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Eastern Nevada Transmission Project

APPLICANT
Silver State Energy Association

GENERAL LOCATION
Clark County, Nevada

BLM CASE FILE SERIAL NUMBER
N-086357

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Acronyms and Abbreviations

AAQS	Ambient Air Quality Standards
AC	Alternating Current
ACEC	Area of Critical Environmental Concern
ACSR	Aluminum Conductor Steel Reinforced
AZGFD	Arizona Game and Fish Department
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
bgs	below ground surface
BLM	Bureau of Land Management
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information Systems
CFR	Code of Federal Regulations
DAQEM	Clark County Department of Air Quality and Environmental Management
DC	Direct Current
DOE	Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Field
EPA	Environmental Protection Agency
EPM	Environmental Protection Measures
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FLPMA	Federal Land Policy Management Act
GLO	General Land Office
I	Interstate
ISA	Instant Study Area
KOP	Key Observation Point
kV	kilovolt

LCCRDA	Lincoln County Conservation, Recreation, and Development Act
µg/m^3	micrograms per cubic meter
mG	milligauss
MP	Milepost
MSHCP	Multiple Species Habitat Conservation Plan
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NDF	Nevada Division of Forestry
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
NNHP	Nevada Natural Heritage Program
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRA	National Recreation Area
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NWR	National Wildlife Refuge
OHV	Off-Highway Vehicle
ON Line	One Nevada Transmission Line
ppb	parts per billion
ppm	parts per million
PFYC	Potential Fossil Yield Classification
PM_{10}	Particulate Matter less than 10 microns
ROU	Right-of-Use
ROW	Right-of-Way
RMP	Resource Management Plan
ROD	Record of Decision

SEZ	Solar Energy Zone
SLRU	Sensitivity Level Rating Unit
SNWA	Southern Nevada Water Authority
SR	State Route
SSEA	Silver State Energy Association
SWIP	Southwest Intertie Project
SWPPP	Storm Water Pollution Prevention
Plan USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WEG	Wind Erodibility Group

CHAPTER 1 - PURPOSE AND NEED

1.1 Introduction

The Silver State Energy Association (SSEA or Applicant) has filed Applications for Transportation and Utility Systems and Facilities on Federal Lands (SF-299) with the Bureau of Land Management (BLM) Las Vegas Field Office and Bureau of Reclamation (Reclamation) Lower Colorado Region for the construction, operation, and maintenance of two separate 230-kilovolt (kV) overhead transmission lines in Clark County, Nevada. The proposed Project, called the Eastern Nevada Transmission Project (Project or Proposed Action), would add infrastructure to support SSEA's projected electrical load obligations. The SSEA is a joint-powers association made up of the City of Boulder City, Lincoln County Power District No. 1, Overton Power District No. 5, Southern Nevada Water Authority (SNWA), and the Colorado River Commission of Nevada.

As the lead federal agency, the BLM determined that an Environmental Assessment (EA) was required to identify potential resource impacts, pursuant to the National Environmental Policy Act (NEPA) of 1969. Reclamation is a cooperating agency. The EA provides a site specific analysis of potential impacts to resources within the BLM's and Reclamation's jurisdiction that could result from the implementation of any of the possible action alternatives meeting the Project purpose and need, compared with the possible effects of no action. If the BLM and Reclamation determine that "no significant impact" would result from the Preferred Alternative, each agency would issue its own Finding of No Significant Impact (FONSI). BLM would approve the project by signing the FONSI and issuing a Right-of-Way Grant. Reclamation's approval of the project would be granted by signing the FONSI and by the execution of a Right of Use (ROU) authorization.

1.2 Project Background

The SSEA proposes to construct, operate, and maintain a new 230-kV overhead transmission line from the Gemmill substation south of Coyote Springs in Clark County, Nevada to the Tortoise substation near Moapa in Clark County, Nevada. The location of the proposed Gemmill to Tortoise right-of-way (ROW) corridor is shown on Figure 1-1. A new 230-kV overhead transmission line would also be constructed from the Silverhawk substation located in northeast Las Vegas Valley in an unincorporated area of Clark County, Nevada to the Newport substation located in southeast Las Vegas Valley in the City of Henderson, Nevada. The location of the proposed Silverhawk to Newport ROW corridor and alternative is shown on Figure 1-2. SSEA has identified route alignment alternatives that follow existing utility corridors as feasible based on land management constraints. The proposed Project and alternative routes are approximately 54 to 56 miles long. Approximately 47 miles occur on federal land administered by the BLM and 5 miles on federal land administered by Reclamation, mainly within existing utility corridors.

The in-service date for the proposed Project is 2018-2020, depending on the acquisition of required permits and approvals. The proposed Project and associated facilities would take approximately 24 months to construct. The proposed Project or alternatives consist of the following:

- An approximately 33 mile-long 230-kV overhead double-circuit transmission line from the Silverhawk substation to the Newport substation.
- An approximately 21 mile-long 230-kV overhead single-circuit transmission line from the Gemmill substation to the Tortoise substation.
- Construction and operation of new or improved access roads to each structure along the 230-kV transmission lines.
- Short-term (temporary) work areas associated with construction activities

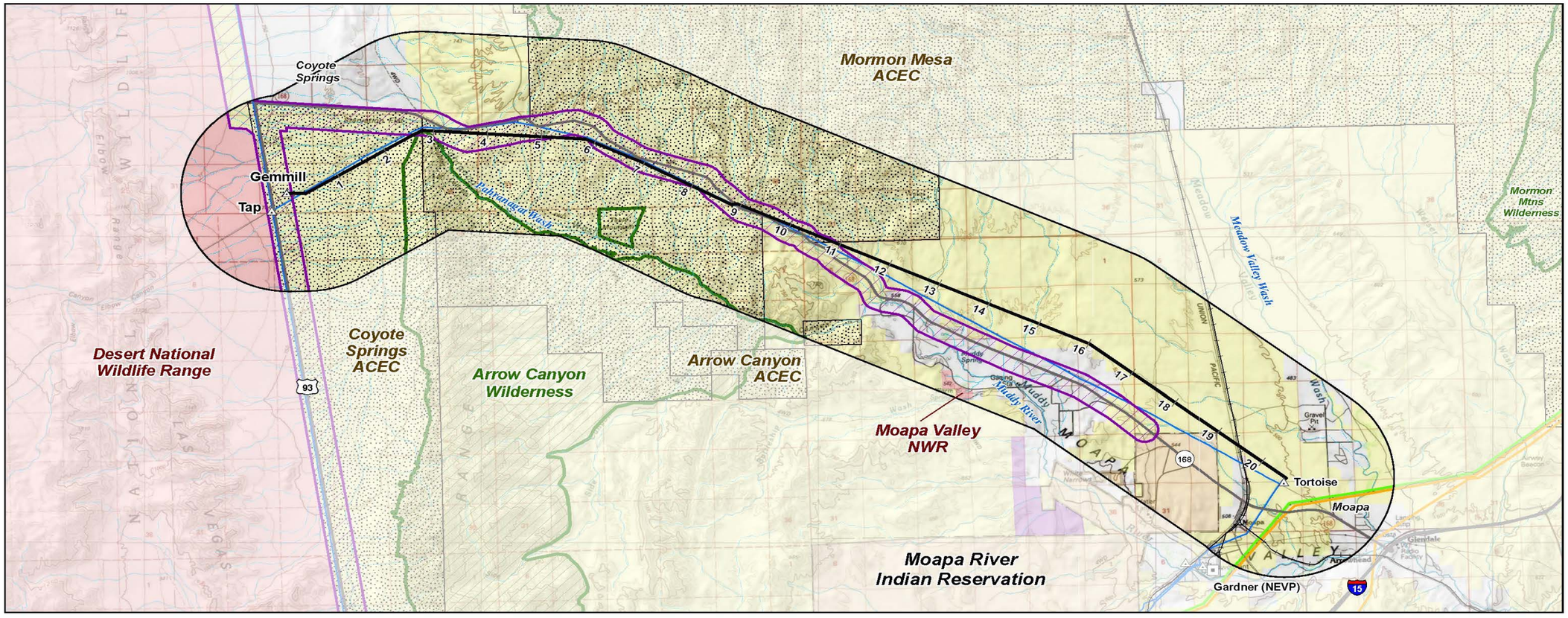
Both permanent and temporary land rights are required for the transmission lines, access roads, and temporary work sites (e.g., ROW grants, easements, license agreements, and fee simple). A ROW/ROU grant for a width of 130 feet has been requested to safely construct, operate, and maintain the transmission lines.

1.3 Purpose and Need for Action

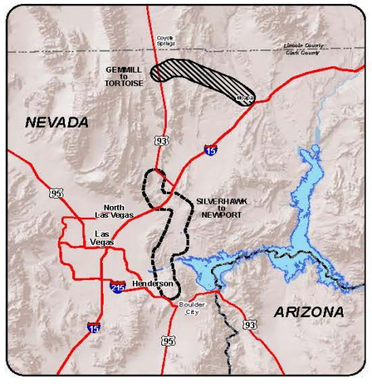
The purpose of the action is to provide the SSEA with legal access across federal land for the construction, operation, and maintenance of electrical transmission lines. Members of the SSEA provide power to residential and commercial customers in Lincoln County, northeastern Clark County, Boulder City, and water system operations by SNWA. SSEA desires to install transmission lines connecting existing major electrical substation hubs of SSEA members to allow for the transport of available electrical resources to meet projected demands, improve system reliability, provide operational flexibility, and to potentially allow for the interconnection of new renewable resources in the future.

The BLM's need for action is defined under Title V of the Federal Land Management Act of 1976 (FLPMA). FLPMA gives the Secretary of the Interior authorization to grant, issue, or renew rights-of-way for systems for generation, transmission, and distribution of electric energy (43 United States Code [USC] § 1761). The BLM must balance these responsibilities with their "multiple-use" management approach to the public land. The "multiple use" management approach is defined as "management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people." It is with this approach that the BLM must evaluate and respond to the SSEA's ROW request and determine if it is consistent with its management objective. The BLM is required by FLPMA and other legislation to consider and respond to the applicant's ROW request.

Reclamation's proposed action is approval of a ROU authorization to SSEA to construct, operate, and maintain an electrical transmission line as described above. Similar to the BLM, the purpose and need for Reclamation's proposed action arises out of the need to respond to SSEA's application for a ROU authorization on Reclamation managed lands. It is Reclamation's responsibility under the Act of Congress of June 17, 1902 (32 Stat.388), the Act of Congress approved August 4, 1939 (53 Stat. 1187), Section 10, and 43 Code of Federal Regulations (CFR) Part 429 to respond to a request for a ROU authorization on Reclamation-administered Federal lands.



VICINITY MAP



PROJECT FEATURES

- Proposed Action (with mileposts)

JURISDICTION

- Bureau of Land Management
- Indian Reservation
- U.S. Fish & Wildlife Service
- Bureau of Reclamation
- Private

SPECIAL MANAGEMENT AREA

- BLM Wilderness
- BLM Area of Critical Environmental Concern (ACEC)

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- Lincoln County Conservation, Recreation, and Development Act (LCCRDA) Corridor
- Interstate, Highway
- Local Road, Dirt Road
- Railroad
- Perennial River/Wash
- Intermittent Wash

Sources
Ownership, Roads, LCCRDA, ACECs, Wilderness - NV BLM; Railroad, Hydrology, Topo - ESRI;
Transmission Lines,Substations, Power Plants - Platts 2010

NOTE: Substations and transmission lines are schematic and do not necessarily represent accurate locations.

