

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

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**Environmental Assessment  
DOI-BLM-NV-L030-2013-0029-EA  
September, 2013**

**Tikaboo Powerline Project**

**FLPMA TITLE V ROW**

**Lincoln County, Nevada**

**Applicant: *Lincoln County Power District*  
*HC 74 Box 101*  
*Pioche, NV 89043***

NVN-085482

NVN-012182

NVN-089429

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## Table of Contents

Table of Contents .....	i
LIST OF FIGURES .....	iii
LIST OF TABLES .....	iii
1 INTRODUCTION .....	1-1
1.1 Background .....	1-1
1.2 Purpose of the Proposed Action.....	1-2
1.3 Need for the Proposed Action.....	1-2
1.4 Land Use Plan Conformance .....	1-2
2 Proposed Action and Alternative .....	2-1
2.1 No Action Alternative .....	2-1
2.2 Proposed Action.....	2-1
2.3 Alternatives Considered but Eliminated from Detailed Analysis .....	2-19
2.3.1 Route Alternatives Proposed by the Proponent.....	2-19
2.3.2 Route Alternatives Considered by the BLM .....	2-21
3 AFFECTED ENVIRONMENT .....	3-1
3.1 General Setting/Resources Considered .....	3-1
3.1.1 General Setting.....	3-1
3.1.2 Resources Considered .....	3-4
3.2 Resources/Concerns Analyzed in Detail.....	3-6
3.2.1 FWS Listed (or proposed for listing) Threatened or Endangered Species or critical habitat.....	3-7
3.2.2 Sensitive Species .....	3-9
3.2.3 Cultural and Historical Resources .....	3-10
3.2.4 Visual Resources .....	3-11
3.2.5 Forest and Woodland Products .....	3-14
3.2.6 Floodplains (Surface Water and Flooding Potential).....	3-14
3.2.7 Non-Native Invasive and Noxious Species .....	3-15
4 ENVIRONMENTAL CONSEQUENCES OF PROPOSED ACTION.....	4-16
4.1 Impact on FWS Listed (or proposed for listing) Threatened or Endangered Species or critical habitat .....	4-16
4.2 Sensitive Species.....	4-17
4.3 Impacts on Cultural Resources .....	4-18
4.4 Impacts on Visual Resources .....	4-18

4.5	Impacts on Forest and Woodland Products.....	4-22
4.6	Impacts on Floodplains .....	4-22
4.7	Non-native Invasive and Noxious Species.....	4-23
5	CUMULATIVE IMPACTS OF THE PROPOSED ACTION .....	5-1
5.1	Impacts to FWS Listed (or proposed for listing) Threatened or Endangered Species or Critical Habitat .....	5-1
5.2	Impacts on Sensitive Species .....	5-1
5.3	Impacts to Cultural Resources .....	5-2
5.4	Impacts to Visual Resources .....	5-2
5.5	Impacts on Invasive Species .....	5-2
6	Tribes, Individuals, Organizations, or Agencies Consulted .....	6-1
7	LIST OF PREPARERS .....	7-1
	APPENDIX A.....	A-1
	APPENDIX B.....	B-9
	APPENDIX C.....	C-1
	APPENDIX D.....	D-2
	REFERENCES .....	R-1

## LIST OF FIGURES

Figure 2.1 The preferred and alternative transmission line routes in Lincoln County Nevada. ....	2-3
Figure 2.2 Map of Southern Project Area.....	2-4
Figure 3.1 Desert tortoise critical habitat within the proposed project area and the proposed preferred transmission line route.....	3-8
Figure 3.2 BLM Visual Resources Management Classes in the vicinity of the proposed transmission line route as defined in the Ely District RMP (BLM, 2007). ....	3-13
Figure 4.1 Photo-simulation of the visual effects of the new H-frame transmission structures paralleling the existing 69kV transmission line and highway US 93 in Coyote Spring Valley (photo by M. Cablk and J. Miller of DRI; photosimulation by ECI).....	4-19
Figure 4.2 Photo simulation of the visual effects of the H-frame transmission structures as the route enters southern Delamar Valley (photo by M. Cablk and J. Miller of DRI, photo-simulation by ECI).....	4-20
Figure 4.3 Photo-simulation of the visual effects of the 69kV single pole transmission line as it transits across Tikaboo Valley past the Medlin ranch as seen from State Route 375 (photo by M. Cablk and J. Miller of DRI, photo- simulation by ECI).....	4-21
Figure 4.4 Photo-simulation of the visual effects of the 69 kV single pole transmission line as it passes over the road leading to the Medlin ranch. View is to the west northwest with Bald Mountain in the background (photo by M. Cablk and J. Miller of DRI, photo-simulation by ECI).....	4-21

## LIST OF TABLES

Table 2-1 Approximate Land Area to be Disturbed with the Proposed Action.....	2-5
Table 3-1 Resources/Concerns Considered for Analysis.....	3-4
Table 4-1 Breakdown of tortoise habitat impacted by type of habitat.....	4-17
Table 7-1 BLM Preparers .....	7-1

## ACRONYMS

ac	acre
APE	area of potential effect
AUM	animal unit month
BAPC	Nevada Bureau of Air Pollution Control
BAQP	Nevada Bureau of Air Quality Planning
BLM	United States Bureau of Land Management
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Register
CWA	Clean Water Act
DRI	Desert Research Institute
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
ft	feet/foot
GIS	geographic information system
GLO	General Land Office
ha	hectare/hectares
HMA	herd management area
km	kilometer/kilometers
kV	kilovolt
LCPD	Lincoln County Power District
mi	mile/miles
m	meter/meters
MV	megavolt
NAAQS	National Ambient Air Quality Standards
NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NNHP	Nevada National Heritage Program
NRHP	National Register of Historic Places
NTTR	Nevada Test and Training Range
NVCRIS	Nevada Cultural Resource Information System
OHV	off highway vehicle
OPGW	optical ground wire
PNWR	Pahranagat National Wildlife Refuge
POD	Plan of Development
ROW	Right-of-way
SHPO	State Historic Preservation Office
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VRM	Visual Resource Management

# FINAL ENVIRONMENTAL ASSESSMENT

## Lincoln Power District District #1 Transmission Project From Coyote Spring Valley to the Nevada Test and Training Range in Tikaboo Valley, NV [801 Transmission Facilities Projects (N-58482; N- 89429; N-12182)]

### 1 INTRODUCTION

The Bureau of Land Management (BLM) prepared this Environmental Assessment (EA) pursuant to Section 102 of the National Environmental Policy Act of 1969 (NEPA), as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ, 1978), and the Bureau of Land Management's National Environmental Policy Act Handbook H-1790-1 to ensure compliance with NEPA and CEQ regulations. Since the United States Air Force would be providing funds for the implementation of the proposal, prepared it pursuant to 32 CFR Part 989, (which defines the Air Force's Environmental Impact Analysis Process (EIAP); see Air Force Instruction 32-7061)) in anticipation of the Air Force's adoption of the document as provided for in *CEQ Guidance Regarding NEPA Regulations, 48 Fed. Reg. 34263 (July 28, 1983)*. The objective of NEPA is to ensure that the federal decision-making process recognizes natural and cultural resources and considers the potential environmental impacts of proposed actions before decisions are made and actions are taken. Therefore, this EA contains an explanation of the proposed action, an evaluation of the natural and cultural resources present, a description of alternative actions, and an estimate of the environmental impacts of all alternative actions. Also, it provides sufficient evidence and analysis to determine whether or not to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI) (40 CFR 1508.9). All of the requirements contained in the Clean Air (CAA), Clean Water (CWA), Endangered Species (ESA), and National Historic Preservation (NHPA) Acts as they apply to implementation of the proposed action will be complied with.

This EA tiers to and incorporates by reference the Ely District Resource Management Plan (RMP) Environmental Impact Statement (EIS) (2007) and the West Wide Energy Corridor EIS and incorporates by reference the Final EIS for the ON Line Project. It evaluates only those natural, cultural and socio-economic resources reasonably expected to be potentially significantly affected by the granting of the required rights-of-way and construction of the proposed transmission facilities.

#### 1.1 Background

Lincoln County Power District No. 1 (LCPD) owns and operates electrical transmission and switching equipment in Coyote Spring Valley, Delamar Valley, Pahrangat Valley and Tikaboo Valley and provides electrical service to all of Lincoln County. Communities served include the new Coyote Spring development, the town of Alamo and surrounding rural areas of Pahrangat Valley, the agricultural area and small community of Rachel in Penoyer Valley, the

towns of Caliente, Panaca and Pioche, and all associated rural areas. LCPD's current combined load is approximately 18 megawatts (MW). The LCPD proposed action would increase the combined load capacity by a maximum of 8 MW.

LCPD is a political subdivision of the State of Nevada, created on June 24, 1935 by Order and Opinion of the Public Service Commission of the State of Nevada as a Power District under Chapter 72 of the laws of Nevada. These laws were subsequently revised and LCPD is now considered a General Improvement District governed by Chapter 318 of the Nevada Revised Statutes. As a General Improvement District, LCPD is governed by a five member board elected by citizens residing within LCPD's boundaries. The function of LCPD is to provide electric service throughout Lincoln County, Nevada and adjoining areas. As a General Improvement District, LCPD does not profit from the sale of electric energy and its primary purpose is to provide a public good by serving the electric energy needs of its customers.

## **1.2 Purpose of the Proposed Action**

The BLM's purpose in considering approval of the application for a grant of right-of-way for electrical transmission facilities is to provide legitimate use of the public lands to the proponent. Legitimate uses are those that are authorized under Title V, Section 501 of the Federal Lands Policy Management Act (FLPMA) of 1976 and meet the proponent's objectives while preventing undue and unnecessary degradation in accordance with the objectives defined by 43 CFR 2810.2 (a-d).

## **1.3 Need for the Proposed Action**

The BLM needs to consider approval of the application for a grant of right-of-way to respond to its mandate under the FLPMA to manage the public lands for multiple uses in a manner which recognizes the Nation's need for reliable electrical energy distribution.

## **1.4 Land Use Plan Conformance**

The proposed action is in conformance with The Ely District Record of Decision and Approved Resource Management Plan (August, 2008). Although the proposed action is not specifically provided for in the Resource Management Plan (RMP) it is clearly consistent with the Goals and Objectives of the RMP which are to:

- Manage public lands in a manner that meets public, local, state and federal agency needs for use authorizations such as rights-of way, permits, leases, and easements while avoiding or minimizing adverse impacts to other resource values and
- To respond to public, local, state and federal agency needs for land for community development, utility and other associated rights-of-way, communication sites, and other allowed uses of BLM administered lands. (pages 66 and 67)

## **2 PROPOSED ACTION and ALTERNATIVE**

### **2.1 No Action Alternative**

Under this alternative BLM would not grant the requested rights-of-way (ROW), LCPD would not construct and upgrade the proposed facilities and the Air Force would thus not contract with LCPD for the power. The No-Action alternative does not meet the purpose and need of the proposed action.

### **2.2 Proposed Action**

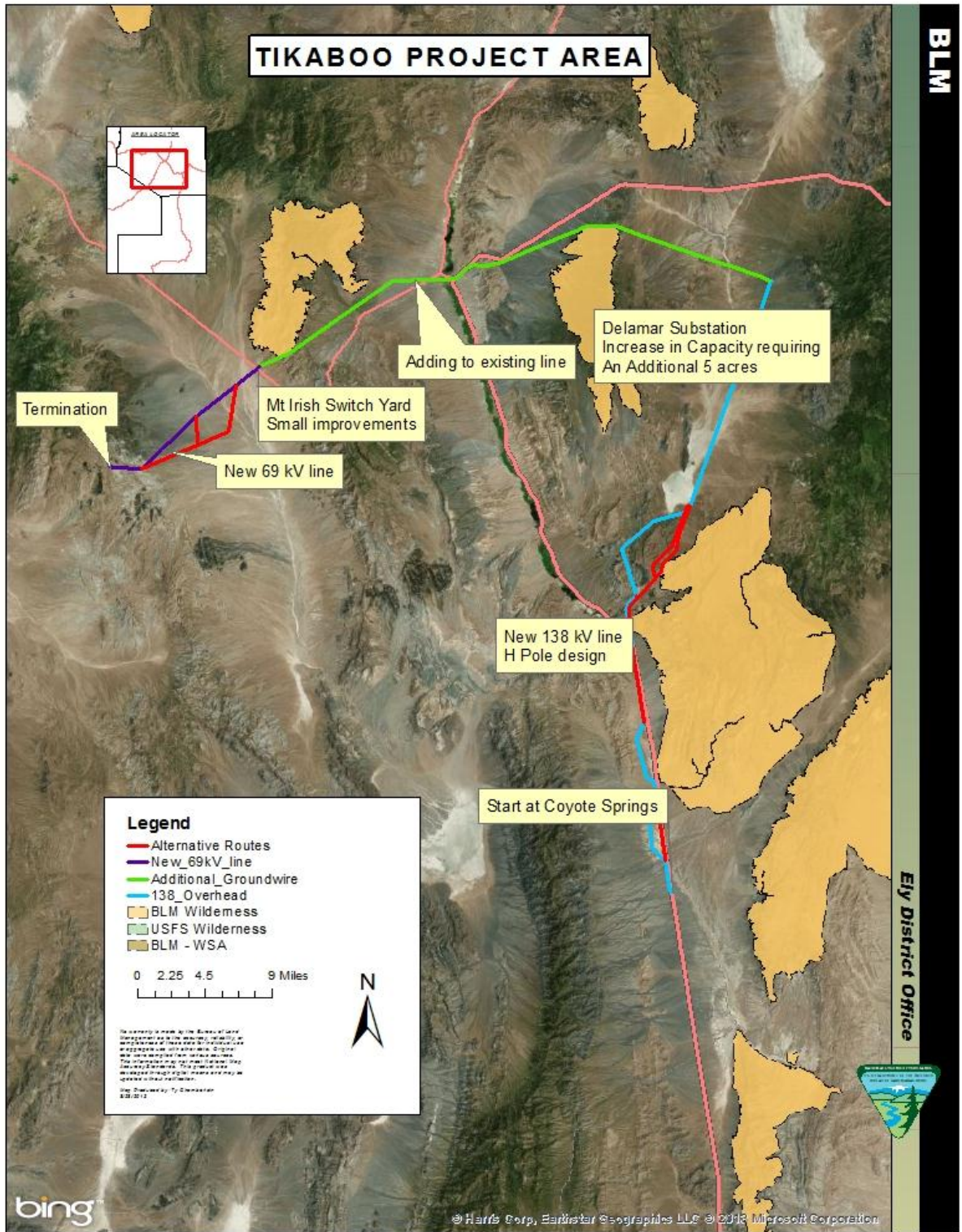
Route alignment for the proposed action is shown in Figure 2.1. If BLM issues the ROW grant, LCPD would construct and operate a 46.5 miles 138 kilovolt (kV) overhead transmission line from the planned Scott Substation located on private land in T12S R63E Sections 6 and 7 to the permitted Delamar Switchyard (N-12182) which would be expanded to become the proposed Delamar Substation, located on BLM administered land in T5S R64E Sections 16 and 17. The proposed 138 kV transmission line would exit from the vicinity of the planned Scott Substation, go to the west, cross US Highway 93 and turn north within a BLM Designated Utility Corridor known in the Ely RMP as the Western Corridor. The proposed project would continue within this utility corridor for approximately 21.5 miles until the terrain becomes impassible within the corridor. At this point, the line would deviate from the utility corridor for approximately 8.9 miles. Where the route leaves the designated utility corridor, a new road would be required. Location of this road was coordinated with NV Energy who was also looking to by-pass the corridor constriction with the ON Line Transmission Line. However, to the extent practicable, overland travel between utility poles would require a single road, rather than construction of additional access roads. This new 8.9 mile long road would be maintained by LCPD for the purpose of transmission line maintenance work. The line would then re-enter the corridor and continue the remaining 16.1 miles north to the Delamar Switchyard which would be expanded to become Delamar Substation. The expansion would require approximately 5 acres (ac) of new right-of-way. The construction of this proposed 138 kV transmission line is anticipated to require approximately 46.5 miles of 150 feet (ft.) wide right-of-way. Approximate land area to be disturbed by the proposed action is shown in Table 2.1.

From the proposed Delamar Substation, the power would then be transported along a current transmission line (N-12182) to the Mount Irish Switchyard. In addition, the installation of 37.6 miles of optical ground wire (OPGW) on the existing Delamar to Tempiute 69 kV transmission line (N-12182) would be required as a result of this transmission project. The installation of the OPGW would not require new right-of-way as this line would be installed on the existing transmission structures and is considered maintenance. The current ground wire being replaced would be used to ‘pull’ the replacement optical ground wire.

From the Mt. Irish Switchyard, LCPD would construct and operate a 12.7 mile 69 kV transmission line on BLM land from the proposed Mt. Irish Switchyard located on BLM administered land in T6S R58E Section 10 to interconnect with a structure at the Nevada Test and Training Range (NTTR) boundary located in T7S R56E Section 12. The proposed 69 kV transmission line would exit the proposed Mt. Irish Switchyard and head southwest, crossing State Route 375, for approximately 10.5 miles at which point it would turn and head west for approximately 2.2 miles to the NTTR. The proposed Mt. Irish Switchyard would include the installation of switchgear and associated electrical equipment. The construction of the proposed Mt. Irish Switchyard would require approximately 5 acres increase in the current right-of-way grant. The construction of the proposed 69 kV transmission line is anticipated to require



approximately 12.7 miles of 100 foot wide right-of-way. The preferred route alternative across Tikaboo Valley from the Mt. Irish Switchyard to the NTTR would require construction of a maximum of approximately 10.5 miles of new access road. However, as noted above, to the extent practicable, overland travel between structures will be used, rather than construction of new access roads, thus, something less than the maximum 10.5 miles would be graded. From the point where the route turns west, stub roads would be constructed from the existing road to access structure sites. These stub roads would be within the requested right-of-way.



**Figure 2.1** The preferred and alternative transmission line routes in Lincoln County Nevada.

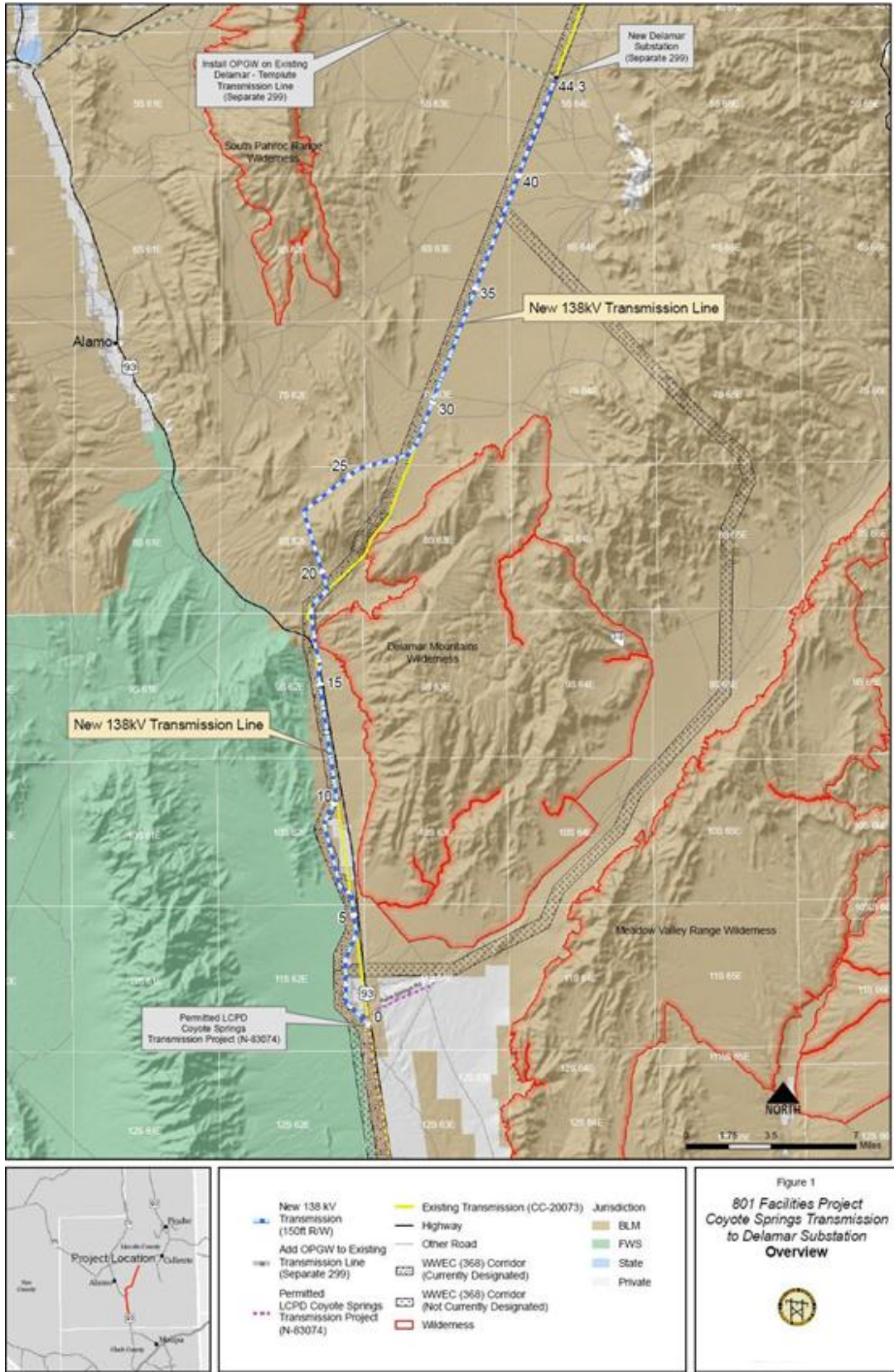


Figure 2.2 Map of Southern Project Area

**Table 2-1 Approximate Land Area to be Disturbed with the Proposed Action**

Design Specifications	Description
<b><u>138 kV Transmission Line</u></b>	
Line Length	46.5 miles
Land Temporarily Disturbed (short-term disturbance)	<ul style="list-style-type: none"> <li>- Wood pole H-Frame would require approximately 0.27 ac/structure (130 ft. x 90 ft.) with conventional construction methods.</li> <li>- Wire pulling sites (approximately 7 sites) would require approximately 0.46 ac/site (200 ft. x 100 ft.)</li> <li>- Material &amp; storage handling yards would be located on private property and BLM land outside of listed species habitat.</li> </ul>
Land Permanently Disturbed	Pole structures would require approximately 0.06 ac/structure (30 ft. x 90 ft.)
Access Roads	New temporary or permanent roads (16 ft. wide) – 1.94 ac/mile. LCPD would coordinate with adjacent utilities to provide common access for construction and maintenance to the extent possible
Structures & Span Length	Approximately 10 /mile at 550 ft. spacing (approximately 465 total)
Delamar Substation	5 acres
<b><u>69 kV Transmission Line</u></b>	
Line Length	12.7 miles
Land Temporarily Disturbed (short-term disturbance)	<ul style="list-style-type: none"> <li>- Single wood pole would require approximately 0.23 ac/structure (120 ft. x 85 ft.) with conventional construction methods</li> <li>- Wire pulling sites (approximately 7) would require approximately 0.46 ac/site (200 ft. x 100 ft.)</li> <li>- Some material and storage yards would be on BLM land</li> </ul>
Land Permanently Disturbed	Pole structures would require approximately 0.06 ac/structure (30 ft. x 90 ft.)
Access Roads	New temporary or permanent roads (16 ft. wide) – 1.94 ac/mile.
Structures & Span Length	Approximately 11 per mile at 475 ft. spacing (approximately 140 total)
Mt Irish Switchyard	5 acres

Temporary material storage yards would be required for construction materials at suitable locations along the transmission line and public access ways. These areas would serve as reporting locations for workers, parking spaces for vehicles and storage spaces for equipment and materials. The proponent anticipates they will need two material storage. These storage yards would be located on BLM administered land in an areas requiring minimal clearing and grading. Structural materials such as wood structures, hardware, foundation material, and spools of conductor would be hauled by truck into the yard. A crane or forklift would be required to unload and transport the materials. Construction materials would be delivered by truck from the yard to lay down areas. From these areas, materials would be brought to structure sites as needed. Crews would load the material required for the workday thus limiting the weight hauled on the access roads. This would limit the impact and rutting on access roads caused by the use of heavy vehicles.

Conductor pulling sites would be required at angle locations and at substation locations for stringing the conductor. Distances between each site would vary depending on the geography, topography and environmental sensitivity of the specific area, the length of the conductor pull, and the accessibility by equipment. Pulling sites would require a temporary area of approximately 100 ft. by 200 ft. When construction occurs in the steep and rough terrain, these sites may require larger, less symmetrical pulling and tensioning sites. These sites would be located along the transmission line centerline. Angle structure pulling sites would be located outside the right of way or on a temporary use area. At each pulling site, stringing equipment would be set up approximately 400 ft. from the initial structure for leveraging the conductor pull safely.

