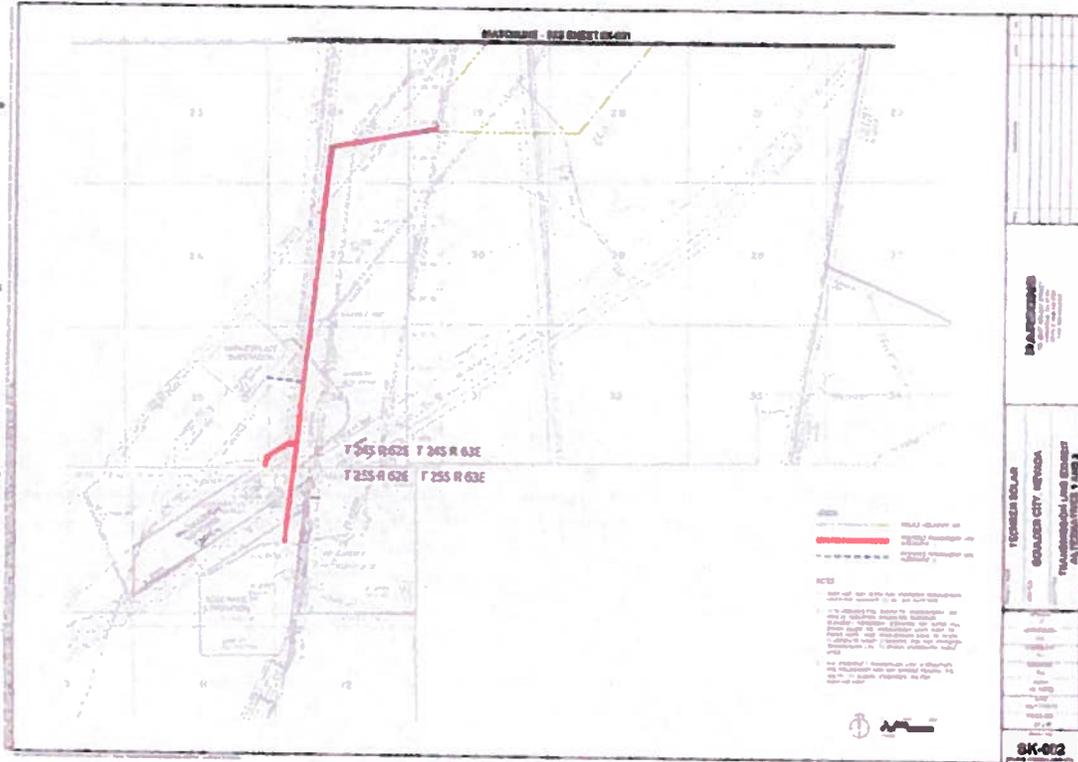
Name	Title	Responsible for the Following Section(s) of this Document
BLM		
Brenda Wilhight	Realty Specialist	Reviewer
Mark Chandler	Realty Specialist	All
Jill Pickren	Realty Specialist	All
Mark Slaughter	Biologist	Wildlife and Biologist
Lisa Christianson	Environment Protection Specialist	Air Quality
Boris Poff	Hydrologist	Hydrology and Soils
John Evans	Planning and Environmental Coordinator	Environmental Justice, Socio-economic
Kathleen Sprowl	Archeologist	Cultural, Native American
Amelia Savage	Wildlife Biologist	Biologist
Mark Boatwright	Archeologist	Cultural, Native American , Pale
Krystal Johnson	Wild Horse and Burro Specialist	Wild Horse and Burro, Farmland
Sean McEldery	Fire Management Specialist	Fuels/Fire Management
George Varhalmi	Geologist	Geology
Lauren Brown	Weed Management Specialist	Weed Management
Katie Kleinick	Natural Resource Specialist	Grazing, Rangeland, T & E Species, Forestry, Vegetation
Marilyn Peterson	Outdoor Recreation Planner	Recreation, Wild and Scenic Rivers
Mike Moran	Environmental Protection	HazMAT
Matthew Hamilton	Project Manager Renewable Resources	Wilderness/WSA
NewFields		
Stephanie Locke	Project Manager	All
Ken MacDonald	Vice President	Socio-economics, Cumulative
Anne Dubarton	Project Manager	Cultural
Sean Milne	Environmental Scientist	Biology
Ninyo and Moore		
Albert Ridley	Principle Geologist	Geology, Minerals, Soils, Water, Hazardous Materials
Randy Keys	Environmental Scientist	Air Quality, Water
Courtney Brooks	Senior Environmental Scientist	Water

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Appendix A: Master Title Plats



The transmission line marked in red, which is the BLM connected action.

Appendix B: Best Management Practices

Best Management Practices

In addition to the requirements and mitigation measures proposed in this document and in the project permits, the applicant has committed to implementing the environmental protection measures discussed below. These measures have been divided into the following categories: General Measures, Soil Disturbance, Noxious Weeds, Vegetation, Water Features, Wildlife and Sensitive Species, Cultural and Paleontological Resources, Hazardous Materials and Waste, and Air Quality.

General Measures

- 1) All construction vehicle movement will be restricted to the ROW, predesignated access roads, and public roads.
- 2) Fences and gates, if damaged by construction activities, will be repaired or replaced to their original preconstruction condition as required by the landowner or land management agency.
- 3) Temporary gates will be installed only with prior permission of the landowner or land management agency.
- 4) All existing roads will be left in a condition equal to or better than their preconstruction condition.

Soil Disturbance

- 1) Site inspections will be conducted during the construction period to ensure that erosion-control measures were properly installed and are functioning effectively.
- 2) Construction will be prohibited when the soil is too wet to adequately support construction equipment.
- 3) Construction activities will be limited to the ROW to reduce soil compaction, erosion, and vegetation loss.
- 4) The Applicant will prepare and implement a SWPPP in accordance with the Clark County Department of Air Quality and the Nevada Division of Environmental Protection.
- 5) Implement BMPs such as locating waste and excess excavated materials outside drainages to avoid sedimentation.
- 6) Install silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion control measures around the perimeter of stockpiled fill material) as necessary.
- 7) Conduct regular site inspections during the construction period to see that erosion-control measures were properly installed and are functioning effectively.

Noxious and Invasive Weeds

- 1) All gravel and/or fill material will be certified weed-free.
- 2) The proponent shall use weed free seed for reclamation and for other organic products for erosion control, stabilization, or revegetation (e.g. straw bales, organic mulch) must be certified weed free.
- 3) The project proponent shall coordinate weed management with the BLM Weed Specialist regarding any proposed herbicide treatment. The project proponent shall prepare, submit, obtain and maintain a pesticide use proposal (PUP) for the proposed action and Pesticide Application Records will be submitted to the BLM Weed Specialist within one week after application.
- 4) The project proponent shall limit the size of any vegetation and/or ground disturbance to the absolute minimum necessary to perform the activity safely and as designed. The project proponent will avoid creating soil conditions that promote weed germination and establishment.

- 5) The project proponent shall begin project operations in weed free areas whenever feasible before operating in weed-infested areas.
- 6) The project proponent shall locate equipment storage, machine and vehicle parking or any other area needed for the temporary placement of people, machinery and supplies in areas that are relatively weed-free. The project proponent shall avoid or minimize all types of travel through weed-infested areas.
- 7) BLM or the project proponent shall determine equipment-cleaning sites. Project related equipment and machinery (this especially includes the nooks and crannies of undercarriages) will be cleaned using compressed air or water to remove mud, dirt and plant parts before entering the project site. Seeds and plant disposal methods will be determined in coordination with the BLM Weed Specialist based on species present.
- 8) Fire prevention measures must be established where problematic annual grass infestations (such as red brome and cheat grass) are present. Compliance with fire restrictions is mandatory while fire restrictions are in place. Fire restrictions are generally enacted between May 15 and October 1. Specific noncompliant activities may be waived on a case by case basis by the District Manager after review and approval by the Fire Management Officer and Field Manager.
- 9) Reduce or remove flammable invasive species to the extent where infrastructure is protected from the direct impact of a wildland fire where needed.

Vegetation

- 1) Wherever possible, vegetation will be left in place. Where vegetation must be removed, the root structure will be preserved as feasible to allow for potential resprouting.
- 2) All temporary construction areas, including stringing sites and transmission structure work areas, that have been disturbed will be recontoured and restored as required by the landowner or land-management agency. The method of restoration typically will consist of seeding or revegetating with native plants (if required), installing cross drains for erosion control, and placing water bars in the road or centerline travel route. Seed used for revegetation will be certified as weed-free.
- 3) All temporarily impacted areas will be restored per Southern Nevada District Office restoration guidance.

Cactus/Yucca

- 1) If unable to be avoided, all cactus and yucca within permanent and temporary impact areas must be salvaged and replanted in temporary impact areas or undisturbed portions of the project area. Unless otherwise directed by the BLM botanist, all replanted cactus and yucca must be watered and otherwise maintained for a period of one year. To ensure successful salvage and transplant, all cactus and yucca must be salvage using a contractor (or other approved by the BLM botanist) with at least three years' experience salvaging and maintaining plant materials in the Mojave or Sonoran Deserts.

Wildlife Sensitive Species

- 1) Prior to construction (including ROW clearing and access road construction), biological surveys of the project area will be conducted by a competent biologist. The biologist will conduct surveys for sensitive plant and animal species in the appropriate season.
- 2) Excavations left open overnight will be covered or fenced securely to prevent wildlife from falling into open excavations.

- 3) The number of areas where wildlife could hide or be trapped (e.g., open sheds, pits, uncovered basins, and laydown areas) shall be minimized. Detention basins located in tortoise habitat would be designed to minimize risk to tortoise or fenced to avoid risk of entrapment.
- 4) Transmission Line Towers will be constructed to conform to those practices described in the Suggested Practices for Raptor Protection on Power Lines Manual developed by the Edison Electric Institute.