EASTERN NEVADA TRANSMISSION PROJECT

GEMMILL to TORTOISE

Figure 1-1
Project Overview

N

0 1 2 3 Miles

ssea
silver state energy association

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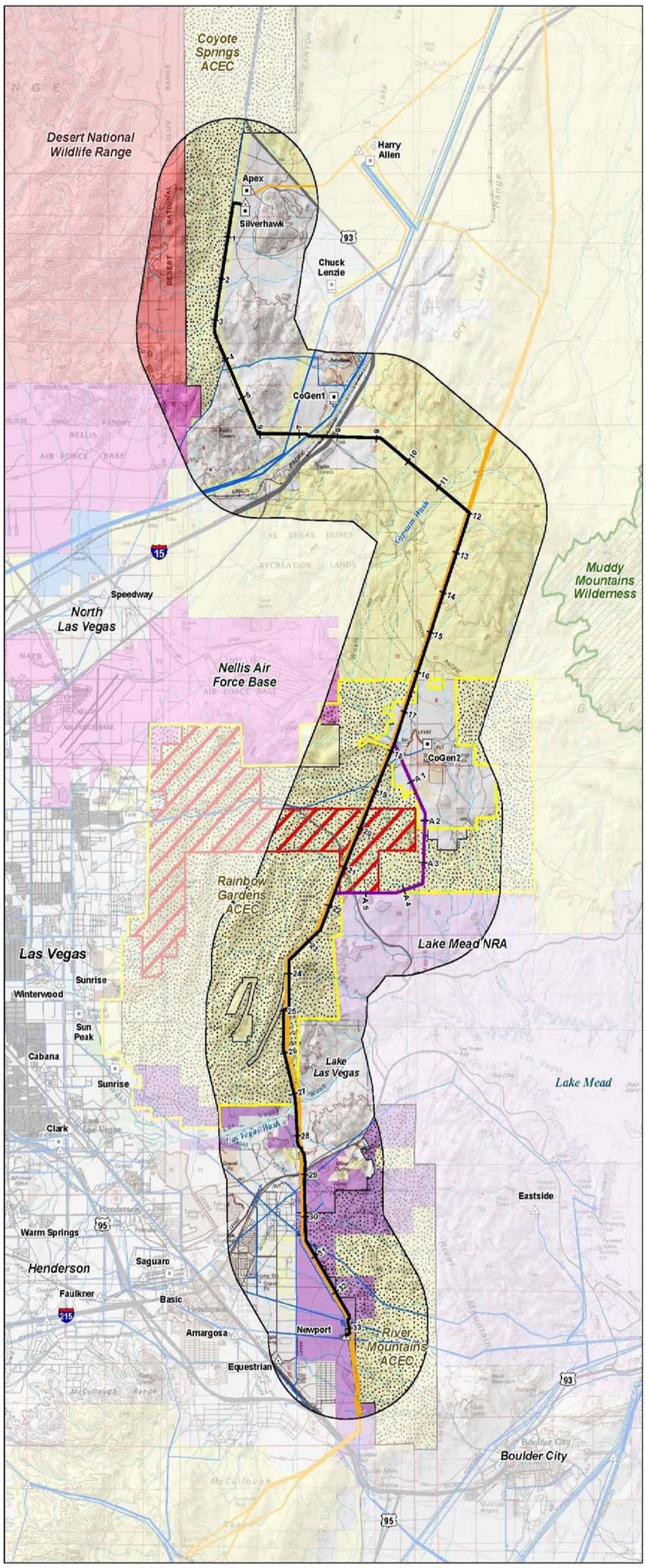
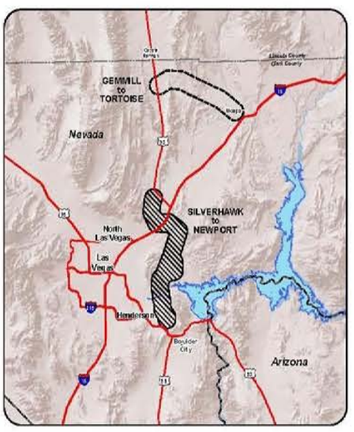


VICINITY MAP



PROJECT FEATURES

- Proposed Action (with mileposts)
- Alternative Alignment (with mileposts)

JURISDICTION

- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- National Park Service
- U.S. Fish & Wildlife Service
- State Land
- Private

SPECIAL MANAGEMENT AREA

- BLM ACEC
- BLM Wilderness and WSA
- Former Sunrise Mountain ISA
- BLM Sunrise Management Area - Interim Plan Area

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- Interstate, Highway
- Major Road
- Railroad
- Perennial River/Wash
- Intermittent Wash

SOURCES:
Ownership, Roads, ACECs, Wilderness - NV BLM; Railroad, Hydrology, Topo - ESRI;
Transmission Lines, Substations, Power Plants - Platts 2010

NOTE: Substations and transmission lines are schematic and do not necessarily represent accurate locations.

EASTERN NEVADA TRANSMISSION PROJECT

SILVERHAWK to NEWPORT

Figure 1-2
Project Overview

0 0.5 1 2 3 Miles

N

ssea
silver state energy association

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1.4 Decisions to be Made

This EA provides the information and environmental analysis necessary to inform the BLM's and Reclamation's authorized officer and the public about the potential environmental consequences of the Proposed Action and alternatives. The BLM's and Reclamation's decisions will be to:

- Approve all or a portion of the Proposed Action or alternative and issue a ROW grant/ROU authorization to the Applicant;
- Approve all or a portion of the Proposed Action or alternative issue a ROW grant/ROU authorization with additional mitigation measures; or
- Deny the ROW/ROU application.

1.5 BLM/Reclamation Policies, Plans, Authorizing Actions, and Permit Requirements

Applications for commercial electric power transmission lines on BLM-administered lands are processed as a ROW authorization under Title V of FLPMA. Title V states that in "…designating right-of-way corridors and in determining whether to require that the right-of- way be confined to them, [BLM] shall take into consideration national and state land use policies, environmental quality, economic efficiency, national security, safety, and good engineering and technological practices." The FLPMA further directs that each ROW grant contain terms and conditions to protect federal property and economic interests, protect lives and property, and otherwise protect the public interest in the lands traversed by the ROW or adjacent to them (43 USC § 1765).

The Proposed Action must be consistent with the BLM Las Vegas Resource Management Plan (RMP)/Environmental Impact Statement (EIS), which was approved by Record of Decision (ROD) on October 5, 1998 (BLM 1998). The RMP/EIS has been reviewed and it is determined the Proposed Action conforms with land use plan decision RW-1, RW-1-e, RW-1-h, under the authority of Section 28 of the Mineral Leasing Act of 1920, as amended (30 USC 185) and the FLPMA as amended (43 USC 1761 et seq.).

This EA was prepared in compliance with: Council for Environmental Quality (CEQ) regulations for implementing the NEPA (40 Code of Federal Regulations [CFR] § 1500-1508; 43 CFR Part 46); the BLM NEPA Handbook, H-1790-1; FLPMA Sections 201, 202, and 206 (43 CFR § 1600); and the BLM Land Use Planning Handbook (BLM Handbook H-1601-1). The BLM also has Instruction Memorandum 2004-105, 149, 231, and 2005-105, which guide and set NEPA compliance policy for the BLM.

Applications for the placement, construction, and use of infrastructure, including utility facilities on Reclamation-managed lands, are processed through a ROU authorization per 43 CFR 429. In reviewing applications for a use authorization, Reclamation will consider 43 CFR 429. A Reclamation ROU authorization includes terms and conditions intended to protect the interests of the United States and reserve the rights of Reclamation to construct, operate, and maintain public works as authorized by Congress.

In addition to conformance with NEPA and the Las Vegas RMP, the Proposed Action would comply with applicable federal, state, and local statutes, regulations, and plans. Table 1-1 identifies the federal and state agencies with potential jurisdiction over the Proposed Action, and the potential permits that may be needed based on final design.

Table 1-1 Authorizations, Permits, Reviews, and Approvals

Action Requiring Permit, Approval, or Review	Permit/Approval or Review	Approving Agency	Statutory Reference
Federal			
ROW Request Across Federal Land	ROW Grant ROU Authorization	BLM Reclamation	FLPMA 1976 (Public Law 94-579) USC 1761-1771 and 43 CFR 2800 Acts of June 17, 1902 and August 4, 1939, as amended and 43 CFR Part 429
ROW Request Across Federal Land	NEPA Compliance (Preparation of an EA)	BLM Reclamation	NEPA 40 CFR Part 1500 et. seq.
ROW Request Across Federal Land	National Historic Preservation Act (NHPA) Compliance with Section 106	BLM and Nevada State Historic Preservation Office	NHPA of 1966 36 CFR part 800, 16 US 47
ROW Request Across Federal Land	Endangered Species Act (ESA) Compliance with Section 7	U.S. Fish and Wildlife Service (USFWS)	ESA Section 7 Consultation, 50 CFR Part 17, 16 USC 1536
State of Nevada			
Construction of Utility Facilities across a State Highway (U.S. Highway 93 [US 93] and Interstate 15 [I-15])	ROW Encroachment Permit	Nevada Department of Transportation (NDOT)	Nevada Revised Statute (NRS) 408.423
Removal of Critically Endangered Plants	Special Permit	Nevada Division of Forestry (NDF)	NRS 527.260-.300
Desert Tortoise Handling Permit/Authorization	Handling Authorization	Nevada Department of Wildlife (NDOW)	Nevada Administrative Code (NAC) 503.090, 503.093
ROW Occupancy Permit	Aerial Installation	NDOT	NRS 408.423
National Pollution Discharge Elimination System Permit	Storm Water Pollution Prevention Program (SWPPP)	Nevada Division of Environmental Protection (NDEP)	Clean Water Act

CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

The BLM and Reclamation are considering the Proposed Action and one other action alternative, along with No Action, relative to the Project. Several Project elements, such as design features and construction techniques, would be used by SSEA in the event that any of the Proposed Action alternatives are decided upon. These are identified separately in the following subsection.

SSEA identified several potential transmission line routes during the initial route selection process. Screening criteria were applied to each corridor to determine which corridors or segments were reasonable to carry forward for further analysis in the EA and which to drop from further consideration. Alternative transmission line corridors eliminated from detailed analysis are described in Section 2.5.

2.1.1 Regulatory Framework for Alternatives

The BLM is required by NEPA to evaluate not only the Proposed Action, but all reasonable alternatives, including the No Action Alternative (40 CFR§1502.14). Section 1502.14(a) requires federal agencies to explore a reasonable range of alternatives, "and for alternatives that were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." The CEQ Guidance concerning NEPA regulations adds that reasonable alternatives include those that are "practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant" (CEQ NEPA's 40 Most Asked Questions, Answer to Question #2).

Criteria for siting the proposed Project included use of BLM-designated and other utility corridors, most direct pathways, use of existing roads and trails, and avoiding sensitive resources. Field and desktop surveys have been conducted by SSEA to determine potential resource impacts from construction and operation of the proposed Project. Consideration of these surveys led to the alternatives analyzed in this EA.

2.2 No Action Alternative

NEPA regulations require that EA alternative analyses "include the alternative of no action" (40 CFR 1502.14[d]). The No Action Alternative must be included in analysis according to CEQ regulations so that the EA clearly evaluates the consequences between the alternative methods of developing the proposed Project and the option of no development. The No Action Alternative provides a useful baseline for comparison of the environmental effects of the other alternatives. For this analysis, no action means that the BLM would reject SSEA's proposal and the ROW as requested would not be approved or authorized.

Because the Project facilities would not exist, potential adverse environmental effects would not occur as a direct result of the construction and operation of the proposed Project. However, any beneficial effects such as a greater ability to safely and reliably transport electricity to support the daily needs of southern Nevada would not exist. Due to the electrical demand of the population of Southern Nevada a reliable network of electricity is crucial. The increase in transmission

capacity and the expansion of the electrical transmission network would allow for a more reliable service of electrical power.