The project would utilize existing access roads wherever practical, thus keeping new construction to the minimum. Some new access roads would be built where none exist. Short spur roads would be constructed from existing access roads to structure sites, as required. New spur roads would be located within the right-of-way whenever practical and would be located to minimize visual impacts. The number of new spur roads would be held to a minimum, consistent with their intended use (e.g., structure construction or conductor stringing and tensioning). New access roads and improvements to existing access roads would be constructed only where absolutely necessary. Overland travel would be utilized to the maximum extent possible, including during the process of pulling conductor directly along the pole alignment.

In areas of steep terrain, the centerline of the road would be staked, and the road built so that there would be approximately 12 feet of travel-way with 2 feet of berm generally on either side (16 feet total). To minimize dust, the entire roadway width may not be bladed. To the extent practical, equipment passing would not be accommodated in these areas.

A portion of the road network used to get through the transmission line corridor would potentially cross area drainages. This would involve the potential installation of drainage structures. To the maximum extent possible, drainages would be crossed at grade (i.e., referred to as an Arizona crossing). Where Arizona crossings are not feasible, culverts would be installed.

Some of these proposed facilities are located on BLM managed land; some are located on BLM ROWs held by LCPD; some are located on a BLM Inheritable Occupancy Lease; and others are located on private property.

#### Geotechnical Investigations

Prior to the final design of the project, the proponent will conduct geotechnical tests at several of the structure locations and at the substation sites to determine the soil conditions for

design of foundations. Geotechnical investigations will include borings at pre-selected sites. Boring locations for transmission line structures shall be sampled to a minimum depth of forty-five feet, unless auger refusal occurs at a shallower depth. Boring locations for substation structures shall be sampled to a minimum depth of thirty-five feet, unless auger refusal occurs at a shallower depth.

## **RECLAMATION, PUBLIC SAFETY AND ENVIRONMENTAL PROTECTION MEASURES**

Appropriate Right-of-Way Guide Stipulations (Appendix A) from the BLM 2801 Manual, would be added to the grant's terms and conditions. In addition, the applicant has committed to the following of Environmental Protection Measures in Section 3 of the LCPD POD for Project 801.

### **Reclamation**

The Contractor would be required to have a continuous cleanup program throughout construction. The Contractor would restore land crossed to its pre-construction condition. Restoration would include the removal of deep ruts and the disposal of foreign objects such as: slash chunks of concrete, pile cut-off, construction materials, etc. Reclamation would include re-contouring of impacted areas to match the surrounding terrain, cleaning trash out of gullies and restoring terraces.

Waste materials and debris from construction areas, would be collected, hauled away, or disposed of at approved landfill sites. Equipment used could include a grader, front-end loader, tractor, and a dozer with a ripper. Procedures for restoration and right-of-way maintenance would be coordinated with the BLM and private landowners and implemented as standard construction and reclamation measures.

The Contractor would be required to keep a clear work area throughout construction. After completion of the project, the Project Engineer would complete a final walk-through in conjunction with a BLM representative. The Project Engineer would note any waste material left on site and any ruts or terrain damage or vegetation disturbance that has not been repaired. The Contractor would be given this list and final refund of any bond would not be received until all items are completed.

The temporary areas of disturbance would be re-contoured to match the surrounding terrain. Reseeding would be done according to the seeding plan in the Appendix D. Construction sites, material storage yards, and access roads would be kept in an orderly condition and free of trash throughout the construction period. Refuse and trash would be collected at the temporary material staging construction yards (pulling and tensioning sites) in a closed container until removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped on the right-of-way. Waste oils or chemicals would be hauled to an approved site for disposal.

## Public Safety Measures

### Stipulations During Blasting

Some work areas that may potentially require blasting are situated in rocky outcrops in high elevations. If this becomes necessary, all applicable state, local, and federal laws concerning the use of explosives will be followed. The blasting contractor will be licensed as required to handle and store explosives. LCPD would obtain a permit from the necessary agency as required for the period when blasting may occur and would comply with the following requirements developed by BLM:

- The holder shall post warning signs at all entry points for the project. Warning signs shall include information on blasting, including the general hours blasting might take place and audible signals to be used warning of impending blasting, and to indicate that the site is all clear.
- Access points to areas where blasting would take place would be blocked, to prevent access by the public, at least 30 minutes prior to blasting. The site shall be swept five minutes prior to any detonation, to ensure that no unauthorized personnel have wandered onto the site. An audible warning signal, capable of carrying for one half mile, shall be used at least two minutes prior to detonation. An “all clear” signal would be given once it has been determined that all danger in the area has passed.

### Fire Protection Plan

All federal, state, and county laws, ordinances, rules, and regulations, which pertain to prevention, pre-suppression, and suppression of fires, would be strictly adhered to. All personnel would be advised of their responsibilities under the applicable fire laws and regulations. It would be the responsibility of the construction contractor to notify the BLM when a project related fire occurs within or adjacent to the construction area.

The contractor would be responsible for any fire started, in or out of the project area, by its employees or operations during construction. The contractor would be responsible for fire suppression and rehabilitation. The contractor would take aggressive action to prevent and suppress fires on and adjacent to the project area, and would utilize its workers and equipment on the project for fighting fires within the project area.

Costs involved with contractor-caused fires would be charged to the contractor. There would be no extension of time for line construction for delays caused by contractor-related fires. Specific construction-related activities and safety measures would be implemented during construction of the transmission line in order to prevent fires and to ensure quick response and suppression in the event a fire occurs. These activities and requirements include:

- All vehicles must stay on designated roads or park in areas free of vegetation.
- The contractor would provide and store in a place easily accessed at each construction site: an axe, shovel, one 5 gallon container of water, and one 5-pound ABC dry powder CO<sub>2</sub> fire extinguisher during all construction activities.
- The contractor would have the appropriate notification numbers including the BLM Fire Dispatch, BLM Project Representative, and LCPD Construction Project Manager readily available on site for all employees in case of fire.

Any BLM imposed fire restrictions in the Proposed Project area would be adhered to, as necessary, during the construction, operation, and maintenance phase of the project. LCPD

would make available to personnel traveling overland: axes, shovels, one five gallon water jug, and fire extinguishers per BLM recommendations to visitors on public land.

## **Environmental Protection Measures**

### Equipment Refueling and Leaks, Solid Waste

- LCPD would implement standard refueling procedures for heavy equipment that is left on the right-of-way for long periods of time, such as cranes, blades, cats, drill rigs, etc. This equipment would be refueled in place. However, no personal or light duty vehicles would be allowed to refuel on the right-of-way.
- Totally enclosed containment would be provided for any trash stored on site. Spill kits would be on site and diapers would be placed under leaking equipment immediately to prevent ground contamination.
- All construction waste, including trash and litter, garbage or solid waste, petroleum products and other materials would be removed to a disposal facility authorized to accept such materials. All construction, operation, and maintenance activities would comply with all applicable Federal, state and local laws and regulations regarding the use of hazardous substances. The construction or maintenance crew foreman would be responsible for maintaining compliance with all applicable laws and regulations. In addition, an onsite inspector would be present during construction to make sure all materials are used and stored properly.

### Dust Control

- Water trucks would be the primary means of dust abatement during all phases of construction. Areas of high erosion may require application of a BLM approved palliative to reduce dust and prevent excess moisture on the road that may attract tortoise. LCPD or a designated contractor would obtain dust permits as necessary prior to construction and comply with all conditions in the permit. At each structure site the disturbed soil would be watered to form a crust following structure installation. Roads would be watered regularly and as needed to prevent dust emissions. Water spray would be controlled so that pooling would be avoided to the extent possible. Speed limits of 20-25 miles per hour would be set and strictly enforced.
- The contractor would negotiate with a regional enterprise to obtain water for construction and dust control. All project personnel would be educated on the site dust mitigation plan. The CIC would monitor dust conditions on site during construction.

### Air Quality

1. During excavation, backfilling, contouring, and rehabilitation, the disturbed soil should be wetted, chemically treated, or treated by other means satisfactory to the Authorized Officer, sufficiently in order to effectively reduce airborne dust and reduce soil erosion. A regular maintenance program shall include, but is not limited to, soil stabilization and reapplication of dust abatement methods as necessary.
2. All requirements of those entities having jurisdiction over air quality matter would be adhered to and any permits needed for construction activities would be obtained. Open burning of construction trash is not allowed.



3. Access to work areas would be by overland travel whenever possible to minimize grading. Access roads would be staked and blading would only be done if necessary. Speed would be limited to prevent excessive amounts of dust.

#### Hazardous or Solid Waste

1. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity.
2. No biodegradable debris would be left in the right of way.

#### Cultural and Paleontological Resources

Prior to construction, Project personnel would be instructed on the protection of cultural, paleontological and ecological resources.

#### Soils/Watershed

1. Grading would be minimized by driving overland within work areas whenever possible, travelling the shortest practical path possible.
2. Construction activities would be minimized when the soil is too wet and unable to adequately support construction equipment.
3. New roads would be built at right angles to washes to the extent practicable. Construction and maintenance activities would be conducted to minimize disturbance to vegetation and drainage channels. Existing roads would be left in or restored to a condition equal to or better than their condition prior to construction.
4. All new access roads not required for maintenance would be permanently closed using methods approved by the landowner/manager (e.g. stockpiling and replacing topsoil or rock replacement).
5. Weed Risk assessment plan is attached as Appendix

### **Measures to Minimize and Avoid Impacts to Threatened and Endangered (T&E) Species, Sensitive Species, and Wildlife**

#### *T&E Species Measures (desert tortoise):*

1) The proponent commits to adhere to the Terms and Conditions from the Biological Opinion for the Lincoln County Power District (LCPD) 801 Transmission Facilities Project N-85095 Scott Substation to the Nevada Test and Training Range (Service File No. 84320-2010-F-0411), which was appended to the Ely Resource Management Plan Programmatic Biological Opinion (Service File No. 84320-2008-F-0078). The proponent commits to adhere to the Reinitiated Biological Opinion on the LCPD project (Service File No. 84320-2010-F-0411-R001). The non-discretionary Terms and Conditions, which are necessary to minimize impacts to desert tortoise, from the Biological Opinions are listed below:

1.a. All construction and maintenance workers will participate in a tortoise education program. The program will be developed by the project proponent prior to beginning of construction. The program will be submitted to the Service for review and approval prior to implementation. The program will include; at a minimum, the following topics: (a) the

occurrence of desert tortoise in the project area; (b) the sensitivity of the species to human activities; (c) legal protection for desert tortoises; (d) penalties for violations of Federal and State laws; (e) general tortoise activity patterns; (f) reporting requirements; (g) measures to protect tortoises; and (h) personal measures employees can take to promote the conservation of desert tortoises.

1.b. Tortoises discovered to be in imminent danger during projects or activities covered under this biological opinion, may be moved out of harm's way.

1.c. Desert tortoises shall be treated in a manner to ensure that they do not overheat, exhibit signs of overheating (e.g. gaping, foaming at the mouth, etc.), or are placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises will be kept shaded at all times until it is safe to release them. No desert tortoise will be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95°F. Ambient air temperature will be measured in the shade, protected from wind, at a height of 2 inches above the ground surface. No desert tortoise will be captured if the ambient air temperature is anticipated to exceed 95°F before handling and relocation can be completed. If the ambient air temperature exceeds 95°F during handling or processing, desert tortoises will be kept shaded in an environment that does not exceed 95°F and the animals will not be released until ambient air temperature declines to below 95°F.

1.d. Desert tortoises shall be handled by authorized desert tortoise biologists. For most projects, an authorized desert tortoise biologist will be onsite during project activities within desert tortoise habitat.

1.e. Prior to starting operations each day on any project that is not totally enclosed by tortoise-proof fencing and cattle guards; the project proponent shall be responsible for conducting a desert tortoise inspection by authorized desert tortoise biologists using techniques approved by the Service and BLM. The inspection will determine if any desert tortoises are present in the following locations:

- Around and under all equipment;
- In and around all disturbed areas to include stockpiles and reject materials areas;
- In and around all routes of ingress and egress; and
- In and around all other areas where the operation might expand to during that day.

If a tortoise is discovered during this inspection or later in the day, the operator will immediately cease all operations in the immediate vicinity of the tortoise and will immediately notify the BLM authorized officer.

1.f. If blasting is necessary, LCPD shall notify BLM 24 hours prior to any blasting. Field meetings will be held to review the blasting process and its implementation. Prior to blasting, a 200-foot area around the blasting site shall be surveyed for desert tortoise using 100-percent coverage survey techniques. Desert tortoises in burrows within 75 feet of the blasting shall be placed into an artificial or unoccupied burrow no less than 500 feet from the blasting site. Tortoises in burrows at a distance of 75 to 200 feet from the blasting site shall be left in their burrows. Burrow locations shall be flagged and recorded using a GPS unit and

burrows shall be stuffed with newspaper. Immediately after blasting, newspaper and flagging would be removed. Any desert tortoises located aboveground will be moved no less than 500 feet from the blasting site.

1.g. With the exception of emergency repair situations, maintenance and termination activities in areas of critical habitat will be modified or discontinued during sensitive periods (March 1 through October 31), or as identified by BLM.

1.h. During tortoise high activity (*e.g.*, March 1 through October), tortoise biologists shall be present during all construction, and maintenance (*e.g.*, emergency repair) activities where one or more pieces of heavy construction equipment are being used.

1.i. Construction and maintenance vehicles will not exceed a speed of 20 miles per hour in tortoise habitat, except where posted otherwise.

1.j. Construction sites and access roads shall be surveyed by qualified tortoise biologists no more than 15 days prior to the initiation of construction. Surveys shall provide 100-percent coverage of the construction area. All desert tortoise burrows located will be conspicuously flagged or marked. All desert tortoise burrows, and other species' burrows that may be used by desert tortoises, will be examined to determine the occupancy of each burrow by tortoises, using a fiber-optic scope, if necessary.

1.k. When desert tortoises are not highly active (*e.g.*, winter), environmental monitors or desert tortoise biologists will be onsite during all phases of transmission line construction to ensure that all construction vehicles and heavy equipment remain within the boundaries or the marked construction zone. If necessary, a qualified desert tortoise biologist will be brought on site to excavate any tortoise burrow in harm's way.

1.l. Desert tortoise and eggs found within construction sites will be removed by a qualified desert tortoise biologist, in accordance with the most recent protocols identified by BLM and the Service. Desert tortoises removed from the project sites will be released into undisturbed habitat within 1,000 feet of the collection site. Any desert tortoise removed construction sites shall be placed in the shade of a shrub or in a natural, unoccupied burrow similar to the one in which it was found or in an artificial burrow, following the most recent protocol approved by BLM and the Service. Desert tortoise shall not be placed on lands outside the administration of the Federal government without written permission of the landowner. Desert tortoises shall be purposely moved only by qualified tortoise biologists, solely for the purpose of moving them out of harm's way.

1.m. Any excavated holes related to transmission line construction (*i.e.*, foundations) to be left open overnight will be covered, and/or tortoise-proof fencing will be installed to prevent the possibility of tortoises falling into the open holes.

1.n. The project proponent will designate a Compliance Inspector Contractor (CIC), who will be responsible for overseeing compliance with protective stipulations for the desert tortoise and for coordinating compliance. The CIC will have the authority to halt activities of construction equipment that may be in violation of the stipulations.

- 1.o. Injured tortoises will be transported to a qualified veterinarian. The Service will furnish direction on the final disposition of tortoises taken to a veterinarian.
- 2.a. A litter-control program shall be implemented to minimize predation on tortoises by ravens drawn to the project site. This program will 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 the proper disposal of trash in a designated solid waste disposal facility. Appropriate precautions must be taken to prevent litter from blowing out along the road when trash is removed from the site.
- 2.b. The proponent shall ensure that structures are inspected annually for nesting ravens and observations of raven nests. All nests shall be reported to the Service. The right-of-way grantee will cooperate with the Service to discuss the necessity to remove any nests determined by the Service to threaten tortoise populations in the area.
- 2.c. H-frame structure with perch deterrents will be utilized in critical habitat and post-construction monitoring for ravens and removal of raven nests will be undertaken in this area as part of the inspection and maintenance activities. If evidence of raven nesting is observed in the right-of-way, the Service shall be notified within three days.
- 2.d. To prevent mortality, injury and harassment of desert tortoises and damage to their burrows and cover sites, no pets shall be permitted in any project construction area, unless confined or leashed.
- 3.a. All vehicles shall be inspected prior to moving into the project area to ensure proper fluid containment. Any vehicles leaking fluid (oil, transmission fluid, etc.) will not be allowed in the project area. Any fuel or hazardous waste leaks/spills shall be contained immediately and cleaned up at the time of occurrence. Contaminated soil will be removed and disposed of at an appropriate facility.
- 3.b. All project vehicles and activities shall be confined to previously-disturbed areas unless unavoidable.
- 3.c. The work site shall be selected to avoid perennial vegetation to the greatest extent possible.
- 3.d. All construction vehicle movement outside the right-of-way will normally be restricted to pre-designated access, contractor acquired access, or public access.
- 3.e. The limits of construction activities will normally be predetermined, with activity restricted to, and confined within, those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.
- 3.f. In construction areas where recontouring is not required, vegetation will be left in place wherever possible and original contour will be maintained to avoid excessive root damage and allow for resprouting.

3.g. In construction areas (*e.g.* marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding (if required), cross drains installed for erosion control, placing water bars in the road, and filling ditches.

3.h. Prior to construction, all supervisory construction personnel will be instructed on the protection of ecological resources. To assist in this effort, the construction contract will address: (a) Federal and State laws regarding antiquities and plants and wildlife, including collection and removal; and (b) the importance of these resources and the purpose and necessity of protecting them.

3.i. Roads will be built as near as possible at right angles to streams and washes. Culverts will be installed where necessary. All construction and maintenance activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks. In addition, road construction will include dust-control measures during construction in sensitive areas. Only water or an alternative substance approved by BLM will be used as a dust suppressant. All existing roads will be left in a condition equal to or better than their condition prior to the construction of the transmission line. Towers will be sited with a minimum distance of 200 feet from streams and washes.

3.j. Fences and gates will be repaired or replaced to their original pre-disturbance condition as required by the landowner or the land managing agency if they are damaged or destroyed by construction activities. Temporary gates will be installed only with permission of the landowner or land managing agency; and will be restored to their original pre-disturbance condition following construction

3.k. Hazardous material shall not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash and litter, garbage, or other solid waste, petroleum products, and other potentially hazardous materials. All waste and hazardous material shall be removed to a disposal facility authorized to accept such materials.

3.l. Pre-construction surveys for plants and wildlife species, designated as sensitive or of concern will be conducted in areas of known occurrence of habitat, including noxious weed surveys as stipulated by the land-administering agency once the transmission line, centerline, access roads, and tower sites have been located and staked in the field.

3.m. No widening or upgrading of existing access roads will be undertaken in the area of construction and operation, except for repairs necessary to make roads passable, where soils and vegetation are very sensitive to disturbance.

3.n. The alignment of any new roads or overland routes will follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.

3.o. All new roads not required for maintenance will be permanently closed using the most effective and least environmentally damaging methods appropriate to that area with concurrence of the landowner or land manager (e.g. stock piling and replacing topsoil, seeding or rock replacement). Public access will be controlled through the installation of fences and gates in key locations or sections. This will limit new or improved accessibility into the area.

3.p. In designated areas, structures will be placed to avoid sensitive features such as, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within the limits of standard tower design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.

3.q. All construction sites and access roads shall be clearly marked or flagged at the outer limits prior to the outset of any surface-disturbing activity. All personnel shall be informed that their activities must be confined within the marked or flagged area.

3.r. Within desert tortoise habitat, a biologist will be assigned to the pre-construction survey team(s). The biologist will be responsible for ensuring that the placement of new access routes, spur roads, arid tower sites will affect as few tortoise burrows as possible. The alignment of access and spur roads will be as direct as possible, to minimize habitat disturbance and minimize the destruction of tortoise burrows. Other work areas (e.g., splicing, tensioning; pulling and batch sites) will be surveyed by a biologist as construction proceeds. Potential work areas will be flagged several days prior to construction for review by a biologist. To the extent possible; these sites will be located in previously-disturbed areas.

3.s. Overnight parking and storage of equipment will be in previously-disturbed areas (i.e., lacking vegetation). These areas will also be designated by the pre-construction survey team. If previously-disturbed areas are not available, these activities will be restricted to the right-of-way and will be cleared of tortoises by the on-site biologist prior to use.

3.t. Within desert tortoise habitat, construction and maintenance workers will strictly limit their activities and vehicles to construction and routes of travel that have been identified and/or flagged to eliminate adverse impacts to desert tortoises and their habitat. Aside from these areas, workers may not drive cross-country, even within the right-of-way. All workers will be instructed that their activities are restricted to previously-identified, flagged or cleared areas.

3.u. In areas where restoration is required, reseeded will occur through the use of native plant species. Reclamation and monitoring requirements and practices will be approved by BLM.

3.v. Herbicides will not be used as part of this project within desert tortoise habitat.

3.w. To the extent possible, access to tower sites, and at splicing and tensioning sites will occur by overland travel and crushing of vegetation, i.e., no blading of such sites, will occur. The CIC will ensure that blading is conducted only where necessary. Due to construction constraints resulting from equipment size and personnel safety, blading will be needed at most spur roads and tower sites.

3.x. Prior to surface-disturbing activities associated with the proposed project, BLM, or other jurisdictional Federal agencies as appropriate, shall pay remuneration fees for compensation of desert tortoise habitat loss. BLM estimates that 71 acres of habitat will be disturbed. Total fees for disturbance of desert tortoise habitat within the material site and expansion area will be \$206,718.

If fees are paid after March 1 of the year, the rate 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/ecpi.nws.htm>.

The payments shall be accompanied by the enclosed Section 7 Fee Payment Form, 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 the Bureau of Land Management and delivered to:

Bureau of Land Management  
Attn: Information Access Center  
PO Box 12000  
Reno, NV 89520-0006

4.a. Brief, but complete reports shall be prepared by the project proponent and submitted to BLM and the Service within 30 days following the conclusion of project activities. Appropriate information for the report includes, but is not limited to: amount of new disturbance (documented if possible by photo points or GPS data); amount of take exempted and actual take that occurred; effectiveness or ineffectiveness of the Terms and Conditions of this biological opinion.

4.b. The CIC and on-site biologist will prepare a report for BLM and the Service no later than 90 days after completion of construction within desert tortoise habitat. The report will make recommendations for modifying or refining the stipulations. The report will include the actual acres of habitat disturbance caused by crushing and blading versus the estimates prior to construction.

*Additional T&E Species Measures for Desert Tortoise:*

1. To avoid building up tall berms that may inhibit movement of desert tortoises, the operator will minimize lowering of the road bed while grading. Berms higher than 12 inches or with a slope greater than 30 degrees shall be pulled back into the road bed.
2. All roads in desert tortoise habitat will be restored to their original width (or less) and condition so as to minimize the potential for future desert tortoise mortalities on access roads.
3. Redundant routes will be closed once construction is complete.

4. All appropriate Nevada Department of Wildlife and U.S. Fish and Wildlife Service permits or letters of authorization will be acquired prior to handling desert tortoises and their parts, and prior to initiation of any activity that may require handling tortoises.

*T&E Species Measures (southwestern willow flycatcher and Hiko White River springfish):*

1. The proponent will not conduct activities within one mile of Crystal Spring during the peak springfish spawning period (April 1 through May 31).

2. The proponent will implement measures to stabilize soils in riparian areas and temporary barriers will be employed to ensure no sediment is deposited into riparian areas.

3. All fuel, transmission or brake fluid leaks, or other hazardous materials shall not be drained onto the ground or into streams or drainage areas. All petroleum products and other potentially hazardous materials will be removed to a disposal facility authorized to accept such materials. Waste leaks, spills or releases will be reported immediately to BLM. The project proponent shall be responsible for spill material removal and disposal to an approved off-site landfill. Servicing of construction equipment will take place only at a designated area. All fuel or hazardous waste leaks, spills, or releases will be stopped or repaired immediately and cleaned up at the time of occurrence. Service and maintenance vehicles will carry a bucket and pads to absorb leaks or spills.

4. All vehicular traffic and equipment shall be restricted to existing access roads; no new disturbances have been identified in or near habitat for Hiko White River springfish or southwestern willow flycatcher.

5. Project activity areas shall be clearly marked or flagged at the outer boundaries before the onset of construction. All activities will be confined to previously disturbed areas. Disturbance of riparian vegetation will not occur.

6. Stream or spring flow will not be impounded or diverted by mechanical or other means.

7. The proponent will not conduct activities within 1 mile of riparian areas during the southwestern willow flycatcher breeding season (May 1 to August 31).

8. The proponent will not drive through any part of the stream channel for this project.

*Measures for BLM Sensitive Species and Other Wildlife and Vegetation:*

1. Areas containing BLM sensitive plants and/or wildlife habitat will be flagged and structures will be placed to allow spanning of the sensitive features, where feasible.

