HOOVER DAM BYPASS PROJECT PHAS

ENVIRONMENTAL ASSESS

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United States Government **Department of Energy**

memorandum

Western Area Power Administration

DATE: OCT 14 2003

REPLY TO ATTN OF: G0400

SUBJECT: Hoover Dam Bypass Project - Phase II

TO: J. Tyler Carlson, G0000

THRU:

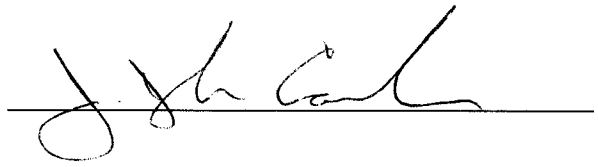
Please find attached for your approval the Environmental Assessment (EA), DOE/EA-1478, and for your signature the Finding of No Significant Impact (FONSI) for the subject project. The FONSI is based on the analysis of impacts presented in the EA. A Mitigation Action Plan (MAP) has been prepared to address two mitigation measures that are essential to rendering the impacts of the proposed action not significant: 1) mitigating impacts to historic facilities, 2) avoiding and mitigating impacts to archaeological sites during construction, 3) avoiding and monitoring for the Mojave Desert tortoise, 4) avoiding and monitoring for the Gila monster, and 5) avoiding and monitoring for the peregrine falcon. The MAP is incorporated into the EA as Appendix A.

Consultations for the Endangered Species Act and National Historic Preservation Act compliance have been completed and the results have been incorporated into the EA and FONSI. In addition, Government-to-Government consultations have been completed with affected Tribes and their interests have been incorporated into the mitigation planning conducted for the project.

The Customer Service Center, National Environmental Policy Act Coordinator has been briefed on the FONSI and concurs with its findings. Please contact me at extension 2592 if you have any questions.

John R. Holt
Environmental Manager

Attachments

APPROVED: 

DISAPPROVED: _____

DATE: OCT 27 2003

cc:
Director of NEPA Compliance and Assistance, EH-42, Washington, DC
(w/copy of FONSI)

DOE/EA-1478

ENVIRONMENTAL ASSESSMENT

Western's Hoover Dam Bypass Project Phase II

(Double-Circuiting a Portion of the Hoover-Mead #5 and #7 230-kV Transmission Lines with the Henderson-Mead #1 230-kV Transmission Line, Clark County, Nevada)

Prepared for:

U.S. Department of Energy

Western Area Power Administration

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October 2003

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LIST OF ACRONYMS

A&N	Arizona & Nevada Switchyard
ACHP	Advisory Council on Historic Preservation
AIRFA	American Indian Religious Freedom Act
ARPA	Archaeological Resources Protection Act
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
BWQP	Bureau of Water Quality Planning (Nevada Division of Environmental Protection)
CCDAQM	Clark County Department of Air Quality Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act

dB	decibels
dBA	A-weighted decibels
DNL	Day-Night Noise Level
DOE	Department of Energy
DOI	Department of Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMF	Electrical Magnetic Field
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FR	Federal Register
GMP	General Management Plan (Lake Mead)
HABS/HAER	Historic American Building Survey/Historic American Engineering Record
LABPL	Los Angeles Bureau of Power and Light
LADWP	Los Angeles Department of Water and Power
LMNRA	Lake Mead National Recreation Area
MSHCP	Multi-Species Habitat Conservation Plan (Clark County)
MWD	Metropolitan Water District
NAAQS	National Ambient Air Quality Standards
NAS	National Academy of Sciences
NDOW	Nevada Division of Wildlife
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statute
PSD	Prevention of Significant Deterioration
PVC	Polyvinylchloride
ROW	Right-of-way
SHPO	State Historic Preservation Office
TCP	Traditional Cultural Places
USFWS	U.S. Fish and Wildlife Service
Western	Western Area Power Administration

1.0 INTRODUCTION

1.1 BACKGROUND

The U.S. Highway 93 (U.S. 93) Hoover Dam Bypass Project calls for the U.S. Department of Energy (DOE) Western Area Power Administration (Western) to remove its Arizona and Nevada (A&N) Switchyard. As a result of this action, Western must reconfigure its existing electrical transmission system in the Hoover Dam area. Western proposes to double-circuit a portion of the Hoover-Mead #5 and #7 230-kV Transmission Lines with the Henderson-Mead #1 Transmission Line (see Figure 1-1). Double-circuiting is the placement of two separate electrical circuits, typically in the form of three separate conductors or bundles of conductors, on the same set of transmission line structures. The old Henderson-Hoover 230-kV Transmission Line would become the new Henderson-Mead #1 and would extend approximately eight miles to connect with the Mead Substation. Western owns, operates, and maintains the Hoover-Mead #5 and #7, and Henderson-Hoover electrical power transmission lines. Additionally, approximately 0.25 miles of new right-of-way (ROW) would be needed for the Henderson-Mead #1 when it transfers from double-circuiting with the Hoover-Mead #7 to the Hoover-Mead #5 at the Boulder City Tap. The proposed project would also involve a new transmission line ROW and structures where the Henderson-Mead #1 will split from the Hoover-Mead #5 and enter the northeast corner of the Mead Substation. Lastly, Western has proposed adding fiber optic overhead ground wire from the Hoover Power Plant to the Mead Substation on to the Henderson-Mead #1, Hoover-Mead #5 and #7 Transmission Lines.

The proposed project includes replacing existing transmission line tower structures, installing new structures, and adding new electrical conductors and fiber optic cables. As a consequence of these activities, ground disturbance may result from grading areas for structure placement, constructing new roads, improving existing roads for vehicle and equipment access, and from installing structures, conductors, and fiber optic cables. Project construction activities would be conducted within the existing 200-foot transmission line ROW and 50-foot access road ROW, although new spur access roads could occur outside of existing ROWs.

As lead Federal agency for this action under National Environmental Policy Act (NEPA), Western must ensure that adverse environmental effects on Federal and non-Federal lands and resources are avoided or minimized. This Environmental Assessment (EA) is intended to be a concise public document that assesses the probable and known impacts to the environment from Western's Proposed Action and alternatives, and reaches a conclusion about the significance of the impacts. This EA was prepared in

compliance with NEPA regulations published by the Council on Environmental Quality (40 CFR 1500-1508) and implementing procedures of the Department of Energy (10 CFR 1021).

1.2 PROJECT HISTORY

The Federal Highway Administration (FHWA) prepared an Environmental Impact Statement (EIS) for construction of a new segment of U.S. 93 to improve congestion and hazardous vehicle/pedestrian conflicts where the highway crosses the Colorado River over Hoover Dam. As a cooperating agency for the EIS, Western proposed modifications to its transmission system and facilities to accommodate the construction for the new highway and bridge spanning the Colorado River. In October 2002, Western adopted the Record of Decision and announced its decision to modify its transmission system to accommodate the new highway segment (Federal Register 2002 Volume 67, No. 190 p. 61619).

Western decided to modify its current transmission system in two phases. Modifications for the first phase (Phase I) included: 1) rebuilding about 2.6 miles of the Hoover-Mead #6 (single-circuit) and #7 (double-circuit) 230-kV Transmission Lines (removing and replacing electrical equipment, conductors, overhead ground wires, replacing lattice steel structures with steel poles); 2) removing conductors and overhead ground wires and insulator assemblies for approximately 1.2 miles of the existing Arizona-Nevada Circuits 11 and 12 230-kV Transmission Lines between Hoover Dam and the A&N Switchyard; 3) constructing approximately 0.3 miles of single-circuit 230-kV transmission line connecting the Southern California Edison Circuit #10 to the A&N Switchyard and to the Hoover Dam Power Plant; and 4) modifying transmission line connections at the Hoover Dam Power Plant yard and A&N Switchyard to accommodate the new configurations. These modifications under Phase I were completed in May 2003. The second phase (Phase II) is described on the previous page and is the Proposed Action for this EA. Phase II modifications are expected to be completed by June 2004.

1.3 PURPOSE AND NEED

The U.S. 93 Hoover Dam Bypass Project's proposed alignmentinterferes with Western's existing electric transmission system. Because Western needs to maintain its transmission system to provide reliable electric and transmission service to its customers in Arizona, California, and Nevada, Western proposes to complete the second of two phases (Phase II) to bypass the A&N Switchyard by extending the old Henderson-Hoover 230-kV Transmission Line about eight miles to connect to the Mead Substation and renaming the line the Henderson-Mead # 1 (Hoover-Mead Transmission Line Upgrade). This transmission line upgrade was part of the transmission reconfiguration options evaluated in the U.S. 93 Hoover Bypass Project Final EIS, but since the final configuration was dependent upon theFHWA's decision, the upgrade was not fully evaluated in the EIS.

insert figure 1

1.4 APPLICABLE REGULATORY REQUIREMENTS AND REQUIRED COORDINATION

Table 1-1 summarizes which applicable laws and regulations Western must comply with to complete the proposed project.

TABLE 1-1
SUMMARY OF APPLICABLE LAWS AND REGULATIONS

Law/Regulation	Applies to
American Indian Religious Freedom Act (AIRFA)	Archaeological resources and tribal consultation
Archaeological Resources Protection Act (ARPA)	Archaeological resources and tribal consultation
Clean Water Act (CWA)	Surface water quality
Endangered Species Act (ESA)	Threatened and endangered species
Executive Order 11593	Protection and enhancement of the cultural environment
Executive Order 11988	Floodplains and wetlands
Executive Order 12898	Environmental justice
Executive Order 13122	Noxious weeds
Executive Order 13175	Consultation and coordination with Indian tribal government
Executive Order 13212	Energy policy
National Environmental Protection Act (NEPA)	Federal undertakings/DOE NEPA regulations
National Historic Preservation Act (NHPA)	Historic properties and traditional cultural properties

1.5 PERMITS, LICENSES, AND ENTITLEMENTS

TABLE 1-2
SUMMARY OF PERMITS, LICENSES, AND ENTITLEMENTS

Permitting Agency	Permit/Authorization
FEDERAL	
U.S. Army Corps of Engineers	Section 404, CWA
STATE	
Nevada Division of Environmental Protection, Bureau of Water Pollution Control	NPDES permit for construction activities
Nevada State Historic Preservation Office	Section 106, NHPA, as amended; amended consultation
LOCAL	
Clark County	County construction permits Department of Air Quality Management Dust Control Permit
Boulder City	City construction permits

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

Western proposes to reconfigure a segment of its existing electrical transmission system near Boulder City, Nevada and the Hoover Dam. The proposed project involves double-circuiting a portion of the Hoover-Mead # 5 and #7 230-kV Transmission Lines with the re-named Henderson-Mead #1 Transmission Line from a point near the Hoover Dam to the Mead Substation. The majority of the proposed alignment is within existing Western ROW, except where the Henderson-Mead #1 Transmission Line transfers from the Hoover-Mead #7 to the Hoover-Mead #5 Transmission Lines, near the Boulder City Substation and where the Henderson-Mead #1 deviates from the Hoover-Mead #5 near the Mead Substation. Another primary project component is adding fiber optic conduit and cable through existing tunnels (near Hoover Dam) and via overhead installation on the transmission line structures described above. Equipment and structures atthe A&N Switchyard would be removed.

Project Activities

Western's Proposed Action includes the following primary activities:

Disassembly and Removal of Existing Structures

Work crews would disassemble existing steel lattice transmission structures at the site, leaving the existing foundations in place at or below grade. The disassembled structures would be removed from the work sites. Structure removal activities would occur within the existing 200-foot ROW. In all, Western proposes to remove about 33 existing structures.

Ground Clearing andLeveling

Clearing of natural vegetation would be required for construction purposes (access and structure sites), clearances for electrical safety, long term maintenance, and transmission reliability. At each structure site, leveled areas, or pads (approximately 30 by 40 feet), would be needed to facilitate the safe operation of construction equipment; a work area, approximately 200-feet in diameter, would be required to assemble the structure, and for necessary crane maneuvers. Most of the existing structure sites that will be reused for the new structures would require minimal clearing and leveling.

Structure Assembly and Erection

Structure replacement activities involve mobilizing construction vehicles, equipment and poles along existing access roads, or new spur access roads to each structure site, installing foundations, and assembling and erecting the structures. Work crews wouldauger foundations with power drilling equipment. Sections of the new structures and associated hardware would be delivered to each structure site by truck. Erection crews would assemble new structures on the ground within the existing ROW and, using a large crane, position them in the previously augured foundation holes. Concrete would be poured in the foundation holes to secure the structure base. Structure replacement activities would occur within the existing 200-foot ROW except in areas near the Mead Substation and Boulder City Tap. Western proposes to erect about 49 newmonopole structures, 17 of which would be located in the same location as the previous structures and 32 of which would be constructed in new areas along the project alignment. Figure 2-1 depicts an existing steel lattice structure being removed and the base of a newly installed steel monopole structure.

Figure 2-1. Photographs of the removal ofan old steel lattice structure and the base of a newly installed steel monopole structure.

Conductor Placement

Conductor stringing would begin by installing insulators and sheaves. The sheaves are rollers attached to the lower end of theinsulators which are attached to the ends of each supporting structurecrossarm. The sheaves allow crews to pull individual cables through each structure until the cables are ready to be pulled

up to the final tension position. Workers would install temporary clearance structures consisting of vertical wood poles with overhead netting at the pole top. These would be located at road crossings and crossings of energized electric lines to prevent the sock line (manila rope or wire used to pull transmission line conductors into place) or conductors from sagging onto the roadway or other energized lines during the stringing operation.

Western would establish conductor pulling and tension sites along the proposed alignment. These sites are required to set-up tractors and trailers with the spooled cables that hold the conductors. All pulling and tensioning sites are proposed within the existing ROW.

Once the equipment is set-up, a light vehicle would pull the sock line between each supporting structure where access along the line is available. At each structure, the sock line would be hoisted to the crossarm and passed through the sheaves on the ends of the insulators. The sock line would be used to pull the conductor through the sheaves. The conductors would then be attached to the sock line and pulled through each supporting structure under tension. After the conductors are pulled into place, they are pulled to a pre-calculated sag and then tension-clamped to the end of each insulator. The final step of the conductor installation process is to remove the sheaves and install vibration dampers and other accessories.

Fiber Optic Cable Installation

Western proposes to install the fiber optic cable in the Hoover Dam Control Tunnel and connect it to the Hoover-Mead #7 Transmission Line originating in the Los Angeles Switchyard (Figure 2-2). The fiber optic cable installation on the reconfigured Hoover-Mead #7 and #5 Transmission Lines would require Western to replace one of the overhead groundwires. The fiber optic cable would also be carried along on single-circuit segments of the new Henderson-Mead #1 230-kV Transmission Line in place of the overhead groundwire. The fiber optic communication path would extend from the Hoover Dam to the Mead Substation. The fiber optic communication path would consist of duct cable where installed in the control tunnel and cable trench, and as a groundwire where installed overhead. The fiber optic cable would be installed in construction spreads consisting of equipment and crews managing various phases of construction for a given line segment. Crews would store all materials and equipment associated with the project at a set-up location on a previously disturbed site. The process of installing the fiber optic cable would require the same or similar action as conductor installation.

Figure 2-2. Photographs of Hoover Dam Control Tunnel with cabletrays which runs from the Hoover Power Plant to the Los Angeles Switchyard (shown on right).

The fiber optic groundwire contains dielectric (non-electric conducting) fibers encased in a metal jacket that protects the fibers and functions as the static line or overheadgroundwire. The fiber optic groundwire with its protective coating, including the metaljacket, is approximately one-half inch in diameter. The duct cable is similar in construction to thegroundwire but has a neoprene jacket and is installed in a polyvinylchloride (PVC) casing. The duct cable is slightly larger in diameter than the fiber optic groundwire. The fiber optic cable does not emit any noise, or electric or magnetic fields. Crews would attach the fiber optic groundwire near the top of each electrical transmission line structure above the electrical conductors. In the static position, the fiber opticgroundwire has dual properties: first, for protecting the electrical lines from lightning strikes, and second, as a fiber optic communication cable.

Right-of-Way Cleanup and Restoration

Western would ensure that construction sites, material storage yards, and access roads are kept in an orderly condition during the construction period. Crews would collect waste construction materials and rubbish from all construction areas daily, haul them away, and dispose of them at approved sites. All structure assembly and erection pads not needed for normal maintenance would be returned to their original contour and natural drainage patterns would be restored. The intent would be to restore all construction areas to their original condition, where feasible.

Operation and Maintenance

Western would use routine visual inspection to ensure proper transmission line operation and maintenance. Western anticipates the need to occasionally tighten hardware and replace damaged materials.

Estimated Ground Disturbance

Temporary and permanent ground-disturbing activities would occur from proposed transmission line construction, operation, and maintenance. Temporary ground disturbance is defined as disturbance occurring only during the construction phase of the project. Examples of expected temporary ground disturbance include locations where existing transmission line structures would be removed and no new structures would be erected, and temporary construction areas associated with new structure installation. Permanent ground disturbance is defined as disturbance that may occur over the life of the project. Permanent ground disturbance would occur as a result of access and spur road re-grading or construction, and at the new structure bases. Western provided examples of temporary and permanent ground disturbance activities and estimates of expected ground disturbance.

Specifically, temporary ground disturbance as result of project implementation would occur where:

- Existing structures would be removed (100-foot radius).
- New monopole structures would be installed atexisting structure locations (100-foot radius).
- New monopole structures would be installed in new locations (100-foot radius).
- Structure installation activities overlap (included in 100-foot radius).
- Wire pulling sites (125 by 125 feet per three miles).
- Wire splicing sites (10 by 50 feet per three miles).

Permanent ground disturbance as result of project implementation would occur where:

- Existing spur or access roads would be improved (0.3 acres per mile).
- New spur or access roads would be developed (1.7 acres per mile).
- Monopole structure bases would be installed (assume one 10-foot diameter foundation per structure).

As depicted in Table 2-1 and Figure 2-3, project construction activities would result in temporary disturbance of about 49 acres and the permanent disturbance of about four acres. Three staging areas, located in previously disturbed areas at the Mead Substation, Boulder City Tap and Hoover Switchyard area, are proposed for this project. As a result, no additional temporary or permanent ground disturbance for staging would be expected at any of these sites.

TABLE 2-1

SUMMARY OF GROUND DISTURBANCE ACTIVITIES

Disturbance Activity	Quantity or Distance	Estimated Temporary Disturbance	Estimated Permanent Disturbance
New structure installation in previously undisturbed areas	32	22.9 acres*	0.07 acres*
Areas where existing structures are removed and replaced with new structures	17	12.2 acres*	0.04 acres*
Areas with removed structures (no new structure installation)	15	10.7 acres*	0 acres*
Restored spur and access roads (re-grade)	8.8 miles	0 acres	2.6 acres
New spur and access roads	0.77 miles	0 acres	1.3 acres
Overlapping structure replacement activities	7	1.8 acres	0 acres
Wire pulling sites	3	1.1 acres	0 acres
Wire splicing sites	3	0.06 acres	0 acres
Staging areas	3	0 acres	0 acres
TOTAL	–	48.8 acres	4.0 acres

* Using a 100-foot radius, which equals ~0.715 acres per structure

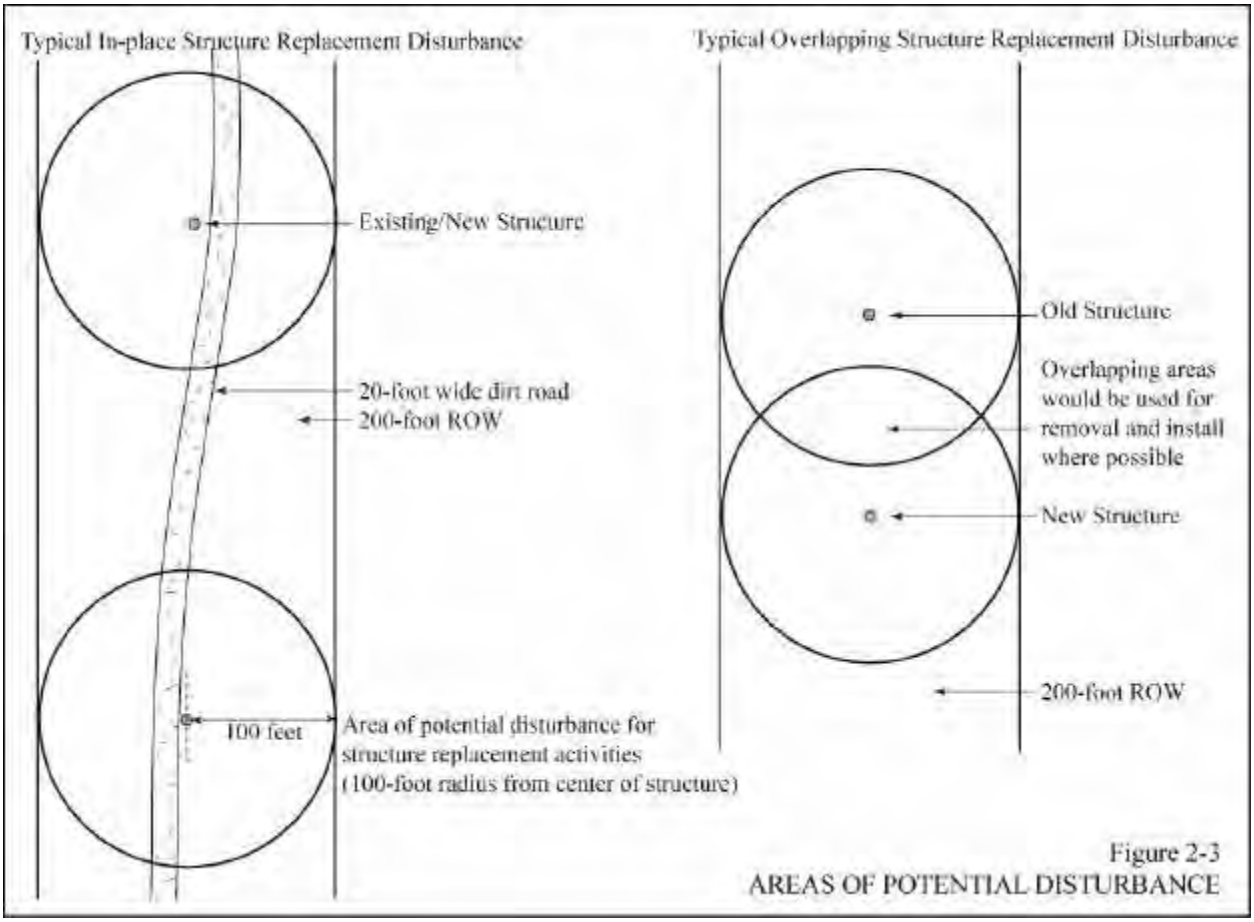

Figure 2-3
AREAS OF POTENTIAL DISTURBANCE

Personnel and Equipment

The approximate number of personnel and equipment required for construction activities needed for the double-circuit reconfiguration project is shown in Table 2-2.

TABLE 2-2
TYPICAL PERSONNEL AND EQUIPMENT FOR TRANSMISSION LINE CONSTRUCTION

Activity	Persons	Equipment
Clearing of crane and assembly areas	2-4	Dozer and motorized grader, pickup trucks
Structure assembly and excavation of structures	6-12	4 to 6 pickup trucks, line truck, tractor/pole trailer, auger truck, and/or backhoe
Removal of existing structure and erection of new structure	6-8	2 cranes (35 to 50 ton capacity), 2 pickup trucks, aerial man-lift
Clean-up	3-6	Large fork-lift, flatbed and/or pickup trucks with associated trailers

2.2 ALTERNATIVES

No-action Alternative

The No-action Alternative means that no changes would occur to the present Henderson-Hoover, Hoover-Mead #7 and Hoover-Mead #5 230-kV Transmission Lines. The lines would continue to operate as is with no provisions for a double-circuit reconfiguration. If the reconfiguration was not conducted, the purpose and need of the project would not be met and Western's electrical transmission system would be disrupted.

Alternatives Considered but Eliminated from Further Consideration

Seven electrical transmission reconfiguration options were developed by Western and presented in the Hoover Dam Bypass Project EIS. Three of the seven options involved removing the A&N Switchyard and replacing a single-circuit line with a double-circuit line to the Mead Substation, which is addressed as Phase II.

In Phase II, removing the A&N Switchyard and replacing a single-circuit line with a double-circuit line to the Mead Substation are directly a result of the Phase I work covered under the Hoover Dam Bypass Project EIS. The following alternatives were reviewed and dismissed from further consideration.

- A new single-circuit 230-kV transmission line from a Hoover Dam switchyard to the Mead Substation would require new ROW and extensive environmental review and was therefore

eliminated from further consideration. The last existing ROW corridor was developed by the Colorado River Commission and the Nevada Power Company.

- Double-circuiting the new Henderson-Mead #1 230-kV Transmission Line with the Existing Hoover-Mead #1 230-kV Transmission Line from the A&N Switchyard to the Mead Substation was dismissed. The northern portion of this transmission line (approximately four miles) is accessible by foot or helicopter only, requiring either new access roads to structure locations, or hand-labor and helicopter construction methods. As a result, Western determined this alternative not feasible and eliminated it from further consideration.
- Fiber optic cable replacement on the Hoover-Mead #1 230-kV Transmission Line from Hoover Power Plant to the Mead Substation was also discussed. The current fiber optic cable is outdated, not allowing for new compatible connections. Replacing the fiber optic cable with new cable to increase capacity and compatibility results in the same restricted access issue as described above; the alternative was therefore eliminated from further consideration.

2.3 RESOURCE PROTECTION MEASURES

Western would incorporate the following resource protection measures into project construction specifications to protect natural, human, and cultural resources in the project area. These protection measures have been approved by Western's Desert Southwest Region for all construction activities and are designed to minimize, reduce, or eliminate impacts of the Proposed Action. Specific mitigation measures that would be implemented to reduce impacts to particular environmental resources are described in Chapter 4 – Environmental Consequences.

Land Use

- The ROW, temporary construction areas, access road buffer zones, and staging areas would be restored as near to the original condition as practicable. Where necessary, land would be restored to its original contour and natural drainage patterns along the ROW.
- All construction vehicle movement outside the ROW would be restricted to pre-designated access or public roads and the areas authorized for use beyond the existing ROW.
- Existing laydown areas would be used to store equipment and supplies during construction. Western would confer with the Bureau of Reclamation (BOR) on utilization of existing areas for use as a laydown area.
- No new material sources (borrow sites) would be utilized or required for construction. Other aggregates may come from readily available commercial sources in Boulder City, Las Vegas, and Kingman.

- In the event of property damage caused by the activities of Western personnel or contractors, Western would quickly investigate and reasonably attempt settlement with the party who incurred property damages.