2.3 Proposed Action

The Proposed Action consists of the construction, operation, and maintenance of two separate 230-kV transmission lines; each line would exist within the boundaries of Clark County, Nevada. The proposed Gemmill to Tortoise transmission line has one proposed ROW corridor while the proposed Silverhawk to Newport transmission line includes the Proposed Action and one alternative corridor.

Both proposed transmission lines are located within existing utility corridors to the extent feasible. The proposed Gemmill to Tortoise ROW corridor is approximately 21 miles long, with 8 miles of transmission line within the existing Lincoln County Conservation, Recreation, and Development Act (LCCRDA) utility corridor, approximately 2.5 miles adjacent to an existing power line to minimize ground disturbance and avoid conflicts with the highway ROW, and approximately 9.5 miles parallel to but between 700-2600 feet north of the LCCRDA corridor to avoid conflict with private and tribal lands (the LCCRDA corridor in this area has not yet been delineated by the BLM to avoid these private and tribal lands, see Fig 1-1). The proposed Silverhawk to Newport ROW corridor, which is approximately 33 miles long, is within a designated utility corridor and would generally parallel three other existing transmission lines..

A BLM ROW grant and a Reclamation ROU authorization for a width of 130 feet has been requested by SSEA to safely construct, operate, and maintain the transmission lines. The specific location of transmission line structures and associated access roads will be determined when final design is complete. Estimates of permanent and temporary ground disturbance were calculated to assess and compare the potential impacts of the Proposed Action and alternatives upon specific resources. Disturbance estimates were based on design specifications for a 230-kV transmission line. Table 2-1 lists the estimated temporary and permanent ROW/ROU acreages across administrative jurisdictions.

The proposed Project would require crossing existing transmission lines, the Union Pacific Railroad track, and highways owned and/or managed by numerous public and private entities. The location of existing transmission facilities relative to final transmission pole siting would dictate the number and location of crossings. The proposed line crossings would be coordinated with each property owner or land manager. SSEA would have letters of agreement in place for all crossings.

2.3.1 Gemmill to Tortoise (Proposed Action)

The proposed Gemmill to Tortoise single-circuit 230-kV transmission line would begin at the Gemmill substation located in northeast Las Vegas Valley and would extend approximately 21 miles to the Tortoise substation, near Moapa, NV, west of Interstate 15 (I-15) (see Figure 1-1).

Table 2-1 Right-of-Way and Disturbance Acreages Across Administrative Jurisdiction

Gemmill to Tortoise – Proposed Action

Jurisdiction	Total ROW Acres			Temporary Disturbance Acres During Construction			New Permanent Disturbance Acres			Existing Disturbance Acres (roads)		
	Non ACEC	CS ACEC	MM ACEC	Non ACEC	CS ACEC	MM ACEC	Non ACEC	CS ACEC	MM ACEC	Non ACEC	CS ACEC	MM ACEC
BLM	161.27	44.12	127.64	48.64	12.27	32.07	12.37	3.60	10.45	0.34	0.14	1.00
Total	333.03			92.98			26.42			1.48		

Silverhawk to Newport – Proposed Action

Jurisdiction	Total ROW Acres		Temporary Disturbance Acres During Construction		New Permanent Disturbance Acres		Existing Disturbance Acres in ROW (roads, railroad tracks)	
	Non ACEC	RG ACEC	Non ACEC	RG ACEC	Non ACEC	RG ACEC	Non ACEC	RG ACEC
BLM	261.06	147.02	63.30	33.61	20.50	11.72	2.59	1.27
Subtotal	408.08		96.91		32.22		3.86	
	Non ACEC	**RM ACEC**	**Non ACEC**	**RM ACEC**	**Non ACEC**	**RM ACEC**	**Non ACEC**	**RM ACEC**
Reclamation	64.88	20.01	18.08	5.16	4.41	1.57	2.30	1.10
Subtotal	84.89		23.24		5.98		3.40	
Private	45.81	0	14.30	0	3.68	0	1.44	0
Subtotal	45.81		14.30		3.68		1.44	
Total	371.75	167.03	95.68	38.77	28.59	13.29	6.33	2.37
	538.78		134.45		41.88		8.70	

Table 2-1 Right-of-Way and Disturbance Acreages Across Administrative Jurisdiction								
Silverhawk to Newport - Alternative 1								
Jurisdiction	**Total ROW Acres**		**Temporary Disturbance Acres During Construction**		**New Permanent Disturbance Acres**		**Existing Disturbance Acres in ROW (roads, railroad tracks)**	
	Non ACEC	**RG ACEC**	**Non ACEC**	**RG ACEC**	**Non ACEC**	**RG ACEC**	**Non ACEC**	**RG ACEC**
BLM	261.0	135.0	63.8	32.3	20.6	10.9	2.6	2.4
Subtotal	396.0		96.1		31.5		5.0	
	Non ACEC	**RM ACEC**	**Non ACEC**	**RM ACEC**	**Non ACEC**	**RM ACEC**	**Non ACEC**	**RM ACEC**
Reclamation	60.5	20	18.1	5.2	4.5	1.6	1.7	0.8
Subtotal	80.5		23.3		6.1		2.5	
NPS	23.5	0	5.6	0	1.9	0	0.1	0
Subtotal	23.5		5.6		1.9		0.1	
Private	76	0	20.9	0	5.7	0	2.2	0
Subtotal	76		20.9		5.7		2.2	
Total	421.0	155	108.4	37.5	32.7	12.5	6.6	3.2
	576.0		145.9		45.2		9.8	
CS = Coyote Springs MM = Mormon Mesa RG = Rainbow Gardens RM = River Mountains ACEC = Area of Critical Environmental Concern								

From the Gemmill substation, the line would travel northeast for approximately 2.5 miles parallel and adjacent to an existing Lincoln County Power District H-frame transmission line until it enters the LCCRDA designated utility corridor. It would then run east for approximately 3.5 miles. Between Milepost (MP) 5 and MP 6, the alignment exits the LCCRDA corridor for approximately half a mile to avoid the need to cross the highway, before reentering the LCCRDA corridor. The alignment turns to the southeast for another 5 miles to MP 11 before exiting the LCCRDA corridor in order to avoid topographic constraints, conflicts with existing and planned infrastructure, crossing private and tribal lands, and ensure pole placement is outside of NDOT ROW for the highway. The transmission line would continue southeast for another 9.5 miles before reaching the Tortoise substation.

2.3.2 Silverhawk to Newport (Proposed Action)

The proposed Silverhawk to Newport double-circuit 230-kV transmission line would begin at the Silverhawk substation, west of I-15 and U.S. Highway 93 (US 93), and would extend south for approximately 33 miles and terminate at the Newport substation in southeast Henderson, Nevada (see Figure 1-2). The entirety of the proposed ROW corridor is located within an existing BLM utility corridor or a utility corridor located on Reclamation land.

From the Silverhawk substation, the line would travel essentially south for approximately 6 miles before turning to the east. It then runs east for 3 miles, crossing I-15, other transmission lines, and Union Pacific Railroad tracks between MP 6.5 and 8.0. At MP 9, the line turns southeast and runs for approximately 3 miles before turning to the southwest at MP 12. The line then runs southwest for approximately 11.5 miles paralleling three existing high-voltage transmission lines. The proposed Project overlaps into 35 feet of the most eastern portion of the Harry Allen to Mead Transmission line ROW between MP 19.5 and 21.5. Just after MP 23.5, the line turns south continuing to parallel existing transmission lines, and runs for another 9.5 miles before reaching the Newport substation. Before reaching the Newport substation, the line crosses the Las Vegas Wash between MP 27 and 27.5 and crosses Lake Mead Parkway just before MP 29.

2.3.3 Silverhawk to Newport - Alternative 1

Alternative 1 was selected as an alternative to avoid crossing an area formerly designated as the Sunrise Mountain Instant Study Area (ISA). The Sunrise Mountain ISA was managed by the BLM to determine if the area possessed the wilderness characteristics described in the Wilderness Act of September 3, 1964. In 2014, BLM's non-suitability recommendation for the ISA was adopted by the United States Congress. The ISA was released from interim protected status, thereby allowing the consideration of a full range of multiple uses.

Alternative 1 follows the same corridor as the Proposed Action from the Silverhawk substation until it reaches MP 17.5. Just south of MP 17.5 it turns to the southeast in order to bypass the eastern edge of the formerly-designated Sunrise Mountain ISA. Between MP A-1.5 and A-2.0, the corridor turns south and continues for another 1.5 miles. At MP A-3.5, the line turns southwest and continues for approximately 0.6 mile before entering the northern edge of the NPS Lake Mead National Recreation Area (NRA). Sixty-five feet inside the Lake Mead NRA boundary, the line turns west and continues in this direction for approximately 1.5 miles before leaving the NRA. Approximately 0.5 miles further west, the Alternative 1 corridor turns south converging with the Proposed Action corridor just south of MP 21.5. From this point, Alternative 1 follows the same corridor as the Proposed Action until it reaches the Newport substation. The Alternative 1 bypass corridor is approximately 5.75 miles long and is presented in Figure 1-2.

If Alternative 1 is selected, it would require an amendment to the Lake Mead NRA Lake Management Plan. Only the NPS may amend an NPS Plan. Any plan amendment to the Lake Mead NRA Lake Management Plan would be considered separately from this EA.

2.4 Project Elements Common to the Proposed Action and All Action Alternatives

2.4.1 Facilities Associated with the Proposed Project and Action Alternatives

Typical design characteristics for the Gemmill to Tortoise and Silverhawk to Newport facilities are listed in Table 2-2 and Table 2-3, respectively.

2.4.1.1 Transmission Line Design

The design, construction, operation, and maintenance of the new 230-kV transmission lines would meet or exceed the requirements of the NESC, U.S. Department of Labor Occupational Safety and Health Standards, and SSEA's member agency requirements for safety and protection of landowners and their property. Final engineering plans, drawings, and construction stipulations will be prepared by SSEA upon issuance of the ROW/ROU.

Structures

The new transmission line structures would be a combination of steel poles and lattice tower structures along the proposed Silverhawk to Newport ROW corridor, and steel poles along the proposed Gemmill to Tortoise ROW corridor. Figures 2-1 through 2-3 depict typical structure types under consideration. The 230-kV self-supporting, tubular steel structures would be installed on foundations or direct imbedded. Foundations would typically be 7 to 11 feet in diameter and 20 to 40 feet deep. The 230-kV self-supporting, steel-lattice towers require four footings that would have cast-in-place concrete footings 3 to 4 feet in diameter and 12 to 24 feet deep. The exact height of each structure and spacing would be governed by topography and safety requirements for conductor clearances and line loading, and would be identified in final engineering design.

All transmission line structures would include avian-safe design features and would be in accordance with *"Suggested Practices for Avian Protection on Powerlines"* (Avian Power Line Interaction Committee [APLIC] 2006). Design features to deter raven perching would be implemented within an Area of Critical Environmental Concern (ACEC) for desert tortoise or where the transmission lines are the only lines on the landscape within non-critical tortoise habitat (i.e., not located adjacent to existing lines). These design features would adhere to the BLM's Common Raven Management Plan (BLM 2014) or be detailed in a project-specific Raven Management Plan, which would be approved by the BLM prior to issuance of a Notice to Proceed for the Project.