2. Work areas and access roads will be located to minimize impacts to BLM sensitive species habitat.

3. The NDOW protocol for Gila monster will be followed.



4. Surface disturbance will be timed to avoid potential destruction of active bird nests or young of birds that breed in the area. Such destruction may be in violation of the Migratory Bird Treaty Act of 1918 (Act) (40 Stat. 755, as amended; 16 U.S.C. 703 *et seq.*). Under the Act, active nests (nests with eggs or young) of migratory birds may not be harmed, nor may migratory birds be killed. If this is not feasible, a qualified biologist will survey the area prior to land clearing. If active nests are located, or if other evidence of nesting (mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the requirements of the species) will be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.
5. Prior to the initiation of construction activities, all construction personnel will be instructed on the protection of migratory birds. To assist in this effort, the training will address the MBTA and all applicable state laws, field procedures, and prohibited activities.
6. A biological monitor will be present on the project during the migratory bird nesting season (approx. March 1 through August 31).
7. Prior to any ground-disturbing construction activity, the biological monitor will survey and inspect the potentially affected area(s) for nests or breeding birds.
8. In the event a nest or breeding pair is discovered, the area will be avoided and a buffer zone around each nest will be created to keep construction personnel and equipment away for a pre-determined time, as identified by the BLM Authorized Officer.
9. Prior to siting areas for disturbance, the proponent will conduct surveys for BLM sensitive small mammal species based on habitat, known range, and previous occurrences within areas being considered for disturbance. Disturbance areas will avoid occurrences to the extent practicable. Proponent will coordinate with NDOW if disturbances cannot avoid known species occurrences.
10. To avoid impacts to white bearpoppy, BLM will review any overland travel or roads proposed to determine if they would impact any bearpoppy plants. The proponent will relocate any proposed roads and avoid any overland travel that would impact the bearpoppy.
11. The BLM Authorized Officer will specify required special handling and recovery techniques for Joshua trees, yucca, and cactus on a site-specific basis. Mature Joshua trees will be avoided to the extent possible when delineating areas to be disturbed.
12. The perennial plant cover of the reclaimed area would equal or exceed perennial cover of selected comparison areas (normally adjacent habitat). If the adjacent habitat is severely disturbed, an ecological site description may be used as a cover standard. Cover is normally crown cover as estimated by the point intercept method. Selected cover can be determined using a method as described in Sampling Vegetation Attributes, Interagency Technical Reference, 1996, BLM/RS/ST-96/002+1730. The reclamation plan for the area project would identify the site-specific release criteria and associated statistical methods in the reclamation plan or permit.

13. Utility companies will manage vegetation in their rights-of-way for safe and reliable operation while maintaining vegetation and wildlife habitat.
14. Use current science, guidelines, and methodologies (Avian Power Line Interaction Committee 1994, 1996, 2005) for all new and existing powerlines to minimize raptor and other bird electrocution and collision potential.
15. When managing weeds in areas of special status species, carefully consider the impacts of the treatment on such species. Wherever possible, hand spraying of herbicides is preferred over other methods.
16. Do not conduct noxious and invasive weed control within 0.5 mile of nesting and brood rearing areas for special status species during the nesting and brood rearing season.
17. Restrict activities from May 1 through July 15 within 0.5 mile of raptor nest sites unless the nest site has been determined to be inactive for at least the previous 5 years. Activities will be restricted within 1 mile of any eagle nest sites if breeding or nesting behavior is observed.
18. Mitigate all discretionary permitted activities that result in the loss of special status species habitats on a ratio of 2 acres of comparable habitat for every 1 acre of lost habitat.
19. Where appropriate, restrict permitted activities in big game calving/fawning/kidding/lambing grounds and crucial summer range from April 15 through June 30.
20. Avoid construction within occupied desert bighorn sheep habitat from March 1 through August 31 or perform work between 8 a.m. to 4 p.m. during this time when access to water is most critical to desert bighorn sheep.
21. Use the criteria listed below to identify artificial wildlife water developments:
  - To mitigate for loss of natural water sources;
  - To mitigate for habitat loss or habitat fragmentation;
  - To reduce inter-specific competition between wildlife, livestock, and wild horses;
  - To reduce inter-specific competition between wildlife species; and
  - In suitable wildlife habitat that is water limited.
22. The new access road to be created that deviates from SWIP powerline (south of Delamar Dry Lake) shall be restricted with a locked gate on both ends to prevent public access.

## **2.3 Alternatives Considered but Eliminated from Detailed Analysis**

### **2.3.1 Route Alternatives Proposed by the Proponent**

As part of the preliminary design process, five route alternatives were examined to select a preferred route (see Figure 2.1). The first route alternative (alternative A) is approximately 2

miles north of the proposed Scott Substation. This alternative to the preferred route crosses private property and is parallel to an existing 69kV transmission line. Route alternative A has the transmission line running in a straight line across the property as opposed to going around the private property. Crossing the private lands would entail entering a lease arrangement for the right-of-way. Furthermore, the existing transmission line would cross through an identified cultural resources property.

Route alternatives B and C are both located in the vicinity of the designated utility corridor constriction at the south end of Delamar Valley. The LCPD's existing 69kV transmission line currently traverses this zone, and other new transmission lines (e.g. LS Power, and SNWA) and the SNWA pipeline have been proposed for the corridor, making this segment potentially severely congested. Addition of the 138kV line through this constriction on the corridor would result in significant land disturbance to erect the H-frame structures. Potential routes along each side of the canyon were examined. In the project POD (ECI, 2008) the design firm described the constriction saying that "... the terrain becomes impassable within the corridor." Route alternative B is located outside and just to the east of the designated utility corridor, while route alternative C is totally within the corridor. Each of these route alternatives presents construction activities with extensive associated land disturbance.

The preferred project alignment avoids the designated utility corridor constriction at the south end of Delamar Valley while minimizing environmental impact outside the utility corridor. This utility corridor constriction has been encountered by other projects being planned in the area, most notably the NV Energy One Nevada Transmission Line Project (ON Line Project). The LCPD proposed alignment parallels the alignment proposed by NV Energy as Segment 9A, the preferred action, described in the FEIS Environmental Impact Statement (FEIS) for the ON Line Project. The NV Energy ON Line Project and the LCPD 138-kV transmission line would be located in close proximity and would be able to share a common construction and maintenance access road.

Route alternatives D and E are both in Tikaboo Valley going southwest across Highway 375 from the proposed Mt. Irish Switchyard. From the switchyard to the beginning of either route alternative D or E, the preferred route will involve construction of some, at this time undetermined, length of access road for structure placement. Where possible on this route, access will be by overland travel. Both route alternatives D and E are parallel to existing permanent roadways from which stub roads would allow access for structure placement, thus, potentially eliminating up to approximately 8.2 miles and 3.2 miles respectively of new access road construction. These reductions would be slightly offset by the aggregate lengths of the stub roads. Respectively for route alternatives D and E, these stub roads total approximately 1 mile and 0.6 mi. The added areas for the guy wires and cable pull areas in each case is approximately 1.8 acres.

The BLM evaluated these routes, but determined that, except for route "B", they did not offer any environmental advantage to the proponent's preferred route. "B" would have been environmentally preferable, but due to the constriction in that section of the utility corridor caused by the designation of Delamar Wilderness Area to the east, and the Lincoln County Conservation, Recreation and Development Act (LCCRDA) reserving the remaining buildable room for the SNWA pipeline, it was not considered a viable alternative. A commenter suggested that LCPD could "co-locate" the line with the existing line by replacing the poles through that section, but that alternative is not feasible because there would be no way to supply power to the northern section of the County while replacing the poles.

### **2.3.2 Route Alternatives Considered by the BLM**

A commenter suggested the BLM consider that the LCPD could bypass the constriction by using the corridor designated by the West Wide Energy Corridor ROD. That corridor breaks off from the SWIP corridor in Gregerson Valley and then hooks into the LCCRDA corridor along the Kane Springs Wash. Evaluation of that corridor revealed that it would impact as much desert bighorn sheep habitat as the preferred alternative, and considerably more desert tortoise habitat. Because it did not offer any environmental advantages over the preferred route, it was not analyzed in detail.

### 3 AFFECTED ENVIRONMENT

#### 3.1 General Setting/Resources Considered

As stated in the previous sections, the proposed action would result in the construction of both new and improvements to existing, transmission facilities in four different valleys. Both Mojave and Great Basin ecosystems are represented across these valleys, which transition south to north from Mojave Desert in Coyote Springs to Great Basin Desert in Delamar and Tikaboo valleys, respectively. Over the course of the proposed route, the topography varies from flat to rugged with steep slopes, with elevation ranging from 2,400 to 5,900 ft. The topographic variability across two ecosystems including the ecotone (or the transition zone from one ecosystem to another) provides for a wide variety of habitats, geologic settings, and hydrologic conditions.

##### 3.1.1 General Setting

###### Geography

The route for the proposed transmission line lies completely within the eastern portion of the Basin and Range physiographic province, an area characterized by generally north-south oriented mountain ranges separated by broad, alluvium-filled valleys. The proposed route begins in Coyote Spring Valley, enters and transits the hydrographically closed Delamar Valley, then crosses Pahrnatagat Valley and terminates in Tikaboo Valley-Northern Part, which drains southward to hydrographically closed Tikaboo Valley-Southern Part. Both Coyote Spring Valley and Pahrnatagat Valley ultimately drain to the Muddy River, a tributary to the Colorado River.

###### Climate

Climate in the proposed project area is continental, including hot summers, cold winters and wide daytime fluctuations. Winter temperatures have fallen to as low as minus 15°F and summer highs have exceeded 117°F. Daytime swings of 50°F are common.

Precipitation is most abundant in the winter and early spring, with periodic storms during the summer months. The standard deviation for each month tends to be greater than the mean indicating relatively large annual variation for every month of the year. The overall pattern is dominated by El Niño events, which result in extremely wet years, e.g. 1998 and 2004. Winter (October to March) precipitation ranges from 50 to 70 percent of total annual. The bulk of the winter precipitation occurs as rain although snowfall events of greater than 8 inches are not uncommon but usually melt within days.

###### Vegetation and Soils

Annual precipitation has a significant impact on the diversity and density of native and introduced annual forb and grass species that appear each spring. El Niño years with above average winter precipitation produce massive blooms whereas below average precipitation years result in few to no annual plants. The 2008/2009 winter/spring precipitation along the preferred route was slightly below average resulting in average diversity and density of native annuals. Mediterranean grass (*Schismus arabicus*) is the dominant invasive annual species in Mojave communities and brome (*Bromus*) species tend to be the dominant invasive species in Great Basin communities, though several other invasive annuals may be locally abundant. No riparian communities occur along the preferred route although the southernmost portion of the preferred

route traverses mesquite woodlands that tap in to shallow groundwater associated with nearby Coyote Spring. The preferred route also traverses the eastern edge of Delamar Valley playa, which is devoid of vascular plant species but may support algal blooms after large precipitation events. Soils vary from deep and sandy in level areas to shallow and rocky on steep slopes. Distribution of different plant associations may vary with soil. While some species, *e.g.* Indian ricegrass (*Achnatherum hymenoides*), are widespread and occur across the entire range of soils, others are restricted to specific soils such as bearpoppies (*Arctomecon spp.*), found only on gypsum badlands.

The preferred route begins on the east side of US 93 and almost immediately crosses the highway to run along the west side of highway within the northern edge of the Mojave Desert ecosystem. Within the Mojave Desert ecosystem several community types occur along the first 27.5 miles of the preferred route. The first community encountered was a typical creosote bush/bursage (*Larrea/Ambrosia*) desert shrub community on gently sloping alluvial soils, followed by mesquite woodlands, gypsum badlands and then north of the gypsum badlands, *Larrea/Ambrosia* communities on level sandy soils again dominate the preferred route. However the preferred route also intersects several level benches with well-developed desert pavement soils and a significantly less dense *Larrea/Ambrosia* shrub cover and a larger component of cacti and *Yucca* species. Within the Mojave Desert ecosystem as elevation increases, the preferred route crosses over to the east side of highway US93 and intersects several relatively narrow rocky drainages with relatively high diversity of shrubs, perennial forbs and grasses, and annual forbs and grasses, but with a continuous *Larrea/Ambrosia* component.

Along the preferred route there is a gradual transition from the Mojave Desert ecosystem to the southern Great Basin Desert ecosystem over approximately 2 mi, but in general the boundary between these two ecosystems coincides with the northern limit of the range for creosote bush. There is about a 60 percent overlap of the total of 236 plant species found along the entire route between ecosystems (Appendix B, Table B-3). However, overlapping species may also have a much greater frequency or abundance in one ecosystem versus the other. Overall plant diversity of 193 species found in the Mojave communities was only slightly greater than the 179 plant species found in Great Basin communities. Temporarily leaving the Mojave Desert behind, the preferred route continues north for approximately 17 miles in Great Basin plant communities. The route then turns west for approximately 22 miles before reentering the Mojave Desert for only about 3.1 miles in Pahranaagat Valley. The remaining 27.5 miles of the preferred route continues west and then south across Pahranaagat Valley, then enters Tikaboo Valley, completely within the Great Basin Desert ecosystem and ends in the southwest corner of Tikaboo Valley.

Community types in each ecosystem vary in species composition due to changes in elevation (ranging from 2,400 to 5,300 feet); soil texture, depth and chemistry; and precipitation and temperature regimes. Interaction with latitude may also limit the occurrence of many species within their overall ranges. Communities in both ecosystems also vary greatly in terms of cover by soil cryptobiotic crusts which are composed of lichen, alga and mosses that reduce soil erosion and contribute biologically fixed nitrogen. Communities in the Great Basin ecosystem include 1) saltbush desert scrub dominated by *Atriplex* species, 2) almost pure winterfat (*Krascheninnikovia lanata*) stands, 3) desert grasslands with mixtures of galleta, needle, threeawn and dropseed grass species (*Pleuraphis*, *Achnatherum*, *Aristida*, and *Sporobolus* species), 4) blackbrush (*Coleogyne ramosissima*), 5) Hopsage/Desert-thorn (*Grayia spinosa/Lycium andersonii*), 6) sagebrush (*Atremesia* species) and 7) at the highest elevations Pinyon/Juniper (*Pinus monophylla/Juniperus osteosperma*). Furthermore, many of these

southern Great Basin communities contain a significant number of Joshua trees (*Yucca brevifolia*), though they tend to be absent on fine texture soils.

### 3.1.2 Resources Considered

Table 3.1 lists resource issues/concerns and describes how each was addressed in preparing this environmental assessment.

**Table 3-1 Resources/Concerns Considered for Analysis**

Resource/ Concern	Issue(s) Analyzed? (Y/N)	Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis (Grouped in accordance with the format of the Ely RMP)
<b>Air Resources</b>		
Air Quality*	N	Construction equipment proposed will be powered by internal combustion engines. These engines produce exhaust emissions that include 5 of the 6 federal criteria pollutants (excluding only lead). The project POD includes a table outlining the conventional construction personnel and equipment requirements. Based on the table, emissions from construction vehicles are not expected to cause or contribute to an exceedance of either the federal or state ambient air quality standards. No significant impacts to air quality related values would result from the proposed project. Minor localized effects of fugitive dust from vehicle and heavy equipment traffic over unpaved areas would be controlled in accordance with a Dust Control Plan.
<b>Water Resources</b>		
Water Quality, Drinking/Ground*	N	There are no drinking water sources in the project area. The project would not encounter aquifers.
Water Resources (Water Rights)	N	The Proposed Action is expected to require water only for dust suppression, and that water will be acquired from existing sources. No new water developments or water rights applications are anticipated
<b>Soil Resources</b>		
Farmlands, Prime and Unique*	N	Not present
<b>Vegetation Resources</b>		
Forest Health*	N	Project does not meet HFRA criteria.
Rangeland Standards and Guidelines*	N	Not a vegetation treatment project
Wetlands/Riparian Zones*	N	4.3 of acres are classified as Wetland/Riparians. This habitat will not be impacted due to mitigation.
<b>Fish and Wildlife</b>		
General Fish and Wildlife	Y	Potential impacts to fish and wildlife habitat are analyzed below.
Migratory Birds*	Y	Potential impacts to migratory birds are analyzed below.
<b>Special Status Species</b>		
FWS Listed (or proposed for listing) Threatened or Endangered Species or critical habitat. *	Y	Potential impacts to listed and proposed species and critical habitat are analyzed below.
Greater Sage Grouse	N	No greater sage-grouse are present in the affected area.
Sensitive species (SS), including plant species. And ACECs designated to protect SS habitat.	Y	Potential impacts to BLM sensitive species and ACECs designated for sensitive species are analyzed below.
<b>Wild Horses</b>		
Wild Horses	N	No BLM Horse Management Area (HMA) occurs in the Project Area
<b>Cultural Resources</b>		
Cultural Resources*	Y	A Class III Inventory of the project area has been completed. The direct APE for this project has been inventoried by two separate inventories, the



		results of which are documented under BLM Reports 8111-NV-04-08-1877 and 8111-NV-04-07-1682. These inventories identified 274 Cultural Resources of which 59 are eligible for the National Register of Historic Places and one site that has not been evaluated for the National Register..
ACEC's designated for Cultural Resources*	N	Not present
Heritage Special Designations (Historic Trails, Archaeological Districts and Areas)	N	Not present
<b>Paleontological Resources</b>		
Paleontological Resources	N	Potential paleontological resources will be unaffected by the proposed transmission line, since very little surface disturbance will take place. Neither the exposed geologic formations traversed by the transmission line or the broad alluvial valleys that make up the vast majority of the route are known to contain any significant paleontological specimens.
<b>Visual Resources</b>		
Visual Resources	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections.
<b>Lands and Realty/Renewable Energy</b>		
Land Uses	N	The proposed action is in a utility corridor with several other linear rights-of-way, but LCPD is working with other ROW holders and applicants to avoid conflicts. It will also cross a 40 acre parcel proposed for disposal (Medlin Parcel), but LCPD has entered into an agreement with buyers that there would be no conflict with the line crossing a corner of the property.
<b>Recreation</b>		
Recreation Uses including Back country Byways, Caves, Rockhounding Areas	N	Recreation within the project area is dispersed and low. There are no developed recreation facilities or sites in the area. Recreation pursuits within the area include Special Recreation Permits, four-wheel driving, dirt bike riding, hunting, hiking, and camping. While there will be increased equipment traffic with the proposed action, the recreation uses are low and dispersed and will not be impacted.
<b>Livestock Grazing</b>		
Grazing Uses/Forage	N	Most of the new construction is within the SWIP utility corridor and adjacent to existing lines. Sections 3.9, 4.9 and 5.9 of the analysis in the Final Environmental Impact Statement for the ON Line Project are incorporated by reference. Impacts discussed are forage loss from surface disturbance and temporary livestock displacement during construction. However this project would not affect grazing uses or forage to the point that AUMs would have to be reduced in any affected allotment.
<b>Forest/Woodland Products</b>		
Forest/Woodland and other vegetative products (Native seeds, yucca and cactus plants)	Y	All cacti and Joshua Trees are protected by the State of Nevada and should be transplanted to adjacent suitable habitat, or replanted in areas disturbed by the proposed action (Nevada Natural Heritage Program, 1998). However, avoiding cacti and Joshua trees during construction is the preferred action.
<b>Geology and Mineral Extraction</b>		
Mineral Resources	N	The Proposed Action preferred alignment or routing alternatives will not cross any mining claims or interfere with mining activities in the project area. There are no known mineral deposits on or adjacent to the alignment.
<b>Watershed</b>		

Soils/Watershed	N	Disturbed areas would be reclaimed. Operator proposed mitigation measures should be implemented. Impacts to soils and watershed would be temporary, and minimized by the Right-of-way guide stipulations.
Floodplains*	Y	The Proposed Action will cross the Pahrangat Wash at several locations, although minimal disturbance will occur during construction within the active channel or floodplain.
<b>Fire</b>		
Fuels	N	No Fuels projects are planned for the affected area.
ES&R	N	No ESR projects have been conducted nor planned for the affected area.
<b>Noxious and Invasive Weeds</b>		
Noxious and Invasive Weeds*	Y	Powerline corridors can be a vector for weed establishment and/or spread. See further analysis below.
<b>Special Designations</b>		
Wilderness/WSA*	N	Not Present
Wild and Scenic Rivers	N	Not Present
<b>Other Concerns</b>		
Human Health and Safety*	N	The proposed action will not present any public human health or safety issues.
Native American Religious and other Concerns*	N	From previous consultations with potentially affected tribes on similar projects in the same area, it is not anticipated that this project will raise concerns.
Wastes, Hazardous or Solid*	N	The proposed action will not generate and hazardous wastes, and construction related wastes will be managed as presented in the construction management plan.
Public Safety	N	The safety measures in the proposed action are sufficient to protect public safety.
Environmental Justice*	N	No minority or low-income groups would be disproportionately affected by health or environmental effects.
Socioeconomics	N	The Proposed Action would require 15-20 workers at a time over a period of 18 to 24 months. A small percentage of the workers (2 to 4 workers) are expected to reside in the area. Remaining workers would be temporary and should not create a demand for added public or private services, but would support local business and provide income to the Pahrangat Valley community through purchase of services and goods. Thus, the Proposed Action socioeconomic impacts would be beneficial, but temporary.
Lands with Wilderness Characteristics	Y	The project overlaps four units of Lands with Wilderness Characteristics.

## 3.2 Resources/Concerns Analyzed in Detail

### 3.2.1 Migratory Birds

During the biological resources survey conducted by Steven Zitzer of Desert Research Institute (DRI), 35 bird species were identified (Appendix B, Table B-1). Bird identification and taxonomy was based on the *Sibley Guide to Birds* (Sibley, 2000).

Among the birds 15 species, or approximately 43 percent of total bird diversity, occurred in both Mojave and Great Basin ecosystems with black-throated sparrows (*Amphispiza bilineata*), a breeding migratory species, being the most abundant and widespread. DRI identified twenty-eight species in the Great Basin communities and seven were identified in Mojave communities. This is not unexpected as the majority of the preferred route (70 percent)

is in Great Basin communities. The total number of bird species that may occur in the proposed project area over the entire year in either ecosystem is expected to be greater than the number observed during this survey, most of which are migratory. Species observed during the surveys in addition to species with potential to exist within the project area are listed in Appendix B.

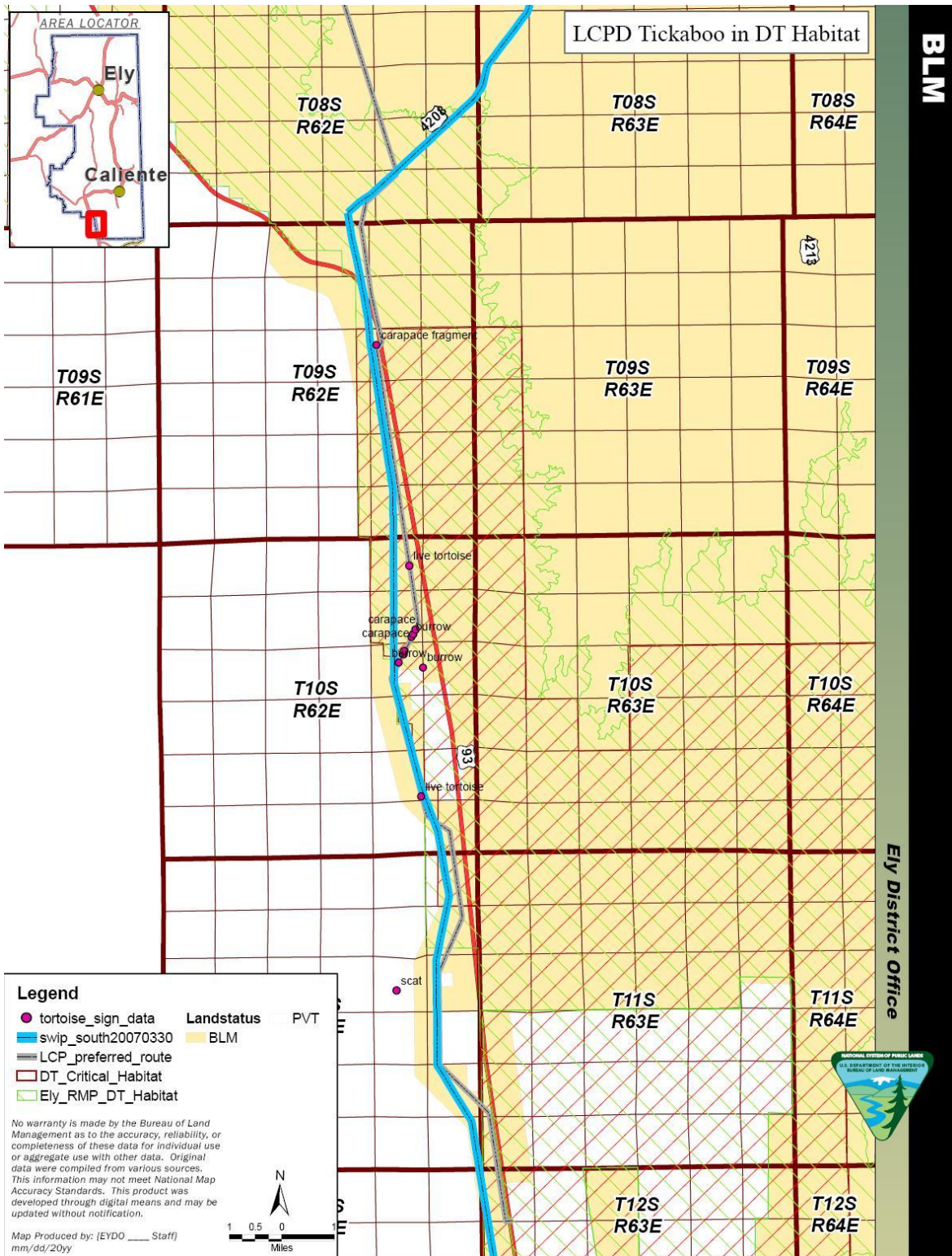
### **3.2.2 General Fish and Wildlife**

Steven Zitzer of DRI conducted the biological resources survey for the proposed transmission line project in July 2008 and May through September in 2009. However, most of Mr. Zitzer surveyed the preferred route and route alternatives between May and June 2009, when greater than 90 percent of the plant species were flowering and spring bird migration was active. Mr. Zitzer observed six Great Basin and one Mojave mammal species. Several bat species are known to occur in both ecosystems, though none were seen. The project area contains general habitat for mule deer (*Odocoileus hemionus*) and pronghorn antelope (*Antilocapra americana*). Several wildlife water developments occur in or near the project area. Some of these developments were constructed for upland game birds, such as mourning dove (*Zenaida macroura*), Gambel's quail (*Callipepla gambelii*), and chukar (*Alectoris chukar*) and some were constructed for large mammals, such as mule deer and pronghorn antelope.