Cultural and Paleontological Resources

- 1) A cultural resource inventory survey will be conducted prior to construction as determined necessary after consultation with BLM biologists. Unevaluated cultural sites will be tested to determine their eligibility status.
- 2) The applicant will avoid cultural sites identified as eligible for inclusion on the National Register of Historic Places.
- 3) Prior to construction, the applicant and/or its contractors will advise workers and individuals as necessary regarding the potential to encounter historic or prehistoric sites and objects, proper procedures in the event that cultural items or human remains are encountered, prohibitions on artifact collection, and respect for Native American religious concerns.
- 4) If potential resources are found, work will be halted immediately within a minimum distance of 300 feet from the discovery, and a professional archaeologist (holding a valid Cultural Resources Permit from the state BLM) will be mobilized to the site to evaluate the find and determine appropriate further step and mitigation measures as necessary. Any cultural and/or paleontological resource discovered during construction on public or land will be reported immediately to the BLM. Work will not commence until the BLM issues a notice to proceed. The BLM will notify and consult with SHPO and appropriate Tribes on eligibility and suitable treatment options. If significant resources are discovered, they will be recovered, transported, and stored at an approved curation facility that meets the standards specified in Title 36 of the Code of Federal Regulations (CFR) Part 79.
- 5) If human remains are encountered during project construction, all work within 300 feet of the remains will cease, and the remains will be protected. If the remains are on land managed by the BLM, BLM representatives will be immediately notified. If the remains are Native American, the BLM will follow the procedures set forth in 43 CFR Part 10, Native American Graves Protection and Repatriation Regulations. If the remains are located on state or private lands, the SHPO and the BLM will be notified immediately.

Hazardous Materials and Waste

- 1) All construction vehicles will be maintained in accordance with the manufacturers' recommendations. All vehicles will be inspected for leaks prior to entering the jobsite.
- 2) All discovered leaks will be contained with a bucket or absorbent materials until repairs can be made.
- 3) All hazardous waste materials will be properly labeled in accordance with Title 40 of the CFR Part 262.
- 4) Spilled material of any type will be cleaned up immediately. A shovel and spill kit will be maintained on site at all times to respond to spills.
- 5) All sanitary wastes will be collected in portable, self-contained toilets at all construction staging areas and other construction operation areas and managed in accordance with local requirements.

Air Quality

- 1) **The applicant and/or its contractor will implement will prepare and implement an Enhanced Fugitive Dust Plan to minimize fugitive dust emissions generated from project construction activities. The Enhanced Fugitive Dust Plan will be submitted to the Clark County Planning Department and will be prepared in accordance with the county or state. At a minimum, the Enhanced Fugitive Dust Plan will discuss enforcement of dust control requirements; environmental training; and dust control measures to be implemented during construction.**

Appendix C: USFWS Burrowing Owl Mitigation at Construction Sites

Appendix C. USFWS Burrowing Owl Mitigation at Construction Sites

U.S. Fish and Wildlife Service

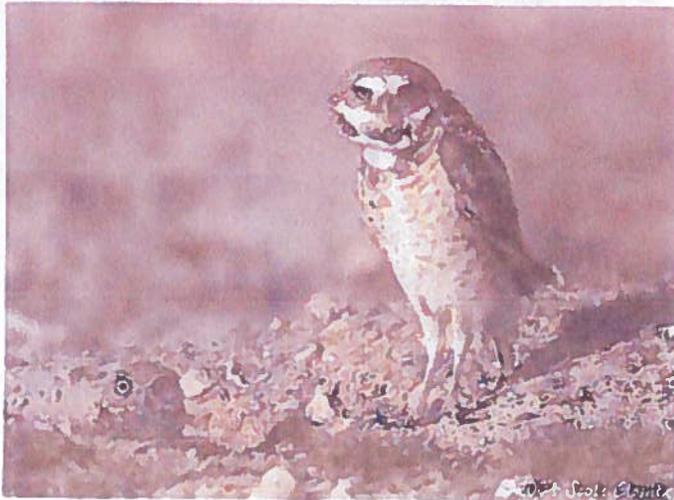
Nevada Fish and Wildlife Office
Conserving the Biological Diversity of Great Basin, Eastern Sierra
& Mojave Desert

PROTECTING BURROWING OWLS AT CONSTRUCTION SITES IN NEVADA'S MOJAVE DESERT REGION



Burrowing owl numbers are declining despite protection under the Migratory Bird Treaty Act. Killing or possessing these birds or destruction of their eggs or nest is prohibited.

Be part of the solution: help these owls!



U.S. Fish and Wildlife Service
Nevada Fish and Wildlife Office
4701 N. Tarry Pines Drive
Las Vegas, NV 89180
Phone: 702-616-6280
Fax: 702-616-6231

<http://www.fws.gov/nevada>

U.S.F.W.S. Brochure on Protecting Burrowing Owls at Construction Sites (Cover Panel and Back Panel).

Appendix C USFWS Burrowing Owl Mitigation at Construction Sites

Though burrowing owls are capable of digging their own burrows, they often will use burrows of other animals for shelter and nesting. They will even adopt pipes or culverts 6" to 8" in diameter.

Tips for Protecting Burrowing Owls, Their Eggs and Young at Construction Sites:

Even though burrowing owls are often active during the day, always check burrows, cracks, and crevices for owls before beginning construction. Use of a fiberoptic scope or remote mini-camera to look into a burrow can help determine the presence of owls or nests. Ensure owls and eggs are not present in burrows when grading begins, to avoid burying them.

In southern Nevada, owls breed from about mid-March through August. If a burrow has an active nest, the site must be avoided until the chicks have fledged. To ensure that birds will not abandon the nest, a buffer of at least a 250-foot radius should be placed around the burrow, within which no construction should occur. It takes a minimum of 74 days from when eggs are laid until chicks are able to fly (fledge). After the young have fledged, check the nest burrow for any owlets before resuming construction.

The following owl behaviors may help determine breeding or the presence of an active nest:

- A pair of owls is initially observed at a site, then only one owl is observed. This may indicate that the pair has chosen a nest burrow, and the female has gone down into the burrow to lay and incubate eggs. Once incubation begins the female rarely leaves the burrow.
- An owl is frequently observed carrying food to the burrow. The male provides food for the female while she is incubating eggs. The best time of day to observe owls is dawn and dusk, but they may be active throughout the day. The male will most likely leave the food in front of the burrow and the female will come to the entrance to take

the food. This is probably the best indication that the owls have an active nest.

- Only one owl has been seen for a period of time; then, two owls are observed. This may indicate that either the nest has failed, or the eggs have hatched, and the female has emerged from the burrow to assist the male in hunting for food to feed the chicks. The chicks will appear at the burrow entrance when they are about 10 days old.

If you are unsure of breeding status, seek the assistance of a professional biologist or other knowledgeable person. Should breeding behavior be observed, presence of an active nest should be assumed and the area avoided until the chicks have fledged or the nest is no longer occupied.

IMPORTANT! In the Mojave Desert portions of Clark, southern Lincoln and Nye counties, owls may use desert tortoise burrows for nesting and shelter. Desert tortoises are protected under the Endangered Species Act. Killing, harassing or harassing desert tortoises, including destruction of their nests with eggs, without prior authorization is prohibited by Federal law.

• IF YOUR PROJECT IS IN CLARK COUNTY, PLEASE READ ON:

Clark County holds a permit from the U.S. Fish & Wildlife Service authorizing "take" of desert tortoises during the course of otherwise legal activities on non-federal lands. In Clark County only, discouraging burrowing owls from breeding in the construction site on private property is allowed by collapsing tortoise burrows during the owl non-breeding season (September through February). This may help avoid construction delays. Prior to collapsing a burrow, always check for owls or other protected wildlife occupying the burrow for the winter. Call the Nevada Department of Wildlife at 702-466-6127 if a Gila monster is found as this is a State protected species.

Thank you for your assistance in protecting migratory birds and Nevada's endangered and threatened species!

U.S.F.W.S. Brochure on Protecting Burrowing Owls at Construction Sites (inside panels).

Appendix D: NDOW Gila Monster Mitigation

Appendix D. NDOW Gila Monster Mitigation



NEVADA DEPARTMENT OF WILDLIFE
Southern Region
4747 W Vegas Drive, Las Vegas, Nevada 89108
Phone: 702-486-5127, Fax: 702-486-5133



1 November 2007

GILA MONSTER STATUS, IDENTIFICATION AND REPORTING PROTOCOL FOR OBSERVATIONS

Gila Monster Status

- Per Nevada Administrative Code 503.080, the Gila monster (*Heloderma suspectum*) is classified as a Protected reptile.
- Per Nevada Administrative Codes 503.090, and 503.093, no person shall capture, kill, or possess any part thereof of Protected wildlife without the prior written permission by the Nevada Department of Wildlife (NDOW).

This species is rarely observed relative to other species which is the primary reason for its Protected classification by the State of Nevada. The USDI Bureau of Land Management has recognized this lizard as a sensitive species since 1978. Most recently, the Gila monster was designated as an Evaluation species under Clark County's Multiple Species Habitat Conservation Plan (MSHCP). The evaluation designation was warranted because inadequate information exists to determine if mitigation facilitated by the MSHCP would demonstrably cover conservation actions necessary to insure the species' persistence without protective intervention as provided under the federal Endangered Species Act.

The banded Gila monster (*H.s. cinctum*) is the subspecies that occurs in Clark, Lincoln, and Nye counties of Nevada. Found mainly below 5,000 feet elevation, its geographic range approximates that of the desert tortoise (*Gopherus agassizii*) and is coincident to the Colorado River drainage. Gila monster habitat requirements center on desert wash, spring and riparian habitats that inter-digitate primarily with complex rocky landscapes of upland desert scrub. They will use and are occasionally encountered out in gentler terrain of alluvial fans (bajadas). Hence, Gila monster habitat bridges and overlaps that of both the desert tortoise and chuckwalla (*Sauromalus ater*). Gila monsters are secretive and difficult to locate, spending >95% of their lives underground.