Biological Resources

- Wherever possible vegetation would be left in place and the original contour would be maintained. The objective of this measure is to avoid excessive root damage and allow for re-sprouting.
- Holes would be covered at the end of each construction day to prevent wildlife from entering unfilled auger holes.
- Trash would be stored in scavenger-proof containers and removed from the field at the end of construction activity each day.
- Speed limits along the ROW and access roads would be restricted to 15 miles per hour.
- All construction vehicles would be washed prior to initial ingress to the project area to prevent the intrusion of invasive weeds.
- Fill, rock, or additional topsoil would be obtained from the project area (ifriprap is obtained from sources outside the project area, it would be cleaned prior to entering the project site).
- Desert soils would be stored on or near its original location to minimize impacts to vegetation, reduce the potential for compaction and erosion of bare soils, and minimize the spread of invasive species (if possible, desert soil replacement techniques would be used to re-establish desert crust surfaces).
- No imported topsoil or hay bales would be used for erosion control.
- Special status species or other species of particular concern would be considered during project implementation under Western's guidance. This may entail conducting surveys for plant and wildlife species of concern in temporary use areas. In cases where such species are identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat and may include monitoring construction activities.
- Biological monitors would inspect areas identified for ground clearing and leveling for active bird nests prior to the start of these activities. Actions would be taken to ensure no migratory birds, their nests, or nest contents would be harmed during construction.

Cultural Resources

- Management recommendations for National Register-eligible archaeological sites and traditional cultural properties include restrictions to access along existing roads, restricting structural maintenance to certain areas to avoid impacting sites, and having an archaeological and/or tribal monitor present, if needed, during construction.

- Western would continue to consider cultural resources during post-EA phases of project implementation. In consultation with the State Historic Preservation Officers, Western would develop and implement specific mitigation measures to minimize any identified impacts. These may include modifying the project to avoid adverse impacts, monitoring of construction activities, and conducting data recovery studies.

Visual Resources

- The limits of construction activities would be predetermined, with activity restricted to and confined within those limits.
- No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity.
- In designated areas, Permeon or similar product would be applied to disturbed rocky surfaces to resemble desert varnish. This would be applied under contract to the FHWA once the Hoover Dam Bypass Project and Western's Phase I and II construction have been completed.

Air Quality

- All applicable permits pertaining to dust abatement and blasting would be obtained and maintained.

Water Resources

- Western would ensure that all construction activities minimize disturbance to vegetation, drainage channels, and stream banks.
- Construction methods shall be designed to minimize erosion and would include installation of cross drains, placement of water barriers adjacent to the road, and the application of Best Management Practices. Western's standard construction specifications require the contractor to obtain any and all necessary Federal and State permits required for stormwater run-off, including a NPDES permit.

Geology and Soils

- Except where necessary for the safe installation of the new structures, measures would be taken to confine vehicle traffic to the existing roads within the ROW and minimize the disturbances to the soil protective mechanisms (i.e., the algal crusts, desert pavement, and vegetation).
- No construction would occur when the soil is too wet to adequately support construction equipment. If grading operations associated with replacing a pole have altered the original ground topography, crews would reshape the ground surface to approximate the original topography.
- In construction areas where ground disturbance is substantial or where re-contouring is required, surface restoration would occur as required by land management agencies. The method of restoration

typically includes returning impacted areas back to their natural contour, installing cross drains for erosion control, placing water bars in the road, and filling ditches.

- If construction crews find paleontological resources during construction activities, Western would meet or exceed the National Park Service's (NPS) guidelines on paleontological resource management.

Noise

- All engine-powered equipment would have mufflers installed according to the manufacturer's specifications and would comply with applicable equipment noise standards.
- Construction crews would locate stationary construction equipment as far from nearby noise sensitive properties as possible.
- Idling equipment would be shut off when possible.
- Construction operations would be rescheduled to avoid periods of noise annoyance, as determined through consultation with the BOR and NPS.
- Affected parties would be notified whenever extremely noisy work, including blasting, would occur.

Health and Safety

- During construction, standard health and safety practices would be conducted in accordance with the Occupational Health and Safety Administration's policies and procedures.

Hazardous Materials and Solid Waste

- A Spill Prevention Notification and Cleanup Plan would be prepared before construction.
- No debris would be deposited in the ROW or temporary use areas.
- Hazardous materials, fuels, and lubricants would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.
- All fuel or hazardous waste leaks, spills, or releases would be reported immediately to Western, FHWA, and the Federal agency that administers the land where the incident occurs.
- Removing oil-filled equipment is not expected; however, if required, the oil must be removed and disposed of in accordance with Federal, State, and local laws.

3.0 AFFECTED ENVIRONMENT

The affected environment describes the existing condition of the environmental resources within the project area. Resources potentially susceptible to impacts from the proposed double-circuit reconfiguration project are identified and described below. These include:

- Land Use
- Biological Resources
- Cultural Resources
- Visual Resources
- Air Quality
- Water Resources
- Geology and Soils
- Noise
- Socioeconomic Resources
- Health and Safety
- Hazardous Materials and Solid Waste

3.1 LAND USE

Land Ownership/Management

Existing land ownership within the project area falls under three Federal agency jurisdictions and one local agency jurisdiction (see Figure 1-1). The three areas with Federal agency jurisdiction include the Lake Mead National Recreation Area (LMNRA), managed by the U.S. Department of the Interior's (DOI) NPS; the Hoover Dam Reservation Area, managed by DOI's BOR; and land associated with the Mead Substation managed by the DOE's Western Area Power Administration. Approximately half of the lands within the project area fall under Boulder City municipal jurisdiction, which is immediately adjacent to the LMNRA. Near the Mead Substation at the southern extent of the project area, the proposed Western's transmission line crosses Federal lands administered by Western (Table 3-1).

TABLE 3-1
SUMMARY OF LAND OWNERSHIP, STRUCTURES, AND RIGHT-OF-WAY OCCUPATION

Ownership	Approx.Number of Structures	Approx. Length	Approx. ROW Area*
Boulder City	23	4.74 miles	115.0 acres
National Park Service	6	2.24 miles	54.42 acres
Bureau of Reclamation	2	0.71 miles	17.08 acres
Western	2	1.11 miles	27.0 acres
TOTAL:	**33**	**8.8 miles**	**213.5 acres**
* Calculated using a 200-foot ROW width			

Existing Land Use

Existing land use in the project area includes utility ROW where various transmission lines extend through an approximate 1,000-foot wide utility corridor between the Hoover Dam and the Mead Substation. Within this corridor, Western occupies approximately eight miles or 190 acres of ROW for the existing Hoover-Mead #7 and #5 Transmission Lines. Except for these existing transmission line facilities, the project area is primarily undeveloped.

The Hoover Dam Reservation Area (Reservation) delineates lands managed by BOR for security purposes and to operate and maintain the Hoover Dam, its buildings and structures, electric transmission lines, structures, switchyards, and spoil disposal sites. BOR has not prepared a specific management plan to guide development within the Reservation; however, public access to certain areas within the Reservation is restricted, and portions of the area are fenced (FHWA 2001).

On the north end of the project area, the existing transmission line corridor extends through the Eldorado Mountains and a Wilderness Suitability Area within the LMNRA. Within the LMNRA, there are multiple recreation trails and established NPS backcountry roads. These roads and trails are frequently used for hiking, equestrian activities, and four-wheel vehicle use. As such, NPS's priority is to maintain access to these roads and trails. No pedestrian or bicycle routes are within the immediate project vicinity for the proposed project; however, many different recreationalists use existing transmission line maintenance roads throughout the project area.

Boulder City is comprised of an urban and suburban core with undeveloped open space. Developed land uses in the city are about one mile from the project area. The developed land uses within the community are primarily residential, while commercial/retail uses are concentrated in the city's northwest area. Along the southern-most portion of the corridor, the proposed transmission line facilities would be located near the private Boulder City Rifle Range, located within 0.25-miles east of the transmission line corridor. In this same area, the Boulder City Municipal Landfill is west of the proposed project alignment. The 100-acre landfill currently serves Boulder City and the LMNRA. The Mead Substation and the BOR's Southwestern Complex, are at the southern end of the project area.

No agricultural land uses occur within the project area, and no areas are designated for future agricultural development. Areas of the County used for livestock grazing purposes are generally in Northeast Clark County along the Muddy and Virgin River Valleys. The majority of rangeland used within Clark County is for animals such as feral horses, burros, mule deer and desert bighorn sheep. The LMNRA is closed to livestock grazing for environmental reasons.

Planned Land Use

Lands immediately adjacent to the proposed project facilities are almost entirely devoted to electrical transmission lines. Although no formally designated utility corridors are associated with the proposed project, land management agencies incorporate these transmission lines and non-designated utility corridors into their land use plans.

The NPS Lake Mead General Management Plan (GMP) was approved in 1986 for a period of 25 years. The project area is located within the Boulder Basin Zone of the GMP. The land next to the existing transmission line corridor is in the Natural Environment sub-zone. This sub-zone emphasizes natural resources conservation and environmentally compatible recreational activities. This sub-zone contains land with natural values and is not open to domestic livestock grazing.

The Clark County Multi-Species Habitat Conservation Plan (MSHCP) was approved in November 2000. The plan addresses the conservation needs of many biological resources in Clark County. The plan's primary objective is to achieve a balance between conservation of natural habitat and native species of Clark County, and the beneficial use of the land for development purposes.

Boulder City is currently updating its Master Plan, completed in 1991. The Master Plan focuses on the community's developed portion and does not identify planned land uses near the project area. The Master Plan Update identifies a long-term desire to provide access to adjacent public lands and regional trails. Although no formal planned trails have been designated, the plan identifies several potential linkages to a regional trails network that serves the outlying areas of Clark County.

Other land uses planned for the project area include the U.S. 93 Hoover Dam Bypass Project and the U.S. 93 Boulder City Bypass Highway Project, where a preferred corridor has been identified parallel to a major portion of the proposed project facilities.

3.2 BIOLOGICAL RESOURCES

Vegetation

Vegetation within the project area can be characterized as a creosote bush (*Larrea tridentata*) – white bursage (*Ambrosia dumosa*) community (Turner 1982), which are the most common plants in the Mojave Desert and within the project area. Other common species observed in the project area during pedestrian surveys include flat-topped buckwheat (*Eriogonum fasciculatum*), range ratany (*Krameria parvifolia*), brittle bush (*Encelia farinosa*), joint fir (*Ephedra nevadensis*), beavertail cactus (*Opuntia basilaris*),

barrel cactus (*Ferocactus ancanthodes*), and cholla (*Opuntia* spp.). Common herbs and forbs include desert mallow (*Sphaeralcea ambigua*), desert chicory (*Rafinesquia neomexicana*), little trumpet (*Eriogonum inflatum*), evening primrose (*Camissonia californica*), fiddleneck (*Amsinckia intermedia*), and spiny chorizanthe (*Chorizanthe rigida*). Common grasses include Arabian grass (*Schismus arabicus*), fluff grass (*Erioneuron pulchellum*), and red brome (*Bromus madritensis rubens*).

Wildlife

The project area supports wildlife characteristic of the Mojave Desert. Substrate, vegetation, topography, and distance to water are the important elements in determining wildlife habitat and diversity. For example, the desert tortoise *(Gopherus agassizii)* requires friable soils or natural shelter sites while desert bighorn sheep require steep mountainous terrain. The most abundant mammals are rodents, such as kangaroo rats (*Dipodomys* sp.), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), desert woodrat (*Neotoma lepida*), white-foot mice (*Peromyscus* sp.), and pocket mice (*Perognathus* sp.). Other common mammals in the project area include the desert bighorn sheep (*Ovis canadensis nelsoni*), desert cottontail (*Sylvilagus audubonii*), and black-tailed jackrabbit (*Lepus californicus*). Carnivores in the project area include the coyote (*Canis latrans*), mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), and kit fox (*Vulpes macrotis*). Common birds include the house finch (*Carpodacus mexicanus*), common raven *Corvus corax*), mourning dove (*Zenaida macroura*), black-throated sparrow *Amphispiza bilineata*), and cactus wren (*Campylorhynchus brunneicapillus*). Common reptiles include the desert horned lizard (*Phrynosoma platyrhinos*), side-blotched lizard (*Uta stansburiana*), collared lizard (*Crotaphytus collaris*), zebra-tailed lizard (*Callisaurus draconoides*), desert spiny lizard (*Sceloporus magister*), speckled rattlesnake (*Crotalus mitchelli*), western diamondback rattlesnake (*C. atrox*), sidewinder rattlesnake (*C. cerastes*) and desert tortoise. This list of wildlife species was compiled from Burt and Grossenheider 1976; Clark County 2000; Heindl 2001; FHWA 2001; and Turner 1982.

Special Status Species

The U.S. Fish and Wildlife Service (USFWS) endangered, threatened, proposed, and candidate species occurring within Clark County are presented in Table 3-2. The list of special status species was examined to assess their potential to occur within the project study area. The majority ofthese Federally listed species were eliminated from further review based on the following criteria:

Criteria 1) Their known geographic ranges and distribution are distant from the project study area.

Criteria 2) The project study area does not contain conditions similar to those known to be necessary to support these species.

TABLE 3-2

SUMMARY OF USFWS LISTED SPECIAL STATUS SPECIES FOR CLARK COUNTY AND EVALUATION OF OCCURRENCE WITHIN THE PROJECT AREA

Species	Status	Potential Occurrence Within Study Area; Basis of Occurrence Determination	Evaluation and Elimination Criteria
Bald eagle *Haliaeetus leucocephalus*	T	Possible; suitable habitat (cliffs near water such as reservoirs). Wintering birds are known to occur in the LMNRA.	This species may occur within the project area and is not eliminated.
Bonytail chub *Gila elegans*	E	None; no suitable aquatic habitat.	Criteria 2
Colorado pike minnow *Ptychocheilus lucius*	E	None; no suitable aquatic habitat.	Criteria 2
Desert tortoise *Gopherus agassizii*	T	Present; project area includes low, desert creosote bush scrub vegetation typical of desert tortoise habitat.	This species occurs within the project area and is not eliminated.
Devil's Hole pupfish *Cyprinodon diabolis*	E	None; no suitable aquatic habitat.	Criteria 2
Humpback chub *Gila cypha*	E	None; no suitable aquatic habitat.	Criteria 2
Lahontan cutthroat trout *Oncorhynchus clarki henshawi*	T	None; no suitable aquatic habitat.	Criteria 2
Moapa dace *Moapa coriacea*	E	None; no suitable aquatic habitat.	Criteria 2
Mountain plover *Charadrius montanus*	PT	None; no suitable habitat (open arid plains, short grass prairies, croplands, and scattered cactus).	Criteria 2
Pahrump poolfish *Empetrichthys latos*	E	None; no suitable aquatic habitat.	Criteria 2
Razorback sucker *Xyrauchen texanus*	E	None; no suitable aquatic habitat.	Criteria 2
Relict leopard frog *Rana onca*	C	None; no suitable aquatic habitat (requires springs).	Criteria 2
Southwestern willow flycatcher *Empidonax traillii extimus*	E	None; no suitable habitat (cottonwood/willow and tamarisk vegetation communities along rivers and streams. At elevations less than 8,500 feet).	Criteria 2
Virgin River chub *Gila seminuda*	E	None; no suitable aquatic habitat.	Criteria 2
Western yellow-billed cuckoo *Coccyzus americanus*	C	None; no suitable habitat (large blocks of riparian habitat along perennial streams or rivers).	Criteria 2
Woundfin *Plagopterus argentissimus*	E	None; no suitable aquatic habitat.	Criteria 2
Yuma clapper rail *Rallus longirostris yumanensis*	E	None; no suitable habitat (breeds in freshwater marshes and inhabit brackish water marshes and side waters preferring tall dense cattail and bulrush marshes).	Criteria 2

TABLE 3-2

SUMMARY OF USFWS LISTED SPECIAL STATUS SPECIES FOR CLARK COUNTY AND EVALUATION OF OCCURRENCE WITHIN THE PROJECT AREA

Species	Status	Potential Occurrence Within Study Area; Basis of Occurrence Determination	Evaluation and Elimination Criteria
USFWS categories: **Endangered (E) –** Taxa in danger of extinction throughout all or a significant portion of its range; **Threatened (T)/Proposed Threatened (PT) –**Taxa likely to become endangered within the foreseeable future throughout all or a significant portion of its range; **Candidate (C)**– Species for which the USFWS has sufficient information on biological vulnerability and threats to support proposals to list as Endangered or Threatened. Candidate species, however, are not protected legally because proposed rules have not been issued. [Source: USFWS database (http.//ifw2es.fws.gov/EndangeredSpecies/lists/)]			

Based on review of the special status species in Table 3-2, the desert tortoise and bald eagle may occur within the project study area. These species and their relationship to the proposed project site are discussed in detail below.

Desert Tortoise

The Mojave population of the desert tortoise occurs west and north of the Colorado River, from southern Utah into Mexico. The tortoise is usually found in creosote bush scrub, with a preferred habitat including scattered shrubs with sufficient herbaceous understory to provide sustenance. The desert tortoise is completely terrestrial. Habitat requirements include cover sites, such as rock crevices for shelter and suitable substrates for digging burrows and nest sites. Throughout the Mojave Region, desert tortoises occur on flats and bajadas with soils ranging from sand to sandy-gravel, and rocky terrain and slopes (USFWS 1994b). Vegetation in desert tortoise habitat usually consists of scattered shrubs and abundant inter-shrub space for growth of herbaceous plants. The most common plant associated with their habitat is creosote bush. Desert tortoises are primarily herbivores, foraging on grasses, forbs, cacti, and the flowers of annual plants (USFWS 1994b). Activity patterns of the desert tortoise are closely tied to ambient temperatures, moisture, and forage availability. Desert tortoises spend much of their lives in burrows. They are active through the spring and portions of the summer through late fall. Their active season is typically defined as March 1 through October 31.

Field investigations confirmed that the southern portion of the project area (the first 5.2 miles north of the Mead Substation) is suitable desert tortoise habitat.

Bald Eagle

The bald eagle was Federally listed as endangered in 1967 (32 FR 4001), but later down-listed to threatened (USFWS 1995). It is currently proposed for removal from the list of endangered and

threatened species (USFWS 1999). Bald eagles are large birds of prey and adult birds are distinguished by a white head and tail, and a large yellow bill. Because of their large size, bald eagles require a substantial prey base consisting mainly of fish, small- and medium-sized mammals, and carrion. Nest sites are typically in large trees or on cliffs near water, where fish are abundant. Wintering birds are known to occur in the LMNRA (FHWA 2001). There are no nests or communal winter roosts in the project area.

Other Special Status Species

Other special status species are those plants and animal species that are of interest to the USFWS and/or the State but are not afforded any special protection under the Endangered Species Act (ESA).Rosy twotone beardtongue (*Penstemon bicolor* ssp. *roseus*), Las Vegas bearpaw poppy (*Arctomecon californica*), banded Gila monster (*Heloderma suspectum cinctum*), chuckwalla (*Sauromalus obesus*), peregrine falcon (*Falco pereginus*), western burrowing owl (*Athene cunicularia hypugea*), desert bighorn sheep (*Ovis canadensis nelsoni*), and several bat species may occur within the project area, and are discussed in more detail below.

Rosy Twotone Beardtongue

Rosy twotone beardtongue is a Federal species of concern. This perennial plant typically occurs in gravel washes or disturbed roadsides at elevations from 1,800 to 4,800 feet and flowers from mid-March to mid-May (Nevada Natural Heritage Program 2001). It is known to occur within the LMNRA but has not been observed in the project area (FHWA 2001; Heindl 2001). No rosy twotone beardtongue was observed during field investigations.

Las Vegas Bearpaw Poppy

The Las Vegas bearpaw poppy, a Federal species of concern, is a perennial plant that grows in areas such as barren, gravelly desert flats, hummocks, and slopes. This species occurs within the LMNRA; however, it was not observed during field investigations and is unlikely to occur in the project area.

Banded Gila Monster

Banded Gila monsters are protected from collection or killing under Nevada law (Nevada Revised Statute [NRS] 501.110) and are a Federal species of concern. This species is common in mountainous areas throughout the region. Gila monsters are likely to occupy rocky outcrops; however, they could occur virtually anywhere in the project area (Stebbins 1985).

Chuckwalla

Chuckwallas, a Federal species of concern, are protected from collection or killing under Nevada law (NRS 501.110). The chuckwalla is found throughout the deserts of the southwestern United States and northern Mexico. Chuckwallas inhabit rock outcrops where cover is available between boulders or in rock crevices typically on slopes and open flats below 6,100 feet. Typical habitat includes rocky hillsides and talus slopes, boulder piles, lava beds, or other clusters of rocks (Stebbins 1985). Habitat for this species exists over the northern portion of the project area. Numerous chuckwalla signs were located during the field investigations.

Peregrine Falcon

The peregrine falcon, a Federal species of concern, was previously Federally listed as endangered but was removed from the list in 1999 (USFWS 1999). This species is found across North America and typically occurs on isolated cliff ledges throughout their range (American Ornithologists Union 1983). Their principal prey species are passerine birds, waterfowl, and shorebirds (Johnsgard 1990). Peregrines may travel up to 17 miles from nest sites to hunting areas, which are often cropland, meadows, river bottoms, marshes, and reservoirs which attract abundant bird life (Ellis 1982). Breeding territories could be situated within the mountainous portions of the project area (FHWA 2001). No peregrine falcons were observed during field surveys.

Western Burrowing Owl

Western burrowing owls, a Federal species of concern, are generally associated with open habitats such as grasslands, pastures, desertscrub, and margins of agricultural fields. They can adapt to urban environments. This species has a strong association with other burrowing species, such as rodents (Brown 2001). No suitable habitat was observed during field surveys.

Desert Bighorn Sheep

Desert bighorn sheep, a state protected species, occupy the mountainous portion of the project area and several were observed and photographed during the field investigations. The combination of rugged topography and water availability in the project area provides high quality habitat for this species. The northern Eldorado Mountains and adjacent River Mountains support one the most important bighorn populations in the State (McQuivey 1978). Field surveys confirmed that the northern portion of the project area is suitable bighorn sheep habitat (approximately three miles).

Bat Species

Several Federal species of concern and/or state protected bat species may occur in the project area. They include the big free-tailed bat (*Nyctinomops macrotis*), California leaf-nosed bat (*Macrotus californicus*), cave myotis (*Myotis velifer*), fringed myotis (*Myotis thysanodes*), greater western mastiff bat (*Eumops perotis californicus*), long-eared myotis (*Myotis evotis*), long-legged myotis (*Myotis volans*), small-footed myotis (*Myotis ciliolabrum*), spotted bat (*Euderma maculatum*), and Yuma myotis (*Myotis yumanensis*). Suitable roosting habitat exists for several species of bat in the mountainous portions of the project area. No significant bat roosts or colonies have been reported in the project area (FHWA 2001;Heindl 2001), nor were any observed during field surveys for this project. A significant bat roost is one frequently used by several bats; commonly deep caves or mine shafts and adits. These sites are easily identified by the accumulation of bat guano and odor at the site. The most extensive survey effort in the project vicinity was part of the environmental evaluation of the U.S. 93 Hoover Dam Bypass Project, which reported low densities of bats. Methods included mist netting and identifying bats from recording echolocation calls (FHWA 2001).

3.3 CULTURAL RESOURCES

Cultural resources are sites, places, objects, buildings, structures, or districts that are of archaeological, ethnohistorical, historical, architectural, cultural, or scientific importance. Federal laws and statutes protect such resources and must be addressed when Federally sponsored, funded, or licensed projects threaten cultural resources. Most notable among these are the Antiquities Act of 1906; the Archaeological Resources Act of 1979 (ARPA); the National Historic Preservation Act of 1966 (NHPA), as amended; NEPA; the Archaeological and Historical Preservation Act of 1974, which amends the Reservoir Salvage Act of 1960; and the American Indian Religious Freedom Act of 1978. The following discussion summarizes the Cultural Resources Inventory Report prepared for the proposed project by Transcon Environmental (Bassett 2003).

Archaeological Resources

Transcon conducted an intensive cultural survey of the project area associated with the Hoover Dam Bypass Project Phase II in April and May 2003 to identify cultural resources within and adjacent to the 200-foot utility ROW and existing access roads. The survey also made recommendations to mitigate these resources during structure placement and replacement, road construction and repair, and transmission line and road maintenance.

A literature review and record search was compiled from previous cultural resources studies, historic maps, and cultural resource site files located at the Harry Reid Center at the University of Nevada, Las Vegas and the BOR, Lower Colorado River Regional Office. About 58 previous cultural resource surveys have been conducted within one-half mile of the proposed project area. Recent surveys that overlap or are adjacent to the project area include the U.S. 93 Hoover Dam Bypass EIS and the U.S. 93 Boulder City Corridor Study. As a result of these previous surveys and other, less formal efforts, 55 previously recorded prehistoric and historic sites were identified within one-half mile of the proposed project area.

The 200-foot transmission line ROW was surveyed along with other survey areas near the Los Angeles Switchyard, Boulder City Tap, and Mead Substation, and along designated access roads in the project area. A total of about 600 acres were surveyed during an eight person-day field effort from March 19 through 22, 2003.

As a result of the previous cultural resource surveys and pedestrian surveys conducted for this project, 23 cultural resource sites have been identified within the project area (Table 3-3). All but four of these were previously recorded sites. Each previously recorded site was examined, compared to the current documentation, and reviewed for National Register of Historic Places (NRHP) eligibility. In addition, 15 isolated occurrences were identified during the field investigations. These include nine lithics or small lithic scatters, four historic rock clusters or cairns, and two historic artifacts. The lithics are mostly comprised of unworked local chalcedony flakes. By definition, isolated artifacts are ineligible for NRHP listing.

Of the 19 previously recorded sites, 12 were formerly determined eligible for NRHP listing. These include the Hoover Dam Historic District (26CK3916), the Hoover Switchyard and Transformer Complex (26CK4765), the U.S. Construction Railroad (26CK4046a), a compilation of 18 transmission lines (26CK5180), and eight individual transmission lines (26CK6249, 26CK6250, 26CK6237, 26CK6238, 26CK6240, 26CK6242, 26CK6251, and NV-27-O). The Hoover Dam Historic District has no delineated boundaries and includes each smaller recorded site (i.e. individual transmission lines) along with others away from the project area. Likewise, one of the transmission line designations (26CK5180) is a compilation of 18 separate transmission lines, and is also included in the eight recorded here. The Hoover Switchyard and Transformer Complex includes the Los Angeles and Metropolitan Water District Switchyards in the northern portion of the project area. The Sullivan Turquoise Mine site (26CK23) is unevaluated due to the uncertainty of its boundary and the highly dispersed nature of the site. Based on the field survey conducted for this project, the site does not extend into the project area and no features or

artifacts associated with this site were identified. An ethnographic study will examine this site as a potential traditional use place.

According to the Advisory Council on Historic Preservation (ACHP), for a resource to qualify for listing on the NRHP it must meet one or more of the following criteria:

criterion a) Possess association with important events that have made a significant contribution to the broad patterns of our history.

criterion b) Have an association with the lives of important persons.

criterion c) Display distinctive characteristics of a type, period of method of construction, such as unique architecture, craftsmanship, or design.

criterion d) Have the capacity to provide important information about the past.