Mr. Zitzer observed seven Mojave reptile and four invertebrate species during the biological surveys. Mammal identification and taxonomy were based on *A Field Guide to the Mammals* (Burt and Grossenheider, 1976). Reptile and insect identification and taxonomy were based on *A Field Guide to the Reptiles and Amphibians of North America* (Behler and King 1979) and *A Field Guide to the Insects of America North of Mexico* (Borror and White 1970), respectively. Species observed during the surveys in addition to species with potential to exist within the project area are listed in Appendix B.

### **3.2.3 FWS Listed (or proposed for listing) Threatened or Endangered Species or critical habitat**

Agassiz's desert tortoise (*Gopherus agassizii*), was documented in the proposed project area (Appendix B, Table B-2). It is a federally listed threatened animal. Two live desert tortoise, five tortoise carapaces, three desert tortoise burrows, and a scat were observed during surveys. The preferred route traverses approximately 16 miles of desert tortoise habitat, 11 miles of which cross designated critical habitat for desert tortoise, and 5 miles cross non-critical habitat as defined in the BLM Ely RMP. A total of approximately 182,323 acres are designated critical habitat, dominated by creosote bush/white bursage communities, within Lincoln County; within this, the proposed project area will encompass approximately 204 acres of desert tortoise critical habitat in the Mormon Mesa Critical Habitat Unit (CHU) over a linear distance of approximately 11 miles of the preferred route (Figure 3-1). Permanent and temporary disturbance is reflected in figure 4.1. All project areas were surveyed for biological resources as well as several hundred acres of mesquite woodland surrounding the ROW.



**Figure 3.1** Desert tortoise habitat within the proposed project area and the proposed preferred transmission line route.

The permanently disturbed areas will not be restored because they are the sites for the pole structures, and there will be regular future maintenance activities at these sites. The preferred route does not intersect with the BLM-designated Kane Springs Area of Critical Environmental Concern (ACEC).

Because the preferred route is approximately one-quarter mile from any known riparian area, no endangered southwestern willow flycatcher (*Empidonax traillii extimus*) or candidate for listing yellow-billed cuckoo (*Coccyzus americanus*) was observed during the biological resources surveys. Neither the U.S. Fish and Wildlife Service (USFWS) nor the Nevada Department of Wildlife (NDOW) has conducted recent breeding season surveys for either the flycatcher or the cuckoo at the privately owned Crystal Spring and no anecdotal records of sightings have been reported.

Crystal Spring contains critical habitat for the endangered Hiko White River springfish (*Crenichthys baileyi grandis*). Species observed during project surveys in addition to species with potential to exist within the project area are listed in Appendix B.

#### **3.2.4 Sensitive Species**

Banded Gila monsters (*Heloderma suspectum cincutum*) and chuckwalla (*Sauromalus ater*) can also be found in desert tortoise habitat. During tortoise surveys, Mr. Zitzer observed no Gila monsters or chuckwalla. However, as stated on page 3-62 of the OnLine FEIS, Gila monsters are believed to spend 95% of their life underground and so may be present in the affected area. The analysis of the OnLine EIS identifies the banded Gila monster as a BLM Sensitive species and is currently ranked as a State of Nevada S2 species.

Pages 3-68, 3-69 and Figure 3.8-4d in the OnLine FEIS discuss the affected environment in regards to desert bighorn sheep (*Ovis canadensis nelsoni*). Approximately 10 miles of the preferred route intersect with four occupied desert bighorn sheep habitat areas, but no sheep were seen during field surveys of these areas. However, there is a wildlife water development on the hill between the SWIP corridor and the segment of the proposed LCPD line that deviates from the corridor at the southern end of Delamar Valley. This wildlife water development would bring desert bighorn sheep within close proximity of the project area.

The project area intersects habitat for two BLM sensitive small mammals: Pahranaagat Valley montane vole (*Microtus montanus focosus*) and Desert Valley kangaroo mouse (*Microdipodops megacephalus albiventer*).

Crystal spring contains habitat for the following BLM sensitive aquatic species: Pahranaagat pebblesnail (*Pyrgulopsis merriami*) and grated tyronia (*Tyronia clathrata*).

A small population (93 individuals) of sensitive white bearpoppy (*Arctomecon merriamii*) was documented adjacent to the preferred route on the upland areas dispersed within the mesquite woodland.

The preferred route intersects habitat for the following BLM sensitive bird species: Bendire's thrasher (*Toxostoma bendirei*), Brewer's sparrow (*Spizella breweri*), ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), and loggerhead shrike (*Lanius ludovicianus*). Among the potentially occurring sensitive bird species, loggerhead shrikes (*Lanius ludovicianus*) were the most commonly observed. Three pinyon jays (*Gymnorhinus cyanocephalus*) were all observed in Great Basin communities. Other sensitive bird species observed flying over the proposed project area during preliminary reconnaissance surveys of the proposed routes included a golden eagle (*Aquila chrysaetos*) and ferruginous hawk (*Buteo regalis*).

The preferred route does not intersect with the BLM-designated Kane Springs Area of Critical Environmental Concern (ACEC) or any other ACECs designated for BLM sensitive species. Species observed during project area surveys in addition to species with potential to exist within the project area are listed in Appendix B.

### **3.2.5 Cultural and Historical Resources**

The “area of potential effects” (APE) for an undertaking is defined in the Protection of Historic Properties section of the code of federal regulations (36 CFR 800.16[d]) as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.” The APE considered for the proposed action’s direct effects included the 150-ft. wide right-of-way (ROW), associated pull areas, lay-down or equipment storage areas, and access roads (both new construction and existing) necessary for the construction and subsequent maintenance of the transmission line. Both the preferred route and route alternatives were surveyed. In addition the records search for previously recorded resources that may be indirectly affected by the proposed actions included the area within a one mile buffer of the actions direct effects.

Between April and September 2008, Desert Research Institute (DRI) archaeologists, under BLM Cultural Resource Use Permit Number N-40987, conducted site and survey record file searches at the Southern Nevada Archaeological Archives at the Harry Reid Center for Environmental Studies, University of Nevada, Las Vegas and to the BLM Ely District Office. Additionally, an online record search of the Nevada Cultural Resource Information System (NVCRIIS) was completed. Historic maps and plats were examined to identify potential unrecorded historic-age resources (e.g., roads, structures, utility lines, etc.) that might fall within the one-mile radius. The Nevada map collections at the University of Nevada, Las Vegas, Lied Library were reviewed, as were maps and plats from two online sources; the Nevada BLM General Land Office website and the University of Nevada, Reno, DeLaMare Library, Mary B. Ansari Map Library, Nevada in Maps digital collection. Finally, ethnographic studies pertinent to Pahranaagat and Coyote Spring valleys and the surrounding mountain ranges were reviewed for potentially sensitive traditional cultural areas.

The literature review revealed that between 1976 and 2007, a total of 84 cultural resource inventories had been conducted within one mile of the proposed action ROW. Two more Class III inventories for transmission lines paralleling, but not coincident with, the proposed LCPD ROW were recently completed (Crews et al. 2007; Duke et al. 2010 ) and numerous sites were recorded during these projects. The final survey reports for these projects were still in the BLM review process but the data was shared.

The previous inventories identified 220 recorded archaeological sites within one mile of the project area. Of these, 50 sites fall within the APE of the proposed action. Forty of those sites are located along the proposed north-south 138 kV ROW between the Scott Substation and Delamar Switchyard and ten sites fall along the east-west 69kV line between the Delamar Switchyard and the NTTR Boundary. Eleven previously recorded sites were identified along the Alternate route segments.

The majority of the previously recorded sites are small prehistoric lithic scatters without temporally or culturally diagnostic artifacts. However there are a substantial number of larger habitation sites that consist of open temporary camps with ground stone, ceramics and hearth

features. Two sites with petroglyph panels also lie within the project corridor as well as five rockshelters and approximately ten large toolstone procurement areas. Additionally, several historic roads cross or parallel portions of the corridor and there are a number of small historic debris scatters within the APE. Eighteen sites in the APE of the preferred ROW, located during previous surveys, were determined eligible to the National Register of Historic Places (NRHP) by the BLM. Twenty-six of the previously recorded sites have been determined non-significant by the BLM, while the remaining six sites have not been evaluated.

The review of the General Land Office (GLO) plats and historic Nevada map collections indicated that remnants of some historic features may still be present within the proposed action ROW. At least six previously unrecorded historic roads cross the proposed LCPD corridor. Other possible historic resources identified from the map records include a possible “Indian trail,” a few mining claims but no shafts or adits, a couple of structures, a water well and several fenced fields.

Desert Research Institute completed the Section 106 Class III Inventory of the 3,438.7 acres of public lands associated with the preferred and alternative routes of this proposed action. This inventory documented 274 cultural resource sites. Nearly 85 percent (233 sites) of all the cultural resources identified during the LCPD project survey occur along the Preferred Route right-of-way. Fifty-nine (59) sites are recommended as eligible for nomination to the NRHP. One site was not evaluated for its eligibility to the NRHP until the architectural resource on the site can be fully documented and evaluated.

### **3.2.6 Visual Resources Management (VRM): Affected Environment**

The designated utility SWIP corridor is within the Visual Resource Management (VRM) Class IV due to the man-made constructions permitted within it (see Figure 3.2, 138\_Overhead).

The propose route originates in the Delamar Valley is within the Great Basin ecosystem. At the southern end of the valley there is extensive playa that is largely devoid of vegetation. The Delamar switchyard lies on the edges of a pinyon-juniper woodland emanating from the alluvial fan to the east. The Delamar switchyard and access road is within the VRM Class IV.

As the corridor proceeds to the Delamar Substation to the point where it moves northeast through the Delamar Valley, it passes through lands that on either side of it have been designated as VRM Class III. These lands are in the Mojave Desert ecosystem with its associated vegetation communities.

Moving westward into and through the Pahranaagat Valley and thence into Tikaboo Valley the preferred route continues in the Great Basin ecosystem in Tikaboo Valley. The lands that the new 60kV transmission line would cross are within VRM Class III and IV. Tikaboo Valley has a substantial number of yuccas growing across it’s bottom lands together with the typical Great Basin vegetation. These largely vertical structures tend to mask and blend in other vertical structures such as power poles.

These two classes are the least restrictive of the four BLM VRM classes. The objective of Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention and should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

The objective of Class IV is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic

landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements, form, line, color, and texture.



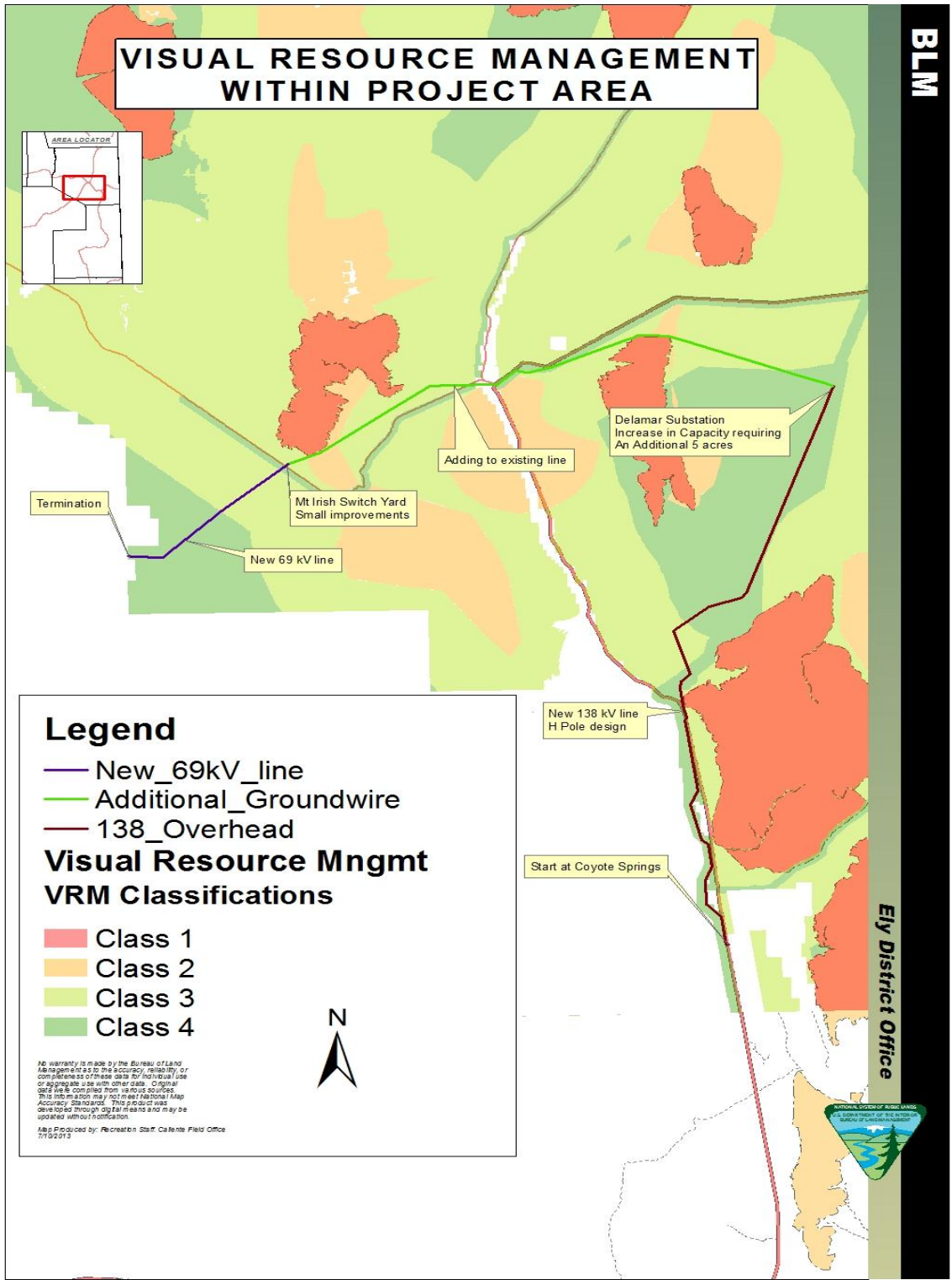


Figure 3.2 BLM Visual Resources Management areas based on the Ely District RMP (BLM, 2008).

### **3.2.7 Forest and Woodland Products**

The Jepson Manual of Higher Plants of California (Hickman, 1993) and the Intermountain Flora Volumes 1-6 (Cronquist et al, 1972-2005) were used to determine plant species taxonomic status during surveys of forest and woodland resources occurring within the preferred and route alternatives. However, in some cases species could only be identified at the genus level, especially for several annual forb genera, though none of these genera are reported to have threatened, endangered or sensitive species in the proposed project area (Nevada Natural Heritage Program, 1998).

The preferred project route includes approximately 1 mile of pinyon/juniper woodland that may include BLM permitted harvesting of pinyon as Christmas trees. Conversely, there is no permitted harvesting of the many Joshua trees and cactus species that occur both within the pinyon/juniper woodland and for most of the non-pinyon/juniper portions of the preferred route and are protected by the State of Nevada.

### **3.2.8 Floodplains (Surface Water and Flooding Potential)**

As noted previously the route for the proposed transmission line begins in Coyote Spring Valley, transects two closed hydrographic basins, Tikaboo and Delamar valleys, and crosses the Pahrnagat Valley. The Pahrnagat Wash, which collects drainage from Pahrnagat Valley, Kane Spring Valley, and several western tributaries, ultimately drains to the Muddy River, a tributary to the Colorado River. Most surface water within these basins is ephemeral; however, some reaches of Pahrnagat Wash are perennial, specifically through the Pahrnagat National Wildlife Refuge (PNWR). Other perennial surface waters within Pahrnagat Valley are the spring-fed lakes at Key Pittman Wildlife Refuge and the nearby pools at Crystal Spring.

Tikaboo Valley consists of two large hydrographic sub basins, Tikaboo Valley-Northern and -Southern sub basins, with areas of 607 and 391 mi<sup>2</sup>, respectively. Ephemeral channels in both sub basins drain to Desert Lake, a playa lake located in the Southern sub basin. The transmission line transects the Northern sub basin, crossing a major ephemeral wash system in the bottom of the valley.

Delamar (playa) Lake is located in the south-central end of Delamar Valley (383 mi<sup>2</sup> area), and is the terminus of ephemeral drainage systems within the valley. The transmission line crosses several large wash systems within the valley until it transects along the eastern edge of the playa lake, and eventually leads into Pahrnagat Valley.

The Pahrnagat Wash conveys tributary flows from Pahrnagat Valley (768 mi<sup>2</sup>), Kane Spring Valley (234 mi<sup>2</sup>), and several western tributaries, into Coyote Spring Valley (657 mi<sup>2</sup>), and eventually via the Muddy River to the Colorado River system. The entire watershed area for Pahrnagat Wash is 3,860 mi<sup>2</sup>, with approximately 2,750 mi<sup>2</sup> of this area located upstream of the PNWR (Guo, 2000). A previous 1988 Master Plan [Flood] Study (The Mark Group, 1988) divided the Pahrnagat Wash into upper and lower reaches, with the division at the PNWR. That study determined that the PNWR had sufficient storage capacity to contain 100-year flood flows from the upper tributary area without overflow. Although the transmission line alignment crosses the northern end of Pahrnagat Valley, it also follows a southern route out of Delamar Valley, again crossing into Pahrnagat Valley downstream of the PNWR. The transmission line route generally parallels highway US93 and Pahrnagat Wash, crossing the Wash at several locations.

There are several possible flood hazards along the proposed route, including alluvial fan flooding, riverine flooding, sheetflow, and playa lake flooding. Although alluvial fan flooding and sheetflow may present flash flood hazards, and playa lakes may be temporarily inundated

during precipitation events, the only significant established flood hazard is from riverine flooding within the Pahrnagat Wash. Several previous flood studies (Carter::Burgess, 2007; Guo, 2000; The Mark Group, 1988) have been completed to delineate the 100-year floodplain of the Pahrnagat Wash within the southern portion of Pahrnagat Valley and in Coyote Spring Valley. Regulatory Federal Emergency Management Agency (FEMA) flood maps have been produced for the reaches of Pahrnagat Wash located within Clark County, Nevada (NFIP, 2002). No FEMA flood maps exist for the portion of the affected area in Lincoln County.

### **3.2.9 Non-Native Invasive and Noxious Species**

Invasive plant species occurred along almost the entire preferred route, but densities and species composition varied significantly (Appendix B Table B-3). Within the southern portion of the preferred route dominated by Mojave Desert communities, the most abundant invasive species were two annual grasses, red brome (*Bromus madritensis*) and Mediterranean six-weeks grass (*Schismus arabicus*). Both species were relatively common regardless of disturbance level, while three other invasive annual forbs, Russian tumbleweed (*Salsola iberica*), Halogeton (*Halogeton glomeratus*), and filaree (*Erodium cicutarium*), occurred in the most highly disturbed areas. Within the ecotone between Mojave and Great Basin communities, nearly 5 miles of the preferred route had burned within the past 5 years due to lightning ignited wildfires and mainly within an extensive blackbrush community, resulting in significant portions of the burned area now dominated by red brome, cheatgrass (*Bromus tectorum*), Russian tumbleweed, filaree and pigweed (*Chenopodium album*). North of the burned area within the Great Basin communities, cheatgrass generally replaces red brome and Mediterranean six-weeks grass disappears. Most of the preferred route from the Delamar Lake playa up to Tikaboo Valley occurs beneath an existing transmission line. These disturbed areas tend to have a greater proportion of introduced annuals and a lower percent cover of native shrubs and grasses compared to adjacent undisturbed areas. A few scattered individuals of Sahara mustard (*Brassica tournefortii*) were found within the first few miles of the southern end of the preferred route within the Mojave Desert Ecosystem. DRI documented a few individuals of Tumble mustard (*Sisymbrium altissimum*), another introduced annual mustard within Great Basin communities. Salt cedar (*Tamarix spp.*) which is a noxious perennial shrub or tree species was observed along roads and drainages leading to the project, but was not found within the preferred route.

### **3.2.10 Lands with Wilderness Characteristics**

On June 1, 2011, the Secretary of the Department of the Interior issued a memorandum to the BLM Director that in part affirms BLM's obligations relating to wilderness characteristics under Sections 201 and 202 of the Federal Land Management Policy Act. The BLM released Manuals 6310 and 6320 in March 2012, which provide direction on how to conduct and maintain wilderness characteristics inventories and provides guidance on how to consider whether to update a wilderness characteristics inventory.

The primary function of an inventory is to determine the presence or absence of wilderness characteristics. An area having wilderness characteristics is defined by:

- Size - at least 5,000 acres of contiguous, roadless federal land,
- Naturalness,
- Outstanding opportunities for solitude or primitive and unconfined types of recreation.

The area may also contain supplemental values (ecological, geological, or other features of scientific, educational, scenic, or historical values).

The Nevada BLM completed the original wilderness review in 1979, and issued an initial wilderness inventory decision in 1980. Two units were intensively inventoried at the time of the 1979 inventory, one of which was found to contain wilderness characteristics: a portion of the South Pahroc Range was designated as a Wilderness Study Area. In 2004, the South Pahroc Range (NV-050-0132) and Mt. Irish (NV-040-249A) were designated as wilderness. The remainder of the project area was found to be lacking in wilderness character.

In 2011, the Ely District Office BLM began updating the lands with wilderness characteristics (LWC) inventory on a project-by-project basis until there is a land use plan revision. The inventory update – where an update has occurred – found LWC present in four units within the project area. Two units (NV-040-0155-2011) would be affected by the proposed corridor. **There has not been a land use plan amendment to determine if or how these LWC units would be preserved to protect the wilderness characteristics.**

## **4 ENVIRONMENTAL CONSEQUENCES OF PROPOSED ACTION**

### **4.1 General Fish and Wildlife**

#### Proposed Action

Some temporary disturbance and displacement may occur to individual animals during construction. Game animals may avoid wildlife water developments that are located near the project area. The proponent has incorporated minimization measures and no population-level effects are anticipated.

#### No Action Alternative

The No Action Alternative would have no impact on general fish or wildlife species.

### **4.2 Migratory Birds**

#### Proposed Action

Some temporary disturbance and displacement may occur to individual birds during construction. The proponent has incorporated minimization measures and no population-level effects are anticipated to migratory birds.

#### No Action Alternative

The No Action Alternative would have no impact on general fish or wildlife species.

### **4.3 Impact on FWS Listed (or proposed for listing) Threatened or Endangered Species or critical habitat**

#### Proposed Action

Two hundred four acres of the proposed ROW would occur in desert tortoise habitat, of which 71 acres would be disturbed during construction and operation activities. The acreage disturbance is broken down in Table 4.1

**Table 4-1 Breakdown of tortoise habitat impacted by type of habitat**

<b>Acres* Disturbed in Desert Tortoise Habitat</b>			
	Total Acres Disturbed	Temporary Disturbed Acres	Permanent Disturbed Acres
<b>Critical Habitat</b>	48	21	27
<b>Noncritical Habitat</b>	23	10	13
<b>Totals</b>	71	31	40

\*All acres have been rounded to the nearest acre.

Due to the federally listed threatened status of the desert tortoise, the proposed action will require that a USFWS-approved desert tortoise biologist be present during construction activities in desert tortoise habitat to reduce risk to desert tortoises within the project area. Furthermore, all construction activities in desert tortoise habitat will be conducted in accordance with the Terms and Conditions in the Biological Opinion (BO) for the project to minimize the effects and impacts of the proposed action on desert tortoises. The BO will be included in the decision record for issuing the grant for the 138 kV line and the Delamar Valley Substation.