The Gila monster is the only venomous lizard endemic to the United States. Its behavioral disposition is somewhat docile and avoids confrontation. But it will readily defend itself if threatened. Most bites are considered illegitimate and consequential to harassment or careless handling. These lizards are not dangerous unless molested or handled and should not be killed.

Scant information exists on detailed distribution and relative abundance in Nevada. The Nevada Department of Wildlife (NDOW) has ongoing management investigations addressing the Gila monster's status and distribution, hence additional distribution, habitat, and biological

Page 1 of 3

information is of utmost interest. In assistance to gathering additional information about Gila monsters in Nevada, NDOW will be notified whenever a Gila monster is encountered or observed, and under what circumstances (see Reporting Protocol below).

Identification



The Gila monster is recognizable by its striking black and orange-pink coloration and bumpy, or beaded, skin. In keeping with its namesake, the banded Gila monster retains a black chain-link, banded appearance into adulthood. Other lizard species are often mistaken for the Gila monster. Of these, the non-venomous western banded gecko (*Coleonyx variegatus*) and non-venomous chuckwallas are most frequently confused with the Gila monster. All three species share the same habitats.

The western banded gecko is often mistakenly identified as a baby or juvenile Gila monster. Western banded geckos do have a finely granular skin and pattern that can be suggestive of the Gila monster to the untrained eye. However, western banded gecko heads are somewhat pointed at the snout and the relatively large eyes have vertical pupils. Snouts of Gila monsters are bluntly rounded and the smallish eyes have round pupils. Newly hatched Gila monsters are about 5-6 inches long with a vivid orange and black, banded pattern. Adult western banded geckos are at best cream to yellow and brown in pattern and do not exceed 5 inches.



Both juvenile and adult chuckwallas are commonly confused with the Gila monster. Juvenile chuckwallas have an orange and black, banded tail. Although banding of the tail fades as chuckwallas mature, their large adult size (up to 17 inches) rivals that of the Gila monster. Adult chuckwallas have a body shape somewhat suggestive of the Gila monster, but they lack the coarsely beaded skin and black and orange body pattern of the Gila monster.

Reporting Protocol for Gila Monster Observations

Field workers and personnel in southern Nevada should at least know how to: (1) identify Gila monsters and be able to distinguish it from other lizards such as chuckwallas and western banded geckos (see Identification section above); (2) report any observations of Gila monsters to the Nevada Department of Wildlife (NDOW); (3) be alerted to the consequences of a Gila monster bite resulting from carelessness or unnecessary harassment; and (4) be aware of protective measures provided under state law.

- 1) Live Gila monsters found in harms way on the construction site will be captured and then

detained in a cool, shaded environment ($\leq 85^{\circ}\text{F}$) by the project biologist or equivalent personnel until a NDOW biologist can arrive for documentation, marking and obtaining biological measurements and samples prior to re-casing. Despite that a Gila monster is venomous and can deliver a serious bite, its relatively slow gait allows for it to be easily coaxed or lifted into an open bucket or box carefully using a long handled instrument such as a shovel or snake hook (*Note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points*). A clean 5-gallon plastic bucket w/ a secure, vented lid, an 18"x 18"x 4" plastic sweater box w/ a secure, vented lid, or, a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location, Global Positioning System (GPS) coordinates in Universal Transverse Mercator (UTM) using the North American Datum (NAD) 83 zone 11, Date, time, and circumstances (e.g. biological survey or construction) and habitat description (vegetation, slope, aspect, substrate) will also be provided to NDOW.

- 2) Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Rehabilitation or euthanasia expenses will not be covered by NDOW. However, NDOW will be immediately notified of any injury to a Gila monster and which veterinarian is providing care for the animal. If an animal is killed or found dead, the carcass will be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, date, time, habitat, and mapped location (GPS coordinates in UTM using NAD 83 Z 11).
- 3) Should NDOW's assistance be delayed, biological or equivalent acting personnel on site should detain the Gila monster out of harm's way until NDOW personnel can respond. The Gila monster should be detained until NDOW biologists have responded. Should NDOW not be immediately available to respond for photo-documentation, a digital (5 megapixel or higher) or 35mm camera will be used to take good quality images of the Gila monster *in situ* at the location of live encounter or dead salvage. The pictures will be provided to NDOW at the address above or the email address below along with specific location information including GPS coordinates in UTM using NAD 83 Z 11, date, time and habitat description. Pictures will show the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).

Please contact NDOW Biologist Polly Conrad at (702) 486-5127 x3718 or by e-mail at pconrad@ndow.org for additional information regarding these protocols

Appendix E: Biological Opinion



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130
Ph: (702) 515-5230 ~ Fax: (702) 515-5231

December 28, 2012
File No. 84320-2012-F-0380

Memorandum

To: Field Manager, Las Vegas Field Office, Bureau of Land Management,
Las Vegas, Nevada

From: State Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Formal Consultation for the Techren Boulder City Solar Project, Boulder City,
Clark County, Nevada

This transmits the Fish and Wildlife Service's (Service) biological opinion in response to your memorandum received June 11, 2012, requesting initiation of formal consultation for the Techren Boulder City Solar Project. The Bureau of Land Management (BLM) determined that the proposed issuance of a right-of-way for the project may adversely affect the Mojave desert tortoise (*Gopherus agassizii*), a species listed as threatened under the Endangered Species Act of 1973, as amended [16 U.S.C. 1531 *et seq.*; 87 Stat. 884]. The project is not located on federally designated critical habitat so it will not be analyzed in the biological opinion.

The attached biological opinion is based on information provided in your memorandum dated June 11, 2012, and the attached biological assessment for the project; discussions between the Service and BLM; and our files. A complete project file of this consultation is available in the Service's Nevada Fish and Wildlife Office in Las Vegas.

If you require additional assistance, please contact Brian A. Novosak in the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230. Please reference the file number above in future correspondence concerning this consultation.

Edward D. Koch

Attachment

cc:
Adaptive Management Coordinator, Desert Conservation Program, Las Vegas, Nevada
Director, Public Works, City of Boulder City, Boulder City, Nevada
Supervisory Biologist – Habitat, Nevada Department of Wildlife, Las Vegas, Nevada

NEVADA BLM SECTION 7 LAND DISTURBANCE FEE PAYMENT FORM

Biological Opinion File Number: 84320-2012-F-0380
Biological Opinion Issued By: Nevada Fish and Wildlife Office, Las Vegas, Nevada
Species: Mojave Desert Tortoise (*Gopherus agassizii*)
Project Name: Techren Boulder City Solar Project
Applicant: Techren Solar, LLC
Phone Number: _____

Payment Calculations:	Clark County		_____ County		_____ County	
	Critical habitat	Non-critical habitat	Critical habitat	Non-critical habitat	Critical habitat	Non-critical habitat
# acres anticipated to be disturbed on federal land	-	4.3				
Fee rate (per acre)	-	\$810.00				
Subtotals	-	\$3,483.00				
Total cost per county	\$ 3,483.00		\$	-	\$	-

Amount paid: _____ **Date:** _____ **Check/Money Order #:** _____

Authorizing agencies: Bureau of Land Management, Las Vegas Nevada

Make check payable to: Bureau of Land Management

Deliver check to:	<u>Physical Address</u> Bureau of Land Management Attn: Information Access Ctr 1340 Financial Blvd. Reno, NV 89502	<u>PO Box</u> Bureau of Land Management Attn: Information Access Ctr PO Box 12000 Reno, NV 89520-0006
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For BLM Public Room

Process check to:
 Contributed Funds-All Other
 WBS: LVTF1000800
 7122 FLPMA
 All other Res. Dev. Project and Management
 Remarks: LLNV9300000 L71220000.JP0000 LVTF1000800 Desert
 Tortoise Conservation Program

Please provide a copy of this completed payment form
 and the payment receipt to NV-830, Attn: T&E Program
 Lead

**T&E Program Lead will provide a copy to the
 appropriate District Office(s)

ATTACHMENT

BIOLOGICAL OPINION

A. CONSULTATION HISTORY

- June 20, 2011: The Fish and Wildlife Service (Service) received a request for a species list for this project.
- July 27, 2011: The Service responded to the request notifying them that the Mojave desert tortoise (*Gopherus agassizii*) is the only federally listed species that is likely to occur in the project area (File No. 84320-2011-SL-0313).
- June 11, 2012: The Bureau of Land Management (BLM) requested initiation of formal consultation and provided the Service with the project's biological assessment (BA).
- July 2, 2012: The Service spoke with BLM acknowledging receipt of their request for consultation and the Service's determination that the information provided in the BA was sufficient to initiate formal consultation on June 11, 2012. Based on the initiation date, the biological opinion would be completed no later than October 24, 2012. We decided that this biological opinion should be appended to the upcoming formal programmatic biological consultation for the Southern Nevada District Office, BLM (File No. 84320-2010-F-0365) (SNDO PBO). The Service anticipated completion date for the SNDO PBO was early October 2012.
- October 22, 2012: The Service informed BLM via email that we now anticipate the SNDO PBO to be completed by October 31, 2012, and notified them of our extension. We committed to issue an individual biological opinion for this project no later than November 6, 2012, if the SNDO PBO was not completed by that time.
- November 6, 2012: We notified BLM we were unable to complete the biological opinion by November 6, 2012, due to workload constraints and would issue it as soon as possible.