Table 2-2 Gemmill to Tortoise 230-kV Transmission Line Design Specification Summary	
Feature	**Description**
Line Length	Approximately 21 miles
Type of Structure	Tubular steel monopoles
ROW Width	130 feet
Structure Height	70 to 110 feet
Span Length	Between 500 to 1000 feet
Number of Structures	Approximately 145
Land Permanently Disturbed (Estimate)	
Structure Base	0.31 acres (Maximum) • 11 feet in diameter (95 ft^2) per monopole. 95 ft^2 per pole x 145 poles = 0.31 acres
Counterpoise grounding trench	0.66 acres (200 x 1 feet per structure x 145 structures)
Land Temporarily Disturbed (Estimate)	
Structure Work Area	66.57 acres (100 x 200 feet per structure x 145 structures)
Wire Pulling / Tensioning Sites (tangent & angle structures)	16.41 acres (130 x 500 feet per site x 11 sites)
Construction Yards	10 acres (2 sites x 5 acres per site) – BLM Land
Guard Structures	Minimum area needed to construct guard structures adjacent to roads/electrical lines
Access Roads (Estimate)	
New and Upgraded Roads Required	25.45 acres (21 miles x 10 feet wide)
Existing Roads	1.48 acres (calculated from aerial imagery)
Electrical Properties	
Nominal Voltage	230-kV
Circuit Configuration	Single-circuit
Conductor	Aluminum Conductor Steel Reinforced (ACSR)
Ground Clearance of Conductors	19-31 feet per National Electric Safety Code (NESC) requirements
Structure Foundations	Tubular steel structures – foundations or direct imbedded

Table 2-3 Silverhawk to Newport 230-kV Transmission Line Design Specification Summary	
Featur	**Description**
Line Length*	Approximately 33 miles
Type of Structure	Steel lattice towers and self-supporting, tubular steel monopoles, double-circuit
ROW Width	130 feet
Structure Height	115 to 145 feet
Span Length	Up to 700 feet for monopoles; up to1000 feet for lattice towers
Number of Structures*	Approximately 205
Land Permanently Disturbed (Estimate)	
Structure Base	0.94 acres (Maximum) • 4 feet in diameter (50 ft^2) per footing of lattice tower. 200 ft^2 per tower x 205 towers = 0.94 acres • 11 feet in diameter (95 ft^2) per monopole. 95 ft^2 per pole x 205 poles = 0.44 acres
Counterpoise grounding trench	0.94 acres (200 x 1 feet per structure x 205 structures)
Land Temporarily Disturbed (Estimate)	
Structure Work Area	94.12 acres (100 x 200 feet per structure x 205 structures)
Wire-Pulling / Tensioning Sites (tangent & angle structures)	25.33 acres (130 x 500 feet per site x 17 sites)
Construction Yards	15 acres (5 acres per site. One on each of BLM Land, Reclamation Land, Private Land)
Guard Structures	Minimum area needed to construct guard structures adjacent to roads/electrical lines
Access Roads (Estimate)	
New and Upgraded Roads Required*	40.0 acres (33 miles x 10 feet wide)
Existing Roads*	8.70 acres (calculated from aerial imagery)
Electrical Properties	
Nominal Voltage	230-kV
Circuit Configuration	Double-circuit
Conductor	ACSR
Ground Clearance of Conductors	19-31 feet per NESC requirements
Structure Foundations	Tubular steel structures – foundations or direct imbedded. Steel-lattice – cast-in-place concrete footings.
*Estimated for Proposed Action only	

Conductors

The proposed Project 230-kV lines would be constructed with ACSR materials. Three conductors forming the three-phase single circuit would be installed, with an optical ground wire in the top position and a static wire on the opposite top position on each structure. The overhead ground wire would protect the 230-kV transmission line from direct lightning strikes. Two overhead ground wires, 0.44 to 0.5 inch in diameter, would be installed on the top of the structures. Current from lightning strikes would be transferred through the ground wires and structures into the ground. Minimum conductor height above ground would be based on NESC and the SSEA's member agency standards. Conductors would be non-reflective.

Insulators and Associated Hardware

Three assemblies of insulators in the form of a "V" or "I" would be used to position and support each of the conductor bundles, relative to the tower while maintaining electrical design clearances between the conductors and the tower. All angle and dead end structures would have associated down guying, except where steel poles with foundations are used.

Fiber Optic Communications

A fiber optic cable would be installed on top of all structures to facilitate communication needs for the transmission line. The fiber optic cable would require the installation of regeneration facilities along the route, which would be located within the ROW, in close proximity to existing power sources.

2.4.1.2 Temporary Construction Yards

Temporary construction 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, salvaged plants, and materials. Five construction yards are anticipated to be needed. These construction yards may be located on BLM, Reclamation, or private land. Each yard would be located in an area requiring minimal clearing and grading, to the extent possible. 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.

2.4.1.3 Conductor Tensioning and Pulling Sites

Typically, conductor tensioning and pulling sites are located at angle locations and at substation locations for stringing the conductor. However, distances between each site would vary depending on the geography and topography, the length of the conductor pull, accessibility by equipment, and if there are any environmentally sensitive areas that must be avoided. Pulling sites would be located along the transmission line centerline. At each pulling site, stringing equipment would be set up approximately 400 feet from the initial structure for leveraging the conductor pull safely. When construction occurs in steep and rough terrain, these sites may require larger, less symmetrical pulling and tensioning sites. The actual location of these pulling sites would be determined following final

engineering design.

2.4.1.4 Substations

Expansion of the Newport, Silverhawk, Gemmill, and Tortoise substations is not currently anticipated, and is not part of this Project. Modifications within the existing substation boundaries may be needed to provide appropriate access locations; any needed internal modifications would be determined during final Project design. A small 2- to 3-acre switch yard may be required adjacent to the Silverhawk substation, if space is not available within the existing facility site.

2.4.2 Construction

This section briefly describes the construction activities associated with the Proposed Action or action alternatives. Construction of a transmission line follows the sequence of surveying the centerline, access road identification and construction, tower sites and ROW clearing (including construction yards), installing foundations, assembling and erecting the towers, installing ground wires and conductors, installing counterpoise/ground rods, and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process.

Construction Work Force and Schedule - The estimated number of personnel and equipment required to construct the proposed Project on an expedited schedule are presented in Table 2-4 below. SSEA estimates that the majority of the total workforce would be hired locally. The Project would require approximately two years to construct. Some transmission facilities owned by other utilities may need to be taken out of service to allow for safe construction, especially in areas of line crossings. A detailed outage and construction schedule would be developed by SSEA during final Project design.

Surveying Activities - Before construction surveying begins, it would be necessary to obtain either a survey permit on federal and state lands, or rights-of-entry for private lands. Construction survey work would consist of locating the centerline, tower center hubs, ROW boundaries, and tower access roads. All of these activities would begin prior to the start of construction. Survey vehicles would stay on existing access roads.

Geotechnical Investigations - Before construction surveying begins, it would be necessary to obtain geotechnical samples. This would require permits for sites on federal lands or rights-of- entry for sites on private lands. Geotechnical investigations would consist of drilling at pre- identified sample locations to obtain core samples. Core samples would be approximately 3- inches in diameter and drilled to a depth of 30 to 50 feet. Drilling would be performed by a truck or track mounted drill and would occur at points of inflection of the transmission line centerline and at distances 1 mile apart on straight sections of the transmission line centerline. Since off-road driving may be necessary to reach the centerline, biological monitors would be present during drilling operations to locate and protect sensitive plant and animal species. Drilling would not occur in identified cultural or paleontological sites. Geotechnical investigations would begin prior to the start of construction.

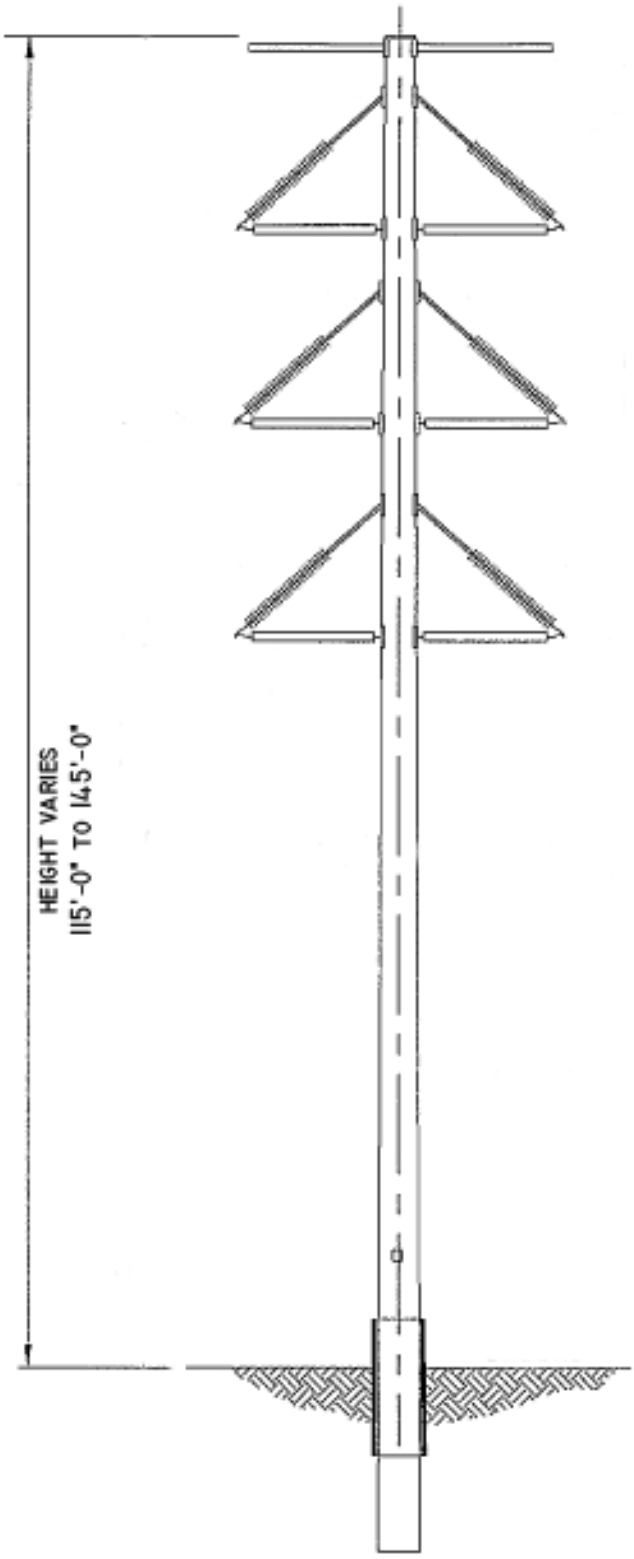


Figure 2-1 Typical Double-Circuit Steel Pole (Preliminary Design)