The preferred route is more than one quarter mile from any known riparian habitat that could provide suitable breeding habitat for endangered southwestern willow flycatchers (*Empidonax traillii extimus*) or candidate for listing yellow-billed cuckoos (*Coccyzus americanus*). There are no published surveys for either of these species at Crystal Spring. The proposed action will consist of an upgrade to an existing transmission line by adding another line in this area. No poles will be located in the riparian area. Minimization measures have been incorporated into the proposed action to ensure no effects to these species.

Crystal Spring contains critical habitat for the endangered Hiko White River springfish (*Crenichthys baileyi grandis*). The proposed action would be an upgrade to an existing transmission line in this area. No poles will be located in the riparian area. Minimization measures have been incorporated into the proposed action to ensure no effects to this species or its critical habitat.

#### No Action Alternative

The No Action Alternative would have no impact on federally endangered, threatened, or proposed species.

#### 4.4 Sensitive Species

Page 4-39 of the OnLine FEIS describes impacts to and their habitat reptiles from construction and maintenance activities of a transmission line through the affected area. Banded Gila monsters or chuckwalla in the construction area could be injured or killed. Some habitat for these two species would be permanently impacted due to roads and power poles. Minimization and avoidance measures have been incorporated into the proposed action to lessen these impacts.

Desert bighorn sheep lambing could be disrupted if construction activities occur during the lambing season. Also, if construction activities were to occur at the same time as the ONLine (formerly SWIP) transmission line on either side of the wildlife water development on the hill between the two lines, any desert bighorn sheep in the area may abandon use of the

development. Minimization and avoidance measures have been incorporated into the proposed action to lessen these impacts.

The project could disturb or displace Pahrnagat Valley montane vole and/or Desert Valley kangaroo mouse. Minimization and avoidance measures have been incorporated into the proposed action to lessen these impacts.

The project consists of only hanging an additional power line on existing poles in the vicinity of Crystal Spring resulting in no anticipated impacts to the sensitive aquatic species Pahrnagat pebblesnail and grated tyronia. This type of upgrade would not result in any disturbances to the riparian area or aquatic habitat.

Destruction of individual white bearpoppy plants discovered adjacent to preferred route could occur during construction activities. Minimization and avoidance measures have been incorporated into the proposed action to lessen these impacts.

The proposed action could temporarily disturb or displace individuals from the following BLM sensitive bird species: Bendire's thrasher, Brewer's sparrow, ferruginous hawk, golden eagle, and loggerhead shrike. However, no population-level impacts are anticipated. Minimization and avoidance measures have been incorporated into the proposed action to lessen these impacts. If ground-disturbing activities were to only occur outside the breeding bird window, potential impacts would be the least to these bird species. BLM has encouraged the proponent to discuss golden eagle measures with the U.S. Fish and Wildlife Service.

#### No Action Alternative

The No Action Alternative would have no impact on any Bureau of Land Management sensitive species.

### **4.5 Impacts on Cultural Resources**

#### Proposed Action

In accordance with 36 CFR 800 (a)(1), an adverse effect to a historic property eligible for inclusion in the NRHP is found when "...an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify that property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association." The ground disturbing activities associated with the proposed action will directly impact fifty-nine (59) historic properties and one (1) unevlouted site.

The actions necessary to mitigate any effects to these fifty-nine (59) Historic Properties and one (1) unevaluated site are to be handled according to the attached Memorandum of Agreement between the Bureau of Land Management, Caliente Field Office, Department of the Air Force, and the Nevada State Historic Preservation Officer Regarding the Lincoln County Power District's Project 801 (MOA). (Appendix C)

#### No Action Alternative

Under the No Action Alternative no construction-related impacts to cultural resources would occur because no new facilities would be built on Federal lands.

### **4.6 Impacts on Visual Resources**

#### Proposed Action

The proposed action will have some visual impacts along the preferred route. From the Scott Substation north along the proposed route, the new 138kV line will parallel the existing transmission lines. In the central portion of Delamar Valley, expansion of the Delamar switchyard to substation status will result in an increase in footprint of the facility, but that increase will not materially affect the visual effects provided by the existing facility.



**Figure 4.1** Photo-simulation of the visual effects of the new H-frame transmission structures paralleling the existing 69kV transmission line and highway US 93 in Coyote Spring Valley (photo by M. Cablk and J. Miller of DRI; photosimulation by ECI)

Figure 4.2 is a photo simulation of the visual effects of the H-frame structures as the transmission line enters Delamar Valley from the south along the preferred route. The existing route of travel in Delamar Valley is on a two-track road that receives very limited, if any, maintenance. Figure 4.1 is a photo simulation of the view looking northward in Coyote Spring Valley along US 93 in this reach of the new 138kV transmission line. As can be seen in this simulation, the addition of the parallel H-frame structures would make the transmission lines in this segment much more visible and notable to persons travelling along US 93. However, the incremental effect of the new line is less than that imposed by the existing lines.



**Figure 4.2** Photo simulation of the visual effects of the H-frame transmission structures as the route enters southern Delamar Valley (photo by M. Cablk and J. Miller of DRI, photo-simulation by ECI)

From the proposed Delamar Substation to the proposed Mt Irish switchyard in Tikaboo Valley, the proposed action is simply to add an OPGW cable to the top of the existing transmission line structures. To the casual observer, this added cable will not even be noticed, and thus there will be no substantive change in the visual effects of that existing transmission line.

Construction of the Mt. Irish switchyard on the eastern edge of Tikaboo Valley will provide a visual element of human presence that is not now there, and thus, an intrusion into a somewhat, but not totally natural environment. This switchyard will be inserted into the existing transmission line and provide for moving electricity to the new 69kV line to the NTTR. Its appearance will be very similar to that of the existing Delamar switchyard.

Figure 4.3 is a photo-simulation of the new single pole transmission structure as it crosses Tikaboo Valley from the Mt. Irish Switchyard going towards the NTTR boundary. The single pole nature of the line tends to make it blend in with the pole-like structure of the Joshua trees on the valley floor. The natural brown coloring of the structures helps to minimize the visual intrusion. The Medlin ranch is in the mid-ground of the image. Figure 4.4 is a photo-simulation of this structure from the road leading to the Medlin ranch.





**Figure 4.3** Photo-simulation of the visual effects of the 69kV single pole transmission line as it transits across Tikaboo Valley past the Medlin ranch as seen from State Route 375 (photo by M. Cablk and J. Miller of DRI, photo- simulation by ECI)



**Figure 4.4** Photo-simulation of the visual effects of the 69 kV single pole transmission line as it passes over the road leading to the Medlin ranch. View is to the west northwest with Bald Mountain in the background (photo by M. Cablk and J. Miller of DRI, photo-simulation by ECI)

No Action Alternative

The No Action Alternative would have no impact on visual resources.

#### **4.7 Impacts on Forest and Woodland Products**

Proposed Action

Cactus and Joshua Trees could be uprooted or crushed by heavy equipment during construction.

Mitigation

Prior to determining the final placement of structures, the location of cacti and Joshua Trees should be considered and, where feasible the locations spanned, within limits of standard structure design. If the plants cannot be avoided, Decision FP-2 of the Ely RMP (2008) allows for the sale and salvage of desert vegetation. Plants should be salvaged by transplanting according to techniques to be provided by the authorized officer of the BLM. If it is not practical to transplant, the authorized officer should be contacted to arrange for alternative salvage.

No Action Alternative

The No Action Alternative would have no impact on Forest and Woodland Products.

#### **4.8 Impacts on Floodplains**

Proposed Action

The ephemeral channels and floodplains crossed by the transmission line alignment may be impacted if tower structures are built within the active channels or overbank floodplains, and if vehicle crossings of ephemeral stream channels are constructed. Impacts to the ephemeral channels and floodplains crossed by the transmission line alignment can be minimized by selective location of the towers (spanning drainages), limiting areas of disturbance, and erosion control measures. As flows from the upper reach of Pahranaagat Wash will be contained within the lakes at PNWR, only flows emanating from subbasins along the lower reach are of concern within the Pahranaagat Wash floodplain near the southern portion of the alignment. The majority of the flow emanates from the Kane Springs and adjacent subbasins.

To the extent practical, tower structures locations are located to avoid approximated floodplains. If a structure cannot be avoided in the overbank floodplain, the structures are designed to withstand overbank flooding, and span the active drainage channel. Because of the small (0.1 ac) footprint of the transmission structures and the small associated long-term disturbance, negligible alteration to the function of these overbank floodplain areas would be expected.

Major wash crossings in Tikaboo Valley will have negligible effects on the floodplain through this valley.

Mitigation

If it is determined a Section 404 permit will be needed, any mitigation would be determined at that time.

No Action Alternative

The No Action Alternative would have no direct or indirect impact on flooding potential, as no new disturbance would occur.

## 4.9 Non-native Invasive and Noxious Species

### Proposed Action

Most of the preferred route has already experienced some level of disturbance, resulting in varying densities of existing invasive species with variable species compositions. The weed stipulations in the proposed action should prevent these populations from spreading. The exception is for the portion of the preferred route where the new 138kV transmission line will be outside of the designated utility corridor circumventing the constriction at the south end of Delamar Valley. This portion of the preferred route will be susceptible to the establishment of new invasive plant populations. This impact would be minimized by implementing the following mitigation measures from the Weeds Risk Assessment (Appendix D)

1. Prior to entering public lands, the contractor, operator, or permit holder will provide information and training regarding noxious weed management and identification to all personnel who will be affiliated with the implementation and maintenance phases of the project. The importance of preventing the spread of weeds to uninfested areas and importance of controlling existing populations of weeds will be explained.
2. Monitoring for noxious weeds would take place at intervals sufficient to identify and eradicate potential weed infestations before they can spread. Such monitoring would be conducted for a period no shorter than the life of the permit or, if a performance bond is required, until bond release and monitoring reports will be provided to the Ely District Office. If the presence and/or spread of noxious weeds is noted, appropriated weed control procedures will be determined in consultation with Ely District Office personnel and will be in compliance with the appropriate BLM Handbook sections and applicable laws and regulations. All weed control efforts on BLM-administered lands will be in compliance with BLM Handbook H-9011, H-9011-1 Chemical Pest Control, H-9014 Use of Biological Control Agents of Pests on Public Lands, and H-9015 Integrated Pest Management. Submission of Pesticide Use Proposals and Pesticide Application Records will be required.
3. To eliminate the transport of vehicle-borne weed seeds, roots, or rhizomes all vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities or for authorized off-road driving will be free of soil and debris capable of transporting weed propagules. All such vehicles and equipment will be cleaned with power or high pressure equipment prior to entering or leaving the work site or project area. Equipment at the site needs to be cleaned using air, not water, since Sahara mustard may be transported in on vehicles and Sahara mustard seeds are more likely to stick and propagate if water is used. Cleaning efforts will concentrate on tracks, feet and tires, and on the undercarriage. Special emphasis will be applied to axels, frames, cross members, motor mounts, on and underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs will be swept out and refuse will be disposed of in waste receptacles. Cleaning sites will be recorded using global positioning systems or other mutually acceptable equipment and provided to the District Weed Coordinator or designated contact person.
4. To eliminate the introduction of noxious weed seeds, roots, or rhizomes all interim and final seed mixes, hay, straw, hay/straw, or other organic products used for reclamation or stabilization activities, feed, bedding will be certified free of plant species listed on the Nevada noxious weed list or specifically identified by the BLM Ely District Office.

5. Removal and disturbance of vegetation would be kept to a minimum through construction site management (e.g. using previously disturbed areas and existing easements, limiting equipment/materials storage and staging area sites, etc.)
6. Reclamation would normally be accomplished with native seeds only. These would be representative of the indigenous species present in the adjacent habitat. Rationale for potential seeding with selected nonnative species would be documented. Possible exceptions would include use of non-native species for a temporary cover crop to out-compete weeds. Where large acreages are burned by fires and seeding is required for erosion control, all native species could be cost prohibitive and/or unavailable. In all cases, seed mixes would be approved by the BLM Authorized Officer prior to planting.
7. Any noxious weeds that become established will be controlled.

#### No Action Alternative

The No Action Alternative would have no impact on invasive species.

### **4.10 Lands with Wilderness Characteristics**

#### Proposed Action

The inventory update – where an update has occurred – found Lands with Wilderness Characteristics (LWC) present in four units within the project area. Two units (NV-040-0155-2011 and NV-040-0177-1-2012) would be affected by the proposed corridor. Should the powerline be constructed in the preferred route, the size of unit NV-040-0155-2011 would be reduced by 7,600 acres. Unit 0177-1 would be reduced by 100 acres. Similarly, should the powerline be constructed along the alternate route, the size of unit NV-040-0155-2011 would be reduced by 1,100 acres, and unit NV-040-0177-1-2012 would be reduced by 160 acres. Under either route, the remainder of each unit would still meet the size criterion.

The western portion of the corridor in Tikaboo Valley has not received an inventory update. The original inventory found this area to be lacking in wilderness characteristics. The remainder of the project corridor would be following along the edges other inventory units or divide units found to not possess wilderness characteristics.

#### No Action Alternative

Under the no action alternative, the project would not be constructed. There would be no impact to the LWC units.

## **5 CUMULATIVE IMPACTS OF THE PROPOSED ACTION**

This EA incorporates by reference the cumulative impact analysis of the *Final Environmental Impact Statement for the ON Line Project*, which was issued on December 3, 2010. A list of the Past, Present and Reasonable Foreseeable Actions that may contribute to the cumulative impacts of this project can be found in Tables 5.1-2 and 5.1-3, pages 5-4 through 5-7, of the FEIS. In addition to the projects on the afore-mentioned tables, NV Energy is currently in the process of building a communications tower with a road and other associated facilities on the hilltop between the corridor constriction and the proposed LCPD alignment and LCPD has a permitted transmission line (N-83047) from the Gemmill Substation in Section 33, T. 13 S., R. 63 E. to the Scott Substation on private land.

### **5.1 Impacts to General Fish and Wildlife**

Some cumulative impacts to general fish and wildlife could occur from the construction of the NV Energy powerline and this project in the same general area. However, due to the incorporation of the proposed minimization measures, no population-level effects are anticipated.

### **5.2 Impacts to Migratory Birds**

Some cumulative impacts to migratory birds could occur from the construction of the NV Energy powerline and this project in the same general area. However, due to the incorporation of the proposed minimization measures, no population-level effects are anticipated. These impacts could be lessened if construction were to occur outside the time period for breeding bird activity.

### **5.3 Impacts to FWS Listed (or proposed for listing) Threatened or Endangered Species or Critical Habitat**

Section 5.8.6 on the ONLine FEIS is incorporated by reference into this FEIS. The most substantial cumulative effect from the past, present and reasonably foreseeable future actions is desert tortoise habitat fragmentation. However, all actions that potentially impact desert tortoise must undergo either Section 7 or Section 10 consultation with the Fish and Wildlife Service (FWS) which considers cumulative effects on habitat, and prepares the terms and conditions of the Biological Opinion accordingly. Therefore, incremental increase of effects to the desert tortoise and its associated critical habitat from the proposed action would not result in a significant cumulative impact.

Cumulative impacts to southwestern willow flycatcher, yellow-billed cuckoo, and Hiko White River springfish are not anticipated. Minimization measures have been incorporated into the proposed action to ensure no effects to these species or critical habitat for the springfish.

### **5.4 Impacts to Sensitive Species**

Cumulative impacts to Gila monster and chuckwalla will be minimal if proposed minimization and avoidance measures are adhered to during construction.

Desert bighorn sheep may experience cumulative impacts from the NV Energy powerline combined with the effects of this project. Mitigation, such as construction of a new wildlife water development, may be needed to offset the cumulative impacts to desert bighorn sheep. This potential mitigation action has been described in the minimization and avoidance measures.

Cumulative impacts are less likely to occur to Pahranaagat Valley montane vole and/or Desert Valley kangaroo mouse because the project area does not overlap other projects in the

habitat for these two species. Minimization and avoidance measures have been incorporated into the proposed action to lessen impacts to these species.

No cumulative impacts are anticipated to the aquatic species Pahranaagat pebblesnail and grated tyronia.

Cumulative impacts on white bearpoppies will be minimized if construction activities are restricted to the designated ROW. Subsequently, the local bearpoppy population should not be impacted by future routine maintenance of the new power line.

Some cumulative impacts to sensitive bird species could occur from the construction of the NV Energy powerline and this project in the same general area. However, due to the incorporation of the proposed minimization measures, no population-level effects are anticipated. These impacts could be lessened if construction were to occur outside the time period for breeding bird activity.

## **5.5 Impacts to Cultural Resources**

Section 5-10 of the ONLine FEIS is incorporated by reference into this FEIS. Most of the impacts that are associated with the past, present and reasonably future actions are similar to those described in Section 4.2 of this document. As is stated in Section 5.10-6 “Section 106 of the National Historic Properties Act requires avoidance and/or mitigation of impacts to NRHP-eligible cultural resources by federal undertakings...” As such, potentially significant impacts, direct, indirect and cumulative, are avoided through design features or mitigated through the development and implementation of a Historic Properties Treatment Plan as required in the appended MOA. (Appendix C)

## **5.6 Impacts to Visual Resources**

In Coyote Spring Valley, the new transmission line will add to the visual intrusion of structures in the background Class I visual resources. However, the incremental effect of the new line is less than that imposed by the existing lines. As more utilities (e.g. the Online and Great Basin Line) are built in the designated corridor in the area, those transmission lines will become a major part of the visual environment along highway US 93 from Scott Substation to the Delamar Valley corridor constriction.

In Delamar Valley there is much less traffic and thus many fewer people will see the transmission lines as they course through the middle of the valley. Located as they will be, and are, with respect to the route of travel and surrounding visual resources, they are not so intrusive and the cumulative impact of the new line is thus less. From Delamar Substation to Tikaboo Valley there should be no noticeable cumulative impact.

The new 69kV transmission line in Tikaboo Valley is the only expected structure in that area, so there should be no further, or cumulative, impact to those Class II and III visual sources.

## **5.7 Impacts on Invasive Species**

Creating a new road to avoid the existing utility corridor where impassable topography and existing transmission lines occur has the greatest potential for cumulative adverse impacts due to invasive species and unauthorized and uncontrollable off-road vehicle traffic. To mitigate these effects, during transmission line construction and maintenance activities LCPD will monitor and attempt to control the extent of invasion by noxious and invasive species. Weed risk assessments are completed for all present proposed actions and this is expected to continue for future proposed actions on public lands. The stipulations in these weed risk assessments help prevent cumulative affects regarding weed establishment and spread.

## **6 Tribes, Individuals, Organizations, or Agencies Consulted**

Preparation of this EA has been coordinated with the United States Air Force. Consultation with the U.S. Fish and Wildlife Service and Steve and Glenda Medlin has been completed and the results of the collaboration are documented in the EA. Copies of the preliminary document were sent to the Nevada State Clearinghouse and potentially affected Native American Tribes, grazing permittees and ROW holders for their review and comments. Letters were sent to other potentially interested parties informing them of the availability of the document on the Ely District BLM website. The EA was available on the Ely District website from December 14, 2010 through January 3, 2011

Comments on the Preliminary EA were received from:

1. Great Basin Transmission, LLC
2. NVEnergy
3. Southern Nevada Water Authority
4. Nevada Department of Wildlife (NDOW)
5. The Nevada Division of State Lands

The first three commenters were concerned with coordination between themselves and the proponents during the design and construction phases of the project in order to reduce conflicts with other proposed Rights-of-Way in the utility corridor. The proponent has been and would continue to coordinate with the affected parties. Also, an additional map (Figure 2.2) has been added to the document to provide more detail for the section of line within the SWIP Corridor. The Nevada Division of State Lands (NDSL) had concerns over visual resources. Additional analysis was added to the EA. NDOW and the NDSL both had concerns over the proposed power line's route deviating from the utility corridor. Additional information was added to the EA to explain the need for the deviation. NDOW had several concerns about the adequacy of the analysis of impacts to Special Status Wildlife Species. A meeting was held on January 13, 2001 between the BLM, NDOW, the proponents and the proponent's contractor. As a result of that meeting, additional analysis, minimization measures, and mitigation were added to the EA.

## 7 LIST OF PREPARERS

Table 7-1 BLM Preparers

Name	Title	Resource Represented
<u>Elizabeth Domina</u>	<u>Outdoor Recreation Planner</u>	<u>Recreation, Travel Management, Visual Resources</u>
<u>Travis Young</u>	<u>Planning and Environmental Coordinator</u>	<u>Air Quality, Environmental Justice, NEPA</u>
<u>Cameron Boyce</u>	<u>Forester</u>	<u>Forest Health, Forest/Woodland Products</u>
<u>Dominick Bolognani</u>	<u>Rangeland Management Specialist</u>	<u>Rangelands Standards and Guidelines, Livestock Grazing</u>
<u>Mark D'Aversa</u>	<u>Hydrologist</u>	<u>Water Resources, Soil Resources, Riparian/Wetlands, Watershed</u>
<u>Alicia Syles</u>	<u>Wildlife Biologist</u>	<u>Fish and Wildlife, Special Status Species</u>
<u>Benjamin Noyes</u>	<u>Wild Horse Specialist</u>	<u>Wild Horses</u>
<u>Nicholas B. Pay</u>	<u>Archaeologist</u>	<u>Cultural Resources, Paleontological Resources</u>
<u>Ty Chamberlain</u>	<u>Realty Specialist</u>	<u>Lands/Energy</u>
<u>Miles Kreidler</u>	<u>Geologist</u>	<u>Mineral Resources</u>
<u>Kyle Teel</u>	<u>Fire Ecologist</u>	<u>Fuels</u>
<u>Erica Husse</u>	<u>Rehabilitation Manager</u>	<u>Emergency Stabilization and Rehabilitation</u>
<u>Chris McVicars</u>	<u>Natural Resource Specialist</u>	<u>Noxious and Invasive Species</u>
<u>Emily Simpson</u>	<u>Planning and Environmental Coordinator</u>	<u>Special Designations</u>
<u>Melanie Peterson</u>	<u>Environmental Protection Specialist</u>	<u>Wastes, Hazardous and Solid, Human Health and Safety</u>
<u>Elvis Wall</u>	<u>Native American Coordinator</u>	<u>Native American Concerns</u>

### Contractors

Multiple Staff of the Desert Research Institute assembled the firstdraft of this EA. DRI is a Division of the Nevada System of Higher Education.



## APPENDIX A

### Right of Way Guide Stipulations

#### 1 Non-BLM Required Authorizing Actions

##### a Air Quality

###### (1) Technical Report.

The holder shall submit for the authorized officer's review a technical report addressing criteria and methodology of how the proposed facility will be located and designed to meet applicable Federal, State, and local air quality standards.

###### (2) Emission Standards.

The holder shall meet Federal, State, and local emission standards for air quality.

###### (3) Dust Control.

The holder shall furnish and apply water or use other means satisfactory to the authorized officer for dust control.

##### b Construction in Waters and Wetlands

###### (1) Section 404 Permit

The holder shall comply with the construction practices and mitigating measures established by 33 CFR 323.4, which sets forth the parameters of the "nationwide permit" required by Section 404 of the Clean Water Act. If the proposed action exceeds the parameters of the nationwide permit, the holder shall obtain an individual permit from the appropriate office of the Army Corps of Engineers and provide the authorized officer with a copy of same. Failure to comply with this requirement shall be cause for suspension or termination of this right-of-way grant.

#### 2 Resources Values and Environmental Concerns

##### a Cultural and Paleontological Resources

A notice to proceed will not be issued until a Historic Properties Treatment Plan is developed and carried out in accordance with the MOA (Appendix C) for this project.

A Cultural Resource Monitor approved by the CFO may be required during the construction phase in order to ensure protection of Cultural Resources.

Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any persons working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer to determine appropriate action to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

b Soil Stabilization and Rehabilitation

- (1) The holder shall prepare a seedbed by scarifying the disturbed area. Seed should be buried at a depth equal to its seed diameter..
- (2) No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 8 inches deep, the soil shall be deemed too wet to adequately support construction equipment.

3 Scheduling, Engineering, and Construction Details.

a Scheduling

Construction activity and surface disturbance will be prohibited during the period from March 1 to October 31 (in Desert Tortoise areas for the protection of Desert Tortoise

Any exception to this requirement must have prior written approval from the authorized officer.

b Protection of Survey Monuments

The holder shall protect all survey monuments found within the right-of-way. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U. S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the holder shall immediately report the incident, in writing, to the authorized officer and the respective installing authority, if known. Where General Land Office or Bureau of Land Management right-of-way monuments or references are obliterated during operations, the holder shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the Manual of Surveying Instructions for the Survey of the Public Lands of the United States, latest edition. The holder shall record such survey in the appropriate county and send a copy to the authorized officer. If the Bureau cadastral surveyors or other Federal surveyors are used to restore the disturbed survey monument, the holder shall be responsible for the survey cost.

c Work Limits.

The holder shall conduct all activities associated with the construction, operation, and termination of the right-of-way within the authorized limits of the right-of-way.

d Construction and Placement of Improvements and/or Structures on the Right-of-Way Grant.

(1) Culverts.