TABLE 3-3
ARCHAEOLOGICAL SITES WITHIN THE PROJECT AREA

Site No.	Site Type	Reference	NRHP
26CK23	Sullivan Prehistoric/Historic Turquoise Mining District	Wedding 2001	Unevaluated
26CK3916	Hoover Dam Historic District (no boundary delineated)	Middleton 1979	Eligible criteria a/c
26CK4046a	U.S. Construction Railroad	White 1997	Eligible criteria a/c
26CK4765	Hoover Switchyard and Transmission Complex	Queen 1992	Eligible criterion c
26CK5180	18 Transmission Lines	Blair 1994; Schweigert 1999	Eligible criterion a
26CK6237 NV-27-M	LABPL #2 Transmission Lines (Currently named Hoover-Mead #7 230-kV Transmission Line)	Schweigert 2002	Eligible criteria a/c
26CK6238 NV-27-M	LABPL #1 Transmission Lines	Schweigert 2002	Eligible criteria a/c
26CK6239	Reservation Boundary Road	Schweigert 2002	Ineligible
26CK6240 NV-27-P	Metropolitan Water District Transmission Line 1 (Currently named Hoover-Mead #5 230-kV Transmission Line)	Schweigert 2002	Eligible criterion a
26CK6241	Metropolitan Water District Transmission Line 2	Schweigert 2002	Ineligible
26CK6242 NV-27-M	LABPL #3 Transmission Lines	Schweigert 2002	Eligible criteria a/c
26CK6249	Southern California Edison North Transmission Line	Schweigert 2002	Eligible criterion a
26CK6250	Southern California Edison South Transmission Line	Schweigert 2002	Eligible criterion a
26CK6251 NV-27-O	Hoover-Basic South Transmission Line	Schweigert 2002	Eligible criterion a

TABLE 3-3
ARCHAEOLOGICAL SITES WITHIN THE PROJECT AREA

Site No.	Site Type	Reference	NRHP
NV-27-O	Magnesium Basic #1 North Transmission Line (Currently named Henderson-Hoover 230-kV Transmission)	Schweigert 2002	Eligible criterion c
26CK6252	Joint Telephone Line and Construction Road	Schweigert 2002	Ineligible
26CK6253	Boulder City Tap to Boulder City #2 Substation 69-kV Line	Schweigert 2002	Ineligible
26CK6255	Basic Tap/Boulder City Tap Substation	Schweigert 2002	Ineligible
26CK6450	Hoover-Mead Transmission Line (formerly Davis-Hoover)	Schweigert 2002	Ineligible
26CK6723	Historic utility line	Bassett 2003	Recommended Ineligible
26CK6724	Historic road	Bassett 2003	Recommended Ineligible
26CK6725	2 rock circles; primary lithic reduction area	Bassett 2003	Recommended Eligible
26CK6726	3 rock shelters; lithics	Bassett 2003	Recommended Eligible

As shown in Table 3-3, four new sites were recorded. These sites are:

1) Site 26CK6723, which consists of three utility pole stubs, located near Hoover Dam. The site is recommended as ineligible for NRHP listing.

2) Site 26CK6724 consists of a short stretch of bulldozed road constructed to access electric transmission line structures originating at the Hoover Dam Switchyards. Four artifacts were identified in association with the road. The site is recommended as ineligible for NRHP listing.

3) Site 26CK6725 is a prehistoric site consisting of one partial and two complete stone circles and a small lithic scatter. The site is recommended as eligible for NRHP listing under criteria a and d.

4) Site 26CK6726 is a prehistoric site consisting of a distinctive conglomerate monolith that contains three separate rock shelters. One of the shelters has been extensively pot-hunted, and includes a small artifact scatter. The site is recommended as eligible for NRHP listing under criterion d.

Places of Traditional Cultural Importance to Native Americans

Identification of traditional places of cultural importance to Native Americans is being conducted in accordance with the NHPA, as amended in 1992, the American Indian Religious Freedom Act (AIRFA), and Executive Order 13007. Western is consulting with appropriate tribes to determine their concern for

specific places of traditional cultural importance. A list of tribes Western has consulted is provided in Chapter 5, Agencies and Persons Consulted. Western is committed to evaluate places of traditional cultural importance identified during tribal consultations to determine if they are traditional cultural places (TCPs) eligible for NRHP in accordance with National Register Bulletin 38. Places of traditional importance to Native Americans, or TCPs, may be either natural or cultural features they consider sacred, or culturally important. TCPs may include natural rock outcrops, archaeological sites, prayer circles, springs, and trails.

In previous studies for the U.S. 93 Hoover Dam Bypass Project, some Native American groups identified the Sullivan Turquoise Mine as significant. Additionally, in studies conducted for the U.S. 93 Boulder City Corridor Study, two cultural resource sites relating to the McClanahan District (26CK6278 and 26CK6281) located outside the Hoover Dam Bypass Phase II project area, were recommended as potential TCPs. Native American communities consulted for this project identified site 26CK6725 and site 26CK6726 as cultural properties of interest or concern to their communities which makes them eligible for the NRHP under criterion a. Western plans to conduct an ethnographic overview, which will further define TCPs in or near the project area.

3.4 VISUAL RESOURCES

The visual resources of the landscape associated with the proposed project area are a mixture of natural physical landscape elements (mountains, canyons, and valleys) and the human-made elements (transmission lines and structures, access roads, and substation infrastructure). The proposed project passes through various topographical settings. Steep mountains and canyons dominate the northern section, while the project's southern portion is composed of a series of washes and ravines and a large relatively flat bajada into the Eldorado Valley. Vegetation within the project area includes mostly small-scale brush species, such as creosote bush and bursage, which does not impede views that often extend to distant horizons. Multiple transmission lines and accompanying access roads bisect the landscape in many directions. Other high-voltage transmission line structures and conductors accompany the transmission line infrastructure that the proposed project would replace on either side for the entire project length. The infrastructure associated with the transmission line corridors is visually composed of various linear and geometric forms as well as metallic colors and textures. The unusually large amount of transmission infrastructure, its prominent scale, and its strong linear elements make it the dominant visual element within the project's existing landscape.

The proposed project is in a generally rural, undeveloped area and has only limited views from transportation corridors or residential areas, which include U.S. 93 near the La Hacienda Casino and Boulder City. Views from U.S. 93 to the existing facilities are momentary in nature and are generally absorbed by the presence of other transmission line facilities. Views toward the transmission corridor from Boulder City are limited by the distance of the community from the proposed project alignment and the presence of other transmission line infrastructure.

The proposed project passes through the LMNRA, managed by theNPS. To protect valuable scenic resources within the LMNRA, the NPS has identified and designated specific areas for special management. These areas are referred to as "outstanding natural features" and are selected based on uniqueness, critical habitat protection, aesthetic, and recreational value. There are no areas within the project alignment identified as outstanding natural features or scenic areas. Additionally, the proposed project passes through boundary limits of Boulder City. The Boulder City Master Plan identifies one of its goals as the need to "consider the historic, cultural, aesthetic, and visual relationships in the planning of the community" as well as to "support and promote efforts to improve the appearance and image of the community."

3.5 AIR QUALITY

Air quality is determined by the concentration of various pollutants in the atmosphere. The type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions are all important air quality factors. Based on the concentration of certain pollutants, commonly referred to as "criteria" pollutants, areas within Nevada are designated as: 1) non-attainment (areas in which ambient pollutant concentration exceed one or more of the Federal standards); 2) attainment (areas meeting Federal standards); or 3) unclassifiable (areas where no information is available to determine if standards are met).

Air quality is measured by ambient air concentrations of specific pollutants that have been determined by the U.S. Environmental Protection Agency (EPA) to be harmful to the public's health and welfare. The EPA's Prevention of Significant Deterioration (PSD) program requires Federal or State permits for new or modified sources of air pollution. The permits are intended to restrict new emissions in areas where the current air quality exceeds the quality standards. National Ambient Air Quality Standards (NAAQS) have been established for these criteria pollutants, (Table 3-4) to protect public health and to prevent environmental degradation (e.g., impairing visibility, damaging vegetation and property). The six criteria pollutants are ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2),

particulate matter (PM_{10}), and lead (Pb). EPA has classified the Las Vegas Valley as a serious non-attainment area for eight-hour carbon monoxide (CO) NAAQS based on monitored air quality data (Clark County 2003).

TABLE 3-4
AMBIENT AIR QUALITY STANDARDS FOR CLARK COUNTY

Pollutant	Concentration Time	Primary
Ozone (O_3)	1 Hour	0.12 ppm (235 $\mu g/m^3$)[3]
Carbon Monoxide (CO)	1 Hour 8 Hours	35.0 ppm (40 mg/m^3) 9.0 ppm (10 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual AM	0.05 ppm (100 $\mu g/m^3$)
Sulfur Dioxide (SO_2)	3 Hours 24 Hours Annual	0.10 ppm (260 $\mu g/m^3$) 0.10 ppm (260 $\mu g/m^3$) 0.03 ppm (60 $\mu g/m^3$)
Particulate Matter (PM_{10})	24 Hours Annual AM	150 $\mu g/m^3$ 50 $\mu g/m^3$
Lead (Pb)	30 Days Calendar Quarter	1.5 $\mu g/m^3$ 1.5 $\mu g/m^3$

ppm - parts per million; **mg/m^3** - milligrams per cubic meter; **$\mu g/m^3$** - micrograms per cubic meter

Notes:

[1]National standards (other than O_3, PM_{10}, and those based on annual periods) are not to be exceeded more than once per year. The new O_3 standard is based on a three-year average of the fourth highest eight-hour concentration in each year. For PM, the 24-hour standard is based on 99 percent (PM_{10}) or 98 percent ($PM_{2.5}$) of the daily concentrations, or averaged over three years.

[2]Equivalent units given in parenthesis are based upon reference conditions of a 25 degrees Celsius (°C) 77 degrees Fahrenheit (°F) and 760 millimeters (mm) (30 inches) mercury.

[3]EPA promulgated new Federal 8-hour O_3 and $PM_{2.5}$ standards on July 18, 1997. The Federal 1-hour O_3 standard continues to apply in areas that remain in violation of that standard. [Source: Clark County 2003]

A portion of the project area is within theEldorado Valley, which the Clark County Department of Air Quality Management (CCDAQM) has designated as a management area. Management areas often surround non-attainment areas and have the same or more stringent controls than a PSD area.

The closest CCDAQM air quality monitoring station operating near the study area is the Boulder City monitoring station at the U.S. 93 and Industrial Road intersection. The Boulder City monitoring station monitors CO, O_3 and PM_{10}. Table 3-5 presents a summary of the highest pollution values for CO and PM_{10} recorded at this station in 1998, 1999, and 2000.

TABLE 3-5
SUMMARY OF CRITERIA POLLUTANTS MONITORED AT BOULDER CITY

Pollutant	Averaging Time	Federal Primary Standards	Maximum Concentrations[1]			Number of Days Exceeding Federal Standards[2]		
			1998	1999	2000	1998	1999	2000
CO	1 Hour	35 ppm	5.1	6.2	4.7	0	0	0
CO	8 Hours	9 ppm	2.5	2.5	2.3	0	0	0
PM_{10}	24 Hours	150 $\mu g/m^3$	69.0	76.0	188.0	0	0	0
PM_{10}	Annual	50 $\mu g/m^3$	14.3	15.4	19.1	0	0	0

Notes:
[1] Concentration units for CO are in ppm; Concentration units for PM_{10} are in $\mu g/m^3$.
[2] For annual standards, a value of 1 indicates that the standard has been exceeded.
[3] CO monitoring data for Boulder City is not available on AIRSData. CO data from the Pittman Monitoring Station (located at 1137 North Boulder Highway) was used. [Source: EPA 2001]

3.6 WATER RESOURCES

Surface Water

Annual precipitation in the project area averages about 4.1-inches per year. Runoff from these precipitation events, which are almost entirely rainfall from infrequent winter storms and summer thunderstorms, is conveyed through desert washes. Much of the precipitation runoff from the mountains in the area is routed to the Colorado River or into Lake Mead. The Colorado River and Lake Mead are the only perennial water sources in the region.

The Nevada Division of Environmental Protection retains statutory authority for water quality through its Bureau of Water Quality Planning (BWQP). The BWQP collects and analyzes water data, develops and assigns standards for surface waters, publishes informal reports, provides water quality education, and implements programs that address surface water quality.

Groundwater

No known groundwater resources are located within the project vicinity of Eldorado Mountains. Volcanic rocks comprising these mountains are not considered suitable for significant aquifers formation. In addition, the lower lying areas within the Boulder City limits and south into the alluvial fan also have no groundwater sources. No known water wells are present within the project area (USGS 2003).

Floodplains and Wetlands

A floodplain is "that portion of a river valley, adjacent to the channel, which is built of sediments deposited during the present regimen of the stream and is covered with water when the river overflows its banks at flood stages". It is typically classified by the frequency of an expected storm that would lead to a flood large enough to cover an area to a specified elevation (American Geological Institute 1984). DOE defines floodplains as "the lowlands adjoining inland and coastal waters and relatively flat areas and floodprone areas of offshore islands including, at a minimum, that area inundated by a 1.0 percent or greater chance flood in any given year. The base floodplain is defined as the 100-year (1.0 percent) floodplain. The critical action floodplain is defined as the 500-year (0.2 percent) floodplain" (10 CFR 1022).

Of the six desert washes in the project area, one wash east of the Mead Substation has a floodplain designation of "Zone E", which is defined as an area with a less than one percent chance of an annual flood. This wash was delineated as part of the Boulder City/U.S. 93 Corridor Study and is planned for a revised floodplain designation (FHWA 2002). The remaining washes in the project area have no floodplain designation.

Federal regulations define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (40 CFR 230.3 and 33 CFR 328). Based on field investigations conducted in March and April 2003, no wetlands exist in the project area.

3.7 GEOLOGY AND SOILS

Local Geology

The transmission corridor extends through the Eldorado Mountains on the north and through bajadas (a wide, gentle slope of gravels) that have been washed down from the Eldorado Mountains on the south. The Eldorado Mountains are made up primarily of Precambrian metamorphic rocks with Precambrian intrusions dated at 1.37 billion years old. Atop these old rocks lie Tertiary volcanic rocks of mostly Oligocene and Miocene age (40 to 20 million years old). There are also Tertiary basalt flows of about the same general age as the tuffs. The entire system lies on the ancient Transcontinental Arch, which can be traced from about Minnesota to the Mojave Desert of California. This arch is all-Precambrian, and preserves many of Earth's earliest rocks. The Eldorado mountains were uplifted during the Miocene Basin and Range Uplift, about 15 million years ago (Bureau of Land Management [BLM] 2003).

Soils

Within the Eldorado Valley, rocks tend to disintegrate rather than decompose. Mechanical breakdown is common and localized rain events sweep large quantities of fragmented rock material into ravines and valleys, forming alluvial fans of coarser material. Finer-grained sediments are washed into the lowlands. Soils in this region are primarily Aridisols, which have one or more horizons that may have formed in the present environment, or may be relics from a former pluvial period. These soils do not retain water necessary to support plants, therefore, the surface is generally bare. Aridosols are often associated with desert pavement (BLM 1998).

Soils near the ground surface (0.5 feet in depth) are generally classified as very gravelly, sandy loam composed of mostly fine soil material. Underlying layers extending down to a depth of five feet contain more very gravelly, sandy loam and, in some areas, gypsum-based soil material or bedrock. Soil permeability ranges from 0.2 to 1.6 feet per hour, with the upper range of permeability generally occurring at depths greater than 10 feet (FHWA 2002).

Paleontological Resources

The inventory of paleontological resources examined specific geologic deposits and determined the known potential of those deposits to yield scientifically important or significant fossils. Because the Eldorado Mountains contain Precambrian (less than 570 million years ago) metamorphic rocks, no specific inventory for fossils was conducted in the project area, however fossils have been found in the Lake Mead region in years past. In 1987, a partial mammoth skeleton was exposed in an arroyo bank above the high water level of Lake Mead. The specimen was preserved in alluvial deposits originating from the Muddy Mountains near the Virgin River. This specimen represents the first reported *Mammuthus columbi* remains from this portion of Clark County, Nevada (Agenbroad and Brunelle 1992).

3.8 NOISE

Noise is defined as unwanted sound. Sound travels in waves from a specific source and exerts a sound pressure level (referred to as sound level), whichis measured in decibels (dB). Zero dB corresponds roughly to the threshold of human hearing and 120 to 140 dB corresponds to the threshold of pain. Human response to noise is subjective and can vary greatly from person to person. Factors that can influence individual response include intensity, frequency, and time pattern of the noise; the amount of background noise present prior to the intruding noise; and the nature of work or human activity that is exposed to the noise. The adverse effects of noise include interference with concentration, communication, and sleep. At high levels, noise can cause hearing damage.

Environmental noise is usually measured in A-weighted decibels (dBA). Environmental noise typically varies over time, and different types of noise descriptors are used to account for this variability. Typical noise descriptors include maximum noise level (Lmax, the highest instantaneous noise level observed in a given period), the energy-equivalent noise level (Leq, the energy-equivalent noise level or "average" noise level, is the equivalent steady-state continuous noise level), and the day-night average noise level (DNL - the day-night average noise level is a weighted 24-hour noise level).

The DNL noise descriptor is commonly used to establish noise exposure guidelines for specific land uses. The noise level experienced at a particular site depends on the distance between the source and a specific receptor (humans, wildlife or sensitive places), presence or absence of noise barriers and other shielding features, and the amount of noise reduction provided by the intervening terrain. Some land uses are considered more sensitive to noise levels than others due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved.

Baseline ambient noise levels were estimated using the relationship between population density and noise levels. The vast majority of the project area is uninhabited, although the proposed project alignment is within one mile of Boulder City. As a result, noise levels in the project area were estimated for the community of Boulder City and for the remaining undeveloped areas. The population density and related noise levels are presented in Table 3-6. These relationships are presented because ambient noise monitoring was not conducted as part of this analysis.

The population density in Boulder City is estimated to be 2,000 people per square mile, which would result in ambient noise levels of 55 dBA. The population throughout the rest of the project area is below 20 people per square mile, with associated ambient noise levels of 35dBA or below. In some areas along the proposed project alignment, noise levels would also be affected by vehicle traffic along U.S. 93, occasional aircraft overflights, and the Boulder City Rifle Range.

Boulder City does not have a noise element as part of its Master Plan.

TABLE 3-6 TYPICAL AVERAGE DAY-NIGHT SOUND LEVELS FOR VARIOUS POPULATION DENSITIES*		
Description	**Population Density (people/square mile)**	**L_{dn} (dBA)**
Rural (undeveloped)	20	35
Rural (partially developed)	60	40
Quiet Suburban	200	45
Normal Suburban	600	50
Urban	2,000	55
Noisy Urban	6,000	60
Very Noisy Urban	20,000	65
* For areas where there is no well-defined noise sources other than transportation noise. [Source: National Academy of Sciences (NAS) 1977.]		

3.9 SOCIOECONOMIC RESOURCES

Population/Demographics

The 2000 Census of Population and Housing lists Boulder City's population as 14,966, representing an increase of 2,399 persons from 1990, and a growth rate of 1.9 percent. By comparison, Clark County and the State of Nevada experienced average annual growth rates of 8.5 percent and 6.6 percent, respectively. The small growth rate for Boulder City is due primarily to local growth controls. In contrast, Clark County's rapid growth over the last decade can be attributed largely to growth in the gaming industry and related businesses in and around the City of Las Vegas. Table 3-7 displays the populations of the State of Nevada, Clark County, and Boulder City within the proposed project area.

TABLE 3-7 POPULATION BY AREA				
Area	**Population**		**Population Change**	
	1990	**2000**	**Difference**	**Avg. Annual Growth 1990-2000**
State of Nevada	1,201,833	1,998,257	796,424	6.6 %
Clark County	741,459	1,375,765	634,306	8.5 %
Boulder City	12,567	14,966	2,399	1.9 %
Source: U.S. Census Bureau 2000				

Population characteristics for the various racial and ethnic categories for Boulder City, Clark County, and the State of Nevada are presented in Table 3-8. The 2000 census data shows that 95 percent of Boulder City population is white. Persons of two or more races and other races account for 1.9 percent and 1.3 percent of the population, respectively. Approximately 4.3 percent of the population of Boulder Cityis of Hispanic or Latino origin.

TABLE 3-8
ETHNIC COMPOSITION BY AREA

Race	Boulder City		Clark County		State of Nevada	
	Persons	% of Total	Persons	% of Total	Persons	% of Total
TOTAL POPULATION:	**14,966**	**100.0**	**1,375,765**	**100.0**	**1,998,257**	**100.0**
White	14,149	94.5	984,796	71.6	1,501,886	75.2
Black or African American	109	0.7	124,885	9.1	135,477	6.8
American Indian and Alaska Native	108	0.7	10,895	0.8	26,420	1.3
Asian	107	0.7	72,547	5.3	90,266	4.5
Native Hawaiian and other Pacific Islander	24	0.2	6,412	0.5	8,426	0.4
Some other race	190	1.3	118,465	8.6	159,354	8.0
Two or more races	281	1.9	57,765	4.2	76,428	3.8
Hispanic or Latino Heritage*	650	4.3	302,143	22.0	393,970	19.7

* Persons of Hispanic or Latino heritage can be of any race. [Source: U.S. Census Bureau 2000]

Economy/Income

The local economy near the proposed project is centered on Boulder City. The largest segments of employment in Boulder City are associated with services, construction, and retail trade. The median household income in Boulder City is substantially greater than either Clark County or the State of Nevada. Employment rates in the City have remained fairly steady since 1980, with an unemployment rate of 4.5 percent in 2000 (U.S. Census Bureau 2000 and Boulder City Master Plan 1991).

Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," was issued by the White House in February 1994. The Executive Order focuses Federal agencies on the human health and environmental conditions in minority and low-income

communities and ensures that any adverse human health and environmental effect of agency actions that may disproportionately impact minority and low-income populations (including Native American Indian Tribes) are identified and addressed. Existing laws such as NEPA, provide the context and opportunity for Federal agencies to identify, address, and consider in decisions any potentially hazardous impacts.

Environmental Justice aims to ensure the fair treatment and meaningful involvement of all people with respect to developing, implementing, and enforcing environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic or socioeconomic group, should bear a disproportionate share of potentially adverse human health and environmental effects of a Federal agency action, operation, or program. Meaningful involvement implies that potentially affected populations have the opportunity to participate in the decision process and their concerns are considered in the agency's decision.

No portions of the proposed projectcross lands that are associated with any minority or low-income populations.

3.10 HEALTH AND SAFETY

Emergency Infrastructure

Boulder City police provides police services in the project area and the Boulder City Fire Department responds to fire emergencies. Non-critical emergencies are treated within Boulder City. People with severe medical emergencies are transported by ambulance to Las Vegas.

Public and Worker Safety

Current public and worker safety concerns are minimal within the project area. The existing transmission lines are within an undesignated utility corridor. Public access to the area is limited due to local road conditions, although the public does use roads in the area to access the landfill and the Boulder City Rifle Range.

Electric Magnetic Fields

Current and voltage associated with electric transmission lines are required to transmit energy over those lines. The current, a flow of electrical charge, is the source of a magnetic field. The voltage, which represents the potential for an electrical charge to do work, is the source of an electric field. Electrical magnetic fields (EMFs) surround every electrical device, including electrical appliances and power lines. Naturally occurring EMFs are associated with lightning, magnetic ores, and electric potentials found in

living cells. Table 3-9 provides typical EMFs from household appliances and from electrical transmission lines.

TABLE 3-9
EMF STRENGTH OF VARIOUS ELECTRICAL SOURCES

EMF Source	Summary		Summary		Summary	
	Distance	**Strength**	**Distance**	**Strength**	**Distance**	**Strength**
COMMON HOUSEHOLD ITEMS[1]						
Microwave Oven	0.5 ft	200 mG	1.0 ft	4 mG	-	-
Vacuum Cleaner	0.5 ft	300 mG	1.0 ft	60 mG	-	-
Hair Dryer	0.5 ft	300 mG	1.0 ft	1 mG	-	-
Electric Shaver	0.5 ft	100 mG	1.0 ft	20 mG	-	-
TRANSMISSION LINES[2]						
115-kV	0 ft	29.7 mG	49 ft	6.5 mG	200 ft	0.4 mG
230-kV	0 ft	57.5 mG	49 ft	6.5 mG	200 ft	1.8 mG

[1] Median field strength milligauss (mG) for typical 60Hz electric current.
[2] Typical power line right-of-way is 49 feet; "0"distance measurements were taken directly below lines of unknown height. Mean field strengths are based on 321 measurements; field strength may, depending on loads, be twice the mean.
[Source: U.S. National Inst. of Environmental Health Sciences &Dep't of Energy, 1995. Questions and Answers about EMF Electric and Magnetic Fields Associated with the Use of Electric Power, 38-46.]

3.11 HAZARDOUS MATERIALS AND SOLID WASTE

Potential hazards related to constructing and operating proposed project facilities include the possible existence of sites that could be contaminated by fuels, chemicals, or other toxic or hazardous substances, and the use of, or accidents involving, hazardous materials during construction activities.

There are no known hazardous waste sites within the designated utility corridor. A visual field survey and Internet investigation were performed to identify potentialSuperfund sites located near the project route. Superfund is an EPA-administered program to locate, investigate, and clean up uncontrolled hazardous waste sites. The National Priorities List is a published list of hazardous waste sites in the United States that are being cleaned up under theSuperfund Program. No Superfund Program sites were identified within Clark County (EPA 2003).

4.0 ENVIRONMENTAL CONSEQUENCES

The Environmental Consequences describes the changes or impacts to natural, human, and cultural environmental resources that can be expected from implementing the Proposed Action or the No-Action Alternative. The Environmental Consequences section forms the scientific and analytic basis for the EA (40 CFR 1502.14). To reduce excessive paperwork, it is analytic rather than encyclopedic (40 CFR 1502.2(a) and 1500.4 (b)).

Environmental impacts can be positive (beneficial) or negative (adverse) as a result of the action (direct) or as a secondary (indirect) result, and can be permanent or long-lasting (long-term), or temporary or of short duration (short-term). Impacts can vary in degree or magnitude from no change, or only slightly detectable change, to a total change in the environmental condition or system once the project has been implemented. The assessment includes identifying initial impacts (including the type of impacts, location, and magnitude), and mitigation, where necessary, to reduce impacts to less than significant levels. A Mitigation Action Plan prepared for the project summarizes Western's mitigation commitments and action plans (Appendix A).

4.1 LAND USE

The assessment of potential impacts on land jurisdiction and land use focused on existing, planned, and future land uses along the proposed project alignment. Impacts were assessed based on whether the project would result in substantial changes to land uses along the proposed project alignment, be incompatible with uses on adjacent properties, or be in conflict with applicable land use plans. Land use impacts would be considered significant if project implementation would result in:

- Physical division of an established residential or mixed-use community.
- Conflict with applicable land use plans, policies, goals, or regulations of an agency with jurisdiction over the project (including recreational or wilderness land management).
- Conversion of prime or unique farmlands to non-agricultural uses.
- Project-related changes that alter or otherwise physically affect established, designated, or planned recreation or wilderness areas or activities.
- Project-related changes that increase or decrease accessibility to areas established, designated, or planned for recreation or wilderness.

- Project-related changes that affect duration, quantity, and quality of impact to recreational or wilderness resources.
- Project-related changes that affect the power distribution of existing electrical transmission distribution.

No changes to land jurisdiction would occur as a result of this action. Western would administer the utility ROW and would continue to cross lands managed by the BOR, NPS and Boulder City.