B. DESCRIPTION OF THE PROPOSED ACTION

1. Summary

The applicant, Techren Solar, LLC, proposes to construct, own, and operate a 300-megawatt (MW) photovoltaic solar energy-generating facility (power plant) on 2,200 acres (ac) of Boulder

City-owned land within the Eldorado Energy Zone approximately 8.5 miles southwest of Boulder City, Nevada. Additionally, the applicant also proposes to construct, own, and operate a 4.6-mile 230-kilovolt (kV) generation-tie (gen-tie) power line on 4.3 ac of BLM-administered right-of-way (ROW) utility corridor to connect the proposed power plant to the Eldorado Substation and McCullough Switching Station (Figure 1 in BLM 2012). Because the power plant would not be constructed except for the proposed gen-tie lines, the power plant is considered an interdependent action under our regulations.

Project components that would affect the desert tortoise include construction, operation, and maintenance of the power plant and the gen-tie line. A detailed description of the proposed project is available in the BA and is hereby incorporated by reference (BLM 2012).

2. Timing

Construction of the power plant would begin in the first quarter of 2013 and last approximately 18 months. Construction for the gen-tie line also would begin in the first quarter of 2013 and last approximately 3 months. Daily construction activities would occur from Monday through Friday, 7:00 am to 5:00 pm.

3. Construction activities

Construction would occur in the following sequence: surveying, staking, and flagging the structure locations and utility corridor; clearing access roads and staging areas; drilling foundations and installing structures; stringing the overhead line; then interim reclamation.

a. Surveying and staking

A three-man survey crew would use pickup trucks to stake the boundary of the construction area and flag the edge of the roads. They would mainly use existing roads, but may be required to travel off road. They would be escorted by a biological monitor in a truck on existing roads and escorted on foot if travelling off road.

b. Clearing roads and staging areas

The ROW would be 200 feet wide. Workers would access the project area using existing roads. The power plant site would be bladed and graded to achieve a flat, vegetation-free surface. The gen-tie line access road would use existing roads. Short access spur roads would be bladed and graded to create cleared areas for the base of the gen-tie towers. No turn-around areas would be constructed. Staging areas would be located within the footprint of the power plant.

c. Foundation construction

Power poles would be 230-kV double circuit, single, tubular steel. They would be 90 to 100 feet tall and placed every 500 to 1,200 feet apart. Foundations areas would be 400 square feet each for a total of 0.3 acre of disturbance for all poles. Holes would be drilled and poles would be placed 14 feet deep. Poles would be erected using a line truck and a crane.

d. Stringing overhead line

Once the poles are vertical and secure in place, the electric wire would be strung on the poles via a drum puller, a splice truck, a wire reel trailer, and two pickup trucks. Two 2-acre sites (4 ac) would be needed for wire pulling sites.

e. Interim reclamation

Following construction, temporary areas used during construction will be reclaimed leaving approximately 27 square feet per pole.

4. Operation and maintenance

a. Timing

The power plant would go into operation as soon as the gen-tie line is completed. Up to four inspections will occur per year for the gen-tie line.

b. Operation and maintenance

The project would have a minimum lifespan of 40 years. The gen-tie lines and power plant would be managed, remotely monitored, and controlled by five employees. Occasionally, there would be up to 10 contract workers on site to conduct periodic maintenance or repair activities. Routine repairs consist of replacing damaged insulators, conductors, and pole repairs.

5. Decommission

Although the project would have a minimum lifespan of 40 years, no future requirement to cease operations or close the site is anticipated. However, if the project is decommissioned, the gen-tie line, including support structures, would be removed, and the power plant site would be restored to pre-construction conditions. At that time, the applicant would prepare a reclamation plan for BLM approval.

6. Applicant committed measures

The applicant and their contractors commit to avoid or minimize effects to the desert tortoise from construction and operation of the project by:

- providing an environmental awareness program to construction personnel;
- checking under vehicles and capping pipes greater than 3 inches;
- preventing pets on the project site;
- requiring biological monitors on-site during construction;
- conducting clearance surveys for desert tortoises prior to construction activity;
- handling desert tortoises using Service guidance;
- minimizing the area disturbed by clearing, earthmoving, or excavating;

- keeping all construction vehicles within the project area;
- enforcing a speed limit of 25 miles per hour (mph) on access roads and within the project area;
- disposing of food-related trash in predator-proof containers to discourage opportunistic desert tortoise predators such as desert kit fox, coyotes, and ravens from entering the area;
- conducting proper vehicle maintenance to prevent potential soil contamination from leaking liquid petroleum products;
- installing perch-deterrent devices on power poles to reduce the risk of predation from raptors and ravens, and
- complying with the terms and conditions of the section 10(a)(1)(B) incidental take permit under the Act for the Clark County Multiple Species Habitat Conservation Plan (MSHCP) (Permit No. TE-034927, File No. 1-5-00-FW-575) for the portion of the project that is located on private land (2,200 ac for power plant and 0.3 mile of gen-tie line).

A detailed description of the applicant-committed measures is hereby incorporated by reference and is available in the BA (BLM 2012).

7. BLM proposed measures

BLM proposes the following measures to ensure that the applicant and their contractors minimize potential adverse effects from the proposed project on the Mojave desert tortoise and its habitat in the BLM-administered corridor by:

- requiring remuneration fees and other measures to offset residual impacts to desert tortoises from permanent removal of their habitat, and
- requiring that structures be inspected annually for nesting ravens.

Remuneration fees would be used for management actions expected to promote recovery of the desert tortoise over time. Actions may include habitat acquisition, population or habitat enhancement, research to increase knowledge of the species' biological requirements, surveys to monitor and document the species' status and trend, and additional measures to preserve individuals and distinct population attributes (Hastey *et al.* 1991; BLM and Service 2010).

A detailed description of BLM's proposed mitigation measures is hereby incorporated by reference (BLM 2012).

C. STATUS OF THE SPECIES RANGEWIDE

The rangewide status of the Mojave desert tortoise and its critical habitat is provided in our 5-year review (Service 2010a), in the Revised Recovery Plan for the Mojave Population of the Desert Tortoise (Service 2011a), and on the Internet at http://www.fws.gov/nevada/desert_tortoise/dt_life.html.

The website write-up consists of information on desert tortoise listing history, species biology, recovery plan, recovery and critical habitat units, distribution, reproduction, and population estimates. The Nevada Fish and Wildlife Office in Las Vegas (702-515-5230) can also provide this information if given the project file number and the administrative date of February 9, 2012.

D. ENVIRONMENTAL BASELINE

Regulations implementing the Act define the environmental baseline as the past and present effects of all Federal, State, or private actions and other human activities in the action area (50 CFR § 402.02). Also included in the environmental baseline are the anticipated effects of all proposed Federal projects in the action area that have undergone section 7 consultation, and the effects of State and private actions that are contemporaneous with the consultation in progress.

1. Action area

The action area is defined as all areas to be affected directly or indirectly by the Federal action, including interrelated and interdependent actions, and not merely the immediate area involved in the action (50 CFR § 402.02). Subsequent analyses of the environmental baseline, effects of the action, cumulative effects, and levels of incidental take are based upon the action area as determined by the Service.

The action area is the Eldorado Energy Zone. The proposed project is in the Eldorado Valley in Clark County, approximately 8.5 miles southwest of Boulder City, Nevada. It is within the Northeastern Mojave Recovery Unit, one of five designated evolutionarily significant units within the range of the tortoise (Service 2011a). The Eldorado Valley is an internally drained basin bordered by the McCullough Range to the west, the River Mountains to the north, and the Eldorado Mountains and Opal Mountains to the east.

2. Status of the desert tortoise in the action area

The desert tortoise is distributed throughout the action area with the exception of the dry lakes and developed areas as indicated by the presence of tortoise sign, including burrows, scats, tracks, and bone elements (BLM 2012). Full coverage desert tortoise surveys were conducted on the proposed gen-tie line route and the power plant using approved Service protocol (Service 2010a). No live desert tortoises, one Class 3 (definitely desert tortoise) and two Class 4 (good condition) burrows were located within the action area (Figure 4 in BLM 2012).

Although limited desert tortoise sign was located, the action area is within desert tortoise habitat. Based on other recent surveys in the Eldorado Energy Zone (Service 2010b, 2011b, 2011c, 2011d), the Service estimates 10 adult and subadult desert tortoises to occur on the power plant and gen-tie areas (2,204.3 ac).

The amount of juveniles and eggs is presently unknown. Few studies have been conducted on determining the number of juveniles and eggs in a desert tortoise population (Turner *et al.* 1984, Turner *et al.* 1987; Bjurlin and Bissonette 2004), but these studies have limited value. Adult desert tortoises 100 mm (about 4 inches) long and larger have a much higher detectability than juveniles (less than 100 mm long) (Freilich and LaRue 1998). In addition to their limited detectability because of their small size and coloration, unknown factors that make determining the number of juveniles in the analysis area difficult are: (1) the number of eggs laid; (2) natural mortality rates of eggs and juveniles; and (3) predation rates of eggs and juveniles. In the absence of site-specific surveys, we base our estimate on the 2010 population density estimate for the Northeastern Mojave Recovery Unit (Service 2010c). The 2010 data estimates two adult desert tortoises for every one juvenile.

Since we expect 10 adult desert tortoises to occur in the construction and operation area, the Service expects 5 juvenile desert tortoises to occur in the construction and operation area.

For eggs, we use the size of disturbance as a surrogate for desert tortoise eggs. Unknown factors that make determining the number of eggs in the analysis area difficult are: 1) the sex ratio (males to females); 2) environmental and habitat conditions; 3) physiological and health conditions of adult female desert tortoises; 3) natural mortality rates of eggs; and 4) egg predation rates. Further, not all reproductive females produce eggs every year, the number of eggs is dependent on the time of the year, and the size of female desert tortoise territories varies.