The holder shall furnish and install culverts of the gauge, materials, diameter(s), and length(s), indicated and approved by the authorized officer. Culverts shall be free of corrosion, dents, or other deleterious conditions. Culverts shall be placed on channel bottoms on firm, uniform beds which have shaped to accept them

and aligned to minimize erosion. Backfill shall be thoroughly compacted. No equipment shall be routed over a culvert until back fill is adequate to protect the culverts.

(2) Low-Water Crossings.

The holder shall construct low-water crossings in a manner that will prevent any blockage or restriction of the existing channel. Material removed shall be stockpiled for use in rehabilitation of the crossings.

4 Flagging and Staking of the Right-of-Way.

- a The holder shall place slope stakes, culvert location and grade stakes, and other construction control stakes as deemed necessary by the authorized officer to ensure construction in accordance with the plan of development. If stakes are disturbed, they shall be replaced before proceeding with construction.
- b The holder shall mark the exterior boundaries of the right-of-way with a stake and/or lath at three hundred (or less depending on visibility but no less than one hundred feet) foot intervals. The intervals may be varied at the time of staking at the discretion of the authorized officer. The tops of the stakes and/or laths will be painted and the laths flagged in a distinctive color as determined by the holder. The survey station numbers will be marked on the boundary stakes and/or laths at the entrance to and the exit from public land. Holder shall maintain all boundary stakes and/or laths in place until final cleanup and restoration is completed and approved by the authorized officer. The stakes and/or laths will then be removed at the direction of the authorized officer.
- c The holder shall survey and clearly make the centerline and/or exterior limits of the right-of-way, as determined by the authorized officer.

All surface disturbance will be contained within the right-of-way.

5 Clearing and Grading of the Right-of-Way.

- a Clearing will be kept to a minimum. Overland (drive and crush) is the preferred method of construction and clearing will only be used where necessary.
- b The holder shall clear and remove all roots, woody plants over 2 feet high, and other vegetative materials from the surfaces to be covered by embankments and disturbed by excavation. This clearing will be limited to plants impeding vehicle traffic or construction activity. Clearing shall be accomplished without mixing topsoil with vegetation. Cleared vegetative materials shall be disposed of as directed by the authorized officer; excess mineral materials shall be stockpiled for disposal by the United States or used in construction in accordance with 43 CFR 2801.1-1(d).
- c Right-of-way clearing shall be limited to 15 feet on each side of the centerline, (the limits of the right-of-way, or the limits of the cut and fill stakes).
- d A buffer strip of vegetation 10 feet wide shall be left between areas of surface disturbance and riparian vegetation as determined necessary by the authorized officer.

- e Suitable topsoil material removed in conjunction with clearing and stripping shall be conserved in stockpiles (within the right-of-way). Topsoil shall be stripped to an average depth of 4 inches.
- f Earthwork areas shall be cleared of vegetation and the topsoil stockpiled for future rehabilitation. Prior to fill construction, the existing surface shall be sloped to avoid sharp banks and allow equipment operations. No fills shall be made with water saturated soils. Materials shall be placed in uniform layers not exceed 4 inches. Construction equipment shall be routed evenly over the entire width of the fill to obtain a thorough compaction.

## 6 Stabilization and Rehabilitation of the Right-of-Way.

### a Recontouring

- (1) The holder shall recontour disturbed areas, or designated sections of the right-of-way, by grading to restore the site to approximately the original contour of the ground as determined by the authorized officer.
- (2) The holder shall recontour the disturbed area and obliterate all earthwork by removing embankments, backfilling excavations, and grading to re-establish the appropriate original contours of the land in the right-of-way.
- (3) The holder shall uniformly spread topsoil over all unoccupied disturbed areas (outside the ditch line, fence line, work area). Spreading shall not be done when the ground or topsoil is frozen or wet.

### b Waterbars

The holder shall construct waterbars on all disturbed areas to the spacing and cross sections specified by the authorized officer. Waterbars are to be constructed to: (1) simulate the imaginary contour lines of the slope (ideally with a grade of one or two percent); (2) drain away from the disturbed area; and (3) begin and end in vegetation or rock whenever possible.

### c Terrace and Bench Construction

Where slope stabilization requires significant terrace or bench construction, the holder shall include engineering drawings for this work to be reviewed, and where appropriate, modified and approved by the authorized officer.

### d Seeding.

- (1) The holder shall seed all disturbed areas with the seed mixture(s) listed below. The seed mixture(s) shall be planted in the amounts specified in pounds of pure live seed (PLS)/acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed shall be tested and the viability testing of seed shall be done in accordance with State law(s) and within 9 months prior to purchase. Commercial seed shall be either certified or registered seed. The seed mixture container shall be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed shall be planted using the recommended (by seed vendor) method of planting. Either drilling or broadcasting may be used. The seed mixture shall be evenly and uniformly planted over the disturbed area. (Smaller/heavier seeds have a tendency to drop to the bottom of the drill and are planted first. The holder shall take appropriate measures to ensure this not occur.) Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre noted below are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of the growing season after seeding. The authorized officer is to be notified a minimum of 14 days prior to seeding of the project.

- (2) The holder shall seed all disturbed areas, using an agreed upon method suitable for the location. Seeding shall be repeated if a satisfactory stand is not obtained as determined by the authorizing officer upon evaluation after the first growing season.

e Mulching.

(1) The holder shall mulch disturbed areas designated by the authorized officer. The type of mulch shall meet one of the following requirements:

- (a) Straw used for mulching shall be from oats, wheat, rye, or other approved grain crops, and free from noxious weeds or other objectionable material as determined by the authorized officer. Straw mulch shall be suitable for placing with mulch blower equipment.
- (b) Hay shall be of approved herbaceous mowing, free from noxious weeds or other objectionable material as determined by the authorized officer. Hay shall be suitable for placing with mulch blower equipment.
- (c) Wood cellulose fiber shall be natural or cooked wood cellulose fiber, shall disperse readily in water, and shall be nontoxic. The homogeneous slurry or mixture shall be capable of application with power spray equipment. A colored dye that is noninjurious to plant growth may be used when specified. Wood cellulose fiber shall be packaged in new, labeled containers.

f Weed Control

The holder shall be responsible for weed control on disturbed areas within the limits of the right-of-way. The holder is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods (within limits imposed in the grant stipulations).

7 Access to and Along the Right-of-Way During Construction.

- a Construction –related traffic shall be restricted to routes approved by the authorized officer. New access roads or cross-country vehicle travel will not be permitted unless prior written approval is given by the authorized officer. Authorized roads used by the holder shall be rehabilitated or maintained when construction activities are complete as approved by the authorized officer.
- b The holder shall permit free and unrestricted public access to and upon the right-of-way for all lawful purposes except for those specific areas designated as restricted by the

authorized officer to protect the public, wildlife, livestock, or facilities constructed within the right-of-way.

- c The holder shall provide for the safety of the public entering the right-of-way. This includes, but is not limited to, barricades for open trenched, flagmen/women with communications systems for single-lane roads without inter visible turnouts, and attended gated for blasting operations.
- d Specific sites as identified by the authorized officer (e.g., archaeological sites, area with threatened and endangered species, or fragile watersheds) where construction equipment and vehicle shall not be allowed, shall be clearly marked onsite by the holder before any construction or surface disturbing activities begin. The holder shall be responsible for assuring that construction personnel are well trained to recognize these markers and understand the equipment movement restrictions involved.
- e Existing roads and trails on public lands that are blocked as the result of the construction project shall be rerouted or rebuilt as directed by the authorized officer.

## 8 Fire Plans

### a Fire Prevention and Suppression Plan.

The holder shall prepare a fire prevention and suppression plan, that shall be reviewed, modified and approved, as appropriate, by the authorized officer. The holder shall take into account such measures for prevention and suppression of fire on the right-of-way and other public land used or traversed by the holder in connection with operations of the right-of-way. Project personnel shall be instructed as to individual responsibility in implementation of the plan.

### b Spark Arresters

During construction, operation, maintenance, and termination of the right-of-way, vehicles, gas-powered equipment, and flues shall be equipped with spark arrestors approved by the authorized officer.

### c Restricted Operations.

During conditions of extreme fire danger, operations shall be limited or suspended in specific areas, or additional measures may be required by the authorized officer.

### d Fire Watch.

The holder shall maintain a fire watch with fire-fighting equipment during construction as per the paln submitted and approved in 8a.

### e Availability of Equipment.

When requested by the authorized officer, the holder shall make his equipment available for fighting fires in the vicinity of the project. Payment for such services will be made at rates determined by the authorized officer.

## 9 Operation and Maintenance of the Facility.

### a Painting.

All above-ground structures not subject to safety requirements shall be painted or colored by the holder to blend with the natural color of the landscape. The one structure that is planned, that is not either wood or galvanized, is the control structure at the substation. It will be constructed from concrete masonry units ASTM C90 grade N, type 1, split face at exterior surfaces Color shall be “harvest brown” as manufactured by Superlite Block Company, Phoenix, Arizona or approved equal.

b Use of Right-of-Way

Except rights-of-way expressly authorizing a road after construction of the facility is completed, the holder shall not use the right-of-way as a road for purposes other than routine maintenance as determined by the authorized officer in consultation with the holder.

c Maintenance of Right-of-Way

(1) Holder shall maintain the right-of-way in a safe, usable condition, as directed by the authorized officer. (A regular maintenance program shall include, but is not limited to, blading, ditching, culvert installation, and surfacing).

(2) If snow removal from road is undertaken, equipment used for snow removal operations shall be equipped with shoes to keep the blade one inch off the road surface. Holder shall take special precautions where the surface of the ground is uneven and at drainage crossings to ensure that equipment blades do not destroy vegetation.

d Signing

Upon completion of construction, the holder shall post as directed by the authorized officer, the Bureau serial number assigned to this right-of-way grant at the following locations Substation in Delamar Valley.

e Waste Disposal

(1) Construction sites shall be maintained in a sanitary condition at all times; waste materials at those sites shall be disposed of promptly at an appropriate waste disposal site. “Waste” means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.

(2) A litter policing program shall be implemented by the holder, and approved in writing by the authorized officer, which covers all roads and sites associated with the right-of-way.

f Industrial Wastes and Toxic Substances.

(1) The holder(s) shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially provisions on polychlorinated biphenyls, 40 CFR 761-1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as by the Comprehensive Environmental Response, Compensation and Liability Act of 1980,

Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

- (2) The holder of Right-of-Way No N-85482 agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980 42 U.S.C. 6901, et seq.) on the right-of-way (unless the release of threatened release is wholly unrelated to the right-of-way holder's activity on the right-of-way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

## 10 Terminations.

- a Prior to termination of the right-of-way, the holder shall contact the authorized officer to arrange a predetermination conference. This conference will be held to review the termination provisions of the grant.
- b Six months prior to termination of the right-of-way, the holder shall contact the authorized officer to arrange a joint inspection of the right-of-way. This inspection will be held to agree to an acceptable termination (and rehabilitation) plan. This plan shall include but is not limited to, removal of facilities, drainage structures, or surface material, recontouring, topsoiling, or seeding. The authorized officer must approve the plan in writing prior to the holder's commencement of any termination activities.



APPENDIX B

Faunal, Special and Floral Species Observed or potentially occurring in the Proposed Project Area

**Table B-1. Faunal species found in Mojave and Great Basin communities during the biological resource survey for the proposed Lincoln County power line project.**

<b>Birds</b>					
Common Name	Scientific Name	Mojave		Great Basin	
		Freq.*	Totals†	Freq.	Totals
Black-throated sparrow	<i>Amphispiza bilineata</i>	43	77	58	125
Horned lark	<i>Eremophila alpestris</i>	5	8	23	74
Raven	<i>Corvus corax</i>	5	6	13	41
Western Kingbird	<i>Tyrannus tyrannus</i>	7	8	9	18
House finch	<i>Carpodacus mexicanus</i>	7	11	8	15
Rock wren	<i>Salpinctes obsoletus</i>	11	14	13	15
Mockingbird	<i>Mimus polyglottos</i>	4	4	11	14
Loggerhead shrike	<i>Lanius ludovicianus</i>	2	4	8	8
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	2	2	5	5
Mourning dove	<i>Zenaida macroura</i>	9	11	4	4
Red-tailed hawk	<i>Buteo jamaicensis</i>	2	2	3	4
Turkey vulture	<i>Cathartes aura</i>	2	2	2	2
Bendire's thrasher	<i>Toxostoma bendirei</i>	1	1	1	1
Gambel's quail	<i>Callipepla gambelii</i>	1	1	1	1
Scott's oriole	<i>Icterus parisorum</i>	1	1	1	1
Barn swallow	<i>Hirundo rustica</i>	1	1	0	0
Black-chinned hummingbird	<i>Archilochus alexandri</i>	2	2	0	0
Lucy's warbler	<i>Vermivora luciae</i>	1	1	0	0
Phainopepla	<i>Phainopepla nitens</i>	3	8	0	0
Redwing blackbird	<i>Agelaius phoeniceus</i>	1	1	0	0
Verdin	<i>Auriparus flaviceps</i>	1	1	0	0
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	1	1	0	0
Brewer's sparrow	<i>Spizella breweri</i>	0	0	4	4
Lark sparrow	<i>Chondestes gramma</i>	0	0	2	4
Cactus wren	<i>Champhorhynchus brunneicapillus</i>	0	0	2	3
Pinyon jay	<i>Gymnrrhinus cyanocephalus</i>	0	0	2	3
Western meadowlark	<i>Sturnella neglecta</i>	0	0	3	3
Blue-gray gnatcatcher	<i>Poliopitila caerulea</i>	0	0	2	2
Bushtit	<i>Psaltriparus minimus</i>	0	0	2	2

\* Freq. = # of observations

† Totals = # of individuals seen

Common Name	Scientific Name	Mojave		Great Basin	
		Freq.*	Totals†	Freq.	Totals
Ladder-backed woodpecker	<i>Picoides scalaris</i>	0	0	2	2
Say's phoebe	<i>Phoebe sayornis</i>	0	0	2	2
Black-headed grosbeck	<i>Pheucticus melanocephalus</i>	0	0	1	1
Gray vireo	<i>Vireo vicinior</i>	0	0	1	1
Lesser nighthawk	<i>Chordeillus acutipennis</i>	0	0	1	1
Prairie falcon	<i>Falco mexicanus</i>	0	0	1	1
Total species (35)		22	167	28	357
Shared species (15)					

### Mammals

Common Name	Scientific Name	Mojave		Great Basin	
		Freq.	Totals	Freq.	Totals
Whitetailed antelope squirrel	<i>Ammospermophilus leucurus</i>	0	0	8	17
Black-tailed jackrabbit	<i>Lepus californicus</i>	0	0	6	6
Coyote	<i>Canis latrans</i>	0	0	1	1
Desert cottontail	<i>Sylvilagus audubonii</i>	0	0	1	1
Mule deer	<i>Odocoileus hemionus</i>	0	0	1	1
Pronghorn	<i>Antilocarpa Americana</i>	0	0	1	1
Desert woodrat	<i>Neotoma lepida</i>	1	1	0	0
Total species		1	1	6	27
Shared species (0)					

### Reptiles

Common Name	Scientific Name	Mojave		Great Basin	
		Freq.	Totals	Freq.	Totals
Side-blotched lizard	<i>Uta stansburiana</i>	21	29	19	20
Zebra-tailed lizard	<i>Callisaurus draconoides</i>	12	14	10	12
Leopard lizard	<i>Callisaurus wislizenii</i>	1	1	9	9
Desert spiny lizard	<i>Scleroporos magister</i>	0	0	1	1
Fence lizard	<i>Scleroporos graciosus</i>	0	0	1	1
Coachwhip snake	<i>Mastophis flagellum</i>	1	1	0	0
Desert collared lizard	<i>Crotophytus insularis</i>	1	1	0	0
Desert horned lizard	<i>Phrynosoma phatyrhinos</i>	1	1	0	0
Desert tortoise	<i>Gopherus agassizii</i>	1	1	0	0
Total species (10)		7	48	5	43
Shared species (4)					

\* Freq. = # of observations

† Totals = # of individuals seen

## Invertebrates

Common Name	Scientific Name	Mojave		Great Basin	
		Freq.*	Totals†	Freq.	Totals
Western white butterfly	<i>Pontia occidentalis</i>	5	5	5	5
Dragonflies	Anioptera and Zygoptera	1	2	1	1
Painted lady butterfly	<i>Vannessa cardui</i>	2	3	1	1
Monarch butterfly	<i>Danaus plexippus</i>	1	1	0	0
Total species		4	11	3	7
Shared species (4)					

**Table B-2. Species with potential to occur within the project area**

(Highlighted species are BLM sensitive species in Nevada)

Scientific Name	Common Name	Observed
<b>MAMMALS</b>		
<i>Antrozous pallidus</i>	Pallid bat	No
<i>Microdipodops megacephalus albiventer</i>	Desert Valley kangaroo mouse	No
<i>Myotis californicus</i>	California myotis	No
<i>Myotis evotis</i>	Long-eared myotis	No
<i>Myotis lucifugus</i>	Little brown myotis	No
<i>Ovis canadensis nelsoni</i>	Desert bighorn sheep	No
<i>Odocoileus hemionus</i>	Mule deer (general habitat)	Yes
<i>Canis latrans</i>	Coyote	Yes
<i>Taxidea taxus</i>	American badger	No
<i>Microtus montanus focosus</i>	Pahrnagat Valley montane vole	No
<i>Dipodomys merriami</i>	Merriam's kangaroo rat	No
<i>Perognathus longimembris</i>	Little pocket mouse	No
<i>Peromyscus maniculatus</i>	North American deer mouse	No
<i>Dipodomys microps</i>	Chisel-toothed kangaroo rat	No
<i>Neotoma lepida</i>	Desert woodrat	Yes
<i>Ammospermophilus leucurus</i>	White-tailed antelope squirrel	Yes
<b>BIRDS</b>		
<i>Carduelis tristis</i>	American goldfinch	No
<i>Falco sparverius</i>	American kestrel	No
<i>Myiarchus cinerascens</i>	Ash-throated flycatcher	Yes
<i>Toxostoma bendirei</i>	Bendire's thrasher	Yes
<i>Archilocus alexandri</i>	Black-chinned hummingbird	Yes
<i>Dendroica nigrescens</i>	Black-throated gray warbler	No

\* Freq. = # of observations

† Totals = # of individuals seen

<i>Amphispiza bilineata</i>	Black-throated sparrow	Yes
<i>Polioptila caerulea</i>	Blue-gray gnatcatcher	Yes
<i>Pheucticus melanocephalus</i>	Black-headed grosbeak	Yes
<i>Spizella breweri</i>	Brewer's sparrow	Yes
<i>Molothrus ater</i>	Brown-headed cowbird	No
<i>Icterus bullockii</i>	Bullock's oriole	No
<i>Campylorhynchus brunneicapillus</i>	Cactus wren	Yes
<i>Catherpes mexicanus</i>	Canyon wren	No
<i>Spizella passerine</i>	Chipping sparrow	No
<i>Corvus corax</i>	Common raven	Yes
<i>Geothlypis trichas</i>	Common yellowthroat	No
<i>Calypte costae</i>	Costa's hummingbird	No
<i>Junco hyemalis</i>	Dark-eyed junco	No
<i>Empidonax oberholseri</i>	Dusky flycatcher	No
<i>Buteo regalis</i>	Ferruginous hawk	No
<i>Callipepla gambelii</i>	Gambel's quail	Yes
<i>Aquila chrysaetos</i>	Golden eagle	No
<i>Empidonax wrightii</i>	Gray flycatcher	No
<i>Pipilo chlorurus</i>	Green-tailed towhee	No
<i>Empidonax hammondii</i>	Hammond's flycatcher	No
<i>Catharus guttatus</i>	Hermit thrush	No
<i>Carpodacus mexicanus</i>	House finch	Yes
<i>Troglodytes aedon</i>	House wren	No
<i>Passerina amoena</i>	Lazuli bunting	No
<i>Carduelis psaltria</i>	Lesser goldfinch	No
<i>Melospiza lincolnii</i>	Lincoln's sparrow	No
<i>Lanius ludovicianus</i>	Loggerhead shrike	Yes
<i>Oporornis tolmiei</i>	MacGillivray's warbler	No
<i>Zenaida macroura</i>	Mourning dove	Yes
<i>Circus cyaneus</i>	Northern harrier	No
<i>Mimus polyglottos</i>	Northern mockingbird	Yes
<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow	No
<i>Pandion haliaetus</i>	Osprey	No
<i>Vermivora celata</i>	Orange-crowned warbler	No
<i>Phainopepla nitens</i>	Phainopepla	Yes
<i>Empidonax difficilis</i>	Pacific-slope flycatcher	No
<i>Buteo jamaicensis</i>	Red-tailed hawk	Yes
<i>Agelaius phoeniceus</i>	Red-winged blackbird	No
<i>Salpinctes obsoletus</i>	Rock wren	Yes
<i>Regulus calendula</i>	Ruby-crowned kinglet	No
<i>Amphispiza belli</i>	Sage sparrow	No
<i>Grus canadensis</i>	Sandhill crane	No
<i>Sayornis saya</i>	Say's phoebe	Yes

<i>Icterus parisorum</i>	Scott's oriole	Yes
<i>Accipiter striatus</i>	Sharp-shinned hawk	No
<i>Melospiza melodia</i>	Song sparrow	No
<i>Piranga rubra</i>	Summer tanager	No
<i>Tachycineta bicolor</i>	Tree swallow	No
<i>Cathartes aura</i>	Turkey vulture	Yes
<i>Tachycineta thalassina</i>	Violet-green swallow	No
<i>Vireo gilvus</i>	Warbling vireo	No
<i>Contopus sordidulus</i>	Western wood-pewee	No
<i>Zonotrichia leucophrys</i>	White-crowned sparrow	Yes
<i>Empidonax traillii</i>	Willow flycatcher	No
<i>Wilsonia pusilla</i>	Wilson's warbler	No
<i>Dendroica petechia</i>	Yellow warbler	No
<i>Icteria virens</i>	Yellow-breasted chat	No
<i>Empidonax traillii extimus</i>	Southwestern willow flycatcher	No
<i>Coccyzus americanus</i>	Western yellow-billed cuckoo	No
<b>REPTILES</b>		
<i>Gopherus agassizii</i>	Agassiz's desert tortoise	Yes
<i>Heloderma suspectum cinctum</i>	Banded Gila monster	No
<i>Sauromalus ater</i>	Chuckwalla	No
<i>Uta stansburiana</i>	Side-blotched lizard	Yes
<i>Gambelia wislizenii</i>	Leopard lizard	Yes
<i>Phrynosoma platyrhinos</i>	Desert horned lizard	Yes
<i>Dipsosaurus dorsalis</i>	Desert iguana	No
<i>Crotalus cerastes</i>	Sidewinder	No
<i>Crotalus scutulatus</i>	Mojave rattlesnake	No
<i>Callisaurus draconoides</i>	Zebra-tailed lizard	Yes
<i>Lampropeltis getula</i>	Common kingsnake	No
<b>AQUATIC SPECIES</b>		
<i>Crenichthys baileyi grandis</i>	Hiko White River springfish	No
<i>Pyrgulopsis merriami</i>	Pahrnagat pebblesnail	No
<i>Tyronia clathrata</i>	Grated tyronia	No
<i>Pyrgulopsis hubbsi</i>	Hubbs pyrg	No
<i>Rana catesbeiana</i>	Bullfrog	No
<b>PLANTS</b>		
<i>Arctomecon merriamii</i>	white bearpoppy	Yes

**Table B-3. Plant species found in Mojave and Great Basin communities during the biological resource survey for the proposed Lincoln County transmission line project.**

<b>Genus</b>	<b>Species</b>	<b>Family</b>	<b>Cycle</b>	<b>Form</b>	<b>Origin</b>	<b>Mojave</b>	<b>Great Basin</b>
<i>Abronia</i>	<i>turbinata</i>	Nyctaginaceae	ann	forb	native	1	1
<i>Acacia</i>	<i>greggii</i>	Fabaceae	per	shrub	native	1	
<i>Achnatherum</i>	<i>hymenoides</i>	Poaceae	per	grass	native	1	1
<i>Acamptopappus</i>	<i>shockleyi</i>	Asteraceae	per	shrub	native	1	1
<i>Achnatherum</i>	<i>speciosum</i>	Poaceae	per	grass	native	1	1
<i>Arctomecon</i>	<i>californica</i>	Papaveraceae	per	forb	native	1	
<i>Adenophyllum</i>	<i>cooperi</i>	Asteraceae	per	shrub	native	1	1
<i>Allium</i>	<i>nevadense</i>	Liliaceae	per	forb	native	1	1
<i>Allonia</i>	<i>incarnata</i>	Nyctaginaceae	ann	forb	native	1	1
<i>Ambrosia</i>	<i>acanthoarpa</i>	Asteraceae	ann	forb	native		1
<i>Ambrosia</i>	<i>confertiflora</i>	Asteraceae	per	shrub	native		1
<i>Ambrosia</i>	<i>dumosa</i>	Asteraceae	per	shrub	native	1	1
<i>Ambrosia</i>	<i>eriocentra</i>	Asteraceae	per	shrub	native		1
<i>Amsinkia</i>	<i>tessellata</i>	Boraginaceae	ann	forb	native	1	1
<i>Amsonia</i>	<i>tomentosa</i>	Apocynaceae	per	shrub	native	1	
<i>Androstephium</i>	<i>breviflorum</i>	Liliaceae	per	forb	native	1	
<i>Anemopsis</i>	<i>californica</i>	Saururaceae	per	forb	native	1	
<i>Antirrhinum</i>	<i>kingii</i>	Scrophulariaceae	ann	forb	native	1	
<i>Artemesia</i>	<i>bigelovii</i>	Asteraceae	per	shrub	native	1	1
<i>Artemesia</i>	<i>ludoviscianus</i>	Asteraceae	per	shrub	native	1	1
<i>Arenaria</i>	<i>macradenia</i>	Caryophyllaceae	per	forb	native	1	1
<i>Argemone</i>	<i>corymbosa</i>	Papaveraceae	per	forb	native	1	
<i>Argemone</i>	<i>munita</i>	Papaveraceae	ann	forb	native	1	1
<i>Artemesia</i>	<i>nova</i>	Asteraceae	per	shrub	native		1
<i>Aristida</i>	<i>purpurea</i>	Poaceae		grass	native	1	1