No impacts to existing or planned residential, commercial, or industrial uses would be expected to occur. Except where the proposed project alignment splits as it enters the Mead Substation, the proposed alignment would use existing transmission line ROWs and corridors. None of the structure replacement activities are expected to impact any other transmission lines in the project area, including those operated by Nevada Power Company, Colorado River Commission, or Southern Nevada Water Authority. Direct impacts to land use from road construction along the route would be minor since minimal new road construction would occur and relatively few miles of access roads would require upgrading. The proposed project would not affect land use plans or policies because the project is within an existing utility ROW, so no land use management plans or policies need to change to accommodate the reconfigured transmission line.

No impacts to recreation would occur as a result of the Proposed Action. Although the proposed project facilities cross the LMNRA, they would occur within existing utility corridors. Dispersed recreation use in the area would be unaffected in the long-term. Construction activities may result in short-term impacts to recreationalists from noise or access disturbance, but these impacts would likely be minimal. Following construction activities, NPS lands affected by the project would remain available for dispersed recreation activities.

Project implementation would not result in meeting or exceeding significance thresholds. As a result, impacts to land jurisdiction, land use, and recreation from implementing the Proposed Action would not be significant.

4.2 BIOLOGICAL RESOURCES

Direct impacts to biological resources are those caused by implementation of the Proposed Action and are immediate and site-specific. Direct impacts on wildlife species and their habitats would result from constructing, operating, and maintaining the proposed project. Direct impacts would include loss or disturbance of species or habitat from blading, crushing, or other project activities.

Indirect impacts are those caused by the activity but would occur later in time or farther removed in distance, but are still reasonably forseeable. Impacts from increased public access, including vandalism, are indirect impacts.

Impacts can be further categorized as short-term or long-term. Short-term impacts on wildlife would not persist beyond one or two reproductive cycles. Long-term impacts would persist for the life of the project or beyond. This is often considered to be more than ten years. Maintenance of an access road would be a direct short-term impact. The presence of the access road would be an indirect long-term impact.

Vegetation

Impacts to vegetation would be considered significant if one or more of the following occur:

- Threatened or endangered species are adversely affected.
- The population of a regional or local species is reduced to the point where it could be listed as a species of concern.
- Ecological processes are damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired.

The Proposed Action would temporarily disturb about 53 acres of creosote bush-white bursage community. In areas where vegetation is crushed, impacts would likely be short-term (less than ten years) and vegetation would be allowed to re-establish naturally following construction. Short-term impacts result from activities associated with structure installation, wire-pulling, and wire-splicing. Long-term impacts result from activities associated with access road restoration or construction. Since no endangered or threatened vegetation, or plant species of concern would be affected and ecosystem sustainability would not be altered, no significant impacts to vegetation would be anticipated.

Wildlife

Impacts to wildlife would be considered significant if one or more of the following criteria occur:

- Threatened or endangered species are adversely affected.
- Ongoing operations cause the habitat necessary for all or part of the life cycle of a species (e.g., lambing areas, migratory corridors) to disappear.
- The population of a regional or local species is reduced to the point where it could be listed as a species of concern.

- Ecological processes are damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired.

During project construction, it is likely that wildlife would be impacted by habitat alteration and temporary displacement to avoid construction activities. There are desert washes crossed by the Proposed Action that may be used as wildlife corridors. Some displacement and avoidance of the washes by wildlife is likely during construction and possibly as a result of the presence of the line, although impacts would be minor because construction is short-term and the project would replace an existing transmission line.

Impacts on migratory birds would be minimized as long as nests are not disturbed during the breeding season. Potential for collisions may increase where lines are double-circuited. In spans of the lines where collisions are found to occur, Western would mark those spans to minimize collisions. Electrocutions are unlikely due to the design of electrical transmission lines at these voltage levels.

No bat roosts are known to occur within or adjacent to the anticipated construction zones; therefore, no impacts to bats or their habitat are anticipated.

As a result of resource protection measures included with the Proposed Action, none of the thresholds defined for significant impacts to common wildlife species would occur with the implementation of the Proposed Action.

Special Status Species

Impacts to special status species may be considered significant if one or more of the following occur:

- Threatened or endangered species are adversely affected.
- A special status species is adversely affected sufficient to cause its status to increase.
- Ecological processes are damaged to the extent that the ecosystem is no longer sustainable or biodiversity is impaired.

Direct impacts on wildlife species and their habitats can result from vehicle or equipment-related mortality and from ground disturbance caused by construction-related activities and project operation and maintenance. The loss of vegetative cover would adversely affect sensitive wildlife species habitat. Indirect impacts would result from increased public access. Several special status wildlife species would be adversely affected through project implementation and are described in more detail below.

Desert Tortoise

Activities associated with project construction could injure or kill tortoises. Vehicles would pose the greatest hazard to tortoises and their burrows during project construction, operation, and maintenance. Direct impacts on desert tortoise habitat would result from ground disturbance. The resulting short- and long-term loss of vegetation would reduce the amount of forage available to tortoises. Of the 431 acres of tortoise habitat surveyed within the project area, the project would disturb approximately 32 acres of habitat. This estimate is derived from temporary and permanent ground disturbance estimates from all project related activities, including the removal and/or replacement of approximately 50 tower structures; about five miles of upgraded or new access roads; wire pulling and splicing sites; and staging areas.

Indirect impacts on tortoises would result from increases in human activity following project construction. Because this project will not provide new access to the project area, no indirect impacts would occur.

Resource protection measures and mitigation measuresproposed for the desert tortoise would be effective in minimizing impacts to desert tortoises (Appendix B). The worker education program and speed enforcement would be effective in reducing vehicular hazards to tortoises. The litter-control program would prevent any increase in use of the area by ravens and would thereby prevent any increase of raven predation on tortoises. The presence of a qualified tortoise biologist for construction activities occurring while tortoises are active would ensure that any tortoises encountered are not harmed. Western would abide by the terms and conditions identified in theUSFWS's biological opinion issued for the Proposed Action (Appendix C). As a result, implementation of the Proposed Action would not result in significant impacts to the desert tortoise.

Bald Eagle

Collisions with existing transmission lines are a potential impact to the bald eagle, but is unlikely given their infrequent use of the project area. Since the proposed project is the replacement of an existing transmission line, an increase in collisions would not be expected. Further, the design of Western's transmission lines meets or exceeds the criteria of the Raptor Research Foundation for minimizing electrocutions. In sum, the proposed project would have minimal impacts to the bald eagle.

Other Special Status Species

Impacts to chuckwallas and Gila monsters would be similar to those described for desert tortoises. Resource protection measures would minimize impacts to these species, resulting in non-significant impacts. Western would implement the measures set forth in the "Gila Monster Protocol for Minimizing

Impacts on the Construction Site" established by the Nevada Division of Wildlife (NDOW) on April 11, 2003 (Appendix D). For peregrine falcons, Western would coordinate with FHWA on a monitoring program and restrict construction during breeding season if an active peregrine falcon nest were located within one-quarter mile of the project area. As a result, no significant impacts to the peregrine falcon would be expected.

Desert bighorn sheep typically react adversely to human activity. However, project construction activities would be in a portion of the Eldorado Mountains where desert bighorn are habituated to humans and are accustomed to human activities as noted by FHWA (2001). Ongoing human activities associated with the project would include traffic, blasting, and maintenance activities around Hoover Dam (FHWA 2001). Any effects to this species during construction would be immediate (e.g. individuals moving to another area during the construction period), but would be unlikely to have a residual, adverse effect. Concerns were raised relative to impacts on ewes during lambing from new highway construction in the project area (FHWA 2001). However, because of the type and duration of construction activities associated with this project, ewes would be unlikely to abandon the area (Smith et al. 1986) and lambing success would not likely be affected. Further, the project is not located in a known lambing area (FHWA 2001).

A major bighorn movement corridor crosses the project area allowing the sheep to access water in the Black Canyon (FHWA 2001). Summer construction could add stress to sheep at a time of high temperatures when water availability is important. Since construction is planned for fall 2003 and winter 2004, the summer months, when bighorns are stressed the most; the majority of lambing season would be avoided. Thus, no significant impacts to the desert bighorn sheep would be anticipated.

Impacts to the rosy twotone beardtongue, Las Vegas bearpaw poppy, western burrowing owl, and bat species are expected to be negligible. Important habitat features for these species are not present in the project area. As a result, no significant impacts would be anticipated for these species.

Resource Mitigation

Mitigation measures specific to the desert tortoise for this project area are included in Appendix B. Pursuant to NDOW recommendations presented on April 11, 2003, Western would implement Gila monster protocol measures to minimize impacts during construction of the proposed project (Appendix D).

4.3 CULTURAL RESOURCES

The cultural environment includes those aspects of the physical environment that relate to human culture and society, along with the social institutions that form and maintain communities and link them to their surroundings. Two issues related to the cultural environment were considered as components of this EA: 1) historic preservation concerns, related primarily to prehistoric and historic archaeological sites; and 2) traditional cultural concerns, related primarily to places of importance to traditional American Indian communities.

Three cultural resource impact issues, which focus on specific categories of resources, were defined as:

- Loss or degradation of prehistoric and historic archaeological sites.
- Loss or degradation of special status cultural resources.
- Loss or degradation of traditional cultural places or properties.

Three types of impacts that could affect each of these three categories of cultural resources have been identified:

- Direct and permanent ground disturbance during construction.
- Direct and long-term visual and auditory intrusions.
- Indirect and permanent disturbance due to changes in public accessibility.

Archaeological Resources

Cultural resources are non-renewable and easily damaged. Damage can occur from ground disturbance, casual site visitation, and/or theft and vandalism. Direct impacts on cultural resources can occur as a result of development activity, including construction and maintenance. The potential for unauthorized collection of artifacts, minor displacement of artifacts by vehicles, and other adverse effects to cultural resources increases with additional work within the ROW. A project undertaking affects a cultural property if it alters any characteristic that qualifies it for NRHP inclusion. Impacts on archaeological resources are considered significant if sites fulfilling NRHP criteria would be physically damaged or altered; would be isolated from the context considered significant; or would be affected by project elements that would be out of character with the property or site and its setting.

An intensive cultural survey of the double-circuit reconfiguration project area was conducted to identify cultural resources within and adjacent to the 200-foot ROW, designated access roads, and in other survey areas near the Los Angeles Switchyard, Boulder City Tap, and Mead Substation. The survey identified

23 archaeological sites (19 previously recorded sites and four new sites), and 15 isolated occurrences. Of the 19 previously recorded sites, 12 were determined to be NRHP eligible. Of the four newly identified sites, two are recommended for NRHP eligibility. One site is currently unevaluated. The 15 NRHP-eligible or unevaluated sites are listed in Table 4-1. The isolated occurrences are not eligible for NRHP listing.

TABLE 4-1

NRHP-ELIGIBLE OR UNEVALUATED SITES WITHIN THE PROJECT AREA AND POTENTIAL EFFECTS

Site Number	Site Type	Potential Effects
26CK3916	Hoover Dam Historic District	Adverse effect as transmission line structures would be replaced
26CK4046a	U.S. Construction Railroad	Used as temporary access during construction, no effect
26CK4765	Hoover Switchyard and Transformer Complex	Fiber optic cable would be connected through this switchyard, no adverse effect
26CK5180	*combined 18 transmission line system	Adverse effect as transmission line structures would be replaced
26CK6237 NV-27-M	LABPL #2 Transmission Line (currently named Hoover-Mead #7 Transmission Line)	Replacement of approximately 15 structures to this transmission line, adverse effect
26CK6238 NV-27-M	LABPL #1 Transmission Line	No improvements to this transmission line at this time, no effect
26CK6240 NV-27-P	Metropolitan Water District Transmission Line 1 (currently named Hoover-Mead #5 Transmission Line)	Replacement of approximately 15 structures to this transmission line, adverse effect
26CK6242 NV-27-M	LABPL #3 Transmission Line	No improvements to this transmission line at this time, no effect
26CK6249	Southern California Edison North Transmission Line	No improvements to this transmission line at this time, no effect
26CK6250	Southern California Edison South Transmission Line	No improvements to this transmission line at this time, no effect
26CK6251 NV-27-O	Hoover-Basic South Transmission Line	No improvements to this transmission line at this time, no effect
NV-27-O	Magnesium Basic #1 North Transmission Line (currently named Henderson-Hoover Transmission Line)	Replacement of one structure and abandonment or removal of two additional structures, adverse effect
26CK6725	rock circles	Can be avoided during construction, no effect
26CK6726	rock shelter complex	Can be avoided during construction, no effect
26CK23	Sullivan Prehistoric/Historic Turquoise Mining District (unevaluated)	No effect, no features associated with this site were identified
*Note: Site 26CK5180 is a compilation of 18 separate transmission lines		

Each of the 12 previously recorded NRHP-eligible sites and the two newly recorded sites (Table 4-1), was carefully evaluated for potential impacts from the Proposed Action. Most of the sites are transmission lines that would not be impacted by the Proposed Action. While new access roads may be built under some of these lines, they are not expected to directly or indirectly affect the historic properties. Since its decommissioning in 1961, the U.S. Construction Railroad bed (26CK4046a) has been used as a temporary access road for several transmission lines. No improvements would be made to the roadbed and, as a result, there would be no direct or indirect effects to the historic property. Crews would stake or flag the rock circles site (26CK6725) and rock shelter site (26CK6726) to assure avoidance by construction activities; therefore, there would be no direct or indirect impacts to these prehistoric features. In addition, a fiber optic cable extending from the Hoover Dam Control Tunnel would be attached to structures within the Los Angeles Switchyard. Because this is an additional feature and no structures would be replaced, no adverse effect to this site would occur.

As the result of anticipated actions, there would be direct adverse impacts to five NRHP-eligible sites. They include site 26CK6237, the LABPL #2 Transmission Line (currently Hoover-Mead #7); site 26CK6240, the Metropolitan Water District Transmission Line #1 (currently Hoover-Mead #5); and site NV-27-O, the Magnesium Basic #1 North Transmission Line (currently Henderson-Hoover). Each of these three sites is also included in two larger site designations, which have been determined NRHP-eligible. These are the Hoover Dam Historic District (26CK3916) and the compilation of 18 transmission lines (26CK5180). For both 26CK6237 and 26CK6240 there would be a replacement of approximately 15 original structures with new monopole structures. For site NV-27-O, one structure would be replaced and two other structures would be abandoned or removed. Replacing the original steel lattice structures with new structures of a different design would constitute an adverse effect to each of these sites.

Mitigation to historic structures slated for demolition typically comes in the form of a Historic American Building Survey/Historic American Engineering Record (HABS/HAER) recording. Under the provisions of Section 110b of the amended NHPA of 1966, Federal agencies must produce documentation to HABS/HAER standards for buildings or structures that are listed, or are eligible for listing on the NRHP, to mitigate the adverse effects of federal actions such as demolition or substantial alteration. The NPS regional offices oversee this aspect of HABS/HAER documentation, which is then submitted to the NPS national office for final review and conclusion in the HABS/HAER Collections. HABS/HAER documentation in the forms of measured and interpretive drawings, large-format photographs, and written histories, is archivally preserved in the Prints and Photographs Division of the Library of Congress, where it is readily available to the public. This process has been completed and approved (Schweigert 2002) or is in the process of being completed (Schweigert in preparation) for each of the historic properties facing

adverse effects. As a result, potential impacts to these five NRHP-eligible sites would be reduced to less than significant.

One of the two newly recorded prehistoric sites has no potential for effects. This site, 26CK6725 (two rock circles and lithics) would be avoided and a tribal and archaeological monitor would be present to ensure avoidance. When conductors are changed our over the site, it would be walked off, not drug through, the site. The other new site, 26CK6726, would be avoided by building a new access road to the northeast of the site, away from the monolith. An ethnographic study, involving interested tribes, would be completed. Tribal and archaeological monitors would be present during all construction at this site. Once the old structure is removed and the new structure installed, the landscape would be restored.

Western has consulted with the Nevada State Historic Preservation Office (SHPO) on the proposed changes to the five historic properties and the twonew recorded prehistoric sites described above (Appendix E). With the mitigation efforts at the NRHP-eligible sites described above and included in Appendix A, the Mitigation Action Plan, no significant impacts to cultural resources would occur.

Places of Traditional Cultural Importance to Native Americans

Prior tribal consultations on the U.S. 93 Hoover Dam Bypass Project identified Gold Strike Canyon, Surgarloaf Mountain, and the Sullivan Turquoise Mine as places of traditional cultural importance to Native Americans. No effects to theseTCPs would occur as these exist outside the project area. To date, correspondence received by Western fromThe Hopi Tribe indicates that the Colorado River and the Grand Canyon are considered traditional cultural properties, which the Proposed Action would not affect. A site visit by local Native American communities indicated that site 26CK6725 and site 26CK6726 are cultural properties of interest and may, through ethnographic study, be identified asTCPs. No other properties have been identified, although consultation with Tribes is ongoing.

4.4 VISUAL RESOURCES

Impacts to visual resources may be considered significant if one or more of the following criteria are met:

- The proposed project facilities would have a substantial adverse affect on a scenic vista.
- The project would substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings, or other special features within a locally designated scenic highway.

- The project would substantially degrade the existing visual character or quality of the site and its surroundings.
- The project would create a new source of substantial light or glare that would adversely affect day- or night-time views in the area.

Assessing of the visual resource impact is based on the contrast level that the project would have on the existing visual setting. The extent to which the proposed project would affect the existing visual setting depends on the amount of visual contrast created between the visual elements (form, line, color, and texture) introduced by the proposed project facilities measured against those visual elements of the existing landscape.

Implementation of the Proposed Action would result in adding long-term elements that would affect the existing landscape, including steel monopole tower structures, conductors, fiber optic cable, and access roads. These facilities are similar to the existing facilities that they would be replacing. The proposed steel monopoles would likely be more visible than the existing lattice structures, since the structure's mass is more concentrated and the new steelmonopoles are lighter in color and more reflective than the aged steel lattice structures. The steelmonopole structures and conductors shine should naturally be reduced over time through exposure to the elements. Although adding the proposed project facilities may be initially more visible than the existing infrastructure, they would remain consistent with those visual elements and themes that are currently present on the landscape and would likely be absorbed visually by the various transmission lines immediately adjacent to the proposed project and through the area. Impacts to views from U.S. 93 and Boulder City would not be significant since the proposed project would replace similar infrastructure and would be consistent in both scale and form with other transmission lines that criss-cross the area. Additionally, the proposed project would not impact any areas with special designations for visual resources as identified by the NPS or Boulder City Master Plan. In sum, impacts to visual resources from project implementation would be minimal and not significant.

4.5 AIR QUALITY

Impacts to air quality would be significant if implementing the Proposed Action would result in the project area being declared a non-attainment area for one or more criteria pollutants. Construction equipment would produce temporary, short-term exhaust emissions and construction activities would produce organic gas emissions. Dust produced by construction equipment and vehicles would increase dustfall and elevate local levels of PM_{10}. Because these emissions would be temporary and localized and the Proposed Action includes measures to abate dust emissions, potential air quality impacts would not

exceed Federal and State air quality standards. No Clean Air Act permit is required for this construction activity; however a dust control plan would be required prior to construction (Clark County 2003). Constructing, operating, and maintaining a 230-kV transmission line would not result in the project area being declared a non-attainment area. As a result, no significant impacts to air quality would occur from project implementation.

4.6 WATER RESOURCES

Impacts to water resources may be considered significant if one or more of the following criteria are met.

- Surface water is contaminated by stormwater runoff from flash floods to levels above Federal and State water quality standards.
- Project activities substantially alter the area's existing drainage pattern.
- Surface waters defined as "waters of the U.S." (e.g., all rivers, permanent and intermittent streams, lakes, wetlands, and natural ponds) are degraded by dredged or fill material.

Under the Proposed Action, impacts to surface and ground water resources should be minimal. Sediment levels during runoff events are high under existing conditions, and project activities are not expected to increase these levels to any measurable degree. Drainage patterns in the area would not be expected to change as a result of project implementation. No floodplains would be impacted under the Proposed Action. Considering the resource protection measures associated with the project description, including ensuring all construction activities minimize disturbance to vegetation and drainage channels, and implementing resource protection measures to control erosion, no significant impacts to water resources are expected.

4.7 GEOLOGY AND SOILS

Impacts to geology and soils are considered significant if one or more of the following criteria are met:

- Geologic hazards (e.g., ground subsidence) would create a danger to human health and the environment.
- Soil resources are extensively disturbed resulting in severe erosion or contamination.

The primary concern of the geology and soils resources investigation was if accelerated soil erosion might occur. Erosion potential results from several factors, including slope, vegetation cover, climate, and the soils physical and chemical characteristics, and indicates how susceptible soils are to increased erosion if

disturbed. Increased soil erosion may occur when crews remove vegetation during construction or when heavy equipment disturbs the surface.

Overall, the majority of impacts to soils in the project area would be minimal due to the limited ground disturbance, which would cause indiscernible-to-minor increases in erosion rates. Removing existing structures would occur in previously disturbed areas. Installing new structures and improving associated access roads could impact approximately 53 acres of soil within the project area in terms of compaction and displacement. Impacts associated with compaction include reduced water infiltration, reduced soil porosity, reduced water holding capacity, reduced soil aeration, increased surface runoff, and increased soil erosion. The impacts of compaction in the project area would be long-term, confined to small areas and would be negligible because of the soil's sandy nature and permeability properties. Impacts associated with displacement include removing the nutrient surface layer and soil profile depletion. In general, implementation of the resource protection measures associated with the project description would minimize erosion. Therefore, direct, indirect, or cumulative impacts to geology and soils would not be significant.

Paleontological Resources

Impacts to paleontological resources are considered significant if the Proposed Action would directly or indirectly destroy or disturb a unique paleontological resource site. Uniquepaleontological resources are fossils or assemblages of fossils that are unusual, rare, or uncommon and those that add to an existing body of knowledge.

Under the Proposed Action, impacts topaleontological resources would be unlikely. Sediments within the Eldorado Valley are derived from Precambrian metamorphic rocks, not young sedimentary rocks where paleontological resources are typically found. Because paleontological resources would not be expected to exist within the existing project ROW and measures are included with the Proposed Action to address any paleontological discoveries, no significant impacts to paleontological resources would be anticipated as a result of project implementation.

4.8 NOISE

A project would normally have a significant effect on the environment if it:

- Substantially increases the ambient noise levels for adjoining areas.
- Exposes people to severe noise levels.

- Generates noise that would conflict with local noise standards or ordinances.

If the project were implemented, some level of noise would result from transmission line construction, operation, and maintenance. During construction, noise would be generated by the equipment used for the removal of the existing structures, clearing and grading (access roads and structure sites), assembly and erection of structures, wire pulling and splicing, and rehabilitation activities. This equipment includes heavy equipment such as cranes, trucks and tractor graders. Table 4-2 shows typical construction equipment noise levels.

TABLE 4-2
TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment Type	Noise Level at 50 Feet
Backhoe	85 dB
Front-end Loader	85 dB
Concrete Truck/Mixer	85 dB
Water Truck	81 dB
Tractor Grader	80 dB
Flat-bed Trucks	84 dB
Source: EPA 1971	

During the transmission line operation, noise generated would best be described as a crackling or hissing sound. The noise is most noticeable during wet-weather conditions such as rain, snow, orfog, and during the summer when there are heavy electrical loads. During maintenance activities, noise could be generated from a vehicle driving along the access roads for structure and line inspection, a helicopter flying along the ROW for structure and line inspection, or equipment and crew conducting maintenance or repairs.

In determining noise impact, the important factor is how close the activity is to people and wildlife detecting the sound. The project area is almost entirely rural open space and remote, with background noise typical of such settings. In most cases, the closest humans would be construction workers. Noise from construction (and subsequent maintenance) activities near Boulder City might be audible; however, such noise would be temporary and possibly considered only as a nuisance. In addition, noise generated from the nearby landfill and rifle range would probably have a greater effect on Boulder City residents than the installation, operation, and maintenance of a 230-kV transmission line. Noise generated from operating and maintaining the proposed project would be similar to that currently generated on the existing transmission line. Noise impacts from construction activities would be minor and short-term and

be limited by the resource protection measures proposed for the project. As a result, the Proposed Action is not expected to conflict with the local noise standards or ordinances. Thus, the Proposed Action would not cause direct, indirect, or cumulative significant noise impacts.

4.9 SOCIOECONOMIC RESOURCES

Factors considered in determining whether the Proposed Action would have significant adverse socioeconomic impacts include the extent or degree to which its implementation would:

- Induce growth or concentrations of population that exceed official local or regional population projections or that conflict with population projections.
- Induce substantial growth in an area, either directly or indirectly.
- Displace existing housing, especially affordable housing.
- Disrupt or divide the physical arrangement of an established community.
- Cause a decrease in local or regional employment.

Socioeconomic impacts can be adverse or beneficial, and short- or long-term. Property owners along the transmission line route, residents of nearby communities, and taxpayers in jurisdictions crossed by the route may experience effects. The primary socioeconomic issues associated with transmission line projects are: 1) construction-period impacts within area communities, 2) social and economic impacts along the selected route, 3) fiscal effects within local jurisdictions, 4) growth-inducing impacts resulting from the proposed project, and 5) impacts to low-income and minority populations.

Implementation of the Proposed Action could beneficially affect the socioeconomic conditions within or adjacent to the project route. Some beneficial socioeconomic impacts would result from construction spending, and to a lesser extent, maintenance worker spending. Workers based in the project area would likely be from Boulder City or in the greater Las Vegas region. Most of the workforce would be temporarily housed in these communities and a portion of their income and expenses would be “re-spent” locally, thus generating secondary income to the affected communities.

Socioeconomic impacts depend on the construction workforce size, construction schedule, and whether workers (and family members) choose to migrate to the project area. During construction, about 25 workers would be expected to conduct various tasks over a period of about three months. Since the construction work would be contracted out, it is not possible to determine the geographic origin of the workforce. If new workers are expected in the area, impacts can depend on the adequacy of existing facilities, such as housing or public services. The criterion of adverse impact, therefore, is measured in

terms of worker influx and increased demand on community services. Because the construction workforce would be small, with no permanent migration to the area, negative effects are not expected for such public services as law enforcement or fire protection.

Implementation of the Proposed Action is not expected to result in growth-inducing impacts. The Proposed Action would not include housing construction or the development of facilities that would result in population growth to the area. The demand for short-term temporary housing to accommodate employees working on the project would contribute to the respective local economies, but would not result in long-term growth inducement. The project would not remove existing obstacles to growth, nor would it inhibit growth. In sum, no significant impacts to socioeconomic resources are expected as a result of the Proposed Action.

Environmental Justice

Environmental justice has been addressed in accordance with Executive Order 12898. Effects on minorities and Native Americans were considered in this project. Disproportionate impacts on minorities and low-income populations are not expected as a result of the proposed project. Since minorities and Native Americans do not comprise a large proportion of the project area's total population, disproportionate cumulative impacts on these groups from the Proposed Action are unlikely.

4.10 HEALTH AND SAFETY

Impacts related to health and safety concerns would be considered significant if:

- Project implementation would emit hazardous emissions near an existing or proposed sensitive land use including schools or hospitals.
- Project implementation would result in serious injuries to workers, visitors to the area, or area land users.
- Project construction, operation, and maintenance activities would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Project implementation would result in exhibited health effects from substantial increases in the EMFs in the project area.

Evaluation of safety and health issues was limited to the proposed project ROW, and specifically focused on 1) public safety and construction and operation personnel working areas in the immediate vicinity of proposed overhead transmission line, and 2) electric and magnetic field effects.