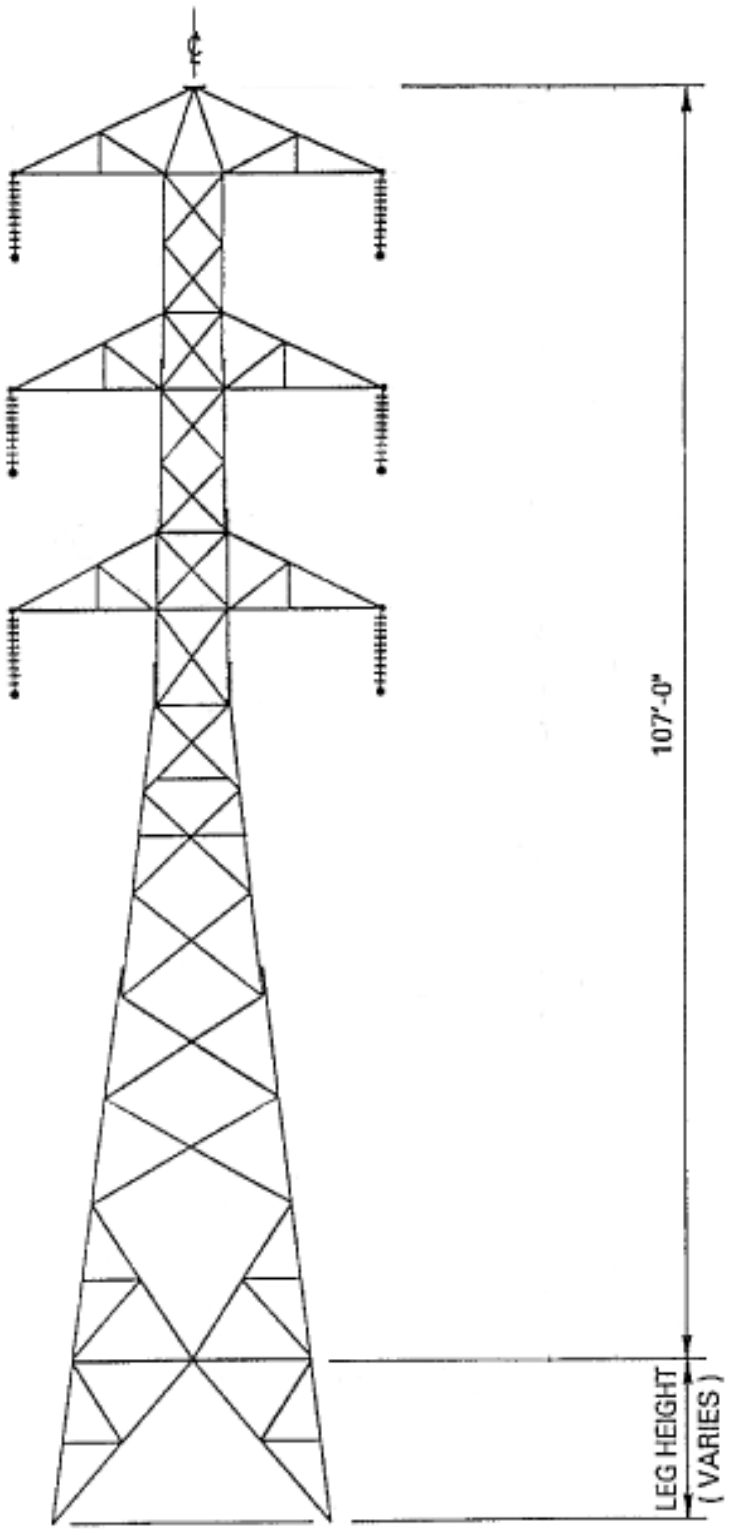


Figure 2-2 Typical Double-Circuit Lattice Tower (Preliminary Design)

Table 2-4 Estimated Personnel and Equipment		
Activity	**People**	**Quantity of Equipment**
Survey	4	2 pickup trucks
Geotechnical Investigations	6	3 pickup trucks 3 truck- or track-mounted drill rigs
Access Road Construction	4-8	1 bulldozer (D-8 Cat) 2 motor graders 2 pickup trucks 2 water trucks (for construction and maintenance)
Footing/Foundation Installation	28	6 hole diggers 2 bulldozers 1 truck 6 concrete trucks 2 dump trucks 4 pickup trucks 1 carry all 1 hydro crane 1 wagon drill 2 water trucks
Structure Steel Haul	8-10	4 steel haul trucks 2 pickup trucks 2 yard and field cranes 1 fork lift 1 water truck
Structure Assembly (per crew)	10-12	1 pickup truck 2 carry alls 1 crane (rubber tired) 1 truck (2 ton) 1 water truck
Structure Erection (per crew)	8-10	1 crane (120 ton) 1 truck (2 ton) 2 pickup trucks 1 carry all 1 water truck

Table 2-4 Estimated Personnel and Equipment		
Activity	**People**	**Quantity of Equipment**
Conductor Installation & Counterpoise	36	6 wire reel trailers 6 diesel tractors 4 cranes (2 19-ton, 2 30-ton) 2 trucks (5 ton) 4 pickup trucks 4-6 large bucket trucks 2 splicing trucks 4 3-drum pullers (2 medium, 2 heavy) 1 single drum puller (large) 1 double bull-wheel tensioner (heavy) 2 sagging equipment (D-8
Site Clean-Up	8-10	3 trucks 1 pickup truck 1 D-6 Cat 1 water truck
Road Rehabilitation (ROW Restoration)	4	1 bulldozer 1 motor grader 2 pickup trucks 1 water truck

Access Road Construction - The construction, operation, and maintenance of the proposed transmission lines would require that heavy equipment and vehicles are able to access tower sites along the ROW. Existing paved and unpaved roads along existing utility corridors would be used where possible to minimize new access road construction. Where existing roads can be used, spur roads to the tower sites may be required. In areas without existing roads, a 10-foot-wide permanent road may be constructed from tower to tower within the 130-foot-wide ROW. Additional permanent roads may be constructed where necessary for operation or maintenance or where the landowner or land managing agency requires. These roads would be identified during the final design stages.

Temporary roads may also be constructed to provide access for the duration of construction to areas not accessible by existing roadways. Material and topsoil from the temporary roads would be bladed to one or both sides to facilitate rehabilitation. Topsoil would be saved and used to restore temporary work areas. Seeds and roots contained within the topsoil layer normally provide a natural source for new growth. Some permanent roads may be constructed, where necessary for operation or maintenance, or where the landowner or land managing agency requires.

Road standards would be addressed specifically in the Final Plan of Development for BLM approval during the final engineering design phase of this Project. Specific actions would be implemented to reduce construction impacts. Standard design techniques, such as installing water bars and dips to control erosion, would be included. Construction activities would not occur when weather or other

conditions increase potential environmental impacts to unacceptable levels, as determined by the agencies. Such conditions could arise during heavy rains or high winds. To prevent impacts during such periods, construction activities would be restricted or curtailed.

Wherever possible, roads would be built at right angles to streams and washes. To the maximum extent possible, drainages would be crossed at grade (Arizona crossing). Where Arizona crossings are not feasible, culverts or other drainage structures would be installed, as necessary, across drainages, but the roads would usually follow the natural grade. This type of temporary road would facilitate rehabilitation. In addition, road construction best management practices (BMPs) would include dust control and erosion control measures in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line.

Right-of-Way Clearing - At each tower site, a leveled work area would be required for the location of tower footings, assembly of the tower, and the necessary crane maneuvers. The leveled area required for the location and safe operation of large cranes would be approximately 30 by 40 feet. All work areas would be cleared of vegetation only to the extent necessary in accordance with state and BLM regulations. In addition, selective clearing would be performed only when necessary to provide for surveying, electrical safety clearances, line reliability, and maintenance. Topping or removal of mature vegetation, under or near the conductors, would be done to provide adequate electrical clearance as required by NESC standards. After line construction, all work areas not needed for normal transmission line maintenance would be graded to blend, as near as possible, with the natural contours, and re-vegetated and restored where required.

Foundations, Structure Assembly, and Erection - Excavations for foundations would be made with power drilling equipment. A vehicle-mounted power auger or backhoe would be used where the soil permits. In rocky areas, the foundation holes may be excavated by drilling and blasting, or special rock anchors may be installed. Safeguards (e.g., blasting mats) would be employed when adjacent areas need to be protected. In extremely sandy areas, soil stabilization by water or gelling agent may be used prior to excavation. After excavations are completed, precast or cast- in-place footings would be installed.

The pre-cast footing would be lowered into the excavated foundation hole, positioned, and backfilled. The cast-in-place footing would be installed by placing reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Spoil material would be used for fill, where suitable. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks.

Bundles of steel members and associated hardware would be shipped to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight. The assembled subsections would be hoisted into place by a large crane and then fastened together to form a complete tower.

Conductor Installation - After the towers are erected, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. For public protection during wire installation, guard structures would be erected over highways, railroads, power lines, structures, and other obstacles. Guard structures would consist of H-frame poles placed on one or both sides of an obstacle. These structures would prevent ground wire, conductor, or equipment from falling on an obstacle.

Equipment for erecting guard structures would include augers, line trucks, pole trailers, and cranes. Guard structures may not be required for small roads. In such cases, other safety measures such as barriers, flagmen, or other traffic control would be used. Pilot lines would be pulled (strung) from tower to tower and threaded through the stringing sheaves at each tower.

Following pilot lines, a larger diameter, steel cable line would be attached to conductors to pull them onto towers. This is called the pulling line. This process would be repeated until the ground wire or conductor is pulled through all sheaves. Ground wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment. Sites for tensioning equipment and pulling equipment would be approximately 2 to 5 miles apart. If a fiber optic groundwire is installed rather than conventional groundwire, the construction methods would be the same. The appearance of a fiber optic groundwire is the same as conventional ground wire. The tensioning and pulling sites would encompass an area within the ROW approximately 130 feet by 500 feet. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be located at this site. The tensioner, in concert with the puller, would maintain tension on the ground wire or conductor while they are fastened to the towers. A puller, line trucks, and tractors needed for pulling and temporarily anchoring the counterpoise/ground wire and conductor would be located at this site.

Ground Rod Installation - Part of standard construction practices prior to wire installation would involve measuring the resistance of tower footings. If required counterpoise (grounds) would be installed to lower the resistance. Counterpoises would consist of a conductor buried a minimum of 12 inches deep, extending from one or more tower legs for approximately 200 feet in line with the linear transmission line ROW.

Cleanup - Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped along the line. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without agency approval.

Hazardous Materials Within Corridor - Petroleum products such as gasoline, diesel fuel, crankcase oil, lubricants, and cleaning solvents would be present within the transmission line corridor during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment. These products would be containerized by fuel trucks or by approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents. Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials. All construction, operation, and maintenance activities would comply with applicable federal, state, and local laws and regulations regarding the use of hazardous substances. The construction or maintenance crew foreman would ensure that all applicable laws are obeyed. In addition, an on- site inspector would be present during construction to make sure that all hazardous materials are used and stored properly. A health and safety plan would be developed as part of the Final Plan of Development during the engineering and preconstruction phase of the Project.

Site Reclamation - The ROW would be restored as required by the BLM and Reclamation. All practical means would be made to restore the land to its original contour and to restore natural drainage patterns along the ROW. Because revegetation would be difficult in many areas of the Project where precipitation is minimal, it would be important to minimize disturbance during construction. All practical means would be made to increase the chances of vegetation reestablishment in disturbed areas. A Restoration Plan would be submitted for BLM and Reclamation approval as part of the Final Plan of Development, prior to beginning any ground disturbance on the Project.

Fire Protection - All applicable fire laws and regulations would be observed during the construction period. All personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires.

2.4.3 Termination and Restoration

Should the ROW and facilities no longer be needed, a Termination and Restoration Plan would be developed by the ROW grant holder for BLM and Reclamation approval. One year prior to termination of the ROW, the holder shall contact the appointed BLM and Reclamation authorized officers to arrange joint inspections of the respective ROWs. These inspections would be held in order to agree to an acceptable Termination Plan. The BLM or Reclamation-authorized officer must approve the plan in writing prior to commencement of any termination activities. Restoration procedures would attempt to restore and reclaim the landscape as near to original conditions as possible. The Termination Plan would be reviewed and approved by the appointed authorized officer(s) and would include the following information:

- What facilities and access routes are to be removed, restored, and/or rehabilitated.
- How facilities and access routes would be removed, and the disturbed areas restored.
- The time of year the facilities and access routes would be removed.
- Stabilization and reclamation techniques to be used during restoration.