Genus	Species	Family	Cycle	Form	Origin	Mojave	Great Basin
			per				
<i>Artemesia</i>	<i>spinescens</i>	Asteraceae	per	shrub	native		1
<i>Artemesia</i>	<i>tridentata</i>	Asteraceae	per	shrub	native		1
<i>Astragalus</i>	<i>lentigiformis</i>	Fabaceae	ann	forb	native	1	1
<i>Aster</i>	<i>scopulorum</i>	Asteraceae	per	forb	native		1
<i>Atriplex</i>	<i>canescens</i>	Chenopodiaceae	per	shrub	native	1	1
<i>Atriplex</i>	<i>confertifolia</i>	Chenopodiaceae	per	shrub	native	1	1
<i>Atriplex</i>	<i>lentiformis</i>	Chenopodiaceae	per	shrub	native	1	
<i>Atriplex</i>	<i>polycarpa</i>	Chenopodiaceae	per	shrub	native	1	
<i>Baileya</i>	<i>multiradiata</i>	Asteraceae	per	forb	native	1	1
<i>Baileya</i>	<i>pleniradiata</i>	Asteraceae	ann	forb	native	1	1
<i>Boerhavia</i>	<i>wrightii</i>	Nyctaginaceae	ann	forb	native	1	1
<i>Brickellia</i>	<i>arguta</i>	Asteraceae	per	shrub	native	1	1
<i>Brickellia</i>	<i>desertorum</i>	Asteraceae	per	shrub	native	1	
<i>Brickellia</i>	<i>oblongifolia</i>	Asteraceae	per	shrub	native	1	1
<i>Buddleja</i>	<i>utahensis</i>	Buddlejaceae	per	shrub	native		1
<i>Camissonia</i>	<i>boothii</i>	Onagraceae	ann	forb	native	1	1
<i>Camissonia</i>	<i>brevipes</i>	Onagraceae	ann	forb	native	1	1
<i>Caulanthus</i>	<i>crassicaulis</i>	Brassicaceae	per	forb	native		1
<i>Calochortus</i>	<i>flexuosus</i>	Liliaceae	per	forb	native	1	1
<i>Camissonia</i>	<i>heterochroma</i>	Onagraceae	ann	forb	native		1
<i>Castilleja</i>	<i>angustifolia</i>	Scrophulariaceae	per	forb	native	1	1
<i>Calicoserius</i>	<i>wrightii</i>	Asteraceae	ann	forb	native	1	1
<i>Centrostigia</i>	<i>thurberi</i>	Poygonaceae	ann	forb	native	1	1
<i>Cercocarpus</i>	<i>intricatus</i>	Rosaceae	per	shrub	native		1
<i>Chamaesyce</i>	<i>albomarginata</i>	Euphorbiaceae	per	forb	native	1	1

Genus	Species	Family	Cycle	Form	Origin	Mojave	Great Basin
<i>Chorizanthe</i>	<i>brevicoru</i>	Poygonaceae	ann	forb	native	1	
<i>Chaenactis</i>	<i>carphoclinia</i>	Asteraceae	ann	forb	native	1	1
<i>Chaenactis</i>	<i>fremontii</i>	Asteraceae	ann	forb	native	1	1
<i>Chaenactis</i>	<i>macrantha</i>	Asteraceae	ann	forb	native	1	1
<i>Chrysothamnus</i>	<i>greenii</i>	Asteraceae	per	shrub	native		1
<i>Chilopsis</i>	<i>linearis</i>	Bignoniaceae	per	tree	native	1	
<i>Chamaesyce</i>	<i>micromera</i>	Euphorbiaceae	ann	forb	native	1	1
<i>Chrysothamnus</i>	<i>nauseosus</i>	Asteraceae	per	shrub	native	1	1
<i>Chorizanthe</i>	<i>rigida</i>	Polygonaceae	ann	forb	native	1	1
<i>Chaenactis</i>	<i>stevoides</i>	Asteraceae	ann	forb	native	1	1
<i>Chrysothamnus</i>	<i>viscidiflorus</i>	Asteraceae	per	shrub	native	1	1
<i>Cirsium</i>	<i>neomexicanum</i>	Asteraceae	ann	forb	native	1	1
<i>Coleogyne</i>	<i>ramosissima</i>	Rosaceae	per	shrub	native	1	1
<i>Cryptantha</i>	<i>angustifolia</i>	Boraginaceae	ann	forb	native	1	1
<i>Cryptantha</i>	<i>circumscissa</i>	Boraginaceae	ann	forb	native	1	1
<i>Cryptantha</i>	<i>confertiflora</i>	Boraginaceae	per	forb	native	1	1
<i>Cryptantha</i>	<i>humilis</i>	Boraginaceae	per	forb	native		1
<i>Cryptantha</i>	<i>micrantha</i>	Boraginaceae	ann	forb	native	1	
<i>Cryptantha</i>	<i>nevadensis</i>	Boraginaceae	ann	forb	native	1	
<i>Cryptantha</i>	<i>recurvata</i>	Boraginaceae	ann	forb	native	1	
<i>Cryptantha</i>	<i>utahensis</i>	Boraginaceae	ann	forb	native	1	
<i>Cymopterus</i>	<i>globosus</i>	Apiaceae	per	forb	native		1
<i>Cymopterus</i>	<i>ripleyi</i>	Apiaceae	per	forb	native		1
<i>Datura</i>	<i>wrightii</i>	Solanaceae	per	shrub	native	1	
<i>Delphinium</i>	<i>parishii</i>	Ranunculaceae	per	forb	native	1	1
<i>Descurrainia</i>	<i>pinnata</i>	Brassicaceae		forb	native	1	1



Genus	Species	Family	Cycle	Form	Origin	Mojave	Great Basin
			ann				
<i>Distichlis</i>	<i>spicata</i>	Poaceae	per	grass	native	1	
<i>Draba</i>	<i>cuneifolia</i>	Brassicaceae	ann	forb	native	1	1
<i>Echinocereus</i>	<i>engelmannii</i>	Cactaceae	per	succ	native	1	1
<i>Echinocactus</i>	<i>polycephalus</i>	Cactaceae	per	succ	native	1	1
<i>Elymus</i>	<i>elymoides</i>	Poaceae	per	grass	native	1	1
<i>Enceliopsis</i>	<i>nudicaulis</i>	Asteraceae	ann	forb	native		1
<i>Encelia</i>	<i>virginensis</i>	Asteraceae	per	shrub	native	1	1
<i>Ephedra</i>	<i>nevadensis</i>	Ephedraceae	per	shrub	native	1	1
<i>Ephedra</i>	<i>viridis</i>	Ephedraceae	per	shrub	native	1	1
<i>Eriogonum</i>	<i>caespitosum</i>	Polygonaceae	per	forb	native	1	1
<i>Eriogonum</i>	<i>cernuum</i>	Polygonaceae	ann	forb	native	1	1
<i>Ericameria</i>	<i>cooperi</i>	Asteraceae	per	shrub	native	1	1
<i>Ericameria</i>	<i>nana</i>	Asteraceae	per	shrub	native		1
<i>Eriogonum</i>	<i>deflexum</i>	Polygonaceae	ann	forb	native	1	1
<i>Erigeron</i>	<i>eatonii</i>	Asteraceae	per	forb	native	1	1
<i>Eriastrum</i>	<i>eremicum</i>	Polemoniaceae	ann	forb	native	1	1
<i>Eriogonum</i>	<i>fasciculatum</i>	Polygonaceae	per	forb	native	1	1
<i>Eriogonum</i>	<i>inflatum</i>	Polygonaceae	per	forb	native	1	1
<i>Eriogonum</i>	<i>maculatum</i>	Polygonaceae	ann	forb	native	1	1
<i>Eriogonum</i>	<i>microthecum</i>	Polygonaceae	per	forb	native	1	1
<i>Eriogonum</i>	<i>nidularium</i>	Polygonaceae	ann	forb	native	1	1
<i>Eriophyllum</i>	<i>pringeli</i>	Asteraceae	ann	forb	native	1	
<i>Erioneuron</i>	<i>pulchellum</i>	Poaceae	per	grass	native	1	1
<i>Eriogonum</i>	<i>trichopes</i>	Polygonaceae	ann	forb	native	1	1
<i>Eschscholzia</i>	<i>glyptoserma</i>	Papaveraceae	ann	forb	native	1	1

<b>Genus</b>	<b>Species</b>	<b>Family</b>	<b>Cycle</b>	<b>Form</b>	<b>Origin</b>	<b>Mojave</b>	<b>Great Basin</b>
<i>Escobaria</i>	<i>vivipara</i>	Cactaceae	per	succ	native	1	1
<i>Gaura</i>	<i>coccinea</i>	Onagraceae	per	forb	native	1	
<i>Gilia</i>	<i>cana</i>	Polimoniaceae	ann	forb	native	1	1
<i>Gilia</i>	<i>aliquinata</i>	Polimoniaceae	ann	forb	native		1
<i>Gilia</i>	<i>scopularum</i>	Polimoniaceae	ann	forb	native	1	
<i>Glyptopleura</i>	<i>marginata</i>	Asteraceae	ann	forb	native	1	
<i>Glossopetalon</i>	<i>spinescens</i>	Crossosomataceae	per	shrub	native		1
<i>Grayia</i>	<i>spinosa</i>	Chenopodiaceae	per	shrub	native	1	1
<i>Guillenia</i>	<i>lasiophylla</i>	Brassicaceae	ann	forb	native	1	
<i>Hazardia</i>	<i>squarrosa</i>	Asteraceae	per	shrub	native		1
<i>Helimeris</i>	<i>multiflora</i>	Asteraceae	per	forb	native	1	1
<i>Hymenochlea</i>	<i>salsola</i>	Asteraceae	per	shrub	native	1	1
<i>Ipomopsis</i>	<i>polycladon</i>	Polimoniaceae	ann	forb	native	1	1
<i>Isocoma</i>	<i>acradenia</i>	Asteraceae	per	shrub	native	1	
<i>Juniperus</i>	<i>osteosperma</i>	Cupressaceae	per	tree	native		1
<i>Kochia</i>	<i>americana</i>	Chenopodiaceae	per	shrub	native	1	1
<i>Krameria</i>	<i>erecta</i>	Krameriaceae	per	shrub	native	1	
<i>Krascheninnikovia</i>	<i>lanata</i>	Chenopodiaceae	per	shrub	native	1	1
<i>Langloisia</i>	<i>setosissima</i>	Polimoniaceae	ann	forb	native	1	1
<i>Larrea</i>	<i>tridentata</i>	Zygphyllaceae	per	shrub	native	1	
<i>Lepidium</i>	<i>fremontii</i>	Brassicaceae	per	shrub	native	1	1
<i>Lepidium</i>	<i>lasiocarpum</i>	Brassicaceae	ann	forb	native	1	1
<i>Lepidium</i>	<i>montanum</i>	Brassicaceae	ann	forb	native		1
<i>Leptodactyon</i>	<i>pungens</i>	Polemoniaceae	per	forb	native	1	1
<i>Lesquerella</i>	<i>tenella</i>	Brassicaceae	ann	forb	native	1	
<i>Leymus</i>	<i>cinereus</i>	Poaceae		grass	native		1

Genus	Species	Family	Cycle	Form	Origin	Mojave	Great Basin
			per				
<i>Linum</i>	<i>lewisii</i>	Linaceae	per	forb	native		1
<i>Lupinus</i>	<i>shockleyi</i>	Fabaceae	ann	forb	native	1	
<i>Lupinus</i>	<i>brevicaulis</i>	Fabaceae	ann	forb	native	1	1
<i>Lycium</i>	<i>andersonii</i>	Solanaceae	per	shrub	native	1	1
<i>Macaeranthera</i>	<i>canescens</i>	Asteraceae	per	forb	native	1	1
<i>Malacothrix</i>	<i>glabrata</i>	Asteraceae	ann	forb	native	1	1
<i>Mentzelia</i>	<i>albicaulis</i>	Loasaceae	ann	forb	native	1	1
<i>Mentzelia</i>	<i>involuta</i>	Loasaceae	ann	forb	native	1	
<i>Mentzelia</i>	<i>multiflora</i>	Loasaceae	ann	forb	native	1	
<i>Mentzelia</i>	<i>tricuspis</i>	Loasaceae	ann	forb	native	1	
<i>Menodora</i>	<i>spinescens</i>	Oleaceae	per	shrub	native	1	1
<i>Mimulus</i>	<i>bigelovii</i>	Scrophulariaceae	ann	forb	native	1	1
<i>Mirabillis</i>	<i>alipes</i>	Nyctaginaceae	per	forb	native	1	1
<i>Mirabillis</i>	<i>bigelovii</i>	Nyctaginaceae	per	forb	native	1	1
<i>Mirabillis</i>	<i>multiflora</i>	Nyctaginaceae	per	forb	native		1
<i>Mimulus</i>	<i>parryi</i>	Scrophulariaceae	ann	forb	native	1	1
<i>Mirabillis</i>	<i>pudica</i>	Nyctaginaceae	per	forb	native	1	1
<i>Monoptilon</i>	<i>bellidiforme</i>	Asteraceae	ann	forb	native	1	
<i>Mulenbergia</i>	<i>porteri</i>	Poaceae	per	grass	native		1
<i>Nama</i>	<i>demissum</i>	Hydrophyllaceae	ann	forb	native	1	1
<i>Nicotiana</i>	<i>obtusifolia</i>	Solanaceae	ann	forb	native	1	1
<i>Oenothera</i>	<i>caespitosa</i>	Onagraceae	per	forb	native	1	1
<i>Oenothera</i>	<i>californica</i>	Onagraceae	per	forb	native	1	1
<i>Oenothera</i>	<i>deltoides</i>	Onagraceae	nn	forb	native	1	1
<i>Oenothera</i>	<i>primaveris</i>	Onagraceae	ann	forb	native	1	1

Genus	Species	Family	Cycle	Form	Origin	Mojave	Great Basin
<i>Opuntia</i>	<i>basilaris</i>	Cactaceae	per	succ	native	1	1
<i>Opuntia</i>	<i>echinocarpa</i>	Cactaceae	per	succ	native	1	1
<i>Opuntia</i>	<i>erinacea</i>	Cactaceae	per	succ	native	1	1
<i>Opuntia</i>	<i>ramosissima</i>	Cactaceae	per	succ	native	1	
<i>Orobanche</i>	<i>cooperi</i>	Orobanchaceae	per	para	native		1
<i>Oxetheca</i>	<i>perfoliata</i>	Polygonaceae	ann	forb	native	1	1
<i>Penstemon</i>	<i>acuminatus</i>	Scrophulariaceae	per	forb	native		1
<i>Penstemon</i>	<i>eatonii</i>	Scrophulariaceae	per	forb	native		1
<i>Penstemon</i>	<i>floridus</i>	Scrophulariaceae	per	forb	native		1
<i>Pectocarya</i>	<i>heterocarpa</i>	Boraginaceae	ann	forb	native	1	1
<i>Petalonyx</i>	<i>nitida</i>	Loasaceae	per	shrub	native	1	
<i>Penstemon</i>	<i>palmeri</i>	Scrophulariaceae	per	forb	native		1
<i>Peucephyllum</i>	<i>schottii</i>	Asteraceae	per	shrub	native	1	1
<i>Phacelia</i>	<i>bicolor</i>	Hydrophyllaceae	ann	forb	native		1
<i>Phorodendron</i>	<i>californicum</i>	Viscaceae	per	para	native	1	
<i>Phacelia</i>	<i>crenulata</i>	Hydrophyllaceae	ann	forb	native	1	1
<i>Phacelia</i>	<i>fremontii</i>	Hydrophyllaceae	ann	forb	native	1	
<i>Phacelia</i>	<i>ivesiana</i>	Hydrophyllaceae	ann	forb	native	1	
<i>Phlox</i>	<i>spp</i>	Polimoniaceae	per	forb	native	1	1
<i>Phlox</i>	<i>stansburyi</i>	Polimoniaceae	per	forb	native	1	1
<i>Physalis</i>	<i>crassifolia</i>	Solanaceae	per	shrub	native	1	
<i>Pinus</i>	<i>monophylla</i>	Pinaceae	per	tree	native		1
<i>Pleuraphis</i>	<i>jamesii</i>	Poaceae	per	grass	native		1
<i>Plantago</i>	<i>ovata</i>	Plantaginaceae	ann	forb	native	1	
<i>Pleuraphis</i>	<i>rigida</i>	Poaceae	per	grass	native		1

<b>Genus</b>	<b>Species</b>	<b>Family</b>	<b>Cycle</b>	<b>Form</b>	<b>Origin</b>	<b>Mojave</b>	<b>Great Basin</b>
<i>Poa</i>	<i>secunda</i>	Poaceae	per	grass	native	1	1
<i>Prenanthes</i>	<i>exigua</i>	Brassicaceae	ann	forb	native	1	
<i>Prunus</i>	<i>fasciculata</i>	Rosaceae	per	shrub	native	1	1
<i>Prosopis</i>	<i>glandulosa</i>	Fabaceae	per	tree	native	1	
<i>Prosopis</i>	<i>pubescens</i>	Fabaceae	per	tree	native	1	
<i>Psilostrophe</i>	<i>cooperi</i>	Asteraceae	ann	forb	native	1	
<i>Psoralea</i>	<i>fremontii</i>	Fabaceae	per	shrub	native	1	1
<i>Psoralea</i>	<i>polydenius</i>	Fabaceae	per	shrub	native	1	1
<i>Psoralea</i>	<i>ramosissima</i>	Asteraceae	ann	forb	native	1	1
<i>Purshia</i>	<i>mexicana</i>	Rosaceae	per	shrub	native	1	1
<i>Rafinesquia</i>	<i>neomexicana</i>	Asteraceae	ann	forb	native	1	
<i>Rumex</i>	<i>hymenosephalus</i>	Polygonaceae	per	forb	native	1	1
<i>Salvia</i>	<i>clevelandii</i>	Lamiaceae	per	shrub	native	1	
<i>Salvia</i>	<i>columabriae</i>	Lamiaceae	ann	forb	native	1	
<i>Salvia</i>	<i>dorrii</i>	Lamiaceae	per	shrub	native	1	
<i>Salvia</i>	<i>mexicana</i>	Lamiaceae	per	shrub	native	1	1
<i>Sanguisorba</i>	<i>occidentalis</i>	Rosaceae	per	forb	native		1
<i>Sarcobatus</i>	<i>vermiculatus</i>	Chenopodiaceae	per	shrub	native	1	1
<i>Senecio</i>	<i>flaccidus</i>	Asteraceae	per	forb	native	1	1
<i>Senecio</i>	<i>multilobatus</i>	Asteraceae	per	forb	native		1
<i>Selinocarpus</i>	<i>nevadensis</i>	Nyctaginaceae	ann	forb	native	1	
<i>Sphaeralcea</i>	<i>ambigua</i>	Malvaceae	per	forb	native	1	1
<i>Sporobolus</i>	<i>airoides</i>	Poaceae	per	grass	native	1	
<i>Sporobolus</i>	<i>cryptandrus</i>	Poaceae	per	grass	native		1
<i>Sporobolus</i>	<i>flexuosus</i>	Poaceae	per	grass	native	1	1
<i>Sphaeralcea</i>	<i>grossulariifolia</i>	Malvaceae		forb	native	1	

Genus	Species	Family	Cycle	Form	Origin	Mojave	Great Basin
			per				
<i>Streptanthus</i>	<i>cordatus</i>	Brassicaceae	ann	forb	native		1
<i>Stanleya</i>	<i>elata</i>	Brassicaceae	per	forb	native	1	1
<i>Stephanomeria</i>	<i>exigua</i>	Asteraceae	ann	forb	native	1	1
<i>Streptanthella</i>	<i>longirostris</i>	Brassicaceae	ann	forb	native	1	1
<i>Stephanomeria</i>	<i>pauciflora</i>	Asteraceae	ann	forb	native	1	1
<i>Stanleya</i>	<i>pinnata</i>	Brassicaceae	per	forb	native	1	1
<i>Stephanomeria</i>	<i>tenuifolia</i>	Asteraceae	per	forb	native	1	
<i>Sueda</i>	<i>moquinii</i>	Chenopodiaceae	per	shrub	native	1	1
<i>Swertia</i>	<i>albomarginata</i>	Gentianaceae	per	forb	native		1
<i>Symphoricarpus</i>	<i>longiflorus</i>	Caprifoliaceae	per	shrub	native	1	1
<i>Tetradymia</i>	<i>axillaris</i>	Asteraceae	per	shrub	native	1	1
<i>Tetradymia</i>	<i>canescens</i>	Asteraceae	per	shrub	native	1	
<i>Tetradymia</i>	<i>glabrata</i>	Asteraceae	per	shrub	native	1	1
<i>Thamnosia</i>	<i>montana</i>	Rutaceae	per	shrub	native	1	
<i>Thymophylla</i>	<i>pentachaeta</i>	Asteraceae	per	shrub	native	1	
<i>Tiquilia</i>	<i>nuttallii</i>	Boraginaceae	ann	forb	native		1
<i>Vulpia</i>	<i>octoflora</i>	Poaceae	ann	grass	native	1	1
<i>Xylorhiza</i>	<i>tortifolia</i>	Asteraceae	per	forb	native	1	1
<i>Yucca</i>	<i>baccata</i>	Liliaceae	per	succ	native	1	1
<i>Yucca</i>	<i>brevifolia</i>	Liliaceae	per	succ	native	1	1
<i>Yucca</i>	<i>schidigera</i>	Liliaceae	per	succ	native	1	
INTRODUCED SPECIES							
<i>Agropyron</i>	<i>desertorum</i>	Poaceae	per	grass	exotic		1
<i>Brassica</i>	<i>tournefortii</i>	Brassicaceae	ann	forb	exotic	1	1
<i>Bromus</i>	<i>madritensis</i>	Poaceae	ann	grass	exotic	1	1

<b>Genus</b>	<b>Species</b>	<b>Family</b>	<b>Cycle</b>	<b>Form</b>	<b>Origin</b>	<b>Mojave</b>	<b>Great Basin</b>
<i>Bromus</i>	<i>tectorum</i>	Poaceae	ann	grass	exotic	1	1
<i>Chenopodium</i>	<i>album</i>	Chenopodiaceae	ann	forb	exotic	1	1
<i>Erodium</i>	<i>cicutarium</i>	Geraniaceae	ann	forb	exotic	1	1
<i>Halogeton</i>	<i>glometatus</i>	Chenopodiaceae	ann	forb	exotic	1	1
<i>Salsola</i>	<i>iberica</i>	Chenopodiaceae	ann	forb	exotic	1	1
<i>Schismus</i>	<i>arabicus</i>	Poaceae	ann	grass	exotic	1	
<i>Sisymbrium</i>	<i>altissimum</i>	Brassicaceae	ann	forb	exotic	1	1
Total Species	234	Shared Species		136			
						192	177
Introduced Species	10	Shared Species		8			
						9	9

APPENDIX C

Memorandum of Agreement Between the Bureau of Land Management, Caliente Field Office,  
Department of the Air Force and the Nevada State Historic Preservation Officer  
Regarding the Lincoln County Power District's Project 801



APPENDIX D

**RISK ASSESSMENT FOR NOXIOUS & INVASIVE WEEDS**  
**LCPD Transmission Line**

On June 2, 2010 a Noxious & Invasive Weed Risk Assessment was completed for the LCPD Transmission Line project in Lincoln County, NV. Implementation of the proposed action would result in granting the right-of-way and LCPD constructing and operating a (46.5 miles (mi)) 138 kilovolt (kV) overhead transmission line from the permitted Scott Substation (N-83047) located on private land in T12S R63E Sections 6 and 7 to the existing Delamar Switchyard (N-12182) which will be expanded to become the proposed Delamar Substation, located on BLM land in T5S R64E Sections 16 and 17. Existing access roads would be used to the extent possible with construction of stub roads to install structures. Where the route leaves the designated utility corridor, a new road will be required. Location of this road was coordinated with other entities looking to also by-pass the corridor constriction. However, to the extent practicable, overland travel between utility poles will require a single road, rather than construction of additional access roads. This new long road will be maintained by LCPD for the purpose of transmission line maintenance work.