Public and Worker Safety

Due to the rural nature of the project alignment, potential impacts to public health and safety is minimal. During construction, standard health and safety practices would be conducted in accordance with the Occupational Health and Safety Administration's policies and procedures, which would reduce worker safety concerns to less than significant levels. No existing or planned sensitive land uses were identified in the project area. Project activities are not expected to result in unusual safety concerns for workers in the project area. Project implementation would not affect any local or regional emergency response plan or evacuation plan. Therefore, no significant impacts to public or worker safety would be anticipated.

Electric Magnetic Fields

The possibility of adverse health effects from EMF exposure has increased public concern in recent years about living near high-voltage transmission lines. The available evidence has not established that such fields pose a significant health hazard to exposed humans. However, the same evidence does not prove there is no hazard. Therefore, in light of the present uncertainty, Western's policy is to design and construct transmission lines that reduce the fields to the maximum extent feasible.

While considerable uncertainty exists about the EMF/health effects issue, the following facts have been established from evaluating the results and trends of EMF-related research:

- Any exposure-related health risks to the exposed individual would be small
- The most biologically significant types of exposures have not been established.
- Most health concerns have been related to magnetic fields.
- The measures employed for field reduction can affect line safety, reliability, efficiency, and maintainability depending upon the type and extent of such measures.

No Federal regulations have established environmental limits on the field strengths from power lines. Some states have set limits on fields from newly constructed lines, not based on factual health data. Most of Western's lines would meet those standards.

Voltage and current are required to transmit electrical power over the transmission line. EMF results from electrically charged particles which may cause effects some distance away from the line. Voltage measured in volts (or kilovolts, kV) is the source of the electric field. Current, measured in amperes, is the source of a magnetic field. Fields drop rapidly as the distance increases from the source. The electrical effects of the 230-kV transmission line are characterized as "corona effects" and "field effects."

Corona

Effects of corona are audible noise, visible light, radio and television interference, and photochemical oxidants. Field effects are induced current and voltage in conducting objects near the line, spark discharge shocks, steady-state current shocks, field perception at ground level, and the magnetic field. Corona-generated audible noise is generally characterized as a crackling or hissing noise, most noticeable during wet-weather conditions. There are no design-specific regulations to limit audible noise from transmission lines. Audible noise generated from the proposed 230-kV double-circuit line would be indistinguishable from existing conditions. Corona is visible as a bluish glow under conditions of darkness, and probably only with the aid of telescopic devices. Light would be difficult to detect at the operating voltage of 230-kV. Corona-generated interference is most likely to affect amplitude modulation (AM) broadcast band reception at transmission line voltages of 345-kV or more; frequency modulation (FM) broadcast band reception is rarely affected. This line would be constructed according to standards that minimize sources of corona, such as surface irregularities and sharp edges on suspension hardware. Corona would ionize the surrounding air and generate ozone and nitrogen oxides. The low levels of oxidants produced during operation of the proposed project facilities would not be measurable either near the line or at ground level and would not result in significant impacts.

Induced Current and Voltage

Voltage induction and the creation of currents in long conducting objects, such as fences and pipelines, would be possible near the proposed transmission line. Grounding practices and the availability of mitigation measures minimize the line's magnetic induction effects. Non-electric fences, such as those made of barbed wire directly attached to steel posts, would be adequately grounded and would not collect an electric charge. It is recommended that other types of wire fences be constructed using a least one steel post every 150 to 200 feet to ground the fence. If the induced voltage is sufficiently high on an ungrounded object, a spark discharge shock would occur as contact is made with the ground. At the operating voltage of 230-kV, and with standard design practices, shock discharge and nuisance shocks would be unlikely. Steady-state currents are those that flow after a person has contacted an ungrounded object, providing a path for the induced current to flow to ground. Design requirements that reduce or eliminate induced current and voltages would help eliminate steady-state current shocks. When the electric field under a transmission line is sufficiently high, persons standing under or near the line may perceive the raising of hair on an upraised hand. At the operating voltage of 230-kV, any perception of electric fields from the proposed line should not be detected and would not result in significant impacts.

Magnetic Field

A 60-hertz magnetic field would be created in the space surrounding the proposed transmission line conductor by the flow of current. Magnetic field is expressed in terms ofteslas or gauss. The maximum magnetic fields at ground level near the transmission line would be similar to the fields developed from common household appliances (refer to Table 3-9). The levels of magnetic fields vary with the amount of current and distance from the source. There are no established limits for magnetic fields.

Magnetic fields at the edge of proposed transmission line ROW (50 feet from centerline) at maximum line capacity are calculated at 6.5 mG. At a distance of 200 feet from the centerline, the maximum fields would be less than 2 mG. Exposures to fields from the proposed line are not likely to adversely affect biological systems, because of the low levels of magnetic fields from the proposed line and because the proposed line would not be located near occupied residences. No significant adverse impact is anticipated.

4.11 HAZARDOUS MATERIALS AND SOLID WASTE

Hazardous materials and solid waste impacts would be considered significant if:

- The proposed projectcreates a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or solid waste.
- The proposed construction activities include handling of hazardous materials, substances, or waste within one-quarter mile of sensitive land uses, including schools and residences.

Crews would remove solid waste generated by the proposed project, including the replaced lattice structures, from the project area and transport it to an appropriate facility for disposal. Structure replacement activities would not generate any hazardous emissions. No hazardous emissions or acutely hazardous materials, substances, or waste would be handled near sensitive land uses, such as residences. The proposed project would not require long-term storage, treatment, disposal, or transport of hazardous materials. Western's standard construction specifications require the contractor to complete and have a Spill Response Plan on file with Western. Crews would handle regulated materials under Federal, State and local laws and would leave no regulated material on site. For these reasons, and the implementation of the resource protection measures associated with the project description, no significant hazardous materials and solid waste impacts would be expected.

4.12 CUMULATIVE IMPACTS

Cumulative impacts are those additive or interactive effects that would occur due to the Proposed Action's incremental impact when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such actions.

While there are cumulative impacts to all affected resources, Council on Environmental Quality (CEQ) guidelines limit cumulative impacts analysis to "important issues of national, regional, or local significance" (CEQ 1997). Therefore, not all issues identified for direct and indirect impact assessment are analyzed for cumulative impacts. In this case, the Proposed Action is replacing steel lattice structures with steel monopole structures for existing 230-kV transmission lines, and the other past, present, and future actions are other pole replacement projects, interconnection projects, and other development projects within the project vicinity. Methods to identify other past, present, and future actions that could, in combination with the Proposed Action, contribute to cumulative impacts include coordinating with land management agencies and using the recent cumulative impact assessment conducted as part of the Boulder City U.S. 93 Corridor Study.

Past Projects

Transmission Lines and Mead Substation in Eldorado Valley

Construction of the various transmission lines, switchyards, and the substation occurred over a period of roughly 60 years, resulting in intermittent short-term impacts to air quality, biological, and visual resources. Possible long-term impacts to vegetation and wildlife can be attributed to numerous maintenance access roads used to service the transmission lines and structures. The prominence of the transmission lines has been a long-term visual impact on the desert landscape, contributing to cumulative impacts. No cumulative impacts are expected to result from these past projects in conjunction with the Hoover Dam Bypass Project Phase II.

Boulder City Rifle Range

The Boulder City Rifle Range opened in spring 1933. In 1941, the range was taken over by the Army to train those responsible for safeguarding Hoover Dam from attack. The range was subsequently returned to the club at the end of World War II. In 1961, the club sought to purchase the property, but leased the property instead. The Boulder City Rifle Range is less than one mile east from the transmission corridor. Those using the range may experience noise during transmission line construction. Also, the range is located at the base of the Eldorado Mountains in desert tortoise habitat. Cumulatively, the loss of habitat

and noise activities from planned activities is not expected to adversely affect biological resources within the project area.

U.S. Hoover Dam Bypass Project (Phase I)

Because of the U.S. 93 Hoover Dam Bypass Project and the planned removal of Western's A&N Switchyard, Western has removed or modified existing electrical transmission components and erected new electrical transmission components, including monopole structures. This project, commonly referred to as Western's U.S. 93 Hoover Dam Bypass Project Phase I, extends from the Hoover Dam area to a point about two miles southeast of the Dam, where it connects to the Proposed Action. This project is similar to the Proposed Action since existing steel lattice structures were removed and replaced with monopole structures and the existing single-circuit was replaced with a double-circuit.

Cumulative impacts to wildlife, visual resources, and archaeological resources may result when considering the activities associated with Phase I and Phase II. Impacts to the desert tortoise, desert bighorn sheep, and cultural sites (specifically existing transmission lines) would be reduced through mitigation. Cumulative visual impacts would not be significant since Phase I and Phase II project activities occur within an existing transmission line corridor.

Reasonably Foreseeable Future Actions

U.S. 93 Hoover Dam Bypass Project and Boulder City U.S. 93 Corridor Project

Environmental studies associated with the U.S. 93 Hoover Dam Bypass Project have been completed. FHWA issued a Record of Decision in March 2001. Some activities associated with the project, such as replacing Western's transmission line structures adjacent to the road alignment, have been completed. Road and bridge construction activities for this project are expected to begin in the near future. The Boulder City U.S. 93 Corridor Study is in its final stages. The Corridor Study has identified a preferred bypass alignment around Boulder City that closely parallels Western's Proposed Action. Depending on the timing of project development, construction activities associated with the U.S. 93 Hoover Dam Bypass Project and the Boulder City U.S. 93 Corridor Study could overlap resulting in cumulative short-term biological, cultural, air quality, traffic, noise, visual, or water quality impacts.

Cumulative impacts to vegetation and wildlife may result when considering the affects of the Proposed Action with the reasonably foreseeable future highway development projects. Transmission line facility construction would result in cumulative impacts to portions of the environmental resource base also impacted by the U.S. 93 Hoover Dam Bypass Project and Boulder City U.S. 93 Corridor Study build

alternatives. These impacts include biological resources, including desert bighorn sheep and desert tortoise habitat; archaeological and historic properties; Section 4(f) lands; water quality; and visual resources in the U.S. 93 corridor. Long-term impacts on desert bighorn sheep and desert tortoise can be expected; however, impacts to these species would be reduced through mitigation. The cumulative construction impacts would be minor and essentially equivalent to the individual project occurrences.

Summary of Cumulative Impacts

Within the Eldorado Valley, several projects could cumulatively impact the region's resources. However, with adequate mitigation, particularly for biological and cultural resources, these or other impacts are substantially reduced. The proposed project, when considered in a cumulative sense with other past, present, and future actions, would not be expected to significantly increase impacts to these resources.

5.0 AGENCIES AND PERSONS CONSULTED

SUMMARY OF AGENCIES CONTACTED FOR THE HOOVER DAM BYPASS PHASE II PROJECT
FEDERAL
Advisory Council on Historic Preservation, Western Office of Planning and Review
Bureau of Indian Affairs, Western Regional Office
Bureau of Indian Affairs, Southern Paiute Field Office
Bureau of Land Management, Las Vegas Field Office
Bureau of Reclamation, Lower Colorado Regional Office
Department of Energy, National Nuclear Security Administration, Nevada Operations Office
Environmental Protection Agency, Region 9
Federal Highway Administration; Western Resource Center, Central Federal Lands Highway Division, Nevada Division
National Park Service, Lake Mead National Recreation Area
U.S. Army Corps of Engineers, Los Angeles District
U.S. Fish and Wildlife Service, Nevada Fish and Wildlife Office
STATE
Arizona State Parks, State Historic Preservation Office
Governor of Nevada, Honorable Kenny C. Guinn
Nevada Department of Administration, Clearinghouse Coordinator
Nevada Department of Conservation and Natural Resources
Nevada Department of Transportation, District 1
Nevada Department of Conservation and Natural Resources
Nevada Department of Conservation and Natural Resources, Division of Environmental Protection
Nevada Department of Conservation and Natural Resources, Division of State Lands
Nevada Department of Conservation and Natural Resources, Division of Water Resources
Nevada Department of Conservation and Natural Resources, Division of Wildlife
Nevada Department of Cultural Affairs, State Historic Preservation Office
TRIBAL
Fort Mojave Tribe
Chemehuevi Indian Tribe
Colorado River Indian Tribes
Colorado River Indian Tribes Museum
Fort Mojave Tribal Council

SUMMARY OF AGENCIES CONTACTED FOR THE HOOVER DAM BYPASS PHASE II PROJECT
The Hopi Tribe
Hualapai Indian Tribe
Kaibab-Paiute Tribe
Las Vegas Paiute Tribe
Moapa Paiute Tribe
Navajo Nation Historic Preservation Office
Pahrump Paiute Tribe
Paiute Indian Tribe of Utah
Pueblo of Zuni
Quechan Tribe
San Juan Southern Paiute Tribe
COUNTY
Clark County Board of Commissioners
CITY
Boulder City Council
OTHER
Colorado River Commission
Nevada Power Company
Southern Nevada Water Authority

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APPENDIX A

MITIGATION ACTION PLAN

MITIGATION ACTION PLAN

for the

MODIFICATION AND CONSTRUCTION OF TRANSMISSION LINES FOR THE U.S. HOOVER DAM BYPASS PROJECT – PHASE II, HOOVER DAM AND BOULDER CITY, NEVADA

(DOE/EA-1478)

WESTERN AREA POWER ADMINISTRATION

October 2003

Western Area Power Administration

Mitigation Action Plan

1.0 HISTORY AND BACKGROUND

The Western Area Power Administration (Western) prepared an Environmental Assessment (EA) (DOE/EA-1478) for the Modification and Construction of Transmission Lines for the U.S. Hoover Dam Bypass Project, referred to as Phase II (Project). Based on the EA, Western has determined that the proposed Project would not result in any significant environmental impacts, and the preparation of an environmental impact statement (EIS) will not be required. The basis for this determination is described in the Finding of No Significant Impact issued in October 2003.

Western proposes to double-circuit a portion of the Hoover-Mead #5 and #7 230-kV Transmission Lines with the Henderson-Hoover 230-kV Transmission Line newly renamed Henderson-Mead #1. The double circuiting will be in the area of Hoover Dam and Mead Substation. In addition, a fiber optic cable will be placed extending from the Hoover Power Plant to Mead Substation mainly carried along on the new double-circuited structures. The modifications and construction to the transmission lines and placement of the fiber optic cable would be completed in 2004. A number of environmental protection measures are included with the proposed action to minimize potential adverse environmental effects.

The requirements for preparing a Mitigation Action Plan (MAP) are specified in 10 CFR part 1021 (Section 331(b), Department of Energy National Environmental Policy Act Implementing Procedures). These guidelines state that DOE shall prepare a MAP for commitments to mitigations that are essential to render the impacts of a proposed action not significant. The guidelines further state that the MAP shall also explain how mitigation will be planned and implemented. The EA analyzed the impacts of the proposed Project. Western has determined that five mitigation measures are essential to render the impacts of the proposed action not significant: 1) mitigating impacts to historic facilities, 2) avoiding and mitigating impacts to archaeological sites during construction, 3) avoiding and monitoring for the Mojave Desert tortoise, 4) avoiding and monitoring for the Gila monster, and 5) avoiding and monitoring for the peregrine falcon.

2.0 FUNCTION AND ORGANIZATION OF THE MITIGATION ACTION PLAN

The following sections describe the plans and actions by which Western will implement and verify mitigation action commitments described above.

Section 3.0 describes the monitoring and verification of mitigation actions and the reporting requirements. Section 4.0 describes the mitigation commitments and action plans for the Project. The commitment to the mitigation is presented along with an action plan composed of the tasks, responsible party, and schedule anticipated for the mitigation.

3.0 MITIGATION ACTION PLAN MONITORING AND REPORTING SYSTEM

Section 5.d. (11) (f) of DOE Order 451.1B, National Environmental Policy Act Compliance Program, requires Western to report MAP activities in its Annual Site Environmental Report (Annual Report), published by January 31 of each year. The Annual Report will reflect new information or changed circumstances. If major changes to mitigation included in this MAP are necessary, these changes will be described in the Annual Report. The Annual Report will be made available to the public.

A member of Western's environmental staff will verify mitigation results and determine if the mitigation actions achieved their intended purpose. Existing organizational and administrative controls will be used to gather information regarding implementation and status of mitigation actions. Such controls include applicable reporting systems, inspection, and verification. The results of inspection and verification will be reported on the anniversary of the MAP in the Annual Report. When mitigation actions are completed and verified, the information will be included in the Annual Report.

4.0 MITIGATION COMMITMENTS AND ACTION PLANS

Mitigation practices were defined for the Project in the EA and were considered during the assessment of impacts of the Project. Measures not addressed as part of this MAP will be implemented as part of Western's standard business and environmental program practices.

Table 4.1 outlines the mitigation measures to reduce impacts to less than significant and action items necessary to assure the mitigation is implemented to protect important cultural resource sites (archaeological and historical), and sensitive wildlife species (Mojave Desert tortoise, Gila monster and peregrine falcon).

TABLE 4.1 MITIGATION MEASURES		**WESTERN ACTIONS NEEDED TO AVOID SIGNIFICANT IMPACT.**
Cultural Resources (archaeological)	Sites subject to impacts from construction activities would be monitored during structure replacement and fiber optic installation activities. Archaeological and Tribal monitors will be used to ensure that the two newly recorded prehistoric sites eligible to the National Register of Historic Places are avoided and project activities are modified to mitigate any impact.	1. Western will assure an Archaeological monitor and Tribal monitor will present pre-construction training to all project construction crews, explaining the importance of the sites and the reason for protecting and respecting these sites and similar sites within the area. 2. Site 26CK6725 is a multiple rock ring site. Western will require that project activities, personnel and equipment will not access the site other than to allow the construction contractor to place a rope on the ground during the conductor pulling process. The rope may be laid across the site, but not pulled. The rope will be placed by hand under the supervision of an archaeological monitor.

TABLE 4.1 MITIGATION MEASURES		WESTERN ACTIONS NEEDED TO AVOID SIGNIFICANT IMPACT.
		3. Site 26CK6726 is a monolith rock shelter. Western will require that project activities, personnel and equipment will not access the site except under supervision of the archaeological monitor. The structure due for replacement will not be accessed by the current spur access road but rather, a new spur access road that will be constructed from the northeast toward the existing access road. Development, use and rehabilitation of the new spur access road will be supervised by the archaeological monitor and a tribal monitor. The new access spur road will be approximately 80 feet long and 12 feet wide. Fill from an approved area will be brought in to create the new spur access road and will not be pulled from the adjoining areas. Western's construction contractor will be using a large crane to remove sections of the current structure tower. These sections will be unbolted and lowered to ground level away from the rock shelter site in order to complete the remaining disassembly. The reverse will occur for the placement of the new monopole structure. The sections will be assembled at ground level away from the rock shelter and the crane will move the structure sections into place.
Cultural Resource (historical)	Historic facilities subject to impacts from construction will be mitigated through documentation.	1. Western will assure that the Hoover-Mead #5 and #7 230-kV Transmission Lines will be documented in the amended Historic American Engineering Record for Hoover Dam and a draft provided to the Nevada State Historic Preservation Office.
Wildlife (Mohave Desert tortoise)	Protection of the Mojave Desert tortoise. Western and the U.S. Fish and Wildlife Service (USFWS) have identified areas of tortoise habitat the southern 5.2 miles of the project area. This area will be surveyed and monitored for the present of the Mojave Desert tortoise during this project so as to reduce possible harm or injury to the Mojave Desert tortoise.	1. Western will assure that a qualified tortoise biologist will train all project personnel prior to access to the project area on the identification, habitat, and protection measures employed for this project to ensure that desert tortoises are not inadvertently harmed. 2. A qualified tortoise biologist will conduct preconstruction surveys prior to the start of project activities at each work location to include but not limited to pad sites, staging areas and access routes anytime during the year.

TABLE 4.1 MITIGATION MEASURES		WESTERN ACTIONS NEEDED TO AVOID SIGNIFICANT IMPACT.
		3. A qualified tortoise biologist will be present for survey and monitoring from March 15-October 15 (active season) during surface-disturbing activities to ensure that desert tortoises are not inadvertently harmed. 4. A qualified tortoise biologist will be on-call for survey and monitoring from October16-March 14 (inactive season) during surface disturbing activities to ensure that desert tortoises are not inadvertently harmed. 5. Herbicides shall not be used in the project area. 6. Vehicular traffic shall be restricted to existing access roads and new constructed assess spur roads or those approved by Western in consultation with the USFWS. 7. Vehicles shall not exceed 15 miles per hour speed limit on non-public access roads. 8. All project activities will be confined to designated areas and blading of vegetation shall only occur in limited areas designated for that purpose by the qualified tortoise biologist. 9. All litter shall be restricted to disposal in covered raven-proof trash receptacles and the trash removed daily. 10. Fully implement all measures, including the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements in the biological opinion issued October 22, 2003 by the USFWS.
Wildlife (Gila monster)		1. Western will ensure implementation of the "Gila Monster Protocol for Minimizing Impacts on Construction Sites," by the biological monitor on-site for the Mojave Desert tortoise.
Wildlife (peregrine falcon)		1. Western will coordinate with the Federal Highway Administration on a monitoring program and restrict construction during the breeding season if an active peregrine falcon nest is located within one-quarter mile of the project area.

APPENDIX B

RECOMMENDED MITIGATION MEASURES FOR THE DESERT TORTOISE

APPENDIX B

RECOMMENDED MITIGATION MEASURES FOR THE DESERT TORTOISE

Mitigation measures would be applied to project construction and maintenance. The following description provides recommended mitigation measures for reducing impacts to plant and wildlife in the project area. Prior to issuance of any Federal permit, lease, or authorization for any surface-disturbing activity, Western would determine if the Proposed Action would affect the desert tortoise.

1. A tortoise-education program shall be presented to all personnel working on the project or activities associated with the project or visiting the project site. This program shall be presented by a qualified tortoise biologist. The program shall include information on the legal protection for desert tortoises, penalties for violations of Federal and state laws, the life history of the desert tortoise, general tortoise-activity patterns, reporting requirements, measures to protect tortoises and personal measures that employees can employ to promote the conservation of desert tortoises. The definition of "take" will also be explained. Specific and detailed instructions will be provided on the proper techniques to move tortoises that appear onsite, in accordance with USFWS-approved protocol. Currently, the USFWS-approved protocol is that described by the Desert Tortoise Council (1994, revised 1999).
2. A qualified desert tortoise biologist shall possess, at a minimum, a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by Western. The biologist must have demonstrated prior filed experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign, which would include a minimum of 60 days of field experience. All tortoise biologists shall comply with the USFWS-approved handling protocol prior to conducting tasks in association with the biological opinion. In addition, the biologist shall have the ability to recognize tortoise sign and accurately record survey results.
3. The qualified biologist will check construction areas immediately before construction activities begin anytime during the year.
4. The qualified biologist will acquire all appropriate USFWS and NDOW permits or letters of authorization prior to handling desert tortoises and their parts and prior to initiation of any activity that may require handling tortoises.
5. The qualified desert tortoise biologist would be present from March 15 through October 15 (active season) during surface-disturbing activities to ensure that desert tortoises are not inadvertently harmed, in areas that Western and USFWS determine that the presence of a biologist is necessary. The biologist shall be on-call from October 16 through March 14 (inactive season).

6. Measures that would be taken to minimize mortality or injury of desert tortoises due to construction activities and use of heavy equipment include: (a) all desert tortoises observed by project workers shall be reported immediately to Western's biologist; (b) if blasting is required in desert tortoise habitat, a desert tortoise biologist will be assigned to each blasting crew or to each area in which blasting will occur; and (c) any time a vehicle is parked in desert tortoise habitat, the ground around and underneath the vehicle will be inspected for desert tortoise prior to moving the vehicle. If a desert tortoise is observed, an authorized biologist will be contacted.

7. Herbicides shall not be used in the project area unless approved in writing by Western.

8. Construction sites, staging areas, and access routes shall be cleared by a qualified tortoise biologist before the start of construction. The project area shall be surveyed for desert tortoise using survey techniques that provide 100 percent coverage. From March 15 through October 15, the pre-construction clearance shall take place no more than three (3) days prior to initiation of construction; from October 16 through March 14, the pre-construction clearance shall take place no more than ten (10) days prior to initiation of construction. All desert tortoise burrows, and other species' burrows that may be used by tortoises, will be examined to determine whether the burrow is occupied by desert tortoises. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed under supervision of a qualified tortoise biologist in accordance with the USFWS protocol (Desert Tortoise Council 1994, revised 1999).

9. Tortoises and nests shall be handled and relocated by a qualified tortoise biologist in accordance with USFWS-approved protocol (Desert Tortoise Council 1994, revised 1999). Burrows containing tortoises or nests shall be excavated by hand, with hand tools, to allow removal of the tortoise or eggs. Desert tortoises moved during the tortoise inactive season or those in hibernation, regardless of date, must be placed into an adequate burrow; if one is not available, one shall be constructed in accordance with Desert Tortoise Council (1994, revised 1999) criteria. During mild temperature periods in the spring and early fall, tortoises removed from the site shall not necessarily be placed in a burrow. Tortoises and burrows shall be relocated only to Federally-managed lands.

10. Tortoises that are moved offsite and released into undisturbed habitat on public land must be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrow in accordance with Desert Tortoise Council (1994, revised 1999) criteria.

11. Overnight parking and storage of equipment and materials shall be in previously disturbed areas or areas to be disturbed that have been cleared by a tortoise biologist. Other areas needed for overnight

parking and storage of equipment shall be cleared by the tortoise biologist and approved by the Contracting Officer.

12. All vehicular traffic shall be restricted to existing access roads, new constructed access spur roads, or those roads approved by Western in consultation with the USFWS.
13. Vehicles shall not exceed the 15 miles per hour speed limit on non-public, access roads.
14. All activities shall be confined to designated areas. Blading of vegetation shall occur only to the extent necessary and shall be limited to areas designated for that purpose by the qualified tortoise biologist.
15. A litter-control program shall be implemented during construction to minimizepredation on tortoises by ravens drawn to the project site. This program shall include the use of covered, raven-proof trash receptacles, removal of trash from project areas to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility. Precautions will be taken to prevent litter from blowing out along the road when trash is removed from the site.
16. The USFWS Southern Nevada Field Office ([702] 647-5230) must be notified of any desert tortoise death or injury resulting from project implementation by close of business on the following working day. In addition, the USFWS Division of Law Enforcement shall be notified in accordance with reporting requirements.
17. A Western representative(s) shall be designated who will be responsible for overseeing compliance with the reasonable and prudent measures, terms and conditions, reporting requirements and re-initiation requirements contained in the biological opinion. The designated representative shall provide coordination with the USFWS, BOR andNPS.
18. Western would implement the terms and conditions of the USFWS Biological Opinion.

APPENDIX C

U.S. FISH AND WILDLIFE SERVICE CONSULTATION

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nevada Fish & Wildlife Office
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Reno, Nevada 89502
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October 22, 2003
File No. 1-5-04-F-400

Mr. John R. Holt
Environmental Manager
U.S. Department of Energy
Western Area Power Administration
Post Office Box 6457
Phoenix, Arizona 85005-6457

Dear Mr. Holt:

Subject: Biological Opinion on Proposed Construction of Phase II of the Hoover Dam By-Pass Project, Clark County, Nevada

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the subject project and its effects on the federally listed as threatened Mojave desert tortoise (*Gopherus agassizii*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*). Your September 30, 2003, request was received on October 1, 2003, at which time the Service initiated formal consultation. The project requires Federal actions involving the Western Area Power Administration (Western) and Federal Highway Administration (FHWA). As stated in your request, it was mutually agreed between Western and FHWA that Western would be the lead Federal agency for the second phase of the project and consultation under section 7 of the Act.