2.5 Alternatives Considered but Eliminated from Detailed Analysis

In accordance with Title 40 CFR Section 1502.14, and consistent with guidance in the BLM NEPA Handbook (Handbook H-1790-1), alternatives were not carried forward for further analysis if the action alternative meets any of the following conditions:

- The alternative is ineffective (i.e. it would not respond to the purpose and need).
- The alternative is technically or economically infeasible given past and current practice and technology (this does not require cost-benefit analysis or speculation about an applicant's costs and profits).
- The alternative is inconsistent with the basic policy objectives for the management of the area.
- Implementation of the alternative is remote or speculative.
- The alternative is substantially similar in design to another alternative that is already being analyzed.
- The alternative has substantially similar effects to another alternative that is being analyzed.

This section complies with this guidance by reviewing a number of alternatives that were originally considered by SSEA, but were eliminated from further consideration.

2.5.1 Route Selection Process

SSEA identified several potential transmission line routes or segments during the initial route selection process. Discussions were held with private landowners, federal and state land managers, and local officials to obtain information on potential opportunities and constraints. The route selection process was based on the consideration of the following factors:

- Property ownership.
- Land use compatibility.
- Topography.
- Environmental constraints.
- Construction and operation costs.
- Electrical loss due to long transmission distances.
- Location and capacity of existing energy infrastructure.

The alternative routes considered but rejected, along with the reasons for eliminating the alternatives from further consideration, are described below.

Western Route – Gemmill to Newport: This corridor is approximately 59 miles in length, originates at the Gemmill substation and parallels US 93 south continuing past the Apex and Silverhawk Generation Plants until it reaches the Union Pacific Railroad. It then parallels the railroad until it reaches North Lamb Boulevard, where, continuing south, it reaches an existing 69/138-kV transmission line that would be paralleled through the Sloan Channel, around the Sun Peak and Sunrise Generation Plants and into the Newport substation.

This route includes portions of the proposed Silverhawk to Newport ROW corridor. However, this route was dismissed from further analysis due to conflicts with proposed NV Energy transmission line upgrades; greater environmental disturbance due to greater length; potential environmental impacts from crossing a Bighorn sheep migration corridor and a historic trail; and potential conflict with existing residential and commercial development and military operations.

Western-Central Route – Gemmill to Newport – This corridor is approximately 59 miles in length and follows US 93 south from Gemmill Substation past the Apex and Silverhawk Generation Plants. At this point, the corridor crosses I-95 below CoGen 1 plant continuing east – southeast towards the existing 500-kV transmission line corridor and following this alignment towards the CoGen 2 plant, then extending south towards the western shore of Lake Mead. This corridor then continues southwest, roughly paralleling SR 564 until it reaches the existing 500- kV transmission line corridor which it follows into the Newport Substation.

This route includes portions of the proposed Silverhawk to Newport ROW corridor. However, this route was dismissed from further analysis due to greater environmental disturbance due to greater length; potential environmental impacts from crossing a Bighorn sheep migration corridor and a historic trail; potential conflict with existing residential development.

Central Route – Gemmill to Tortoise to Newport – This corridor is approximately 75 miles in length and exits the Gemmill substation following State Route (SR) 168 and/or an existing 115- kV transmission line east to the Tortoise Substation. At this point, it turns south, including the existing BLM utility corridor through the Moapa River Indian Reservation towards the Crystal Substation, and then paralleling the 500-kV transmission line corridor towards the CoGen2 plant. Further south, this alternative passes through the BLM Sunrise Management Area following the 500-kV transmission line corridor to the Newport Substations.

This route includes portions of the proposed Gemmill to Tortoise and Silverhawk to Newport ROW corridors. However, this route was dismissed from further analysis due to greater environmental disturbance due to greater length; potential environmental impacts from crossing a Bighorn sheep migration corridor and a historic trail; and potential conflict with existing residential development and the Moapa River Indian Reservation.

East-Central Route – Gemmill to Tortoise to Newport – This corridor is approximately 75 miles in length and also follows SR 168 and/or the 115-kV line to the Tortoise Substation. At this point, the corridor would extend east across I-15, then continue southwest through the western foothills of the North Muddy Mountains towards the existing 500-kV transmission line corridor. This existing corridor would be followed towards the CoGen 2 plant and continuing south where it then passes through BLM Sunrise Management Area and following the 500-kV transmission line corridor to the Newport Substation.

This route includes portions of the proposed Gemmill to Tortoise and Silverhawk to Newport ROW corridors. However, this route was dismissed from further analysis due to greater environmental disturbance due to greater length; potential environmental impacts from crossing a Bighorn sheep migration corridor and a historic trail; and potential conflict with existing residential development and the Moapa River Indian Reservation.

Eastern Route – Gemmill to Tortoise to Eastside to Newport – This corridor is approximately 81 miles in length and exits the Gemmill substation following SR 168 and/or the 115-kV line into Tortoise Substation then continuing across I-15, and then southwest in the western foothills of the North Muddy to the existing 500-kV transmission line corridor. The route continues to a point south of the CoGen 2 plant, then leaves the existing corridor and continues south into the Eastside Substation, then continues south before turning west into Newport Substation along the existing 230-kV lines.

This route includes portions of the proposed Gemmill to Tortoise and Silverhawk to Newport ROW corridors. However, this route was dismissed from further analysis due to greater environmental disturbance due to greater length; potential environmental impacts from crossing a Bighorn sheep migration corridor and a historic trail; and potential conflict with existing residential development.

2.6 Environmental Protection Measures

Table 2-5 specifies Environmental Protection Measures (EPM) that SSEA has incorporated as standard mitigation procedures for the proposed Project. These measures have been developed to maintain environmental quality and meet requirements of BLM's Vegas Resource Management Plan. These measures apply project- wide unless modified by the BLM or Reclamation, or superseded with more stringent requirements under permits granted by federal, state, or local agencies. SSEA would

implement these practices on both public and private lands. SSEA will be responsible to ensure their contractors and employees will implement these measures. These EPMs apply to construction, operation, and maintenance as appropriate.

Table 2-5 Environmental Protection Measures

Resource	Environmental Protection Measure
Air Quality	All requirements of those entities having jurisdiction over air quality matters would be adhered to and any permits needed for construction activities would be obtained. Open burning of construction trash would not be allowed.
Air Quality	In compliance with the Clark County DAQEM dust permit, all roads and structure pads would be watered prior to and during all construction activities. All project personnel would be educated on the site dust mitigation plan.
Air Quality	Construction and operation vehicles would be properly maintained to reduce emissions.
Air Quality	All Proposed Project construction activities shall comply with relevant provisions of the Clark County DAQEM. Site-appropriate BMPs will be implemented. This would typically include: • All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, a BLM/Reclamation-approved chemical stabilizer/suppressant, or vegetative ground cover. • All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or BLM/Reclamation-approved chemical stabilizer/suppressant. • All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. • When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions, or at least six inches of freeboard space from the top of the container shall be maintained.
Geology and Soils	Potential grading requirements will be identified during final engineering design. Grading needs will be minimized wherever possible.
Geology and Soils	As feasible, segregation of the soil horizons would be conducted where soils will be disturbed. At a minimum, the initial 3 inches of the surficial horizon would be segregated and stockpiled from lower horizons. This soil containing seed bank would be used for restoration.
Geology and Soils	BLM/Reclamation-approved weed-free mulch would be used to stabilize disturbed areas where severely erosive soils will be encountered.
Water Resources	In compliance with Clark County and the federal Clean Water Act, all necessary permits relating to water resources would be obtained.
Water Resources	The appropriate NPDES permits for construction activities will be obtained from NDEP, and all NPDES permit requirements will be met. This includes implementing and maintaining appropriate BMPs for minimizing impacts to surface water.
Water Resources, Soils	A site-specific SWPPP will be developed and modified as necessary to account for changing construction conditions.
Water Resources, Soils	The SWPPP will identify areas with critical erosion conditions that may require special construction activities or additional BMPs to minimize soil erosion.

Table 2-5 Environmental Protection Measures

Resource	Environmental Protection Measure
Water Resources, Soils	Stormwater BMPs will be maintained on all disturbed lands during construction activities, as described in the SWPPP. Approved sediment and erosion control BMPs will be installed and maintained until disturbed areas meet final stabilization criteria.
Water Resources, Soils	Damaged temporary erosion and sediment control structures will be repaired in accordance with the SWPPP.
Water Resources, Soils	Upon completion of construction, permanent erosion and sediment BMPs will be installed along the transmission line within the ROW, at substations, and at related facilities in accordance with the SWPPPs
Biological Resources	All appropriate NDOW and USFWS permits will be obtained prior to initiation of the project.
Biological Resources	Minimal construction of new roads or upgrading of existing access roads would occur in areas identified as sensitive plant habitat.
Biological Resources	In areas where the BLM determines sensitive plant species may occur, pre-construction surveys will be conducted during the blooming or fruiting season as needed to verify plant identification. Sensitive plants and/or habitat would be flagged or mapped for avoidance, salvage, or seed collection.
Biological Resources	In areas identified with sensitive plants and/or habitat, construction activities would be adjusted as feasible to avoid any identified sensitive plant populations. Structures would be placed to allow spanning of these features, where feasible, within limits of standard structure design. Orange snow fencing will be used to mark any avoidance areas, including a reasonable buffer, alerting construction personnel to avoid the area. The onsite Environmental Compliance Representative will ensure these areas are properly monitored and protected.
Biological Resources	If sensitive plant species cannot be avoided, SSEA would implement plant and/or seed salvage prior to the start of construction. Seeds would be collected from sensitive plants that are located within the ROW. Collection, storage, and handling of seeds would be in accordance with commonly accepted scientific practices. Collected sensitive plant seed would be used to either grow additional plants from seed or applied with the seeding program as part of restoration at the completion of construction, and in the same general area as the seeds were initially collected. Specific special status plant species and collection methods would be identified in the Restoration Plan.
Biological Resources	No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity.
Biological Resources	As outlined in an approved Restoration Plan, temporary disturbance would be restored using grasses, forbs, cacti and yucca originally salvaged from the site. The material would be salvaged by an experienced contractor, stockpiled in an area approved by the land manager within the ROW, and then transplanted to reclaimed sites. Restoration would be in accordance with the BLM-approved Restoration Plan developed for the Project.
Biological Resources	Terms and conditions of the biological opinion rendered through formal consultation with the USFWS would be implemented during all Project related activities. These mitigation measures include, but are not limited to: education in desert tortoise protection measures for construction personnel; surveys to remove tortoises from construction zones immediately before construction; implementation of a litter control program; construction monitoring by qualified biologist; and habitat compensation within the Las Vegas Field Office of the BLM.
Biological Resources	In designated areas, structures would be placed to avoid sensitive wildlife and/or to allow conductors to clearly span the features, within limits of standard structure design.