No field weed surveys were completed for this project. Instead the Ely District weed inventory data was consulted. There are currently no known infestations within the project area. The following species are found along roads and drainages leading to the project area:

<i>Cardaria draba</i>	hoary cress
<i>Tamarix spp.</i>	salt cedar

The following weed species were documented as found in Mojave and Great Basin communities during the biological resource survey for the proposed Lincoln County transmission line project:

<i>Brassica tournefortii</i>	African mustard
<i>Bromus madritensis</i>	compact brome
<i>Bromus tectorum</i>	cheatgrass
<i>Chenopodium album</i>	lambsquarters
<i>Erodium cicutarium</i>	redstem stork's bill
<i>Halogeton glometatus</i>	halogeton
<i>Salsola iberica</i>	Russian thistle
<i>Schismus arabicus</i>	Arabian schismus
<i>Sisymbrium altissimum</i>	tall tumbledustard

**Factor 1 assesses the likelihood of noxious/invasive weed species spreading to the project area.**

None (0)	Noxious/invasive weed species are not located within or adjacent to the project area. Project activity is not likely to result in the establishment of noxious/invasive weed species in the project area.
Low (1-3)	Noxious/invasive weed species are present in the areas adjacent to but not within the project area. Project activities can be implemented and prevent the spread of noxious/invasive weeds into the project area.
Moderate (4-7)	Noxious/invasive weed species located immediately adjacent to or within the project area. Project activities are likely to result in some areas becoming infested with noxious/invasive weed

	species even when preventative management actions are followed. Control measures are essential to prevent the spread of noxious/invasive weeds within the project area.
High (8-10)	Heavy infestations of noxious/invasive weeds are located within or immediately adjacent to the project area. Project activities, even with preventative management actions, are likely to result in the establishment and spread of noxious/invasive weeds on disturbed sites throughout much of the project area.

For this project, the factor rates as High (8) at the present time. The ground disturbance, heavy machinery, and noxious and invasive species associated with this project make it likely that new infestations would occur within the project area.

**Factor 2 assesses the consequences of noxious/invasive weed establishment in the project area.**

Low to Nonexistent (1-3)	None. No cumulative effects expected.
Moderate (4-7)	Possible adverse effects on site and possible expansion of infestation within the project area. Cumulative effects on native plant communities are likely but limited.
High (8-10)	Obvious adverse effects within the project area and probable expansion of noxious/invasive weed infestations to areas outside the project area. Adverse cumulative effects on native plant communities are probable.

This project rates as Moderate (7) at the present time. The project area is currently considered to be weed-free, however there are numerous weed infestations nearby and the highway that the line crosses has several weed infestation that could spread due to vehicles traveling in the area. If new weed infestations establish within the project area this would have possible adverse impact the surrounding native plant communities. Also, an increase of red brome could increase fire frequency with increased impacts to native vegetation.

**The Risk Rating is obtained by multiplying Factor 1 by Factor 2.**

None (0)	Proceed as planned.
Low (1-10)	Proceed as planned. Initiate control treatment on noxious/invasive weed populations that get established in the area.
Moderate (11-49)	Develop preventative management measures for the proposed project to reduce the risk of introduction of spread of noxious/invasive weeds into the area. Preventative management measures should include modifying the project to include seeding the area to occupy disturbed sites with desirable species. Monitor the area for at least 3 consecutive years and provide for control of newly established populations of noxious/invasive weeds and follow-up treatment for previously treated infestations.
High (50-100)	Project must be modified to reduce risk level through preventative management measures, including seeding with desirable species to occupy disturbed site and controlling existing infestations of noxious/invasive weeds prior to project activity. Project must provide at least 5 consecutive years of monitoring. Projects must also provide for control of newly established populations of noxious/invasive weeds and follow-up treatment for previously treated infestations.

For this project, the Risk Rating is High (56). This indicates that the project can proceed as planned as long as the following measures are followed:

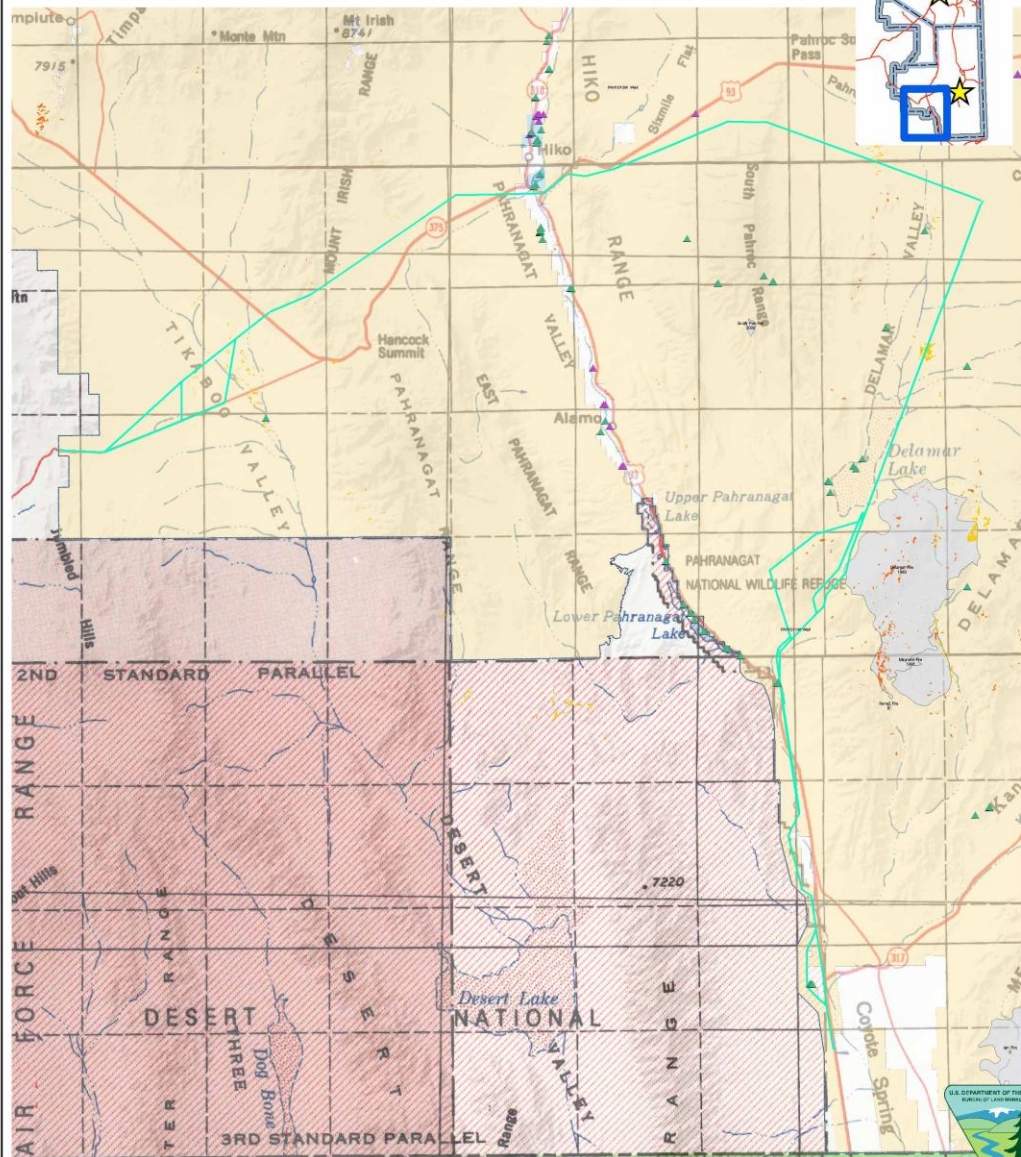
- Prior to entering public lands, the contractor, operator, or permit holder will provide information and training regarding noxious weed management and identification to all personnel who will be affiliated with the implementation and maintenance phases of the project. The importance of preventing the spread of weeds to uninfested areas and importance of controlling existing populations of weeds will be explained.
- Monitoring will be conducted for a period no shorter than the life of the permit or until bond release and monitoring reports will be provided to the Ely District Office. If the presence and/or spread of noxious weeds is noted, appropriated weed control procedures will be determined in consultation with Ely District Office personnel and will be in compliance with



LCPD TICKAPOO POWERLINE PROJECT  
DOCUMENTED NOXIOUS AND NON NATIVE INVASIVE WEEDS

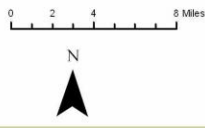


BLM



Ely District Office

- Legend**
- LCPD\_linear\_location
  - Invasive Annual and Biennial Forbland
  - Invasive Annual Grassland
  - Invasive Perennial Grassland
  - Past Large Fires
  - BLM
  - FS
  - State of Nevada
  - Private
  - ▲ SALT CEDAR
  - ▲ WHITETOPIHOARY CRESS



No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual use or aggregate use with other data.

Inventoried in 2007  
Map Produced by: EYDO Weed Staff  
6/1/2010



The Tickaboo transmission line enters the Caliente Field Office boundary at 2700 feet in elevation near Coyote Springs, and reaches a peak elevation of 5900 feet above sea level as it crosses the Irish Mountain Range. The currently proposed route crosses 20 different ecological communities and 15 unique soil types. The diversity of the area is attributed to wide ranging elevations and geology of the Mojave-Great Basin ecotone. Due to the aridity of the environment, restoration of these soils is extremely difficult and often unsuccessful. Some communities such as blackbrush (*Coleogyne ramosissima*), are considered a paleoendemic species, and are not restorable due to changes in climate over the last several hundred years. Economically speaking, minimizing disturbance will significantly reduce costs and restoration needs.

Due to diverse communities and the adverse environment, a wide range of seed mixes is needed for successful restoration of disturbed sites. In the case of paleoendemic communities, the use of desirable non-native species may be required to reduce invasion and effects of non-desirable invasive non-native species. In all cases, it is recommended selecting seed by matching an ecotype that grows under conditions similar to those where it is to be planted.

### **Blackbrush**

There are approximately 111 acres of blackbrush (*Coleogyne ramosissima*) communities found in portions of the northern third and southern third of the proposed route. Blackbrush communities are often monotypic, but do contain minor components of desert needlegrass (***Achnatherum speciosum***) and globemallow (*Spaeralcea ambigua*), as well as other small statured native plants.

These areas will prove to be the most challenging for restoration efforts. Once removed, blackbrush will not return. Seeding with forage kochia (*Bassia prostrata*) and sideoats grama (*Boutiloua curtipendula*) has proven successful in similar soils in southwestern Utah. The primary concern will be the invasion of non-desirable alien plants which will prevent native species re-occupy the site over time. Having desirable species established on the site will greatly reduce the presence of non-desirable species. The most economical and ecological viable measure is to minimize disturbance of these soils.

Anderson, Michelle D. 2001. *Coleogyne ramosissima*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2013, September 6].

### **Creosote bush**

Approximately 204 acres of the proposed project area is occupied by creosote (*Larrea tridentata*) communities. Creosote is the dominant shrub with an understory of Indian ricegrass (*Achnatherum hymenoides*) and big galleta (*Pleuraphis rigida*), with trace amounts of other native forbs. It is sometimes co-dominant with white bursage (*Ambrosia dumosa*). Creosote has been shown to be difficult to establish by seeding, but has proven successful in out-plantings (grown in a nursery, and then planted on site). *Ambrosia dumosa* has proven to be successfully established from seeding.

Marshall, K. Anna. 1995. *Larrea tridentata*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2013, September 6].

### **Greasewood**

Greasewood (*Sarcobatus vermiculatus*) communities only occupy five acres of the proposed project area. Greasewood communities typically occur in saline soils with high water tables. Alkali sacaton (*Sporobolus airoides*) and basin wildrye (*Leymus cinereous*) are associated with greasewood communities. There is not a lot of literature available on the planting of greasewood, but it is known to resprout vegetatively after fire. In the case of plants that exhibit an ability to resprout vegetatively, the best approach may be to use a drive and crush technique which will allow the plant to resprout after disturbance.

Anderson, Michelle D. 2004. *Sarcobatus vermiculatus*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/>.

### **Winterfat (whitesage)**

Winterfat (*Krascheninnikovia lanata*) communities occupy approximately 117 acres of the proposed project area. Soils occupied by winterfat are especially susceptible to compaction and erosion, and have proven difficult to restore. However, there is a considerable amount of knowledge regarding the restoration of winterfat areas. An important component in maintaining site stability is perennial grasses, such as Indian ricegrass (*Achnatherum hymenoides*), big galleta (*Pleuraphis rigida*), and squirrel tail (*Eleocharis acicularis*). Globemallow (*Spaeralcea ambigua*) is also commonly associated with winterfat in the Mojave Desert.

With considerable disturbance, winterfat, fourwing saltbush, and Indian ricegrass decrease. With further site degradation, halogeton, Russian thistle and annual mustards invade the interspace areas between shrubs. These annual species, particularly halogeton, can become dominant on disturbed sites. The soils of this site are susceptible to wind erosion.

Carey, Jennifer H. 1995. *Krascheninnikovia lanata*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2013, September 6].

### **Spiny hopsage**

Spiny hopsage (*Grayia spinosus*) communities occupy approximately 527 acres of the proposed project area. Plants typically respond to disturbances to the top of the plant by sprouting from the root crown. In some cases, plants have been noted to re-sprout several years after disturbance from plants that were considered dead. Seeding using spiny hopsage may be difficult in the Mojave Desert if not using an ecotype from the region. The conditions in the Mojave Desert region favor intact seeds that have bracts, which are often removed by commercial seed distributors to reduce shipping costs and volume.

Other species associated with this site include Indian ricegrass (*Achnatherum hymenoides*), desert needlegrass (***Achnatherum speciosum***), **Nevada ephedra (*Ephedra nevadensis*)**, and **fourwing saltbush (*Atriplex canescens*)**.

This site, when in deteriorated condition, subjected to wildfire or other disturbance, may become a nearly solid stand of horsebrush, snakeweed, and rabbitbrush with annuals or galleta occurring within the shrub interspaces.

Tirmenstein, D. A. 1999. *Grayia spinosa*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [ 2013, September 6].

### **Green ephedra**

Green ephedra (*Ephedra viridis*) occupies approximately 203 acres of the proposed project area. Green ephedra is often used in the reclamation and restoration of damaged lands because it establishes readily through direct seeding, transplants, and stem cuttings and provides soil protection from wind and water.

Species associated with green ephedra include needle and thread grass (*Hesperostipa comata*), desert needlegrass (**Achnatherum speciosum**), **Mojave buckwheat** (*Eriogonum fasciculatum* Benth. var. *polifolium*), and desert snowberry (*Symphoricarpos longiflorus*).

Annual species such as some *Eriogonum* spp. are especially useful on disturbed sites as they tend to establish rapidly and protect the site while perennials re-establish.

Anderson, Michelle D. 2001. *Ephedra viridis*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [ 2013, September 6].

### **Black sagebrush**

Black sagebrush (*Artemisia nova*) occupies approximately 33 acres of the proposed project area. This short statured shrub is known to establish well from seed drilling, but it is suggested to be planted in alternate rows from grasses. Grasses and other rapid establishing species can hinder black sagebrush establishment. This may be of special concern as the area is likely to be invaded by invasive annuals which may also impact seeded species establishment.

Other species associated with this site is primarily Indian ricegrass (*Achnatherum hymenoides*) with a minor component of needle and thread grass (*Hesperostipa comata*), Globemallow (*Spaeralcea ambigua*), and **Nevada ephedra** (***Ephedra nevadensis***).

Fryer, Janet L. 2009. *Artemisia nova*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [ 2013, September 6].

### **Wyoming sagebrush**

Wyoming big sagebrush (*Artemisia tridentate* ssp. *wyomingensis*) occupies approximately 142 acres of the proposed project area. Wyoming sagebrush is known to establish well from seed and is often used in rehabilitation and stabilization of disturbed areas. It has been shown to establish well in drier sites where other coexisting shrub species do not.

Wyoming big sagebrush codominates with bluebunch wheatgrass and bottlebrush squirreltail. Other associates common in Wyoming big sagebrush communities of eastern California and western Nevada include fourwing saltbush (*Atriplex canescens*), rubber rabbitbrush (*Chrysothamnus nauseosus*), blackbrush (*Coleogyne ramosissima*), California brome (*Bromus carinatus*), and needle-and-thread grass (*Hesperostipe comata*).



Howard, Janet L. 1999. *Artemisia tridentata* subsp. *wyomingensis*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [ 2013, September 6].

## Shadescale

Shadescale (*Atriplex confertifolia*) occupies approximately 182 acres of the proposed project area. Other species associated with this site include Indian ricegrass (*Achnatherum hymenoides*), big galleta (*Pleuraphis rigida*), desert needlegrass (***Achnatherum speciosum***), bud sagebrush (*Picrothamnus desertorum*), **and** white burrsage (*Ambrosia dumosa*).

Due to the complex mechanisms behind shadscale seed dormancy, revegetation through seed is usually unsuccessful. Studies have documented the difficulty in breaking seed dormancy. Results from a comprehensive review of literature suggest a staggered germination pattern resulting in increased probability of survival under specific germination conditions. However, dormancy mechanisms controlling germination patterns are still unknown to an "agronomic" level of predictability. Mechanical scarification increased germination by 15% within growth chambers. Some studies concluded recommendations to improve artificial regeneration on rangelands:

- Choose similar source and planting sites
- Use high fill seed lots ( $\geq 50\%$ ) or consider fill % when calculating planting rate; fresh seed shows greater germination the 2nd spring
- Plant in early fall to receive beneficial effects of natural leaching, oxidative processes, and winter chilling

Scientists from the USDA were successful revegetating disturbed areas of Nellis Air Force Range, Nevada with seeded shadscale. Seeding resulted in 1 plant/m<sup>2</sup> after 2 years (Hall et al 1999).

Establishment of shadscale from container stock provides the highest probability for successful revegetation. Cuttings from juvenile plants readily propagate, but it is recommended taking cuttings in fall or early spring and placing in a medium with good aeration. High

humidity must be maintained during propagation. The rooting medium should allow for good aeration and drainage and still maintain relatively high water-holding capacity.

Shadscale establishes well from transplants when put out in the early spring, after 6 weeks of high soil moisture. McKell has shown success revegetating with container grown shadscale transplants. Seed-grown stock is available commercially.

Hall, Derek B.; Anderson, David C. 1999. Reclaiming disturbed land using supplemental irrigation in the Great Basin/Mojave Desert transition region after contaminated soils remediation: the Double Tracks Project. In: McArthur, E. Durant; Ostler, W. Kent; Wambolt, Carl L., compilers. Proceedings: shrubland ecotones; 1998 August 12-14; Ephraim, UT. Proceedings RMRS-P-11. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 260-265. [36052]

Simonin, Kevin A. 2001. *Atriplex confertifolia*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [ 2013, September 6 ].

### **Fourwing saltbush**

Approximately 89 acres of the proposed project area is occupied by fourwing saltbush (*Atriplex canescens*). Fourwing saltbush has proven to establish well from seed and is often used in restoration of rangeland and riparian improvement and reclamation projects, including burned area recovery. Fourwing saltbush has also shown to resprout after destruction to the top of the plant. Drive and crush methods of site preparation may allow fourwing and other shrub species to recover with passive efforts if the period of disturbance is kept to a minimum.

Other species associated with this site include include Indian ricegrass (*Achnatherum hymenoides*), squirreltail (*Elymus elymoides*), desert needlegrass (***Achnatherum speciosum***), Globemallow (*Spaeralcea ambigua*), and spiny menodora (*Menodora spinescens*).

Howard, Janet L. 2003. *Atriplex canescens*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station,

Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [ 2013, September 9].

### **Yucca and cactus**

All plants of the cactus family cactaceae and all plants of the genus yucca are protected under NRS 527.060-.120, which prohibits destruction of these plants without “written permission from the legal owner...specifying locality by legal description and number of plants to be removed or possessed” (NRS 527.100).

All salvageable cacti and yucca will be moved out of the area of disturbance and permanently transplanted adjacent to the disturbed area. Previous experience has shown that transplanting plants twice through the use of temporary planting sites increases mortality and greatly reduces the effectiveness of salvage efforts. Therefore, by only transplanting once adjacent to the disturbance, it is expected that survivability will increase and the plant will then provide a seed source for the disturbed area.

### **Pre-construction**

Pre-construction actions for cacti and yucca include the following measures:

*Preserve in Place:* This activity includes the preservation of existing vegetation to the degree possible when screening of the proposed project is desired to reduce visual impacts and/or mature plant specimens are present to enhance habitat recovery and quality. Preservation of specimens may be requested by the BLM or recommended by the Construction Contractor on a case-by-case basis. Eligible specimens would include mature trees, succulents, or diverse vegetation groupings that would provide seed and a microclimate for seedling germination. Flagging or fencing of specimens (e.g. Joshua trees) to be preserved should be done before ground is disturbed. The Construction Contractor will ensure construction activities will not disturb the specimens. If it is determined that construction activity would be detrimental to the plant then salvage should be considered if the specimen meets the qualifications defined in plant salvage.

*Plant Salvage:* Succulent plants with potential to be impacted by construction will be considered for salvage if the following criteria are satisfied: 1) the plant is currently in a healthy condition as determined by the Restoration Contractor, 2) yucca and Joshua trees must be greater than 1 foot but less than 6 feet tall, and 3) cacti must be greater than 1 foot tall or 1 foot wide (including prickly pear). Cholla greater than 3 feet tall and 3 feet wide will not be salvaged.

Any succulent that cannot be accessed safely due to steep slopes or rocky areas will not be salvaged. Succulents that will not be salvaged will be broken up and windrowed as vertical mulch.

The Construction Contractor shall identify with flagging tape all succulents that qualify for salvage, marking the north orientation for barrel cactus only. A list describing quantity and species of plants to be salvaged will be forwarded by the Construction Contractor to the BLM upon completion of restoration activities. Salvaged plants will be transplanted out of harm's way in designated areas within the project area by the Construction or Restoration Contractor.

Plants salvaged from areas of permanent disturbance will only be moved once, and replanted as described under Post-Construction Actions. All succulents, approved by the Compliance Inspection Contractor for salvage, will be dug bare root and replanted within 24 hours. All barrel cacti and yucca will be planted with the same north orientation as they originally grew. All yucca stems will be thoroughly watered initially and DriWater applied (completely buried) at a quantity of one quart for every foot of height. A one-time watering of transplanted plants approximately 15 days after transplanting will occur to remove or minimize any air pockets in the soil and assure proper soil stabilization. Care will be taken to properly stabilize all soil around roots of plants that are directly transplanted in the field.

#### *Windrow Vertical Mulch*

Materials including dead plants, cut plants, and rocks are to be temporarily set aside during project site preparation so that they may be shredded or otherwise placed on the soil surface (post-construction) to increase fertility, provide microclimates for seed to germinate, and stabilize soil. This will include any succulents that did not meet salvage requirements previously discussed. In some vegetation communities where mulch density would be very high, removal of excess mulch off site should be arranged after replacement quantities have been determined. Vertical mulch temporary storage areas should be located near the project area.

#### **Post-construction**

##### *Replant Salvage*

Succulent plants removed from permanent and temporary use areas will also be located in pre-approved locations adjacent to the original location and similarly oriented. All salvaged plant material will be replanted in natural patterns. Large yucca will be carefully removed from the ground, taking care not to damage stems, roots, or the base of the plant, and be re-planted in groups of three or more for a natural effect. A hole at least 2 feet deep and 3 feet wide will be

prepared for each single stem yucca. Multiple stem plantings will be accordingly larger to accommodate the stem size. The hole will be filled with water and allowed to drain once. The hole will then be filled with water again and then back-filled with soil to form a muddy matrix to about 18 inches from the surface. DriWater will be applied (completely buried) at a quantity of one quart for every foot in height. The yucca will then be planted and soil tamped around the plant so that there are no air pockets. At the surface a “watering well” will be formed around the plant. Afterward, the plant will be watered thoroughly again. Yuccas will be rewatered approximately 3 to 4 weeks after transplanting. All small cacti will be watered thoroughly one time upon being transplanted in the field.

Every effort will be made to transplant the material at the time of year (early spring or fall) when the plants are least likely to experience environmental stress. The plants will be adequately maintained for one full year to ensure protective measures are intact. If salvaged plants are located in an area susceptible to off-highway vehicle access, the closure of access roads may be recommended in specific areas, as approved by BLM. Replacement of salvaged succulents may be strategically placed or concentrated in certain areas to deter access. A combination of plants, snags, or rocks may be used in these areas, where appropriate, as directed by the BLM. Transplanting and maintenance of plant material will be done such that an agreed upon percent survivorship (between BLM and the proponent) is achieved.

#### *Vertical mulch*

Vertical mulch is not entirely in contact with the soil surface, rather parts of the mulch rise above the surface. Removed and stored trees, shrubs, and other plants are the sources of vertical mulch. For areas that have been cleared, vegetation that was windrowed to outside the disturbance boundary shall be replaced back onto the site. Mulch should be placed randomly.

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