Western's September 30, 2003, letter also requested concurrence that the proposed construction of Phase II of the Hover Dam by-pass project in Clark County, Nevada, is "not likely to adversely affect" the bald eagle (*Haliaeetus leucocephalus*), a species federally listed as threatened. The Service concurs with this determination based on the following:

1) the lack of bald eagle observations in the project area indicates a lack of use of the project area, and

2) the majority of the project area is located away from perennial water bodies and other areas of likely bald eagle use.

This biological opinion is based on information provided in your September 30 request; biological assessment dated August 27, 2003 (Transcon Environmental 2003a); biological report dated August 27, 2003 (Transcon Environmental 2003b); August 20, 2003, letter to the Service from FHWA requesting that Western be the lead Federal agency for the project; discussions among Western and FHWA staff and their environmental consultants, the Service, and our files. A complete administrative record of this consultation is on file in the Southern Nevada Field Office, Las Vegas, Nevada.

Consultation History

On June 3, 1999, the Service issued a non-jeopardy biological opinion (Service File No. 1-5-99-F-105) to the FHWA for construction of a bypass of the Hoover Dam in Nevada and Arizona. FHWA proposed to bypass Hoover Dam with a new bridge and approach roadway crossing the Colorado River. The 3.35-mile-long road construction right-of-way (ROW) would average 300 feet in width. The Service concluded that up to 5 desert tortoises may be incidentally injured or killed and 20 desert tortoises captured and moved out of harm's way during project activities. Further, FHWA determined that the proposed project was *not likely to adversely affect* the bald eagle (*Haliaeetus leucocephalus*), American peregrine falcon (*Falco peregrinus anatum*), razorback sucker (*Xyrauchen texanus*), or southwestern willow flycatcher (*Empidonax traillii extimus*), which are federally listed species; the Service concurred with this determination.

On October 31, 2002, the Service amended the 1999 biological opinion for the Hoover Dam bypass to include relocation and installation of power circuits and structures associated with the project, as requested by FHWA.

A. BIOLOGICAL OPINION

I. Description of the Proposed Action

a. Proposed Action and Action Area

Western proposes to reconfigure a segment of its existing electrical transmission system near Boulder City, Nevada and the Hoover Dam. The proposed project area is located entirely within Clark County, Nevada (USGS 7.5' quadrangle series includes Hoover Dam, Nev.-Ariz. 1983; Boulder Beach, Nev.-Ariz. 1970; and Boulder City, Nev. 1983). The project crosses land administered by the Bureau of Reclamation (BOR), National Park Service (NPS) Lake Mead National Recreation Area, Boulder City and Western. The project area begins about 2,000-feet west of the Hoover Dam, on the Nevada side of the Colorado River, and continues along an existing transmission line corridor for approximately 8 miles where it terminates at the Mead Substation (Figure 1).

The proposed action involves double-circuiting a portion of the existing Hoover-Mead Nos. 5 and 7, 230-kV transmission lines with the re-named Henderson-Mead No. 1 transmission line from a point near the Hoover Dam to the Mead Substation. Double-circuiting is the placement of two separate electrical circuits, typically in the form of three separate conductors or bundles of conductors, on the same set of transmission line structures. The majority of the proposed alignment is within existing Western ROW, except where the Henderson-Mead No. 1 transmission line transfers from the Hoover-Mead No. 7 to the Hoover-Mead No. 5 transmission lines, near the Boulder City Substation, and where the Henderson-Mead No. 1 deviates from the Hoover-Mead No. 5 near the Mead Substation. Another component of the proposed action is the addition of fiber-optic conduit and cable through existing tunnels (near Hoover Dam) and on overhead ground wires on the transmission line structures described above. Equipment and structures at the existing Arizona and Nevada (A&N) Switchyard will be removed.

Western's proposed action includes:

- Disassembly and Removal of Existing Structures

  Work crews would disassemble existing steel lattice structures at the site and either completely remove or leave the existing foundations in place at or below grade. The disassembled structures would be removed from the work sites. Most of the structure removal activities would occur within the existing 200-foot transmission line ROW and 50-foot access road ROW.

- Ground Clearing and Leveling

  Clearing vegetation from the ROW and work areas would be required for worker safety, construction purposes (access and structure sites), clearances for electrical safety, long term maintenance and transmission reliability. At each structure site, leveled areas, or pads (approximately 30 by 40 feet), would be needed to facilitate the safe operation of construction equipment; a work area, approximately 200-feet in diameter, would be required to assemble the structure, and for crane maneuvers. Most of the existing structure sites that would be reused for the new structures would require minimal clearing and leveling.

- Structure Assembly and Erection

  Structure replacement activities involve mobilizing construction vehicles, moving equipment and poles along existing access roads to each structure site, installing

foundations and assembling and erecting the structures. Work crews would auger footings. Sections of the new structures and associated hardware would be delivered to each structure site by truck. Crews would mainly assemble new structures on the ground within the existing ROW and, using a crane, position them in the previously augured foundation holes. Most structure replacement activities would occur within the existing 200-foot transmission line ROW except in areas near the Mead Substation and Boulder City Tap. Western proposes to erect about 47 new monopole structures, 14 of which would be located in nearly the same location as the previous structures and 33 of which would be constructed in new areas along the project alignment.

- Conductor Placement

Conductor stringing would begin by installing insulators and sheaves on the conductor arms. The sheaves are rollers attached to the lower end of the insulators that are attached to the ends of each supporting structure cross arm. The sheaves allow crews to pull individual cables through each structure until the cables are ready to be pulled up to the final tension position. Workers would install temporary clearance structures at road crossings and crossings of energized electric lines. These would consist of vertical wood poles with overhead netting at the pole top to prevent the sock line (manila rope or wire used to pull the conductors into place) or conductors from sagging onto the roadway or energized lines during the stringing operation.

Western would establish conductor pulling and tension sites along the proposed alignment. These sites are required to set-up tractors and trailers with the spooled cables that hold the conductors and tension the lines to the proper height above the ground. All pulling and tensioning sites would be within the existing ROW.

Once the equipment is set-up, a light vehicle would pull the sock line between each supporting structure where access along the line is available. At each structure, the sock line would be hoisted to the cross arm and passed through the sheaves on the ends of the insulators. The sock line would be used to pull the conductor through the sheaves. The conductors would then be attached to the sock line and pulled through each supporting structure under tension. After the conductors are pulled into place, they are pulled to a pre-calculated sag and then tension-clamped to the end of each insulator. The final step of the conductor installation process is to remove the sheaves and install vibration dampers and other accessories.

- Fiber-Optic Cable Installation

Western proposes to install the fiber-optic cable in the Hoover Dam Control Tunnel and connect it to the Hoover-Mead No. 7 transmission line originating in the Los Angeles Switchyard. The fiber-optic cable installation on the reconfigured Hoover-Mead Nos. 5 and 7 transmission lines would require Western to replace one of the overhead ground wires. The fiber-optic cable would also be carried on segments of the new Henderson-Mead No. 1, 230-kV transmission line in place of the overhead ground wire. The fiber-optic cable would extend from Hoover Dam to the Mead Substation. The fiber-optic cable would be installed in construction spreads consisting of equipment and crews managing various phases of construction for a given line segment. Crews would store all materials and equipment associated with the project at a set-up location on a previously disturbed site. The process of installing the fiber-optic cable would require the same or similar action as conductor installation.

- Right-of-Way Cleanup and Restoration

  Western would ensure that construction sites, material storage yards and access roads are kept in an orderly condition during the construction period. Crews would collect waste construction materials and rubbish from all construction areas daily, haul them away and dispose of them at approved sites. All structure assembly and erection pads not needed for normal maintenance would be returned to their original contour and natural drainage patterns would be restored. The intent would be to restore all construction areas to their original condition, where feasible.

- Operation and Maintenance

  Western would use routine visual inspection to ensure proper transmission line operation and maintenance. Western anticipates the need to occasionally tighten hardware and replace damaged materials.

b. Proposed Minimization Measures

Western and FHWA propose the following measures to minimize potential effects to the desert tortoise as a result of project construction and maintenance.

1. A tortoise-education program shall be presented to all personnel working on the project or activities associated with the project or visiting the project site. This program shall be presented by a qualified tortoise biologist. The program shall include information on the legal protection for desert tortoises, penalties for violations of Federal and State laws, the

life history of the desert tortoise, general tortoise-activity patterns, reporting requirements, measures to protect tortoises and personal measures that employees can employ to promote the conservation of desert tortoises. The definition of "take" will also be explained. Specific and detailed instructions will be provided on the proper techniques to move tortoises that appear onsite, in accordance with Service-approved protocol. Currently, the Service-approved protocol is that described by the Desert Tortoise Council (1994, revised 1999).

2. A qualified desert tortoise biologist shall possess, at a minimum, a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by Western. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign, which would include a minimum of 60 days of field experience. All tortoise biologists shall comply with the Service-approved handling protocol prior to conducting tasks in association with the biological opinion. In addition, the biologist shall have the ability to recognize tortoise sign and accurately record survey results.

3. The qualified biologist will check construction areas immediately before construction activities begin anytime during the year.

4. The qualified biologist will acquire all appropriate Service and Nevada Department of Wildlife (NDOW) permits or letters of authorization prior to handling desert tortoises and their parts, and prior to initiation of any activity that may require handling tortoises.

5. The qualified desert tortoise biologist would be present from March 15 through October 15 (active season) during surface-disturbing activities to ensure that desert tortoises are not inadvertently harmed, in areas that Western and the Service determine that the presence of a biologist is necessary. The biologist shall be on-call from October 16 through March 14 (inactive season).

6. Measures that would be taken to minimize mortality or injury of desert tortoises due to construction activities and use of heavy equipment include: (a) all desert tortoises observed by project workers shall be reported immediately to Western's biologist; (b) if blasting is required in desert tortoise habitat, a desert tortoise biologist will be assigned to each blasting crew or to each area in which blasting will occur; and (c) any time a vehicle is parked in desert tortoise habitat, the ground around and underneath the vehicle will be inspected for desert tortoise prior to moving the vehicle. If a desert tortoise is observed, an authorized biologist will be contacted.

7. Herbicides shall not be used in the project area unless approved in writing by Western.

8. Construction sites, staging areas, and access routes shall be cleared by a qualified tortoise biologist before the start of construction. The project area shall be surveyed for desert tortoise using survey techniques that provide 100 percent coverage. From March 15 through October 15, the pre-construction clearance shall take place no more than 3 days prior to initiation of construction; from October 16 through March 14, the pre-construction clearance shall take place no more than 10 days prior to initiation of construction. All desert tortoise burrows, and other species' burrows that may be used by tortoises, will be examined to determine whether the burrow is occupied by desert tortoises. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed under supervision of a qualified tortoise biologist in accordance with the Service protocol (Desert Tortoise Council 1994, revised 1999).

9. Tortoises and nests shall be handled and relocated by a qualified tortoise biologist in accordance with Service-approved protocol (Desert Tortoise Council 1994, revised 1999). Burrows containing tortoises or nests shall be excavated by hand, with hand tools, to allow removal of the tortoise or eggs. Desert tortoises moved during the tortoise inactive season or those in hibernation, regardless of date, must be placed into an adequate burrow; if one is not available, one shall be constructed in accordance with Desert Tortoise Council (1994, revised 1999) criteria. During mild temperature periods in the spring and early fall, tortoises removed from the site shall not necessarily be placed in a burrow. Tortoises and burrows shall be relocated only to Federally-managed lands.

10. Tortoises that are moved offsite and released into undisturbed habitat on public land must be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrow in accordance with Desert Tortoise Council (1994, revised 1999) criteria.

11. Overnight parking and storage of equipment and materials shall be in previously disturbed areas or areas to be disturbed that have been cleared by a tortoise biologist. Other areas needed for overnight parking and storage of equipment shall be cleared by the tortoise biologist and approved by the Contracting Officer.

12. All vehicular traffic shall be restricted to existing access roads, new constructed access spur roads, or those roads approved by Western in consultation with the Service.

13. Vehicles shall not exceed the 15 miles per hour speed limit on non-public, access roads.

14. All activities shall be confined to designated areas. Blading of vegetation shall occur only to the extent necessary and shall be limited to areas designated for that purpose by the qualified tortoise biologist.

15. A litter-control program shall be implemented during construction to minimize predation on tortoises by ravens drawn to the project site. This program shall include the use of covered, raven-proof trash receptacles, removal of trash from project areas to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility. Precautions will be taken to prevent litter from blowing out along the road when trash is removed from the site.

16. The Service's Southern Nevada Field Office (702 515-5230) must be notified of any desert tortoise death or injury resulting from project implementation by close of business on the following working day. In addition, the Service's Division of Law Enforcement shall be notified in accordance with reporting requirements.

17. A Western representative(s) shall be designated who will be responsible for overseeing compliance with the reasonable and prudent measures, terms and conditions, reporting requirements and re-initiation requirements contained in the biological opinion. The designated representative shall provide coordination with the Service, BOR and NPS.

18. FHWA will provide compensation to the Section 7 Fund for the disturbance of 32 acres of desert tortoise habitat.

II. Status of the Species Rangewide/Critical Habitat

The desert tortoise is a large, herbivorous reptile found in portions of California, Arizona, Nevada, and Utah. It also occurs in Sonora and Sinaloa, Mexico. The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California. Desert tortoises reach 8 to 15 inches in carapace length. Adults have a domed carapace and relatively flat, unhinged plastron. Shell color is brownish, with yellow to tan scute centers. The forelimbs are flattened and adapted for digging and burrowing. Optimal habitat has been characterized as creosote bush scrub in which precipitation ranges from 2 to 8 inches, where a diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982; Turner 1982; Turner and Brown 1982). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. Desert tortoises occur from

below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982).

Desert tortoises are most active during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. Desert tortoises spend the remainder of the year in burrows, escaping the extreme conditions of the desert. The size of desert tortoise home ranges vary with respect to location and year. Females have long-term home ranges that are approximately half that of the average male, which range from 25 to 200 acres (Berry 1986). Over its lifetime, each desert tortoise may require more than 1.5 square miles of habitat and make forays of more than 7 miles at a time (Berry 1986). In drought years, the ability of tortoises to drink while surface water is available following rains may be crucial for tortoise survival. During droughts, tortoises forage over larger areas, increasing the likelihood of encounters with sources of injury or mortality including humans and other predators. Desert tortoises possess a combination of life history and reproductive characteristics which affect the ability of populations to survive external threats. Tortoises may require 20 years to reach sexual maturity (Turner, *et al.* 1984; Bury 1987).

The desert tortoise is most commonly found within the desert scrub vegetation type, primarily in creosote bush scrub. In addition, it is found in succulent scrub, cheesebush scrub, blackbrush scrub, hopsage scrub, shadscale scrub, microphyll woodland, Mojave saltbush-allscale scrub, and scrub-steppe vegetation types of the desert and semidesert grassland complex (Service 1994). Within these vegetation types, desert tortoises potentially can survive and reproduce where their basic habitat requirements are met. These requirements include a sufficient amount and quality of forage species; shelter sites for protection from predators and environmental extremes; suitable substrates for burrowing, nesting, and overwintering; various plants for shelter; and adequate area for movement, dispersal, and gene flow. Throughout most of the Mojave Region, tortoises occur most commonly on gently sloping terrain with soils ranging from sand to sandy-gravel and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Throughout their range, however, tortoises can be found in steeper, rockier areas. Further information on the range, biology, and ecology of the desert tortoise can be found in Berry and Burge (1984); Burge (1978); Burge and Bradley (1976); Bury, *et al.* (1994); Germano, *et al.* 1994; Hovik and Hardenbrook (1989); Karl (1981, 1983a, 1983b); Luckenbach (1982); Service (1994); Turner, *et al.* 1984; and Weinstein, *et al.* (1987).

On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 FR 42270). On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 FR 12178). Reasons for the determination included loss of habitat from construction projects such as roads, housing and

energy developments, and conversion of native habitat to agriculture. Grazing and off-highway vehicle (OHV) activity have degraded additional habitat. Also cited as threatening the desert tortoise's continuing existence were illegal collection by humans for pets or consumption, upper respiratory tract disease (URTD), predation on juvenile desert tortoises by common ravens (*Corvus corax*) and kit foxes (*Vulpes macrotis*), and collisions with vehicles on paved and unpaved roads. Fire is an increasingly important threat to desert tortoise habitat. Over 500,000 acres of desert lands burned in the Mojave Desert in the 1980s. Fires in Mojave desert scrub degrade or eliminate habitat for desert tortoises (Appendix D of Service 1994).

On February 8, 1994, the Service designated approximately 6.4 million acres of critical habitat for the Mojave population of the desert tortoise in portions of California, Nevada, Arizona, and Utah (59 FR 5820), which became effective on March 10, 1994. Critical habitat is designated by the Service to identify the key biological and physical needs of the species and key areas for recovery, and focuses conservation actions on those areas. Critical habitat is composed of specific geographic areas that contain the primary constituent elements of critical habitat, consisting of the biological and physical attributes essential to the species' conservation within those areas, such as space, food, water, nutrition, cover, shelter, reproductive sites, and special habitats. The specific primary constituent elements of desert tortoise critical habitat are: Sufficient space to support viable populations within each of the six recovery units, and to provide for movement, dispersal, and gene flow; sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species; suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites; sufficient vegetation for shelter from temperature extremes and predators; and habitat protected from disturbance and human-caused mortality.

Approximately 1.2 million acres were designated as critical habitat in Nevada. Critical habitat units (CHUs) were based on recommendations for Desert Wildlife Management Areas (DWMAs) outlined in the *Draft Recovery Plan for the Desert Tortoise (Mojave Population)* (Service 1993). These DWMAs are also identified as "desert tortoise areas of critical environmental concern (ACEC)" by BLM. Because CHU boundaries were drawn to optimize reserve design, the CHU may contain both "suitable" and "unsuitable" habitat. Suitable habitat can be generally defined as areas that provide the primary constituent elements. The proposed project area does not occur within critical habitat.

On June 28, 1994, the Service approved the final Desert Tortoise Recovery Plan (Service 1994). The Desert Tortoise Recovery Plan divides the range of the desert tortoise into 6 recovery units and recommends establishment of 14 DWMAs throughout the recovery units. Within each DWMA, the Desert Tortoise Recovery Plan recommends implementation of reserve-level

protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The design of DWMAs should follow accepted concepts of reserve design. As part of the actions needed to accomplish recovery, the Desert Tortoise Recovery Plan recommends that land management within all DWMAs should restrict human activities that negatively impact desert tortoises (Service 1994). DWMAs have been designated by BLM through development or modification of their land use plans in Nevada, Arizona, and Utah. Land-use planning activities are underway in California to designate DWMAs/ACECs. The regulation of activities within critical habitat through section 7 consultation is based on recommendations in the Desert Tortoise Recovery Plan. DWMAs/ACECs have been designated in Utah, Arizona, and Nevada. Similar designations are in progress in California for the Western Mojave Recovery Unit, and Northern and Eastern Colorado recovery units. The proposed project area occurs within the Northeastern Mojave Recovery Unit but not within a DWMA/ACEC.

The Northeastern Mojave Recovery Unit occurs primarily in Nevada, but it also extends into California along the Ivanpah Valley and into extreme southwestern Utah and northwestern Arizona (Figure 2). Vegetation within this unit is characterized by creosote bush scrub, big galleta-scrub steppe, desert needlegrass scrub-steppe, and blackbrush scrub (in higher elevations). Topography is varied, with flats, valleys, alluvial fans, washes, and rocky slopes. Much of the northern portion of the recovery unit is characterized as basin and range, with elevations from 2,500 to 12,000 feet. Desert tortoises typically eat summer and winter annuals, cacti, and perennial grasses. Desert tortoises in this recovery unit, the northern portion of which represents the northernmost distribution of the species, are typically found in low densities (approximately 10 to 20 adults per square mile).

Long-term monitoring of desert tortoise populations is a high priority recovery task as identified in the Desert Tortoise Recovery Plan. From 1995 to 1998, pilot field studies and workshops were conducted to develop a monitoring program for desert tortoise. In 1998, the Desert Tortoise Management Oversight Group chose line distance sampling as the appropriate method to determine rangewide desert tortoise population densities and trends. Monitoring of populations using this method is underway across the range of the desert tortoise. Successful rangewide monitoring will enable managers to evaluate the overall effectiveness of recovery actions and population responses to these actions, thus guiding recovery of the Mojave desert tortoise.

III. Environmental Baseline

a. Status of the Species in the Action Area

The project area is situated in the northeast corner of the Mojave Desert. The region is typified by broad alluvial basins located between relatively isolated mountain ranges and dissected uplands. The project area crosses the northern most extension of the Eldorado Valley and Eldorado Mountains.

The dominant vegetation in the project area is creosotebush (*Larrea tridentata*) – white bursage (*Ambrosia dumosa*) community. Other common species observed in the project area during pedestrian surveys include desert buckwheat (*Eriogonum fasciculatum*), range ratany (*Krameria parvifolia*), brittlebush (*Encelia farinosa*), joint-fir (*Ephedra nevadensis*), beavertail cactus (*Opuntia basilaris*), barrel cactus (*Ferocactus ancanthodes*), and cholla (*Opuntia* spp). Common herbs and forbs include desert mallow (*Sphaeralcea ambigua*), desert chicory (*Rafinesquia neomexicana*), little trumpet (*Eriogonum inflatum*), evening primrose (*Camissonia californica*), fiddleneck (*Amsinckia intermedia*) and spiny chorizanthe (*Chorizanthe rigida*). Common grasses include Arabian grass (*Schismus arabicus*), fluff grass (*Erioneuron pulchellum*) and red brome (*Bromus madritensis rubens*).

In April and May 2003, a biologist conducted pedestrian surveys of the project area to characterize vegetation communities, wildlife habitats, and desert tortoise habitat (Transcon 2003a). During the surveys, 431 acres of desert tortoise habitat was surveyed. The survey sampled 5.2 miles of the proposed alignment and included approximately six transect miles. Although no tortoise sign was observed during the surveys, the intent was not to determine presence/absence of desert tortoises but to characterize the habitat. The biologist concluded that the project area included desert tortoise habitat potentially occupied by desert tortoises. Surveys conducted in the area in 1990 concluded that 10 to 45 desert tortoises occurred in the area per square mile of habitat. This determination was based on the observation of 45 corrected sign located over 109 acres of habitat surveyed based on the regression equation developed by Berry and Nicholson (1984) as modified by BLM's Las Vegas District (Mark Cochran, pers. comm. 2003).

b. Factors Affecting the Species Environment in the Action Area

Along the southern-most section of the project, the proposed transmission line facilities would be located near the Boulder City Riffle Range. The 100-acre Boulder City Municipal Landfill is located west of the project area and serves Boulder City and Lake Mead National Recreation

Area. The Mead Substation and Bureau of Reclamation's Southwestern Complex occur at the southern end of the project area. Most traffic to and from these existing facilities would not extend into the project area. Recreationists use the existing transmission line maintenance roads with little evidence of off-road activity.

Programmatic Biological Opinions Issued for Desert Tortoise in the Action Area

File No. 1-5-97-F-251. On November 21, 1997, the Service issued a programmatic biological opinion to BLM for implementation of multiple-use actions within their Las Vegas District, excluding desert tortoise critical habitat, proposed desert tortoise ACECs, and the area covered by the Las Vegas Valley programmatic consultation. BLM proposes to authorize activities within the programmatic area that may result in loss of tortoises or their habitat through surface disturbance, land disposal, and fencing, for a period of five years. The total area covered by this programmatic biological opinion is approximately 2,636,600 acres, which includes approximately 263,900 acres of BLM-withdrawn lands in Clark County. This programmatic consultation is limited to activities which may affect up to 240 acres per project, and a cumulative total of 10,000 acres, of desert tortoise habitat excluding land exchanges and sales. Only land disposals by sale or exchange within Clark County may be covered under this consultation up to a cumulative total of 14,637 acres. Therefore, a maximum total of 24,637 acres of desert tortoise habitat may be affected by the proposed programmatic activities. BLM collects a remuneration fee of $648 per acre of disturbance of desert tortoise habitat, as indexed annually for inflation.

File No. 1-5-98-F-053. On June 18, 1998, the Service issued a programmatic biological opinion to BLM for implementation of the Las Vegas RMP. BLM collects a remuneration fee of $648 per acre of disturbance of desert tortoise habitat, as indexed for inflation. The project area for this consultation covers all lands managed by BLM's Las Vegas Field Office, including desert tortoise critical habitat, proposed desert tortoise ACECs, and BLM-withdrawn land. The Las Vegas Field Office designated approximately 648 square miles of tortoise habitat as desert tortoise ACEC in the Northeastern Mojave RU, and approximately 514 square miles of tortoise habitat as desert tortoise ACEC in the East Mojave RU, through the final RMP. As identified in the RMP, BLM manages 743,209 acres of desert tortoise habitat within four tortoise ACECs for desert tortoise recovery. To accomplish desert tortoise recovery in the Northeastern and Eastern Mojave RUs, the Las Vegas Field Office implements appropriate management actions in desert tortoise ACECs through the RMP including:

1. Manage for zero wild horses and burros within desert tortoise ACECs.
2. Limit utility corridors to 3,000 feet in width, or less.

3. Do not authorize new landfills or military maneuvers.
4. Require reclamation for activities which result in loss or degradation of tortoise habitat, with habitat to be reclaimed so that pre-disturbance condition can be reached within a reasonable time frame.
5. Limit all motorized and mechanized vehicles to designated roads and trails within ACECs and existing roads, trails, and defined dry washes outside ACECs.
6. Allow non-speed OHV events within ACECs, subject to restrictions and monitoring determinations.
7. Prohibit OHV speed events, mountain bike races, horse endurance rides, four-wheel hill climbs, mini-events, publicity rides, high-speed testing, and similar speed based events.
8. Within ACECs, do not allow commercial collection of flora. Only allow commercial collection of fauna within ACECs upon completion of a scientifically credible study that demonstrates commercial collection of fauna does not adversely impact affected species or their habitat. This action will not affect hunting or trapping, and casual collection as permitted by the State.

Habitat Conservation Plans Completed Involving the Action Area

On May 23, 1991, the Service issued a biological opinion on the issuance of incidental take permit PRT-756260 (File No. 1-5-91-FW-40) under section 10(a)(1)(B) of the Act. The Service concluded that incidental take of 3,710 desert tortoises on up to 22,352 acres of habitat within the Las Vegas Valley and Boulder City in Clark County, Nevada, was not likely to jeopardize the continued existence of the desert tortoise. The permit application was accompanied by the *Short-Term Habitat Conservation Plan for the Desert Tortoise in the Las Vegas Valley, Clark County, Nevada* (Regional Environmental Consultants 1991) (Short-term HCP) and an implementation agreement that identified specific measures to minimize and mitigate the effects of the action on desert tortoises.