3. Status of the habitat in the action area

The Eldorado Energy Zone is located on a dry lakebed (Eldorado Lake) and goes up an alluvial fan. The dry lakebed has no vegetation and is not desert tortoise habitat. The alluvial fan is dominated by Mojave creosote bursage and is very suitable desert tortoise habitat. The alluvial fan contains several desert washes. These washes are relatively undisturbed and provide habitat for desert tortoises.

4. Factors affecting the species in the action area

a. Current land uses

Land use activities in the action area that have disturbed the habitat and affected desert tortoise include three solar power plants, numerous transmission lines, an electrical substation and switchyard, numerous access roads (paved, graveled, and dirt), and dispersed all-terrain vehicle recreation on dirt roads and off-highway recreation on the dry lakebed. Historically, mining claims were active in the vicinity, but are no longer active.

b. Clark County Habitat Conservation Plan

On May 23, 1991, the Service issued a 3-year incidental take permit to Clark County (Permit No. PRT-756260; File No. 1-5-91-FW-40). The Service permitted incidental take of 3,710 desert tortoises on up to 9,046 hectares (ha) (22,352 ac) within the Las Vegas Valley and Boulder City in Clark County, Nevada. On July 29, 1994, the Service extended the term by 1 year and added 3,237 ha (8,000 ac) to the incidental take permit (File No. 1-5-94-FW-237). An estimated 1,300 desert tortoises were harmed or harassed, and 12,141 ha (30,000 ac) of habitat were disturbed under this permit.

On July 14, 1995, the Service issued an incidental take permit to Clark County and the NDOT (Permit No. PRT-801045; File No. 1-5-95-FW-233). The action area covered 143,663 ha (355,000 ac) in Clark, Lincoln, Esmeralda, Mineral, and Nye counties. The Service permitted take of all desert tortoises on 44,920 ha (111,000 ac) of nonfederal land in Clark County and an additional 1,174 ha (2,900 ac) associated with NDOT activities in desert tortoise habitat in the other counties.

On November 22, 2000, the Service issued a 30-year incidental take permit to Clark County and NDOT that supersedes the previous permit (Permit No. TE-034927; File No. 1-5-00-FW-575). The Service permitted incidental take of all desert tortoises on 58,679 ha (145,000 ac) in addition to the 44,920 ha (111,000 ac) in the 1995 permit within Clark County, Nevada.

As partial mitigation under the MSHCP, the County purchased a conservation easement from Boulder City in 1994. The term of the Boulder City Conservation Easement (BCCE) is for 50 years and it will be retained in a natural condition for recovery of the desert tortoise and conservation of other species in the area. Certain uses shall be prohibited within the BCCE including motor vehicle activity off designated roads, livestock grazing, and any activity that is inconsistent with the purposes of the BCCE. Much of the BCCE also is designated desert tortoise critical habitat. Within the boundary of the BCCE, Boulder City reserved the Solar Energy Zone for energy development projects in addition to adjacent energy generation facilities described previously.

c. Climate change

In addition, global climate change may affect recovery of the desert tortoise. The following information is summarized from the revised recovery plan for the desert tortoise (Service 2011a). Global climate change and drought are potentially important long-term considerations with respect to recovery of the desert tortoise. Recent climatic changes have affected a broad range of organisms with diverse geographical distributions (Walther *et al.* 2002). Although we do not have information regarding specific direct effects of climate change on the desert tortoise or its habitat, the Intergovernmental Panel on Climate Change has suggested a 6.3 to 7.2 °F increase in annual mean temperature, with the greatest increases occurring in summer (June-July-August mean up to 9 °F) increase (Christensen *et al.* 2007). Precipitation likely will decrease by 5 to 15 percent annually in the region, with winter precipitation decreasing in the range of 5 to 20 percent (Christensen *et al.* 2007).

Because germination of the desert tortoise's food plants is highly dependent on stable winter precipitation and temperature, the forage base could be reduced due to increasing temperatures and decreasing or unreliable precipitation during critical winter months. Winter precipitation in the Mojave Desert is much more reliable than the summer rains. One potential scenario is that the winter precipitation would shift to the north over time, leading to drier winters in the Mojave Desert, negatively impacting the growth of the spring annual plants. Spring annual plants, which are dependent on winter precipitation, provide essential forage for the desert tortoise. However, rainfall patterns may change in unpredictable ways, some areas may get wetter and other areas drier, with both situations altering desert tortoise habitat. Areas with increased rainfall would likely have increased growth of non-native, invasive species, altering the mixture of plants available for desert tortoise forage and changing the fire regime. Therefore, desert tortoise habitat may potentially change over the life of the project due to climate change. Further

predictions need to specifically be developed for the desert tortoise to help inform recovery efforts.

E. EFFECTS OF THE PROPOSED ACTION

1. Desert tortoise and its habitat

Direct effects are the immediate, often obvious effects of the proposed action on the desert tortoise or its designated critical habitat. Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR § 402.02). In contrast to direct effects, indirect effects can often be more subtle, and may affect desert tortoise populations and habitat quality over an extended period, long after project activities have been completed. Indirect effects are of particular concern for long-lived species such as the desert tortoise, because project-related effects may not become evident in individuals or populations until years later.

Although impacts would be lessened through implementation of applicant-committed measures and BLM proposed measures, not all impacts would be eliminated. The following measures are expected to minimize the impacts: (1) provide an environmental awareness program to construction personnel; (2) have biological monitors on-site during construction; (3) conduct clearance surveys for desert tortoise prior to construction activity; (4) enforce a speed limit of 25 mph within the project area; and (5) pay remuneration fees to offset residual impacts.

a. Remuneration fees

Remuneration fees would be used for management actions expected to promote recovery of the desert tortoise over time, including management and recovery of desert tortoise in Nevada. Actions may involve acquiring habitat, enhancing population or habitat, conducting research to increase knowledge of the species' biological requirements, reducing loss of individual animals, documenting the species' status and trend, and preserving distinct population attributes. Fees would be used to fund the highest priority recovery actions for desert tortoises in Nevada.

b. Scale of habitat disturbance

Studies suggest that differences in the magnitude of the threat to desert tortoises are related to the scale of the project, the ability of crews to avoid disturbing burrows, and the timing of construction (Boarman 2002). The proposed project is expected to result in permanent disturbance of 2,204.3 ac of desert tortoise habitat and will take place during the more active desert tortoise season. Because it is during the more active season, more desert tortoises may be present on the site than were observed during the pre-project surveys. Additionally, the desert tortoises will be wandering and may be difficult to keep out of the project area.

c. Vehicles

The greatest potential threats for incidental take of desert tortoises from the proposed action are vehicles driving over and crushing desert tortoises and desert tortoise entrapment in trenches. Incidental death and injury of desert tortoises could result from crushing during excavation

activities such as clearing, grubbing of vegetation, and trenching activities; entrapment in open trenches and pipes; and crushing by vehicles or heavy equipment (including instances when individuals take shelter under parked vehicles and are then killed or injured when vehicles are moved). Desert tortoises could be incidentally killed or injured by motor vehicles outside the project area, including vehicles driven by workers commuting to and from the project area. Any tortoise on an access road during project hours would be highly vulnerable. Project equipment or vehicles that stray from designated areas or widen existing access roads may incidentally crush desert tortoises (aboveground or in their burrows) and damage habitat outside the project area. Tortoises that wander into the construction work area and are not located before project activities commence could be incidentally killed or injured. Additional committed measures by the applicant to keep all construction vehicles within the project area and check under vehicles prior to moving them are expected to minimize these effects.

d. Predation/collection

Project personnel could illegally collect tortoises (intending to keep or sell them as pets) or bring dogs to the project area. The additional committed measure by the applicant to restrict construction personnel from bringing pets to the project area are expected to minimize these effects.

e. Litter and predation

Project activities may produce food-related trash and litter that attracts tortoise predators such as ravens, kit foxes, and coyotes (BLM 1990; Boarman and Berry 1995). Natural predation in undisturbed, healthy ecosystems is generally not an issue of concern. However, predation rates may be altered when natural habitats are disturbed or modified. Ravens use power poles and other tall structures as nest sites; their presence threatens small tortoises in the area surrounding the nest site (Boarman 2002). The majority of raven predation occurs during the spring and is most likely accomplished by breeding birds (Boarman 2002). Raven populations in some areas of the Mojave Desert have increased 1,500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman 1992). Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered an unnatural occurrence (BLM 1990). To minimize litter and predation effects, the applicant would implement additional committed measures; specifically, the applicant would dispose of food-related trash in predator-proof containers, install perch-d discouraging devices on power poles, and monitor nesting of ravens.

Tortoises may ingest some forms of trash or become entangled in trash or litter; either situation can result in their injury or death. The additional committed measure by the applicant to dispose of trash in predator-proof containers would minimize these effects.

f. Capture and relocation

Tortoises that are physically moved out of project areas to prevent mortality or injury could be inadvertently harmed if not handled properly. The tortoises' large urine bladder enables them to consume large quantities of free water when available and to use that water to maintain hydration during periods when free water or succulent plants are not available. Urine and large amounts of urates may be voided during handling and may represent a severe water loss, particularly to juveniles (Averill-Murray 2002). Overheating can occur if tortoises are not placed in the shade when ambient temperatures equal or exceed temperature maximums for the species (Service

2009). The additional committed measures by the applicant to handle desert tortoises using the most current Service-approved guidance (Service 2009) would minimize these effects.

2. Recovery

The project would impact desert tortoise habitat, but not priority conservation areas identified in the revised recovery plan (Service 2011a). The disturbed portion of the action area contributes toward recovery by providing space and habitat connectivity, allowing unobstructed tortoise movements across contiguous desert tortoise home ranges. Although the action area continues to provide habitat connectivity, tortoises that cross the disturbed ROW would be exposed to predators.