Table 2-5 Environmental Protection Measures

Resource	Environmental Protection Measure
Biological Resources	If construction of the Project is not begun until after the commencement of burrowing owl breeding season (mid-March-August), all burrows, holes, crevices, or other cavities on the construction site would be collapsed after a qualified biologist thoroughly checks them for inhabitants. This would discourage owls from breeding on the construction site. If authorization for the plan is not provided until after the commencement of breeding season and burrowing owls can be seen within the area during surveys, behavioral observations would be done by a qualified biologist to determine their breeding status. If breeding behavior is observed, an area large enough to prevent disturbance to the adults would be avoided until the chicks fledge to ensure the chicks do not abandon the nest.
Biological Resources	In compliance with NAC regarding protection of the Gila Monster, standard NDOW protocols would be followed if a Gila Monster is encountered during construction activities.
Biological Resources	Survey suitable habitat for threatened and endangered riparian bird species that could potentially occur in the construction ROW area. If found, complete protocol surveys for these species. Restrict construction activities in the area where found, until protocol surveys are complete. If the species are determined to be breeding, restrict construction where confirmed nesting threatened and endangered riparian bird species are located.
Biological Resources	Preconstruction avian surveys would be conducted to locate breeding and nesting bird species in the construction ROW and areas adjacent (up to 200 feet from the ROW edge) to the ROW where access is available. Nest and breeding locations would be surveyed using GPS and flagged and buffered by an appropriate distance as determined by the appropriate agency. Surveyed areas with no documented nests would permit construction activities. If additional nest(s) are found during construction, the onsite biological monitor would record the nest, flag, and buffer the area for avoidance.
Cultural Resources	In accordance with the approved Programmatic Agreement, intensive pedestrian inventory would be conducted for all unsurveyed portions of the selected ROW corridor.
Cultural Resources	Where avoidance of potentially significant effects is not possible, mitigation of potential adverse effects will be provided in accordance with the approved Programmatic Agreement to the standards prescribed in applicable federal guidelines. Mitigation measures could include a range of treatment options, including (a) detailed recordation, (b) undertaking historic documentary research as a means of preserving the information values of a particular site, or (c) data recovery- level excavation.
Cultural Resources	If any archaeological remains are unearthed during project construction, notification, construction avoidance, consultation, and mitigation will occur as described in the approved Programmatic Agreement.
Paleontological Resources	If required, prior to project construction, a pedestrian survey of the selected ROW corridor would be conducted by a qualified and BLM-permitted paleontologist. In areas underlain by PFYC *Class 4*/*5* and *Class 5* geologic units, a 100% survey would be conducted by a BLM-permitted paleontologist. In all areas underlain by PFYC *Class 3*, a partial survey may be conducted in areas determined by the paleontologist to be potentially sensitive for fossil resources. This work would take place during surface disturbing activities such as grading for the construction of access roads, transmission line structures, and other associated facilities.
Paleontological Resources	If fossil materials are discovered during Project construction, all surface-disturbing activities in the vicinity of the find will cease until notification to proceed is given by the authorized officer. The site will be protected to reduce the risk of damage to fossils and context. Appropriate measures to mitigate adverse effects to significant paleontological resources will be determined by the authorized officer.
Land Use	SSEA will consult with local planning agencies during the project review process in order to identify applicable land use policies and related concerns.

Table 2-5 Environmental Protection Measures

Resource	Environmental Protection Measure
Land Use	SSEA will consult with potentially-affected land owners along proposed Project ROW corridor, and will incorporate project design features as required to minimize potential land use conflicts.
Land Use	Fences and gates would be repaired or replaced to their preconstruction condition prior to disturbance as required by the landowner or the land management agency if they are damaged or destroyed by construction activities. Temporary gates would be installed only with the permission of the landowner or the land management agency and, if required, would be restored to original condition prior to disturbance following construction.
Transportation	SSEA will obtain encroachment permits or similar authorizations from applicable regional, state, and local transportation agencies when streets are used for more than normal traffic purposes, or where a traffic control plan is required.
Transportation, Soils	Dust suppression techniques will be applied, such as watering construction areas or removing dirt tracked onto a paved road as necessary to prevent safety hazards or nuisances on access roads and in construction zones near residential and commercial areas and along major highways and interstates.
Transportation, Soils	Roads identified by SSEA as no longer necessary will be reclaimed as specified in the Restoration Plan.
Noise	SSEA will comply with all county and city noise ordinances.
Visual Resources	To minimize ground disturbance and/or reduce scarring (visual contrast) of the landscape, the alignment of any new access roads or cross-country route would follow the landform contours in designated areas where practicable, providing that such alignment does not impact resource values additionally.
Visual Resources	To minimize amount of sensitive features disturbed and/or reduce visual contrast; structures would be placed in designated areas so as 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 limits of standard tower design. If the sensitive features cannot be completely avoided, towers would be placed so as to minimize the disturbance.
Visual Resources	Non-specular conductors would be used to reduce visual impacts.
Health and Safety	All proposed electrical facilities will be designed in accordance with adopted SSEA engineering practices or the equivalent.
Health and Safety	Workers will be instructed not to drive or park vehicles where catalytic converters can ignite dry vegetation and to exhibit care when smoking in natural areas. Vehicles would carry water and shovels or fire extinguishers during times of high fire hazards.
Health and Safety	All necessary precautions will be utilized to minimize safety concerns when working within public road ROWs. Traffic safety cones, construction signage or other measures will be used to alert drivers to construction activities.
Health and Safety	Construction would be performed in accordance with the site-specific SWPPP which addresses proper storage, management, and disposal of construction and hazardous waste. On-site personnel shall be trained in oil spill prevention and control.
Health and Safety	Spill supplies and equipment would be readily available at the construction site to respond to and cleanup accidental spills to prevent contamination of soils, surface waters, and groundwater.

2.7 Comparison of Alternatives and Summary of Impacts

Table 2-6 provides a comparison of the impacts on each resource for each alternative.

Table 2-6 Summary Comparison of Potential Impacts from No Action, Proposed Action, and Alternative 1

Resource	No Action	Proposed Action		Alternative 1
		Gemmill-Tortoise	Silverhawk-Newport	
Air Quality	No Project-related impacts to air quality.	Temporary, minor impacts on air quality during construction from emissions generated by heavy equipment and support vehicles and fugitive dust from soil disturbance and wind entrainment. No impacts to air quality from Project operation and maintenance. Adherence to BMP's associated with the dust permits will mitigate air quality impacts to a minimal level.	Same as Gemmill to Tortoise.	Same as Proposed Action.
Geology and Geologic Hazards	No Project-related impacts to geology and geologic hazards.	Short-term minor impacts to geology due to construction activities limiting access to mineral resources. Low probability of impacts from geologic hazards.	Same as Gemmill to Tortoise.	Same as Proposed Action.
Soils	No Project-related impacts to soils.	Short-term, moderate impacts to soils during construction from increased wind and water erosion and soil compaction. Adherence to BMP's associated with the Project-specific SWPPP will reduce potential for wind and water erosion and soil compaction. Reclamation of the temporarily disturbed areas would return these soils to productivity by being utilized as a growth medium in reseeded areas.	Same as Gemmill to Tortoise.	Same as Proposed Action.

Table 2-6 Summary Comparison of Potential Impacts from No Action, Proposed Action, and Alternative 1

Resource	No Action	Proposed Action		Alternative 1
		Gemmill-Tortoise	Silverhawk-Newport	
Water Resources	No Project-related impacts to water resources.	Short-term, minor, indirect effects to water resources during construction from storm water discharge. BMPs would be implemented at all locations to avoid and/or minimize surface water quality impacts during the construction phase. No direct impacts to surface waters and wetlands are anticipated since all such waters can be spanned with no construction disturbance to the surface water. There would be no impacts to groundwater.	Same as Gemmill to Tortoise.	Same as Proposed Action.
Biological Resources – Vegetation	No Project-related impacts to vegetation.	Both permanent and temporary vegetation impacts would occur as a result of construction, operation, and maintenance. Temporary impacts to vegetation would occur at construction-related disturbances that would then be reclaimed after construction. Las Vegas buckwheat occurs along certain sections of the proposed corridor. During the design of facilities, structures would be sited to avoid known special-status plant species with the project area to the extent practical.	Impacts to vegetation same as Gemmill to Tortoise. Moderate impacts to Las Vegas bearpoppy, sticky ringstem, silverleaf sunray, and rosy twotone beardtongue. Impacts to cactus and yucca same as Gemmill to Tortoise.	Impacts to vegetation same as Proposed Action. Impacts equal or higher amounts of habitat for special status species compared to the Proposed Action. Impacts to cactus and yucca same as Proposed Action.

Table 2-6 Summary Comparison of Potential Impacts from No Action, Proposed Action, and Alternative 1

Resource	No Action	Proposed Action		Alternative 1
		Gemmill-Tortoise	Silverhawk-Newport	
Biological Resources – Wildlife	No Project-related impacts to wildlife.	Low impacts to general wildlife and special status species except the Desert Tortoise from construction and maintenance. Potential for direct impacts to the desert tortoise are expected to be either avoided or greatly minimized through the implementation of BMPs and applicable mitigation measures identified in the Biological Assessment.	Same as Gemmill to Tortoise. Short-term indirect impacts to wildlife inhabiting the Las Vegas Wash.	Same as Proposed Action.
Historic and Cultural Resources	No Project-related impacts to historic and cultural resources.	Permanent impacts on cultural resources may result from construction-related activities and ground disturbance. Indirect effects from increased foot and vehicle traffic to the area may result from improved roads leading to a greater likelihood of vandalism and unlawful collecting. Avoidance, project design, and mitigation through data recovery would reduce the level of impacts to negligible to minor.	Same as Gemmill to Tortoise.	Same as Proposed Action.

Table 2-6 Summary Comparison of Potential Impacts from No Action, Proposed Action, and Alternative 1				
Resource	**No Action**	**Proposed Action**		**Alternative 1**
		Gemmill-Tortoise	**Silverhawk-Newport**	
Paleontological Resources	No Project-related impacts to paleontological resources.	Ten paleontological localities are located along the proposed Gemmill to Tortoise alignment. With adherence to proposed mitigation measures described in Chapter 4.7.4, minor impacts to paleontological resources would result. If significant fossils were found during construction, they would be mitigated under direction of the BLM by a qualified BLM- permitted paleontologist.	Same as Gemmill to Tortoise. Two paleontological localities are located along Silverhawk to Newport.	Same as Proposed Action.
Land Use, Transportation and Access	No Project-related impacts to land use, recreation, and transportation.	Land Use - Construction, operation, and maintenance of the proposed Gemmill to Tortoise alignment would largely occur within an existing utility corridor already designated for this land use. Portions of the transmission facility that deviates from the LCCRDA corridor would be constructed according to authorizations issued by the BLM. Transportation – Impacts to transportation during construction would be temporary and minor. Low impacts during operations.	Construction, operation, and maintenance of the proposed Silverhawk to Newport alignment would largely occur within existing utility corridors already designated for this land use. Portions of the transmission facility that deviates from existing corridors would be constructed according to authorizations issued by the BLM. Transportation – Impacts to transportation during construction would be temporary and minor. Low impacts during operations.	Same as Proposed Action.

Table 2-6 Summary Comparison of Potential Impacts from No Action, Proposed Action, and Alternative 1

Resource	No Action	Proposed Action		Alternative 1
		Gemmill-Tortoise	Silverhawk-Newport	
Socioeconomic Resources	No Project-related impacts to socioeconomic resources.	Long-term benefits to the economy from maintaining reliable electric power service for growing demand. No impacts on population, housing, or public services.	Same as Gemmill to Tortoise.	Same as Proposed Action.
Environmental Justice	No Project-related impacts to environmental justice.	Minority populations of Native Americans are located along the eastern end of the proposed Gemmill to Tortoise alignment. No minority populations living at or below the poverty level would experience any disportionate adverse effects from the project.	No impacts on environmental justice.	Same as Proposed Action.
Noise	No Project-related impacts to noise.	Construction noise impacts would be temporary and of short duration at any given location.	Same as Gemmill to Tortoise.	Same as Proposed Action.
Visual Resources	No Project-related impacts to visual resources.	Long-term, low to moderate impacts to visual resources.	Same as Gemmill to Tortoise.	Same as Proposed Action.
Health and Safety/Hazardous Materials	No Project-related impacts to health and safety or hazardous materials.	Potential environmental contamination from accidental hazardous material spills during construction.	Same as Gemmill to Tortoise.	Same as Proposed Action.

CHAPTER 3 - AFFECTED ENVIRONMENT

This chapter describes the physical, biological, social, and economic characteristics of the area that would be affected by implementation of the Proposed Action and alternatives. This chapter focuses on current resource conditions as well as environmental trends based on current management. For some resource values, the discussion would address conditions beyond the proposed Project area to ensure an adequate analysis of off-site and cumulative impacts found in Chapter 4, Environmental Consequences. For the action alternatives considered for this Project, the affected environment discussed in this section is the same for all alternatives unless otherwise noted.