On July 29, 1994, the Service issued a non-jeopardy biological opinion on the issuance of an amendment to incidental take permit PRT-756260 (File No. 1-5-94-FW-237) to extend the expiration date of the existing permit by one year (to July 31, 1995) and include an additional disturbance of 8,000 acres of desert tortoise habitat within the existing permit area. The amendment did not authorize an increase in the number of desert tortoises allowed to be taken under the existing permit. Additional measures to minimize and mitigate the effects of the amendment were also identified. Approximately 1,300 desert tortoises were taken under the authority of PRT-756260, as amended. In addition, during the Short-term HCP, as amended, approximately 541,000 acres of desert tortoise habitat have been conserved in Clark County on lands administered by BLM and NPS.

On July 11, 1995, the Service issued an incidental take permit (PRT-801045) to Clark County, Nevada, including cities within the county and the Nevada Department of Transportation (NDOT), under the authority of section 10(a)(1)(B) of the Act. The permit became effective August 1, 1995, and allowed the "incidental take" of desert tortoises for a period of 30 years on 111,000 acres of non-Federal land in Clark County, and approximately 2,900 acres associated with NDOT activities in Clark, Lincoln, Esmeralda, Mineral, and Nye Counties, Nevada. The Clark County Desert Conservation Plan (DCP) served as the permitees' habitat conservation plan and detailed their proposed measures to minimize, monitor, and mitigate the effects of the proposed take on the desert tortoise (Regional Environmental Consultants 1995). The permittees imposed, and NDOT paid, a fee of $550 per acre of habitat disturbance to fund these measures. The permittees expended approximately $1.65 million per year to minimize and mitigate the potential loss of desert tortoise habitat. The majority of these funds were used to implement minimization and mitigation measures, such as increased law enforcement; construction of highway barriers; road designation, signing, closure, and rehabilitation; and tortoise inventory and monitoring within the lands initially conserved during the short-term HCP and other areas being managed for tortoise recovery (*e.g.*, ACECs or DWMAs). The benefit to the species, as provided by the DCP, substantially minimized and mitigated those effects which occurred through development within the permit area and aided in recovery of the desert tortoise. The desert tortoise translocation site west of I-15 was established in 1997 under the DCP.

As partial mitigation under the Short-term HCP and DCP, a conservation easement was purchased from the City of Boulder City in 1994. The term of the Boulder City Conservation Easement (BCCE) is for a minimum of 50 years and will be retained in a natural condition with the purpose 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 activity that is inconsistent with the purposes of the BCCE. Much of the BCCE is also designated desert tortoise critical habitat.

On November 22, 2000, the Service issued an incidental take permit (TE-034927-0) to Clark County, Nevada, including cities within the county and NDOT, under the authority of section 10(a)(1)(B) of the Act. The permit supercedes the incidental take permit for the DCP. In the biological/conference opinion (File No. 1-5-FW-575), the Service determined that issuance of the incidental take permit to Clark County would not jeopardize the listed desert tortoise or southwestern willow flycatcher, or any of the 76 unlisted, un-proposed species covered under the permit. Under the special permit terms and conditions of the permit, take of avian species, with the exception of American peregrine falcon (*Falco peregrinus anatum*) and phainopepla (*Phainopepla nitens*), would not be authorized until acquisition of private lands in desert riparian habitats in southern Nevada has occurred. The incidental take permit allows incidental take of

covered species for a period of 30 years on 145,000 acres of non-Federal land in Clark County, and within NDOT rights-of-way, south of the 38th parallel in Nevada. The Clark County Multiple Species Habitat Conservation Plan and Environmental Impact Statement (MSHCP) (Regional Environmental Consultants 2000), serves as the permittees' habitat conservation plan and details their proposed measures to minimize, mitigate, and monitor the effects of covered activities on the 78 species. In addition to measures specified in the MSHCP and its implementing agreement, the permittee shall comply with the special terms and conditions of the permit and measures stated in Sections 3C and 3D of the DCP, which were incorporated by reference into the MSHCP and incidental take permit.

IV. Effects of the Proposed Action on the Listed Species

Direct effects encompass the immediate, often obvious effect of the proposed action on the tortoise or its habitat. Indirect effects are caused by, or result from the proposed action, are later in time, and are reasonably certain to occur. In contrast to direct effects, indirect effects are more subtle, and may affect tortoise populations and habitat quality over an extended period of time, long after construction activities have been completed. Indirect effects are of particular concern for long-lived species such as the tortoise because project-related effects may not become evident in individuals or populations until years later.

Desert tortoises may be adversely affected during project activities. Vehicle and equipment operation on the project poses the greatest threat to desert tortoises. Desert tortoises may be killed or injured by project vehicles, including those that travel on access roads or across undisturbed desert, or captured and displaced out of harm's way. Additional harassment may occur from increased levels of noise and ground vibrations produced by blasting, vehicles, and heavy equipment (Bondello 1976; Bondello, *et al.* 1979). Ground vibrations can cause desert tortoises to emerge from their burrows; slapping the ground several times within a few feet of a desert tortoise burrow entrance will often cause a desert tortoise to emerge (Medica, *et al.* 1986). Measures proposed by Western should minimize these effects, which include: (1) educate project personnel on desert tortoise biology and its protected status, (2) clear construction areas immediately before construction activities begin, (3) provide a biologist to oversee project activities and clear project areas, (4) restrict activities to designated areas including existing or newly constructed roads, (5) require workers to check for tortoises underneath project vehicles before moving them, (6) impose a 15 mile-per-hour speed limit, and (7) requiring a desert tortoise biologist be assigned to each blasting crew.

Trash accumulation at the proposed project sites may attract and concentrate predators such as ravens, coyotes (*Canis latrans*), and kit fox, which may result in increased predation of desert

tortoises. 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. Common raven populations in the California deserts have increased tenfold from 1968 to 1992 in response to expanding human use of the desert (Boarman and Berry 1995). Because ravens make frequent use of food, water, and nest site subsidies provided by humans, their population increases can be tied to this increase in food and water sources, such as landfills and septic ponds (Service 1994; Boarman 2002). Ravens may be attracted to landfills or project sites if trash is accessible by scavengers (Boarman 2002). Considering that ravens were very scarce in this area prior to 1940, it is assumed that the current level of raven predation on juvenile desert tortoises is an unnatural occurrence (BLM 1990). The measure proposed by Western to implement a litter-control program will minimize predation on tortoises from subsidized predators.

A total of 32 acres of desert tortoise habitat would be disturbed as a result of the project. As part of the proposed action, Western proposes to restore all construction areas to their original condition which should minimize impacts to desert tortoise habitat. Because Western proposes not to use herbicides on the project area, no effects to desert tortoise are anticipates from herbicide application.

The Service has determined that the level of effect described herein will not reduce appreciably the likelihood of survival and recovery of the Mojave population of the desert tortoise in the wild or diminish the value of critical habitat both for survival and recovery of the desert tortoise because:

- Potential impacts to the desert tortoise would be minimized by measures proposed by Western.
- The proposed project would mostly occur within an existing utility corridor.
- No new public access is anticipated to be created as a result of the project.
- No designated critical desert tortoise habitat would be affected by the project.

V. Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities that are reasonably certain to occur in the project 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. As the human population continues to grow in Las Vegas and surrounding areas, recreation and human use of the desert will continue to increase. The Service does not anticipate the Phase II of the

Hoover Dam bypass project would not result in additional cumulative effects beyond those described in the Biological Opinion for the first phase of the bypass project. The energy transmitted along the project infrastructure will continue to support development in southern California and Nevada including development in desert tortoise habitat. In Clark County, Nevada, habitat loss on non-Federal land and incidental take of desert tortoise occurs under the purview of the Clark County MSHCP. We anticipate that similar effects to desert tortoise on non-Federal land in southern California would be covered by HCPs.

VI. Conclusion

After reviewing the current status of the desert tortoise, the environmental baseline for the action area, the effects of the proposed minerals project and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the desert tortoise. In the Northeastern Mojave Recovery Unit, critical habitat for the desert tortoise has been designated in portions of the Piute and Eldorado valleys, Mormon Mesa, Gold Butte, and Beaver Dam Slope areas, however, this action does not affect those areas and no destruction or adverse modification of that critical habitat is anticipated.

B. INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, prohibits take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR § 17.3). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3). Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The following terms and conditions: (1) restate measures proposed by Western, (2) modify the measures proposed by Western, or (3) specify additional measures considered necessary by the Service. Where these terms and conditions vary from or contradict the minimization measures proposed under the *Description of the Proposed Action*, specifications in these terms and

conditions shall apply. The measures described below are nondiscretionary and must be implemented by Western so that they become binding conditions of any project, contract, grant, or permit issued by Western as appropriate, in order for the exemption in section 7(o)(2) to apply. The Service's evaluation of the effects of the proposed actions includes consideration of the measures developed by Western, and repeated in the *Description of the Proposed Action* portion of this biological opinion, to minimize the adverse effects of the proposed action on the desert tortoise. Any subsequent changes in the minimization measures proposed by Western may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR § 402.16. These reasonable and prudent measures are intended to clarify or supplement the protective measures that were proposed by Western as part of the proposed action.

Western has a continuing duty to regulate the activity that is covered by this incidental take statement. If Western fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

I. Amount of Take

Based on the analysis of impacts provided above, measures proposed by Western, and anticipated project duration, the Service anticipates that the following take could occur as a result of the proposed action:

1. No desert tortoises may be incidentally injured or killed by project activities.

2. All desert tortoises found in harm's way may be harassed by capture and removal from the proposed project areas. The Service estimates that no more than five desert tortoises may be affected by project activities.

3. No desert tortoise eggs are anticipated to be destroyed during construction activities.

4. No desert tortoises are anticipated to be taken in the form of indirect mortality through predation by ravens drawn to trash in the project area.

5. An unknown number of desert tortoises may be taken indirectly in the form of harm through increased noise and ground vibrations associated with construction, use of heavy equipment, and other project activities.

II. Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species, or destruction or modification of critical habitat.

III. Reasonable and Prudent Measures

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of desert tortoise:

1. Western shall implement measures to minimize injury or mortality of desert tortoises due to project-related activities.

2. Western shall implement measures to minimize predation on tortoises by predators drawn to project areas.

3. Western shall implement measures to minimize destruction of desert tortoise habitat, such as soil compaction, erosion, or crushed vegetation, due to construction activities.

4. Western shall implement measures to ensure compliance with the reasonable and prudent measures and terms and conditions in this biological opinion.

IV. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Western must fully comply with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. To implement Reasonable and Prudent Measure Number 1, Western shall fully implement the following measures to minimize injury or mortality of desert tortoises due to project-related activities:

    a. A desert tortoise education program will be presented to all personnel onsite during construction activities. This program will contain information concerning the biology and distribution of the desert tortoise, its legal status and occurrence in the proposed project area, the definition of "take" and associated penalties, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be

implemented when tortoises are encountered. Personnel will be informed to limit their activities to designated areas and check under vehicles before moving them as tortoises often seek shelter under parked vehicles.

b. All activities shall be confined to designated areas. Blading of vegetation shall occur only to the extent necessary and shall be limited to areas designated for that purpose by the authorized tortoise biologist.

c. Overnight parking and storage of equipment and materials shall be in previously disturbed areas or areas to be disturbed that have been cleared by an authorized tortoise biologist. Other areas needed for overnight parking and storage of equipment shall be cleared by the tortoise biologist.

d. Any desert tortoise found in imminent danger shall be moved out of harm's way. Such tortoises will relocated 300 to 1,000 feet offsite into adjacent undisturbed habitat. A pair of new, disposable latex gloves will be used for each tortoise that must be handled. After use, the gloves will be properly disposed. Tortoises found above ground will be placed under a marked bush in the shade; in an unoccupied burrow of similar size/orientation; or a burrow constructed by the authorized biologist in accordance with Section B-5-f (Desert Tortoise Council 1994, revised 1999). Any tortoise found within one hour before nightfall will be placed individually in a clean cardboard box and kept overnight in a cool, predator-free location. To minimize stress to the tortoise, the box will be covered and kept upright. Each box will be used only once and will then be discarded. The tortoise will be released the next day in the same area from which it was collected and placed under a marked bush in the shade.

e. If the tortoise is found and an authorized biologist is not available, an employee that has completed desert tortoise training may move the tortoise. All tortoises that are handled must be reported to the Service in accordance with Term and Condition 4 below.

f. Construction sites, staging areas, and access routes shall be cleared by an authorized tortoise biologist immediately prior (within 24 hours) to the onset of construction in any given area. The project area shall be surveyed for desert tortoise using survey techniques that provide 100 percent coverage. All potential tortoise burrows shall be identified and flagged for avoidance or excavation. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed under

supervision of an authorized tortoise biologist in accordance with the Service protocol (Desert Tortoise Council 1994, revised 1999). All desert tortoise surveys, handling of desert tortoises, and burrow excavation will be performed only by an authorized biologist except as specified Term and Condition 1.e. above.

g. Tortoises and nests shall be handled and relocated by a qualified tortoise biologist in accordance with Service-approved protocol (Desert Tortoise Council 1994, revised 1999). Burrows containing tortoises or nests shall be excavated by hand, with hand tools, to allow removal of the tortoise or eggs. Desert tortoises moved during the tortoise inactive season or those in hibernation, regardless of date, must be placed into an adequate burrow; if one is not available, one shall be constructed in accordance with Desert Tortoise Council (1994, revised 1999) criteria. During mild temperature periods in the spring and early fall, tortoises removed from the site shall not necessarily be placed in a burrow. Tortoises and burrows shall be relocated only to Federally-managed lands.

Special precautions will be taken to ensure that desert tortoises are not harmed as a result of their capture and movement during extreme temperatures (*i.e.,* air temperatures below 55° F or above 95° F). Under such adverse conditions, tortoises captured will be monitored continually by an authorized biologist until the tortoise exhibits normal behavior. If a desert tortoise shows signs of heat stress, procedures shall be implemented as identified in Service-approved protocols (Desert Tortoise Council 1994, revised 1999).

h. In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (Service 1992), an authorized desert tortoise biologist shall possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign. In addition, the biologist shall have the ability to recognize and accurately record survey results. The attached *Desert Tortoise Biologist Qualifications Statement* should be completed by potential biologists (Attachment A) and submitted to Western for review.

i. Project activities that may endanger a tortoise will cease if a tortoise is found on a project site. Project activities may resume after an authorized biologist removes the tortoise from danger or after the tortoise has moved to a safe area.

j. Herbicides shall not be used in the project area unless approved in writing by Western and the Service.

k. All desert tortoises observed by project workers shall be reported immediately to an authorized biologist.

l. If blasting is required in desert tortoise habitat, an authorized desert tortoise biologist will be assigned to each blasting crew or to each area in which blasting will occur.

m. Vehicles will not exceed 15 miles per hour on non-public access roads. Authorized biologists will monitor speed limit compliance during construction.

n. All fuel, transmission or brake fluid leaks, or other hazardous waste leaks, spills, or releases will be reported immediately to the designated environmental supervisor. The environmental supervisor shall be responsible for spill material removal and disposal to an approved offsite landfill, and if necessary, will notify the appropriate Federal agency.

2. To implement Reasonable and Prudent Measure Number 2, Western shall fully implement the following measure to minimize predation on tortoises by predators drawn to project areas:

a. A litter-control program shall be implemented during construction to minimize predation on tortoises by ravens drawn to the project site. This program shall include the use of covered, raven-proof trash receptacles, removal of trash from project areas to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility. Precautions will be taken to prevent litter from blowing out along the road when trash is removed from the site.

b. Western shall report any observations of raven predation on desert tortoises in the project area.

3. To implement Reasonable and Prudent Measure Number 3, Western shall fully implement the following measures to minimize destruction of desert tortoise habitat, such as soil compaction, erosion, or crushed vegetation, due to construction activities:

a. All equipment, vehicles, and construction materials will remain within designated areas. Staging areas will be located in previously disturbed areas whenever possible.

b. Cross-country travel and travel outside construction zones and fenced areas will be prohibited.

c. Prior to surface disturbing activities associated with the proposed project, FHWA will pay remuneration fees to be deposited into the Desert Tortoise Public Lands Conservation Fund (account number 730-9999-2315) (section 7 account) for compensation of desert tortoise habitat loss on public lands. Additionally, payment shall also be made for disturbance of private land into the MSHCP, as appropriate.

The proposed project would disturb a maximum of 32 acres of non-critical tortoise habitat on public and private lands. The fee will be assessed at the rate of $648 per acre of disturbance on public lands. These fees will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U). Information on the CPI-U can be found on the internet at: *http://stats.bls.gov/news.release/cpi.nws.htm*. The next adjustment will occur on March 1, 2004.

Clark County serves as the administrator of the funds, but does not receive any benefit from administering these funds. These funds are independent of any other fees collected by Clark County under the MSHCP. None of these funds shall be used to develop a habitat conservation plan.

The payments shall be accompanied by the attached Section 7 Fee Payment Form (Attachment B), and completed by the payee. The project proponent or applicant may receive credit for payment of such fees and deduct such costs from desert tortoise impact fees charged by local government entities. Payment shall be by certified check or money order payable to Clark County and delivered to:

Clark County Habitat Conservation
Department of Comprehensive Planning
Clark County Government Center, Third Floor
500 South Grand Central Parkway
Las Vegas, Nevada 89155-1712
(Attn: Sandy Helvey)
(702) 455-4181

4. To implement Reasonable and Prudent Measure Number 4, Western shall fully implement the following measures to ensure compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements in this biological opinion:

   a. The authorized biologist will record each observation of all desert tortoises within the project area. Information will include the following: Location, date and time of observation, whether tortoise was handled, general health and whether it voided its bladder, location tortoise was moved from and location moved to, and unique physical characteristics of each tortoise. A final report will be submitted to the Service's Southern Nevada Field Office in Las Vegas, Nevada, within 90 days of completion of construction.

   b. The authorized biologist will acquire all appropriate NDOW permits or letters of authorization prior to handling desert tortoises and their parts and prior to initiation of any activity that may require handling tortoises.

   c. A Western representative(s) shall be designated who will be responsible for overseeing compliance with the reasonable and prudent measures, terms and conditions, reporting requirements and re-initiation requirements contained in the biological opinion. The designated representative shall provide coordination with the Service, BOR and NPS.

The Service believes that no desert tortoises will be accidentally injured or killed and five tortoises may be taken by harassment or capture and movement out of harm's way during the project; no desert tortoises may be taken in the form of indirect mortality through predation by ravens drawn to the project area; no desert tortoise eggs or nests are anticipated to occur in the project area; and an unknown number of desert tortoises may be taken indirectly in the form of harm or harassment through increased noise associated with operation of heavy equipment.

In addition, up to 32 acres of desert tortoise habitat may be disturbed as a result of project activities. The reasonable and prudent measures, 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 or loss of habitat identified is exceeded, such incidental take and habitat loss represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. Western must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Reporting Requirements

Upon locating a dead or injured endangered or threatened species, initial notification must be made to the Service's Division of Law Enforcement in Las Vegas, Nevada, at (702) 388-6380. Care should be taken in handling sick or injured desert tortoises to ensure effective treatment and care for the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured desert tortoises or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by the Service's Division of Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed. All deaths, injuries, and illnesses of desert tortoises, whether associated with project activities or not, will be summarized in an annual report.

The biologist will record each observation of handled desert tortoises. Data will include the following: location, date, time of observation, whether the tortoise was handled, the general health of the tortoise, whether it voided its bladder, the location the tortoise moved from and the location it moved to, and any unique physical characteristics. Reports documenting the effectiveness and compliance with the tortoise protection measures will be prepared every six months. A final report will be reviewed and approved by Western and then submitted to the Service within 90 days of completion of construction.

The following actions should be taken for injured or dead tortoises if directed by the Service's Division of Law Enforcement:

> Injured desert tortoises shall be delivered to any qualified veterinarian for appropriate treatment or disposal. Dead desert tortoises suitable for preparation as museum specimens shall be frozen immediately and provided to an institution holding appropriate Federal and State permits per their instructions. Should no institutions want the desert tortoise specimens, or if it is determined that they are too damaged (crushed, spoiled, etc.) for preparation as a museum specimen, then they may be buried away from the project area or cremated, upon authorization by the Service's Division of Law Enforcement. Western or the project proponent shall bear the cost of any required treatment of injured desert tortoises, euthanasia of sick desert tortoises, or cremation of dead desert tortoises. Should sick or injured desert tortoises be treated by a veterinarian and survive, they may be transferred as directed by the Service.

C. 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 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.

The Service does not have any conservation recommendations at this time.

D. REINITIATION

This concludes formal consultation on the actions outlined in your September 30, 2003, 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.

If we can be of any further assistance, please contact Michael Burroughs, in the Southern Nevada Field Office, at (702) 515-5230.

Sincerely,

Cynthia T. Martinez

for Robert D. Williams
Field Supervisor

cc:
Administrator, Desert Conservation Plan, Clark County Department of Comprehensive Planning, Las Vegas, Nevada
Supervisory Biologist - Habitat, Nevada Department of Wildlife, Las Vegas, Nevada
Deputy State Director, Resources, Land Use, and Planning, Bureau of Land Management, Reno, Nevada
Regional Director, Lower Colorado Regional Office, Bureau of Reclamation, Boulder City, Nevada
Hoover Dam Bypass Project Manager, Federal Highway Administration, Lakewood, Colorado
Superintendent, Lake Mead National Recreation Area, National Park Service, Boulder City, Nevada
Assistant Regional Director, Ecological Services, Fish and Wildlife Service, Portland, Oregon
Senior Resident Agent, Division of Law Enforcement, Fish and Wildlife Service, Boise, Idaho

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Attachment A.

DESERT TORTOISE BIOLOGIST QUALIFICATIONS STATEMENT

1. Name:	
Address:	
City, State, zip code:	
Phone number:	
Email address:	

2. Date:

3. States in which authorization is requested (check all that apply):
   ☐California ☐Nevada ☐Utah ☐Arizona

   If authorization is sought for desert tortoise work under a Biological Opinion, provide the following:

   Biological Opinion File No. (USFWS): _____ Date: _____
   Project Name and Proponent: _____
   _____

4. Desert tortoise training:
   Dates (dd/mm/year):
   Location:
   Instructor/sponsor:

5. Education: Provide up to three:

Institution			
Dates attended			
Major/minor			
Degree			

6. Specify activities anticipated that require authorization (*e.g.,* capture, weigh, measure, attach telemetry devices, release, etc.)

7. Do you hold, or have you held, any State or Federal wildlife permits? If yes, provide the following:

   Dates:
   Species:
   State (specify) or Federal:
   Covered activities:

8. Project or activity for which authorization and approval is requested:

9. Experience. Complete for each position held. Include **only** those positions that involved desert tortoise experience.

<table>
<tr><td colspan="2">Project Name:
Your Position:
Responsibilities and skills used or acquired:</td></tr>
<tr><td>Dates (dd/mm/year):</td><td>From:
To:</td></tr>
<tr><td colspan="2">Total field experience:
No. of hours _____ or 8-hr. days _____ conducting desert tortoise-related activities.</td></tr>
<tr><td colspan="2">• No. of desert tortoises you encountered: <100 mm carapace length _____
>100 mm carapace length _____
• No. of desert tortoises you handled: _____
• No. of transect miles/kilometers walked: _____
• Prior authorizations for desert tortoise under Biological Opinions (specify number, date, and project and location if known):</td></tr>
<tr><td rowspan="3">References that can verify experience-provide information on right for up to three.</td><td>Name:
Employer/Position:
Address/location:
Phone no.:
Email:</td></tr>
<tr><td>Name:
Employer/Position:
Address/location:
Phone no.:
Email:</td></tr>
<tr><td>Name:
Employer/Position:
Address/location:
Phone no.:
Email:</td></tr>
</table>

Attachment B.

SECTION 7 FEE PAYMENT FORM
Entire form is to be completed by project proponent

Biological Opinion File Number: 1-5-04-F-400

Fish and Wildlife Service Office that Issued the Opinion: Reno, Nevada

Species: Desert tortoise (*Gopherus agassizii*)

Project: Proposed Ivanpah Energy Center near Jean and Sloan, Clark County, Nevada

Number of Acres to be Disturbed: _____
Fee Rate (per acre): $_____
Total Payment Required: $_____
Amount of Payment Received: $_____
Date of Receipt: _____
Check or Money Order Number: _____

Project Proponent: _____
Telephone Number: _____

Authorizing Agency: Western Area Power Administration
Make checks payable to: Clark County Treasurer
Deliver check to: Clark County Habitat Conservation
Department of Comprehensive Planning
Clark County Government Center, Third Floor
500 South Grand Central Parkway
Las Vegas, Nevada 89155 (Attn: Sandy Helvey)
(702) 455-4181

If you have questions, you may call the Southern Nevada Field Office of the U.S. Fish and Wildlife Service at (702) 515-5230.

Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
Phoenix, AZ 85005-6457

SEP 30 2003

Ms. Cynthia T. Martinez
Assistant Field Supervisor
Southern Nevada Office
U.S. Fish and Wildlife Service
4701 North Tory Pines Drive
Las Vegas, NV 89130

Subject: Amendment to the Biological Opinion for the Hoover Dam Bypass Project - Phase II (File No. 1-03-SP-493).

Dear Ms. Martinez:

The Western Area Power Administration (Western) is providing your office the Biological Assessment and the Biological Report for Western's Hoover Dam Bypass Project – Phase II. In addition, enclosed is one copy of the proposed project's draft Environmental Assessment, which is currently being revised.

Phase II is the second installment of Western's transmission modifications to accommodate the future construction of the Federal Highway Administration's (FHWA) Hoover Dam Bypass Project (File No. 1-5-99-F-105). Western's Phase I was an amendment to the FHWA's Biological Opinion (File No. 1-5-99-F-105.AMD). For the Phase II amendment the FHWA has requested that Western be assigned as lead Federal Agency, as is stated in their letter of August 20, 2003 to your office (enclosure).

In Phase II, Western proposes to replace approximately 5 miles of the Hoover-Mead #5 230-kV Transmission Line (Hoover-Mead #5) and approximately 3 miles of the Hoover-Mead #7 230-kV Transmission Line (Hoover-Mead #7) current single-circuit lattice-steel structures with new double-circuit monopole structures. The old Henderson-Hoover 230-kV Transmission Line (Henderson-Hoover) will become the new Henderson-Mead #1 230-kV Transmission Line (Henderson-Mead #1) and would be double-circuited with portions of each of these transmission lines. The Henderson-Mead #1 would be extended approximately 8 miles for the double-circuiting, and would connect with Western's Mead Substation. New right-of-way, approximately 0.25 miles, would be required for the Henderson-Mead #1 when it transfers from double-circuiting with the Hoover-Mead #7 to the Hoover-Mead #5 at Boulder City Tap. The Henderson-Mead #1 will then leave the Hoover-Mead #5 and will enter in a new alignment at the northeastern corner of Mead Substation.

In addition, fiber optic cable will replace the overhead ground wire for the newly double-circuited transmission lines. The fiber optic cable will originate at the Hoover Power House and

connect to the Los Angeles Switchyard through the underground Control Tunnel. The fiber optic cable will be placed on the Hoover-Mead #7, and then transferred to the Hoover-Mead #5 via the Henderson-Mead #1. When the Henderson-Mead #1 separates from the Hoover-Mead #5 the fiber optic cable will continue with the Henderson-Mead #1 into Mead Substation.