3. Conclusion

The Service reviewed the best currently available information, including reported survey information and take from biological opinions issued in the action area (see *Environmental Baseline*). We adjusted the densities of desert tortoise surveys and reported desert tortoise take by acre from other projects in the action areas and compared that to the acreage of this project footprint. This modification allowed us to more accurately estimate take for the project. This is the best currently available information.

a. BLM-administered corridor

Within the desert tortoise habitat in the BLM-administered corridor, which includes 4.3 ac, we expect that no adult and subadult and 1 juvenile desert tortoises will be killed or injured; no more than 2 adults and all juvenile desert tortoises will be taken through harassment via capture and relocation. Given the difficulty in detecting eggs and juveniles, we anticipate that most eggs and juveniles in the project area to be injured, killed, or destroyed due to project activities. For eggs, we use the size of disturbance as a surrogate for desert tortoise eggs. This estimate is based on pre-project survey data and data gathered from previous actions within the action area (see *Status of the desert tortoise in the action area*).

b. Private land

Within the desert tortoise habitat on private land, which includes 2,200 ac, the effects were analyzed in the biological opinion issued for the MSHCP (File No. 1-5-00-FW-575). The Service permitted all desert tortoises on the 2,200 ac may be taken as a result of the proposed action. We expect that no adult and subadult and four juvenile desert tortoises will be killed or injured; no more than seven adults and all juvenile desert tortoises will be taken through harassment via capture and relocation. Given the difficulty in detecting eggs and juveniles, we anticipate that most eggs and juveniles in the project area to be injured, killed, or destroyed due to project activities. For eggs, we use the size of disturbance as a surrogate for desert tortoise eggs. This estimate is based on pre-project survey data and data gathered from previous actions within the action area (see *Status of the desert tortoise in the action area*).

c. Recovery

We do not anticipate the proposed project would impede the recovery potential of the species because: (1) the impacts would occur within a utility corridor that is already degraded from construction and operation and maintenance of existing utility infrastructure; (2) raven impacts

from the gen-tie line would be monitored and managed to ensure that the project will not result in an increase in ravens in the action area; (3) the size and scope of the proposed action and its footprint is relatively small when compared to the range of the species; and (4) juvenile desert tortoise and desert tortoise eggs have a lower conservation value than adult desert tortoises because younger age classes have a naturally high mortality rate (up to 99 percent) and do not reproduce until sexual maturity (15 to 20 years old) (Service 1994) thus this loss would not impede the recovery potential of the species.

F. CUMULATIVE EFFECTS

Cumulative effects are those effects of future non-Federal (State, tribal, local government, or private) activities that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Projects that do not have a Federal nexus include three proposed solar energy facilities on Boulder City, Nevada lands and a small mining operation. These proposed projects could disturb approximately 8,692 ac.

Increased development would cause continued habitat loss, degradation, and fragmentation for the local desert tortoise population, as well as increased harm and harassment of individual desert tortoises, contributing to the cumulative degradation of the area. Planned future actions such as future industrial solar power plants would likely continue this trend. However, we know of no specific proposal by any non-Federal entity in the action area. Most other future actions in the action area likely would require section 7 consultation because the action area is administered by BLM.

G. CONCLUSION

Based on the best available information regarding the project, the Service estimates that no adult and subadult desert tortoises will be killed or injured, no more than 10 adults will be taken through harassment via capture and relocation, and all juveniles and eggs will be injured, killed, or destroyed due to project activities.

H. JEOPARDY DETERMINATION

Section 7(a)(2) of the Act requires Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed Federal action, and any cumulative effects, on the rangewide survival and recovery of the desert tortoise. It relies on four components: (1) the Status of the Species, which describes the rangewide

condition of the desert tortoise, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the desert tortoise in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the desert tortoise; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the desert tortoise; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the desert tortoise.

After reviewing the effects of the proposed project, and the cumulative effects, against the current status of the desert tortoise, its critical habitat, and the environmental baseline for the analysis area, it is the Service's biological opinion that the project, as proposed and analyzed, is not likely to jeopardize the continued existence of the threatened Mojave desert tortoise. These conclusions are based on the following assumptions:

- The applicant and their contractors will implement all the applicant-committed measures, as modified by BLM, and the terms and conditions of the BLM ROW grant, including those in the Las Vegas Resource Management Plan (RMP) (BLM 1998).
- Intense clearance surveys for desert tortoise will locate all adult and subadult desert tortoises within the areas to be disturbed.
- For desert tortoises not located during clearance surveys, a qualified biologist will be on-site and will halt nonemergency construction activities for a desert tortoise in harm's way, and activities that are not in compliance with the applicant-committed environmental protection measures.
- Desert tortoises that are moved out of harm's way and placed within their home range will remain in the wild with no long-term effects to survival and reproduction.
- Perch-deterrent devices installed on new power lines will decrease the risk of predation to desert tortoises from raptors and ravens.
- The proposed action will not kill or injure any adults, harass more than 10 adults, and this number, based on the best currently available information, will not result in a level of take of desert tortoises that would significantly affect the rangewide number, distribution, or reproduction of the species.
- The proposed project will not result in permanent loss of more than 2,204.3 ac of desert tortoise habitat.
- Juvenile desert tortoise and desert tortoise egg have a lower conservation value than adult desert tortoises because younger age classes have a naturally high mortality rate (up to 99 percent) and do not reproduce until sexual maturity (15 to 20 years old) (Service 1994a).

INCIDENTAL TAKE STATEMENT

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

In the BLM-administered corridor, the incidental take is authorized under the terms of section 7(b)(4) and section 7(o)(2). This take is incidental to and not intended as part of the agency action and is not considered to be prohibited taking under the Act provided that such taking is in compliance with the Terms and Conditions of an incidental take statement. BLM, and other jurisdictional Federal agencies, have a continuing duty to regulate the activities covered by the Incidental Take Statement in the biological opinion. If BLM, and other jurisdictional Federal agencies, fail to include the Terms and Conditions of this Incidental Take Statement as enforceable conditions of its discretionary action, the protective coverage of section 7(o)(2) may lapse. To monitor the effect of incidental take, BLM must report the progress of its action and its effects on the desert tortoise to the Service as specified in the Incidental Take Statement [50 CFR § 402.14(i)(3)].

On private lands, take of desert tortoises is permitted under section 10(a)(1)(B). The incidental take permit for the Clark County MSHCP (Permit No. TE-034927; File No. 1-5-00-FW-575). By complying with the section 10(a)(1)(B) incidental take permit and MSHCP, effects of the proposed action on private land will be minimized and mitigated through implementation of measures administered through MSHCP activities and programs.

1. Amount of take anticipated

Based on the scope of the proposed action, the desert tortoise survey data, analysis of impacts provided above, measures proposed by BLM, and the anticipated project duration, the Service anticipates that the following take could occur within the BLM ROW as a result of the proposed action:

Exempted mortality, injury, and destruction			Exempted harassment: Capture and removal			Anticipated habitat loss (ac)	
Adult (>100mm)	Juvenile (<100mm)	Eggs	Adult (>100mm)	Juvenile (<100mm)	Eggs	Critical	Non-critical
0	1	See Anticipated Habitat Loss	2	All in harm's way		0	4.3

2. Reasonable and Prudent Measures with Terms and Conditions

The Reasonable and Prudent Measures (RPMs) are intended to clarify or supplement the protective measures that were proposed by BLM as part of the proposed action. The RPMs, with their implementing Terms and Conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, the level of incidental take is reached or exceeded, such incidental take represents new information, requiring reinitiation of consultation and review of the RPMs provided. BLM must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the RPMs.

The Terms and Conditions may include: (1) restating measures committed by the applicant and proposed by BLM; (2) modifying the measures proposed; or (3) specifying additional measures considered necessary by the Service. Where these Terms and Conditions vary from or contradict the minimization measures proposed *Description of the proposed action* and discussed in the BA, the specifications in these Terms and Conditions shall apply.

In order for the exemption in section 7(o)(2) to apply, the measures described below are nondiscretionary and must be implemented by the BLM and other jurisdictional federal agencies so that they become binding conditions of any project, contract, grant, or permit issued by the BLM and any other jurisdictional federal agencies as appropriate. These conditions only apply to the BLM-administered portion of the project.

RPM 1: *Impacts to Mojave desert tortoises – BLM, and other jurisdictional Federal agencies as appropriate, shall ensure their agency personnel, the applicant, and their contractors implement the following measures to minimize injury and mortality of desert tortoises due to project-related construction, operation, and decommission:*

Terms and Conditions:

- 1. a. Applicant-committed measures – BLM shall ensure that the applicant and their contractors implement all the applicant-committed measures, as modified by the Service and BLM, and the BLM terms and conditions of the ROW grant, including those required in the Las Vegas RMP (BLM 1998).

1. b. **Timing of construction**—BLM shall ensure that when possible, the applicant schedules and conducts construction, operation, and maintenance activities within desert tortoise habitat during the less-active season (generally October 31 to March 1) or during periods of reduced desert tortoise activity (typically when ambient temperatures are less than 60 or greater than 95°F).

All vehicles and equipment that are not in areas enclosed by desert tortoise exclusion fencing will stop activities in desert tortoise habitat during rainfall events in the more-active season (generally March 1 to October 31), and if temperatures are above 60 but below 95°F for more than seven consecutive days. The Field Contact Representative (FCR) or designee will determine, in coordination with BLM and the Service, when it is appropriate for project activities to continue.

1. c. **Field Contact Representative**—BLM shall ensure an FCR (also called a Compliance Inspection Contractor, or CIC) is designated for each contiguous stretch of construction activity. The FCR will serve as an agent of the BLM and the Service to ensure that all instances of noncompliance or incidental take are reported. BLM has discretion over approval of potential FCRs; however, those who will also be acting as authorized desert tortoise biologists must also be approved by the Service (see Term and Condition 1.d.).