The project area is located east and south of Boulder City, Nevada, in Sections 29 and 30, T.22S., R.65E., Sections 25, 35 and 36, T.22S., R.64E., and Sections 2, 11, 14, 15, 22, 27 and 28, T.23.S., R.64E., MDM, Clark County, Nevada.

On March 7, 2003, Western requested a list of Endangered, Threatened, Candidate, Proposed or Sensitive Species or Critical Habitats for Modifications and Construction of Transmission Lines for the U.S. 93 Hoover Dam Bypass Project Western's Phase II. Your office responded in your letter of May 5, 2003, that the Mojave Desert tortoise and the bald eagle were listed species that may occur in the project area. Western prepared the enclosed Biological Assessment in accordance with U.S. Fish and Wildlife Service regulations found at 50 CFR 402 for these two species.

Western has determined that the bald eagle may be affected but is not likely to be adversely affected because of:

1) discountable or insignificant effects due to the lack of bald eagle observations, indicating lack of usage of the project area;
2) the mitigation agreed to during Phase I of the Hoover Dam Bypass Project; and
3) beneficial affects resulting from the Mitigation efforts in Phase I of the Hoover Dam Bypass Project.

Based on conversations with Mr. Michael Burroughs, Western has changed the determination in the Biological Assessment for the Mojave Desert tortoise. Western has determined the Mojave Desert tortoise may be adversely affected by the proposed action. Western has also determined that 32 acres of desert tortoise habitat will undergo long-term disturbance. The FHWA will provide compensation to the Section 7 fund for the disturbance.

If you have any questions regarding these determinations please contact Mr. John Bridges 720-962-7255, or the project Ms. Alison Jarrett 602-352-2434.

Sincerely,

John R. Holt
Environmental Manager

Enclosures:

cc:

Mr. Mike Burroughs
Biologist
U.S. Fish and Wildlife Service
Southern Nevada Office
4701 North Tory Pines Drive
Las Vegas, NV 89130
(w/cy BA electronic provided via e-mail)

Mr. Robert D. Williams
Field Supervisor
U.S. Fish and Wildlife Service
Nevada Fish and Wildlife Office
1340 Financial Boulevard
Suite #234
Reno, NV 89502

Mr. Doug Hunt
Chief, Habitat Bureau
Dept. of Conservation and Natural Resources
Division of Wildlife
1100 Valley Road
Reno, NV 89512

Mr. F. Dave Zanetell
Hoover Dam Bypass Project Manager
Federal Highway Administration
Central Federal Lands Highway Division
555 Zang Street
Mail Room 259
Lakewood, CO 80228

Mr. Robert Johnson
Regional Director
Bureau of Reclamation
Lower Colorado Regional Office
P.O. Box 61470
Boulder City, NV 89006-1470
(w/o cy of encls.)

Mr. William K. Dickinson
Superintendent
National Park Service
Lake Mead National Recreation Area
601 Nevada Way
Boulder City, NV 89005

APPENDIX D

NEVADA DIVISION OF WILDLIFE – GILA MONSTER PROTOCOL FOR MINIMIZING IMPACTS ON THE CONSTRUCTION SITE

GILA MONSTER PROTOCOL FOR MINIMIZING IMPACTS ON THE CONSTRUCTION SITE

11 April 2003

Background

- Per Nevada Administrative Code 503.080, the Gila monster 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 Division of Wildlife (NDOW).

This species is rarely observed relative to other species and 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 the Clark County Multiple Species Habitat Conservation Plan (MSHCP). The 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 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 illegitimate, resulting from harassment or careless handling.

The banded Gila monster (*Heloderma suspectum cinctum*) 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. The Gila monster is recognizable by its striking black and orange-pink coloration. 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 western banded gecko (*Coleonyx variegatus*) and chuckwalla (*Sauromalus obesus (= ater)*) are most frequently confused with the Gila monster. All three species share the same habitats.

The banded gecko is often mistakenly identified as a baby or juvenile Gila monster. Banded geckos do have a finely granular skin and pattern that can be suggestive of the Gila monster to the untrained eye. However, 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. 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.

Gila monster habitat requirements center on desert wash, spring and riparian habitats that interdigitate primarily with complex rocky landscapes of upland desert scrub. Hence, Gila monster habitat bridges and overlaps that of both the desert tortoise and chuckwalla. Gila monsters are secretive and difficult to locate, spending >95% of their lives underground.

Gila monsters make use of deep crevices and caves of primarily rocky slopes for winter and summer refugia. When active they will also frequent animal burrows and other shallow refugia on more gentle slopes. Foraging Gila monsters seek nestlings of ground or low-shrub nesting birds (e.g. doves, quail), rodents (e.g. mice, kangaroo rats), and lagomorphs (e.g. cottontail) which are found in highest concentration in higher productivity areas, such as along well-vegetated wash courses of bajadas.

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

Construction Site Protocols

Helpful to any instructional program, personnel should at least know how to: 1) identify Gila monsters and be able to distinguish it from other lizards such as chuckwallas and banded geckos; 2) report any observations of Gila monsters to the Nevada Division of Wildlife (NDOW); 3) be alerted to the consequences of a 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°F) by the project biologist or equivalent until a NDOW biologist can arrive for documentation purposes. Despite that a Gila monster is venomous and can deliver a serious bite, its relatively slow gate 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 mapped capture location (e.g. GPS record), 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 during normal business hours. 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, habitat, and mapped location.

3) Should NDOW's assistance be delayed, biological or equivalent personnel on site may be requested to remove and release the Gila monster out of harms way. Should NDOW not be immediately available to respond for photo-documentation, a 35mm camera or equivalent will be used to take good quality photographs of the Gila monster in situ at the location of live encounter or dead salvage. The pictures, preferably on slide film, will be provided to NDOW. Pictures will include: 1) Encounter location (landscape overview 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 Christy Klinger at (702) 486-5127 x3718 for additional information regarding these protocols.

APPENDIX E

STATE HISTORIC PRESERVATION OFFICE CONSULTATION

STATE OF NEVADA
DEPARTMENT OF CULTURAL AFFAIRS
Nevada State Historic Preservation Office
100 N. Stewart Street
Carson City, Nevada 89701

KENNY C. GUINN
Governor

SCOTT K. SISCO
Interim Director

RONALD M. JAMES
State Historic Preservation Officer

September 29, 2003

J. Tyler Carlson
Regional Manager
Western Area Power Administration
Desert Southwest Customer Service Region
PO Box 6457
Phoenix AZ 85005-6457

RE: Hoover Dam Bypass Project II, Colorado River Basin at Black Canyon, Clark County.

Dear Mr. Carlson:

The Nevada State Historic Preservation Office (SHPO) reviewed the cultural resources inventory for Phase II of the Hoover Dam Bypass Project which will result in the multiple alterations to Hoover-Mead #5, #7, and the Henderson-Hoover Transmission Lines described in your letter of September 2, 2003.

The SHPO concurs with the Western Area Power Administration's determination that the following sites are not eligible under any of the Secretary's criteria:

26Ck6723 and 26Ck6724.

The SHPO concurs with the Western Area Power Administration determination that the following historic property is eligible for the National Register of Historic Places under criterion d:

26Ck6726.

The SHPO cannot concur with a Western Area Power Administration determination that the following resources are eligible under criterion a:

26Ck6725 and 26Ck6726.

In order to complete our review of the Western Area Power Administration's determination of National Register eligibility, we request that the Western Area Power Administration provide the documentation necessary to justify a determination of National Register eligibility. Please refer to National Register Bulletin #38 (Guidelines for Evaluating and Documenting Traditional Cultural Properties) for a description of the methods used to compile this information. Some questions that could be addressed are:

> What characteristics contained in this site would differentiate it from other stone circles and make it eligible as a traditional cultural property?
>
> How large is the traditional cultural property and how are the boundaries defined?

The SHPO awaits the submission of the ethnographic study of the project.

The SHPO notes that the Western Area Power Administration has initiated HAER documentation required for the Hoover-Mead #5 and #7 230-kV Transmission Line. The SHPO awaits submission of these documents.

The proposed activities are part of the Hoover Dam Bypass Project and are therefore addressed by a Programmatic Agreement signed by all parties. No determination of effect for this portion of the project is necessary.

If you have any questions concerning this correspondence, please feel free to call Rebecca Lynn Palmer at (775) 684-3443 or by E-mail at rlpalmer@clan.lib.nv.us.

Sincerely,

Rebecca Palmer

Alice M. Baldrica, Deputy
for State Historic Preservation Officer

Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
Phoenix, AZ 85005-6457

SEP 2 2003

Mr. Ronald M. James
State Historic Preservation Officer
Nevada State Historic Preservation Office
100 North Stewart Street
Carson City, NV 89710

Dear Mr. James:

The Western Area Power Administration (Western) has considered the effects of the undertaking near Hoover Dam described below on cultural resources. Per 36 CFR § 800.4, Western has determined that there will be a **no adverse effect** by the proposed undertaking, **providing the Special Conditions of Compliance** outlined below are strictly followed. The submission of this documentation will fulfill Western's responsibilities under Section 106 of the National Historic Preservation Act.

I. **Description of the Undertaking** – As the result of the Federal Highway Administration's (FHWA) Hoover Dam Bypass Project, Western developed two phases of modification and construction of our electrical facilities in the Hoover Dam and Boulder City area. In Phase I, a portion of each of the Hoover-Mead #6 and #7 230-kV Transmission Lines were reconstructed. The existing lattice steel structures were replaced with single-circuited and double-circuited steel monopole structures. A few of the structures were relocated from their original locations along with abandonment of some structures on the Circuits 11 and 12, due to the future U.S. 93 Highway corridor. This work was done under the FHWA Hoover Dam Bypass Programmatic Agreement.

In Phase II of the Hoover Dam Bypass Project, Western proposes to replace approximately 5 miles of the Hoover-Mead #5 230-kV Transmission Line (Hoover-Mead #5) and approximately 3 miles of the Hoover-Mead #7 230-kV Transmission Line (Hoover-Mead #7) current single-circuit lattice-steel structures with new double-circuit monopole structures. The old Henderson-Hoover 230-kV Transmission Line (Henderson-Hoover) will become the new Henderson-Mead #1 230-kV Transmission Line (Henderson-Mead #1) and would be double-circuited with portions of each of these transmission lines. The Henderson-Mead #1 would be extended approximately 8 miles for the double-circuiting, and would connect with Western's Mead Substation. New right-of-way, approximately 0.25 miles, would be required for the Henderson-Mead #1 when it transfers from double-circuiting with the Hoover-Mead #7 to the Hoover-Mead #5 at Boulder City Tap. The Henderson-Mead #1 will then leave the Hoover-Mead #5 and will enter in a new alignment at the northeastern corner of Mead Substation.

In addition, fiber optic cable will replace the overhead ground wire for the newly double-circuited transmission lines. The fiber optic cable will originate at the Hoover Power House and connect to the Los Angeles Switchyard through the underground Control Tunnel. The fiber optic cable will be placed on the Hoover-Mead #7, and then transferred to the Hoover-Mead #5 via the Henderson-Mead #1. When the Henderson-Mead #1 separates from the Hoover-Mead #5 the fiber optic cable will continue with the Henderson-Mead #1 into Mead Substation.

II. **Methodology and Reporting** – Trancon Environmental (Transcon) conducted a cultural resource inventory of the Phase II project area. The report, **"Western Area Power Administration's Hoover Dam Bypass Project Phase II, Cultural Resources Inventory (Double-Circuiting a Portion of the Hoover-Mead #5 and #7 230-kV Transmission Lines with the Henderson-Mead #1 230-kV Transmission Line), Clark County, Nevada,"** is enclosed for your review and comments. An intensive pedestrian inventory was conducted for the 200-foot right-of-way (ROW) for portions of the Henderson-Hoover, Hoover-Mead #5 and Hoover-Mead #7 230-kV Transmission Lines and a 50-foot ROW for associated access roads. Additional small areas were also surveyed (staging, pulling locations, and areas between the transmission line and associated access roads). Combined, these represent the project Area of Potential Effect (APE).

Part of this project lies within the National Historic Landmark boundary for Hoover Dam. The project area is located east and south of Boulder City, Nevada, in Sections 29 and 30, T.22S., R.65E., Sections 25, 35 and 36, T.22S., R.64E., and Sections 2, 11, 14, 15, 22, 27 and 28, T.23.S., R.64E., MDM, Clark County, Nevada (enclosure). Land status includes the Bureau of Reclamation (BOR), National Park Service (NPS) – Lake Mead Recreation Area, Western and Boulder City Municipal lands.

Portions of the Hoover-Mead #5 and #7 and Henderson-Hoover 230-kV Transmission Lines proposed for double-circuiting were evaluated and documented in "Boulder City/U.S. 93 Corridor Study Historic Structures Survey" by Associated Cultural Resource Experts (ACRE), September 2002 and the Historic American Engineering Record (HAER) Addendum to Hoover Dam (NV) Spanning Colorado River At Route 93 Boulder City Vicinity, Clark County, Nevada," by ACRE, 2002. All three lines were recommended as eligible by FHWA.

III. **Resources Located, Identified and Evaluated** – Transcon's survey identified 38 cultural resources. Of these, 15 are isolated occurrences (IOs). One IO is located on the BOR, one IO is on the NPS, and 13 IOs are located on Boulder City Municipal lands. The IOs are all recommended as not eligible for listing on the National Register of Historic Places (NRHP). There are 23 sites of which 19 are previously recorded sites. Twelve were previously determined to be eligible, six were previously determined to be not eligible for the NRHP and one site is unevaluated. These are listed in Table 5 of the enclosed draft report.

Four newly recorded sites were located, two historic and two prehistoric. The two historic sites, 26CK6723 and 26CK6724, are both located on the BOR. Site 26CK6723 is an alignment of three low-power electric transmission utility poles. Site 26CK6724 is a short segment of an access road associated with the construction of electric transmission lines. Western recommends both of these historic sites as not eligible for inclusion in the NRHP.

The two prehistoric sites 26CK6725 and 26CK6726 are both located on Boulder City Municipal lands. Site 26CK6725 consists of two stone circles and a lithic scatter. Site 26CK6726 consists of one rock shelter and two additional, probable rock shelters located in close association on a conglomerate monolith.

Western consulted with tribes on this project and set up two site visits to help evaluate eligibility and effect to prehistoric sites 26CK6725 and 26CK6726. The tribes included representatives from the Hualapai Tribe, Kaibab-Pauite Tribe, Fort Mojave Tribe, Chemehuevi Tribe and Paiute Indian Tribe of Utah. The tribes expanded the site boundary for site 26CK6726, and they identified both as traditional cultural properties. They also identified methods to mitigate the effects of the project to both sites. At the request of the tribes, Western will do an ethnographic study of the project.

The two newly recorded prehistoric sites, 26CK6725 and 26CK6726, are both recommended as eligible. Both are recommended eligible under criteria a and d. Tribal consultation indicated they are TCPs (criterion a). Both sites have potential for data recovery, criterion d.

The Sullivan Turquoise Site, 26CK23, is unevaluated. During the survey for this project, no features were found within the APE. The survey did go up to 1000' outside the APE and did not identify any features associated with this site. Since the site was recorded so long ago, the original site map does not realistically represent the site's boundaries. Based on the field survey for this project, the site does not extend into the APE for this project. Therefore, there are no impacts to the site, and the site remains unevaluated due to the lack of features or artifacts within the APE. A copy of the site forms are enclosed for clarification.

IV. **Effects Determination and Compliance Decision** – Of the previously recorded sites, five have a potential adverse effect from this project. They are 26CK3916 (Hoover Dam Historic District), 26CK5180 (18 Transmission Lines), 26CK6237 (Hoover-Mead #7), 26CK6240 (Hoover-Mead #5), and NV-27-O (Henderson-Hoover). The sites or the components of these sites that are being affected have had or are under contract to have completed HAER documentation. Western believes if HAER documentation is completed on these sites or their components that this will mitigate any adverse effects.

Of the previously recorded sites, the project has no adverse effect potential. Site 26CK4765 (Hoover Switchyard and Transmission Complex) will have a fiber optic cable connected through the Los Angeles Switchyard component, but no main or major introduction, reconstruction, or removal will occur in this yard. The Los Angeles

Switchyard HAER documentation has been completed and was submitted to the NPS and Nevada State Historic Preservation Office (NVSHPO) by FHWA for the Hoover Dam Bypass Project.

For a portion of the routing of the fiber optic cable installation, the Hoover Control Tunnels will be used. The Control Tunnels have been referenced during evaluation and documentation of the Hoover Switchyards, but not directly recorded. The fiber optic cable will most likely be inside a flexible-plastic conduit placed in the pre-existing cable trays which currently hold other cables (enclosure). This would not affect the integrity or purpose of the Control Tunnels. Due to the nature of work regarding the Control Tunnels there will be a no effect potential.

Six previously recorded sites have no potential for any effects. They are 26CK4046a (U.S. Construction Railroad), 26CK6249 (Southern California Edison North Transmission Line), 26CK6250 (Southern California Edison South Transmission Line), 26CK6238 (Los Angeles Bureau of Power and Light [LABPL] #1 Transmission Line), 26CK6242 (LABPL #3 Transmission Line), and 26CK6251 (Hoover-Basic South Transmission Line). Site 26CK4046a is the only site that may be used temporarily for access during construction. Access will consist of driving over the railroad grade. No improvements or upgrading will occur on or near these sites.

One of the two newly recorded prehistoric sites has no potential for effects. This site, 26CK6725 (two rock circles and lithics), will be avoided and a tribal and archaeological monitor will be present to ensure avoidance. When conductor is changed out over the site, it will be walked off, not drug through, the site. The other new site, 26CK6726, will be avoided by building a new access road to the northeast of the site, away from the monolith. An ethnographic study, involving interested tribes, will be completed. Tribal and archaeological monitors will be present during all construction at this site. Once the old tower is removed and the new tower installed, the landscape will be restored.

Western did consult with NPS and BOR on eligibility and effect on sites located on their lands. Changes were made to the draft report, based on their comments.

Effects determinations are the responsibility of the lead agency. Western has considered the nature of the undertaking and determined that there will **be a no adverse effect to historic** properties by the undertaking provided that Western follows the **Special Conditions of Compliance** established below. Western considers that the stipulations of Section 106 of the National Historic Preservation Act, as amended, and the implementing regulations, 36 CFR § 800, will be satisfied through this consultation.

V. **Special Conditions of Compliance** – Western currently has contracted Mr. Kurt Schweigert of ACRE to complete the additional HAER documentation required for the Hoover-Mead #5 and #7 230-kV Transmission Lines prior to construction. The documentation will be done similarly to what was done for the Hoover Dam Bypass Project. Copies of documentation will be sent to the NVSHPO for review when they are completed in draft form. Tribal and/or archaeological monitors will be on site for

avoidance of Site 26CK6725 (2 rock circles and lithics), and to ensure avoidance at Site 26CK6726 (3 rock shelters). In consultation with the tribes, they concurred that the monitoring and using a new road for access to the structure would mitigate any potential effects to these two sites. The tribes also agreed to an ethnographic study that would be ongoing during the construction project.

Please provide comments on the enclosed draft report. Please concur with our determinations of eligibility and **no adverse effect**. If you have any questions about these determinations, please contact Ms. Mary Barger at (720) 962-7253, or Ms. Alison Jarrett at (602) 352-2434.

Sincerely,

J. Tyler Carlson
Regional Manager

Enclosures

cc:

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Director
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Hoover Dam Bypass Project Manager
Federal Highway Administration
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Mr. Steve Daron
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(w/cy of encls.)

Los Angeles Switchyard

Single Circuit Hoover-Mead #7 with Fiber Optic Cable

Henderson-Hoover 230kV

Double Circuit Henderson-Mead #1 and Hoover-Mead #7 with Fiber Optic Cable

Metropolitan Water District Switchyard

Fiber Optic Cable

Boulder City Tap

Henderson-Mead #1 and Fiber Optic Cable Cross from Hoover-Mead #7 to Hoover-Mead #5

New Alignment of Single-Circuited Henderson-Mead #1 with Fiber Optic Cable

Double Circuit Henderson-Mead #1 and Hoover-Mead #5 with Fiber Optic Cable

Mead Substation

Boulder City

Landfill

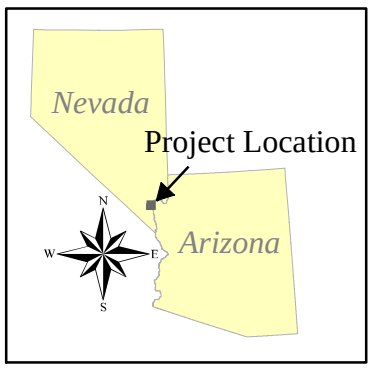
ELDORADO VALLEY

NATIONAL RECREATION AREA

COLORADO MOUNTAINS

LAKE MEAD

COLORADO



0 0.5 1 Miles

Legend

- Bureau of Reclamation Security Area
- National Park Service
- Western Area Power Administration
- Boulder City/Private
- Double Circuit Henderson-Mead #1 and Hoover-Mead #5 with Fiber Optic Cable
- Double Circuit Henderson-Mead #1 and Hoover-Mead #7 with Fiber Optic Cable
- Single Circuit Henderson-Mead #1 with Fiber Optic Cable
- Single Circuit Henderson-Mead #1 crosses from Hoover-Mead #7 to Hoover-Mead #5 with Fiber Optic Cable
- Fiber Optic Cable (via Control Tunnel)
- Henderson-Hoover 230kV Transmission Line (Henderson-Mead #1)
- Single Circuit Hoover-Mead #7 with Fiber Optic Cable

Project Location

Hoover Dam Bypass Project Phase II

Western Area Power Administration

Figure 1-1

TRANSCON ENVIRONMENTAL

Los Angeles Bureau of Power and Light Switchyard

Single Circuit Hoover-Mead #7 with Fiber Optic Cable

Henderson-Hoover 230kV

Metropolitan Water District Switchyard

Fiber Optic Cable

Double Circuit Henderson-Mead #2 and Hoover-Mead #7 with Fiber Optic Cable

Boulder City Tap

Henderson-Mead #2 and Fiber Optic Cable Cross from Hoover-Mead #7 to Hoover-Mead #5

Double Circuit Henderson-Mead #2 and Hoover-Mead #5 with Fiber Optic Cable

New Alignment of Single-Circuited Henderson-Mead #2 with Fiber Optic Cable

Mead Substation

Boulder City

Nevada

Project Location

Arizona

0 0.5 1 Miles

Legend

- Bureau of Reclamation Security Area
- Western Area Power Administration
- National Park Service
- Boulder City/Private
- Double Circuit Henderson-Mead #2 and Hoover-Mead #5 with Fiber Optic Cable
- Double Circuit Henderson-Mead #2 and Hoover-Mead #7 with Fiber Optic Cable
- Single Circuit Henderson-Mead #2 with Fiber Optic Cable
- Single Circuit Henderson-Mead #2 crosses from Hoover-Mead #7 to Hoover-Mead #5 with Fiber Optic Cable
- Fiber Optic Cable (via Control Tunnel)
- Henderson-Hoover 230kV Transmission Line (Henderson-Mead #2)
- Single Circuit Hoover-Mead #7 with Fiber Optic Cable

Project Location

Hoover Dam Bypass Project Phase II

Western Area Power Administration

Figure 1-1

TRANSCON ENVIRONMENTAL

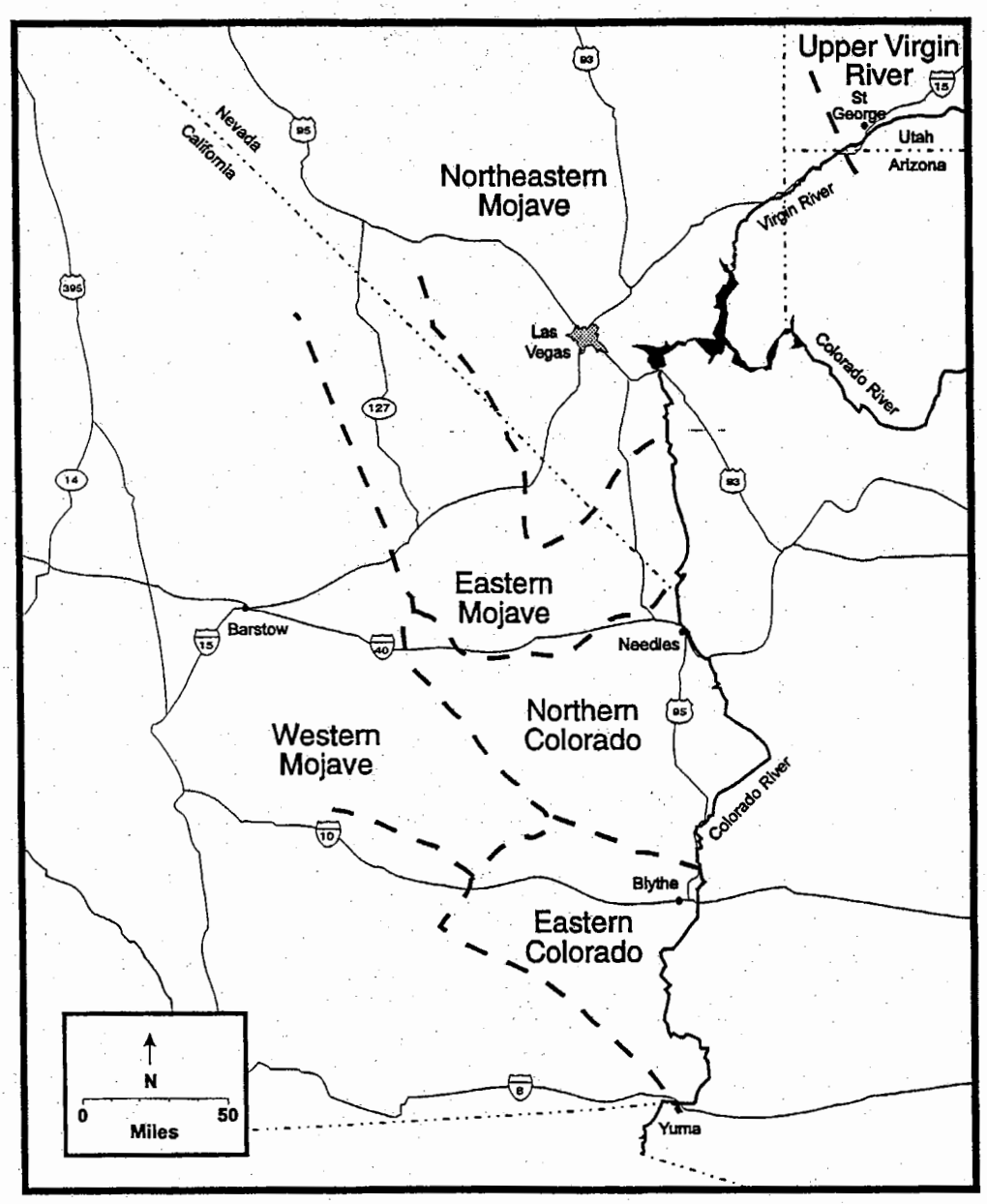


Figure 2. Desert Tortoise Recovery Units