The FCR and authorized desert tortoise biologist shall have a copy of all stipulations when work is being conducted on the site and will be responsible for overseeing compliance with terms and conditions of the ROW grant, including those for listed species. BLM shall ensure the FCR and authorized desert tortoise biologists have authority to halt any activity that is in violation of the stipulations.

Within 3 days of employment or assignment, the applicant and BLM shall provide the Service with the names of FCRs.

1. d. **Authorized desert tortoise biologist**—In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (Service 2009), an authorized desert tortoise biologist shall possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or a closely related field. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and desert tortoise sign. In addition, the biologist shall have the ability to recognize and accurately record survey results. Potential authorized desert tortoise biologists must submit their statement of qualifications to the Service's Nevada Fish and Wildlife Office in Las Vegas for approval, allowing a minimum of 30 days for Service response. The statement form is available on the Internet at http://www.fws.gov/nevada/desert_tortoise/auth_dt_form.htm.

During the desert tortoise more-active season (generally March 1 to October 31), or if temperatures are above 60° but below 95°F for more than seven consecutive days, an authorized desert tortoise biologist shall be on-site. He/she will be

assigned to each piece/group of large equipment (e.g., front-end loader, backhoe, excavator, and water truck) engaged in activities that may result in take of desert tortoises (e.g., clearing, watering roads, grading, backfilling, recontouring, and reclamation activities).

An authorized desert tortoise biologist and FCR (see Term and Condition 1.c.) shall be responsible for: (1) conducting and supervising desert tortoise clearance surveys; (2) enforcing the litter-control program; (3) ensuring that desert tortoise habitat disturbance is restricted to authorized areas; (4) ensuring that all equipment and materials are stored within the boundaries of the construction zone or within the boundaries of previously disturbed areas or designated areas; (5) ensuring that all vehicles associated with construction activities remain within the proposed construction zones; (6) and ensuring compliance with the conservation measures of this biological opinion and reporting actual take (see RPM 4).

An authorized desert tortoise biologist will serve as a mentor to train desert tortoise monitors (see Term and Condition 1.e.) and shall approve monitors to conduct specific activities based on the monitor's demonstrated skills, knowledge, and qualifications. An authorized desert tortoise biologist is responsible for errors committed by desert tortoise monitors.

Biologists and monitors shall be visibly identifiable on the project site, wearing, for example, a uniquely designated hardhat color or safety vest color.

- 1.e. Desert tortoise monitor – Desert tortoise monitors assist an authorized desert tortoise biologist during surveys and serve as apprentices to acquire experience. Desert tortoise monitors assist on project activities to ensure proper implementation of protective measures, and record and report desert tortoises and sign observations in accordance with Term and Condition 1.d. They will report incidents of noncompliance in accordance with RPM 4.

If a desert tortoise is immediately in harm's way (e.g., certain to immediately be crushed by equipment), desert tortoise monitors will move the desert tortoise and place it in a designated safe area until an authorized desert tortoise biologist assumes care of the animal.

Desert tortoise monitors will not conduct field or clearance surveys or other specialized duties of an authorized desert tortoise biologist unless directly supervised by an authorized desert tortoise biologist; "directly supervised" means an authorized desert tortoise biologist has unaided direct sight of and unaided voice contact with the desert tortoise monitor.

Within 3 days of employment or assignment, the applicant and the BLM shall provide the Service with the names of desert tortoise monitors who will assist an authorized desert tortoise biologist.

1.f. Desert tortoise education program— A desert tortoise education program shall be presented by an authorized desert tortoise biologist to all personnel on-site during construction activities. The Service, BLM, and appropriate State agencies shall approve the program. At a minimum, the program shall cover desert-specific Leave-No-Trace guidelines, the distribution of desert tortoises, general behavior and ecology of this species, sensitivity to human activities, threats including introduction of exotic plants and animals, legal protection, penalties for violation of State and Federal laws, reporting requirements, and the project measures presented in this opinion. All field workers shall be instructed that activities must be confined to locations within the approved areas; they shall also be informed of their obligation to walk around and check underneath vehicles and equipment before moving them. In addition, the program shall include fire prevention measures to be implemented by employees during project activities. The program shall instruct participants to report all observations of desert tortoise and their sign during construction activities to the FCR and authorized desert tortoise biologist.

1.g. Vehicle travel— Project personnel shall exercise vigilance when commuting to the project area to minimize risk for inadvertent injury or mortality to desert tortoises encountered on paved and unpaved roads leading to and from the project site. Speed limits will be clearly marked, and all workers will be made aware of these limits. On-site, personnel shall carpool to the greatest extent possible.

During the desert tortoise less-active season (generally October 31 to March 1), vehicle speed on project-related access roads and in the work area will not exceed 25 mph. All vehicles and construction equipment will be tightly grouped.

During the more-active season (generally March 1 to October 31), or if temperatures are above 60° but below 95°F for more than seven consecutive days, vehicle speed on project-related access roads and in the work area will not exceed 15 mph. All vehicles and construction equipment will operate in groups of no more than three vehicles. An authorized desert tortoise biologist and desert tortoise monitor will escort or clear ahead of vehicles and equipment for ROW travel. The escort will be on foot and clear the area of tortoises in front of each traveling construction equipment group (see Term and Condition 1.h.) or use a recreational/non-passenger vehicle with ground visibility (e.g., UTV); however, at least one authorized desert tortoise biologist and one desert tortoise monitor must ride together and survey both sides of the vehicle. An authorized desert tortoise biologist will determine the speed/pace. The speed shall be slow enough to ensure adequate inspection.

New access road and spur road locations will be sited to avoid potentially active tortoise burrows to the maximum extent practicable.

1.h. Desert tortoise clearance— Prior to surface-disturbing activities, an authorized desert tortoise biologist, potentially assisted by desert tortoise monitors, shall conduct a clearance survey to locate and remove all desert tortoises from harm's

way or from areas to be disturbed, using techniques that provide full coverage of all areas (Service 2009). No surface-disturbing activities shall begin until two consecutive surveys yield no individuals.

During the less-active season (generally October 31 to March 1), clearance surveys will be conducted within 7 days prior to any surface-disturbing activity.

During the more-active season (generally March 1 to October 31), or if temperatures are above 60° but below 95°F for more than seven consecutive days, clearance surveys will be conducted the day of any surface-disturbing activity.

An authorized biologist shall excavate all burrows that have characteristics of potentially containing desert tortoises in the area to be disturbed, with the goal of locating and removing all desert tortoises and desert tortoise eggs. During clearance surveys, all handling of desert tortoises and their eggs and excavation of burrows shall be conducted solely by an authorized desert tortoise biologist in accordance with the most current Service-approved guidance. If any tortoise active nests are encountered, the Service must be contacted immediately, prior to removal of any tortoises or eggs from those burrows, to determine the most appropriate course of action. Unoccupied burrows shall be collapsed or blocked to prevent desert tortoise re-entry. Outside of unfenced construction work areas, all potential desert tortoise burrows and pallets within 50 feet of the edge of the construction work area shall be flagged. If the burrow is occupied by a desert tortoise, the tortoise shall be temporarily penned (see Term and Condition 1.k.). No stakes or flagging shall be placed on the berm or in the opening of a desert tortoise burrow. Desert tortoise burrows shall not be marked in a manner that facilitates poaching. Avoidance flagging shall be designed to be easily distinguished from access route or other flagging, and shall be designed in consultation with experienced construction personnel and authorized biologists. All flagging shall be removed following construction activities.

An authorized desert tortoise biologist will inspect areas to be backfilled immediately prior to backfilling.

- i. Desert tortoise in harm's way – Any project-related activity that may endanger a desert tortoise shall cease if a desert tortoise is found on the project site. Project activities may resume after an authorized desert tortoise biologist or desert tortoise monitor (see restrictions in Term and Condition 1.e.) removes the desert tortoise from danger or after the desert tortoise has moved to a safe area on its own.

During the more-active season (generally March 1 to October 31), or if temperatures are above 60° but below 95°F for more than seven consecutive days, at least one monitor shall be assigned to observe spoil piles prior to excavation and covering.

- 1.j. **Handling of desert tortoises** – Desert tortoises shall only be moved by an authorized desert tortoise biologist or desert tortoise monitor (see restrictions in Term and Condition 1.e.) solely for the purpose of moving the tortoises out of harm's way. During construction, operation, and maintenance, an authorized desert tortoise biologist shall pen, capture, handle, and relocate desert tortoises from harm's way in accordance with the most current Service-approved guidance.

Desert tortoises that occur aboveground and need to be moved from harm's way shall be placed in the shade of a shrub, 150 to 300 feet from the point of encounter. If desert tortoises need to be moved at a time of day when ambient temperatures could harm them (less than 40°F or greater than 95°F), they shall be held overnight in a clean cardboard box. These desert tortoises shall be kept in the care of an authorized biologist under appropriate controlled temperatures and released the following day when temperatures are favorable. All cardboard boxes shall be discarded after one use and never hold more than one tortoise at a time. If any tortoise active nests are encountered, the Service must be contacted immediately, prior to removal of any tortoises or eggs from those burrows, to determine the most appropriate course of action.

During the less-active season (typically October 31 to March 1), desert tortoises located in the project area sheltering in a burrow will be temporarily penned at the discretion of an authorized biologist. Desert tortoises shall not be penned in areas of moderate-to-heavy public use; rather, they shall be moved from harm's way in accordance with the most current Service-approved guidance.

Equipment that contacts desert tortoises shall be sterilized or changed before contacting another tortoise to prevent the spread of disease. If a tortoise contacts clothing, those clothes shall be washed before coming into contact with another desert tortoise. All tortoises shall be handled using disposable surgical gloves, and each pair of gloves shall be disposed of after handling one tortoise. An authorized biologist shall document each tortoise handling with the following information: (1) narrative describing circumstances; (2) vegetation type; (3) dates of observations; (4) general conditions and health; (5) any apparent injuries and state of healing; (6) if the tortoise was moved, the GPS location where it was captured and the location where it was released; (7) maps; (8) whether animals voided their bladders; and (9) diagnostic markings (e.g., identification numbers marked on lateral scutes).

- 1.k. **Penning** – Penning shall be accomplished by installing a circular fence, approximately 20 feet in diameter, to enclose and surround the tortoise burrow. The pen shall be constructed with 2-inch hardware cloth 1-inch horizontal by 2-inch vertical, galvanized welded wire. Steel T-posts or rebar 2 to 3 feet high shall be placed every 5 to 6 feet to support the pen material. Pen material will extend 18 inches aboveground. The bottom of the enclosure will be buried 6 to 12 inches deep or bent toward the burrow, with soil mounded along the base, and other measures implemented to ensure zero ground clearance. Care shall be taken to

minimize public visibility of the pen. An authorized desert tortoise biologist or desert tortoise monitor shall check the pen at least daily and ensure that the desert tortoise is in the burrow or pen, the tortoise is healthy, and the pen is intact. Because this is a new technique, all instances of penning or issues associated with penning shall be reported to the Service within 3 days.

- 1.1. **Dust control**—Water applied to the construction ROW and topsoil piles for dust control shall not be allowed to pool. Similarly, leaks on water trucks and water tanks will be repaired to prevent pooling water.

During the more-active season (generally March 1 to October 31), or if temperatures are above 60° but below 95°F for more than seven consecutive days, an authorized biologist will be assigned to patrol each area being watered, both immediately after the water is applied and at approximate 60-minute intervals, until the ground is no longer wet enough to attract tortoises.

RPM 2: *Predator control—BLM, and other jurisdictional Federal agencies as appropriate, shall ensure their agency personnel, the applicant, and their contractors implement the following measures to minimize injury to desert tortoises as a result of predators drawn to the project area from construction, operation, and minor maintenance activities:*

Terms and Conditions:

- 2.a. **Litter control**—A litter-control program shall be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit foxes, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with predator-proof lids. Trash containers will be emptied and construction waste will be removed daily from the project area and disposed of in an approved landfill.
- 2.b. **Deterrence**—The applicant will implement best management practices to discourage the presence of predators on-site (coyotes, ravens, etc.). Measures will include eliminating available water sources, designing structures to discourage potential nest sites, and hazing predators to discourage their presence.
- 2.c. **Monitoring and predator control**—The applicant will inspect structures annually for nesting ravens and report observations of raven nests to the Service. If sign of predation is found under a nest, a control plan will be implemented. All raven nests will be removed from the transmission line by authorized personnel when desert tortoises are least active, and the nesting material will be disposed.
- 2.d. **Pets**—Dogs will be prohibited in all project work areas.

RPM 3: *Impacts to desert tortoise habitat—BLM, and other jurisdictional Federal agencies as appropriate, shall ensure their agency personnel, the applicant, and their contractors implement the following measures to minimize loss and long-term degradation and fragmentation of desert tortoise habitat, such as soil compaction, erosion, crushed vegetation, and introduction of weeds or contaminants from construction, operation, and minor maintenance activities:*

Terms and Conditions:

- 3.a. **Minimizing new disturbance**—Cross-country travel and travel outside designated areas shall be prohibited. All equipment, vehicles, and construction materials shall be restricted to the ROW, and new disturbance will be restricted to the minimum necessary to complete the task (e.g., construction of one-lane access roads with passing turnouts every mile rather than a wider, 2-lane road).
- All work area boundaries shall be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities.
- 3.b. **Weed prevention**—Vehicles and equipment shall be cleaned with a high-pressure washer prior to arrival on the ROW and prior to departure from areas of known invasive weed and nonnative grass infestations to prevent or at least minimize the introduction or spread of these species.
- 3.c. **Chemical spills**—Hazardous and toxic materials such as fuels, solvents, lubricants, and acids used during construction will be controlled to prevent accidental spills. Any leak or accidental release of hazardous and toxic materials will be stopped immediately and cleaned up at the time of occurrence. Contaminated soils will be removed and disposed of at an approved landfill site.
- 3.d. **Residual impacts from disturbance**—BLM shall ensure remuneration fees are paid to offset residual impacts to desert tortoises from project-related disturbance to desert tortoise habitat.

Remuneration fees will be used for management actions expected to promote recovery of the desert tortoise over time, including management and recovery of desert tortoise in Nevada. Actions may involve habitat acquisition, population or habitat enhancement, research to increase knowledge of the species' biological requirements, reducing loss of individual animals, documenting the species' status and trend, and preserving distinct population attributes. Fees will be used to fund the highest-priority recovery actions for desert tortoises in Nevada.

The current rate is \$810 per acre of disturbance, as indexed for inflation. The fee rate will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) on January 31 of each year. Fees assessed or collected for projects covered under this biological opinion will be adjusted based on the current CPI-U for the year they are collected.

Information on the CPI-U can be found on the Internet at: <http://stats.bls.gov/news.release/cpi.nws.htm>.

RPM 4: *Compliance and reporting—BLM, and other jurisdictional Federal agencies as appropriate, shall ensure their agency personnel, the applicant, and their contractors implement the following measures to comply with the RPMs, terms and conditions, reporting requirements, and reinitiation requirements contained in this biological opinion:*

Terms and Conditions:

- 4.a. Desert tortoise deaths—The deaths of desert tortoises shall be investigated as thoroughly as possible to determine the cause of death. The Service and appropriate State wildlife agency must be informed immediately verbally and within five business days in writing (electronic mail is sufficient). See *Care for dead or injured desert tortoises*.
- 4.b. Noncompliance—Any incident occurring during project activities that was considered by the FCR, authorized desert tortoise biologist, or desert tortoise monitor to be in noncompliance with this opinion shall be immediately documented by an authorized desert tortoise biologist and immediately reported to BLM and the Service at (702) 515-5230.
- 4.c. Construction completion—Within 90 days following completion of construction, a written assessment report shall be submitted to the Service, outlining the schedule that was followed for implementing the minimization measures. The report shall also include biological observations and the general success of each of the minimization measures and the maintenance activities that occurred over that phase of construction. The following information will be included in the report: (1) location (GIS shapefile); (2) date and time of observation; (3) documentation of desert tortoise handling (see Terms and Conditions 1.d. and 1.j.); (4) any actions taken to protect the desert tortoise, such as penning or temporarily holding; (5) unique physical characteristics of each desert tortoise; (6) raven and predator monitoring; (7) reports of noncompliance; (8) chemical spills; (9) acreage of final habitat disturbance; and (10) any other information useful to the Service.

Example compliance reporting table

Activity	Actual Mortality, Injury, and Destruction			Actual Harassment: Capture and Removal			Actual Habitat Loss (acres)	
	Adult (>100mm)	Juvenile (<100mm)	Eggs	Adult (>100mm)	Juvenile (<100mm)	Eggs	Critical	Noncritical
Construction							0	
Operation and Maintenance							0	
Predation								
Minimization Measures Implemented	Effectiveness and Recommendations							

- 4.d. **Operation**—A written assessment report shall be submitted to the Service, outlining the maintenance activities that occurred over the past year. It will include frequency of implementation of minimization measures, biological observations, general success of each of the minimization measures and Terms and Conditions, and recommendations for future minimization measures. All deaths, injuries, and illnesses of endangered or threatened species within the project area, whether associated with project activities or not, will be summarized in the annual report, which is due April 1 of each year.

We recognize that the procedures we are likely to develop in the future, in close cooperation with BLM and the applicant, will include a more efficient way of collecting this information; we welcome recommendations to improve the reporting method, provided that any new method meets the requirements of the implementing regulations for section 7(a)(2) of the Act (50 CFR 402.14(i)(3)).

Care for dead or injured desert tortoises

If any project-related personnel locate a dead or injured desert tortoise, they shall immediately notify the designated FCR, the authorized desert tortoise biologist, and the Service at (702) 515-5230.

Care shall be taken in handling sick or injured endangered or threatened species to ensure effective treatment. Care also shall be taken when handling dead specimens to preserve biological material in the best possible state for later analysis. In conjunction with the care of injured endangered or threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by the Service to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

The following actions shall be taken for injured or dead tortoises as directed by the Service:

- Injured desert tortoises shall be delivered to a qualified veterinarian for appropriate treatment or disposal. The applicant shall bear the cost of any required treatment of desert tortoises injured from the project, euthanasia of sick desert tortoises, and cremation of desert tortoises that die during treatment. Should sick or injured desert tortoises be treated by a veterinarian and survive, they will be transferred as directed by the Service.
- Dead desert tortoises suitable for preparation as museum specimens shall be frozen immediately and provided to an institution holding appropriate federal and State permits. Should no institutions want the desert tortoise specimens, or if it is determined that they are too damaged (e.g., crushed, spoiled) for preparation as museum specimens, then they will be buried away from the project area or cremated, upon authorization by the Service.
- Dead desert tortoises that are needed for later analysis as to cause of death and for law enforcement purposes shall be frozen immediately. Carcasses must be submitted for necropsy and the cost covered by the proponent. Necropsy results must be submitted to the Service and the appropriate State wildlife agencies.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities designed to minimize or avoid adverse effects of a proposed action on listed species or critical habitat; to help implement recovery plans; or to develop information. In order to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

The Service hereby makes the following conservation recommendations:

- BLM should work with and encourage power companies to include structure designs that minimize raven perching and nesting substrate.
- BLM should encourage power pole owners and power plant operators to collocate utility lines on existing infrastructure.
- BLM should encourage applicants conduct pre-construction surveys for desert tortoises on the private land portion of projects that have a connected BLM decision, and recommend that any located desert tortoises on the private land be relocated outside the project footprint prior to construction.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in your June 11, 2012, request. As required by 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over an action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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