3.1 Air Quality

This section provides a description of the existing air quality conditions within the two separate Project areas.

3.1.1 Air Quality Regulations

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants. The Ambient Air Quality Standards (AAQS) set forth by the EPA, the State of Nevada, and Clark County are listed in Table 3-1.

Table 3-1 National, State, and County Ambient Air Quality Standards (AAQS)

Criteria Pollutant	National (EPA) AAQS Value[1]	State of Nevada (NDEP) AAQS Value[2]	Clark County AAQS Value[3]
Ozone			
1-hour Average (Avg.)	0.12 ppm[4]	0.12 ppm (235 µg/m^3)	0.12 ppm (235 µg/m^3)
8-hour Avg.	0.075 ppm (75 ppb)	0.075 ppm	0.075 ppm (2008) 0.08 ppm (1997)
Carbon Monoxide			
8-hour Avg. below 5000 ft msl	9 ppm (10 mg/m^3)	9 ppm (10,500 µg/m^3)	9 ppm (10 mg/m^3)
8-hour Avg. above 5000 ft msl	9 ppm (10 mg/m^3)	6 ppm (7,000 µg/m^3)	9 ppm (10 mg/m^3)
1-hour Avg.	35 ppm (40 mg/m^3)	35 ppm (40,500 µg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide			
Annual Arithmetic Mean	53 ppb	53 ppb (100 µg/m^3)	53 ppb (100 µg/m^3)
1-hour	100 ppb	N/A	100 ppb
Sulfur Dioxide			
Annual Arithmetic Mean	N/A	0.030 ppm (80 µg/m^3)	0.03 ppm (80 µg/m^3)
24-hour Avg.	N/A	0.14 ppm (365 µg/m^3)	0.14 ppm (365 µg/m^3)
3-hour Avg.	N/A	0.5 ppm (1,300 µg/m^3)	0.5 ppm (1,300 µg/m^3)
1-hour Avg.	75 ppb	N/A	75 ppb

Table 3-1 National, State, and County Ambient Air Quality Standards (AAQS)			
Criteria Pollutant	**National (EPA) AAQS Value[1]**	**State of Nevada (NDEP) AAQS Value[2]**	**Clark County AAQS Value[3]**
Particulate Matter < 10 microns			
Annual Arithmetic Mean	N/A	50 µg/m^3	50 µg/m^3
24-hour Avg.	150 µg/m^3	150 µg/m^3	150 µg/m^3
Particulate Matter < 2.5 microns			
Annual Arithmetic Mean	12 µg/m^3	N/A	12 µg/m^3
24-hour Avg.	35 µg/m^3	N/A	35 µg/m^3
Lead			
3-mo Rolling Avg.	0.15 µg/m^3	0.15 µg/m^3	0.15µg/m^3

Source: [1] EPA 2012; [2] NDEP 2008; [3] Clark County Department of Air Quality and Environmental Management (DAQEM) 2014

[4]The EPA revoked the 1-hour ozone standards in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").

All values are corrected to reference conditions. These standards of quality for ambient air are minimum goals and it is the intent of the state environmental commission in this section to protect the existing quality of Nevada's air to the extent that it is economically and technically feasible.

msl – mean seal level; µg/m^3- micrograms per cubic meter; ppm – parts per million by volume; ppb – parts per billion by volume

The EPA had delegated the responsibility of enforcing air quality standards in the Las Vegas Valley to Clark County DAQEM. DAQEM has developed a set of air quality regulations that establish the current air quality rules for Clark County. DAQEM enforces the air quality rules to maintain compliance with local, state, and federal air quality standards.

Clark County is divided into separate airshed regions synonymous with the hydrographic area boundaries. Hydrographic areas represent natural and man-made stream drainage areas or basins. Air quality is regulated according to compliance in each hydrographic basin. Attainment areas are those areas meeting state and federal air quality standards. Non-attainment areas do not meet the state and federal air quality standards. Clark County (all hydrographic basins) is in attainment or unclassifiable for the NAAQS $PM_{2.5}$, SO_2, NO_2, Pb, and ozone (2008 ozone NAAQS of 75 ppb). Portions of Clark County that lie within the Las Vegas hydrographic basin (212) and the California Wash hydrographic basin (218) are in ozone maintenance for the 1997 ozone NAAQS of 80 ppb. The Las Vegas hydrographic basin (212) is in maintenance for carbon monoxide and in serious nonattainment for PM_{10}.

3.1.2 Existing Environment

Background ambient air quality reflects the condition of the existing, baseline air resources. The primary factors that determine the air quality of a region are the locations of the air pollution emission sources, amounts and types of pollutants emitted, and local meteorological conditions over a period of time. Particulate matter less than 10 microns (PM_{10}) levels from local monitoring sites were analyzed because a project of this nature would likely only effect PM_{10} levels. All other pollutants emitted during construction and operation would be negligible.

3.1.2.1 Gemmill to Tortoise

The proposed Gemmill to Tortoise ROW corridor begins in the Coyote Spring Valley hydrographic basin (210) (MP 0 to MP 4). From MP 4 to MP 17, the alignment crosses the Muddy River Springs Area hydrographic basin (219). The corridor then crosses into the Lower Meadow Valley Wash hydrographic basin (205) at MP 17 before terminating at the Tortoise substation at MP 20.5.

The nearest air quality monitoring station to the proposed Gemmill to Tortoise ROW corridor is the Mesquite Monitoring Station located at 465 East Old Mill Road in Mesquite, Nevada. Table 3-2 provides information regarding PM_{10} concentrations measured at the Mesquite monitoring station. This data shows that the 24-hour concentrations have exceeded the NAAQS several times during this period. This suggests that these high 24-hour values are related to natural events (i.e., high winds). It is likely that these events are common in the Project area.

Table 3-2 Mesquite Monitoring Station 24-Hour PM_{10} Concentration ($\mu g/m^3$)

Year	Max Concentration ($\mu g/m^3$)	Date Max was Recorded	Second Highest Recorded Concentration ($\mu g/m^3$)	Yearly Average Amount
2009	599	12/27/09	599	20
2008	1003	10/30/08	661	20
2007	1136	10/20/07	782	24

Source: DAQEM 2010
$\mu g/m^3$ – micrograms per cubic meter

3.1.2.2 Silverhawk to Newport

The proposed Silverhawk to Newport ROW corridor crosses three separate hydrographic basins. From MP 0 to MP 10, the proposed ROW corridor begins within the Garnet Valley hydrographic basin (216), with a 1 mile segment crossing into the Las Vegas Valley hydrographic basin (212) (MP 5 to MP 6). From MP 10 to MP 28.5, the line crosses the Black Mountains Area hydrographic basin (215). From MP 28.5 to 30.5 the alternative corridor crosses the Las Vegas Valley hydrographic basin (212) before terminating at the Newport substation. The Las Vegas Valley hydrographic basin (212) is considered to be in maintenance for carbon monoxide and ozone (1997 ozone NAAQS of 80 ppb) and serious non-attainment for PM_{10} ((EPA 2012). The remainder of the proposed Silverhawk to Newport ROW is in attainment or unclassifiable for the NAAQS criteria pollutants of $PM_{2.5}$, SO_2, NO_2, Pb, and 2008 ozone NAAQS of 75 ppb.

There are four air quality monitoring stations within the vicinity of the proposed Silverhawk to Newport ROW corridor. They include Boulder City, Green Valley, Winterwood, and Apex. There were no parameters available for the Boulder City monitoring station in recent years, and the Winterwood monitoring station does not measure PM_{10}, therefore, there is no data to record for these two monitoring stations. Data from the Green Valley and Apex monitoring stations are provided in Table 3-3 and Table 3-4, respectively. This data shows that the 24-hour concentrations have exceeded the NAAQS several times during this period at both locations.

This suggests that these high 24-hour values are related to natural events (i.e., high winds). It is likely that these events are common in the Project area.

Table 3-3 Green Valley Monitoring Station 24-hour PM_{10} Concentration

Year	Max Concentration ($\mu g/m^3$)	Date Max was Recorded	Second Highest Recorded Concentration	Yearly Average Amount ($\mu g/m^3$)
2009	667	11/12/09	330	20
2008	1373	4/8/08	1159	20
2007	1009	6/6/07	907	22

Source: DAQEM 2010
$\mu g/m^3$ – micrograms per cubic meter

Table 3-4 Apex Monitoring Station 24-hour PM_{10} Concentration

Year	Max Concentration ($\mu g/m^3$)	Date Max was Recorded	Second Highest Recorded Concentration	Yearly Average Amount ($\mu g/m^3$)
2009	819	10/4/09	651	17
2008	402	4/15/08	384	17
2007	604	8/16/07	600	22

Source: DAQEM 2010
$\mu g/m^3$ – micrograms per cubic meter

3.2 Geology and Geologic Hazards

This section presents an overview of the geologic conditions that occur within the Project area. The main purpose of this overview is to identify geologic hazards that could have a potential impact to Project construction or operation.

3.2.1 Existing Environment

Both of the proposed Project corridors are located in the southern part of the Basin and Range physiographic province. The Basin and Range physiographic province is characterized by north-south trending mountain ranges that are separated by alluvium-filled, nearly flat to gently sloping valleys.

The proposed Gemmill to Tortoise ROW corridor is located in the Coyote Springs Valley and the Moapa Valley. These valleys are surrounded by rugged mountain ranges. From north to south, these are the mountain ranges: Meadow Valley Mountains (to the east of Coyote Springs Valley and north of Moapa Valley); Las Vegas Range and Sheep Range (to the west of Coyote Springs Valley); and Arrow Canyon Range (south of Moapa Valley). The predominant strata in the mountain ranges include limestone and dolomites of Paleozoic age (Longwell et al. 1965, Tschanz

and Pampeyan 1970, Stewart 1980, Stewart and Carlson 1978). The valleys primarily contain Cenozoic sedimentary rocks that consist of alluvial, fluvial, playa, lacustrine, and spring deposits (Stewart 1980; Figure 3-1). Elevations along the proposed ROW corridor range from 2,700 feet to 1,700 feet, with surrounding mountain ranges containing peaks that range from approximately 4,500 feet to almost 10,000 feet.

The majority of lands crossed by the proposed Silverhawk to Newport ROW corridor are either open desert or the alluvial areas and foothills associated with the Las Vegas Mountain Range, Sunrise Mountain, Frenchman Mountain, and River Mountains (Figure 3-2). The entire route is underlain by unconsolidated Quaternary alluvium. This term applies to unconsolidated materials that differ widely in character and origin. The alluvium is present in a variety of forms including clay, silt and sand on the old flood plains composed of coarse, gravely deposits spread by sporadic sheet floods on wide slopes bordering high ranges; boulder deposits in alluvial fans built up by temporary streams that issue from narrow canyons; windblown sand forming irregular sheets or dunes; and heaps of coarse slide rock forming talus slopes below steep cliffs (Longwell et al. 1965).

3.2.1.1 Geologic Hazards

Geologic hazards include earthquakes (seismicity) and active faults. The seismicity of both Project areas is low relative to the western United States in general. Seismicity values range between 10 percent and 20 percent of gravity, with a 2 percent probability of exceedance over the next 50 years (Peterson et al. 2008). No earthquakes greater than 3.0 in magnitude on the Richter scale have been recorded by the U.S. Geological Survey (USGS) within 1 mile of either corridor since 1973, which is the oldest year for which information is available (USGS – National Earthquake Information Center 2009).

Quaternary faults, which are considered to still be active, are present within one mile of the proposed Project ROW corridors. For example, along the western edge of the Gemmill to Tortoise corridor, the Wildcat Wash and Arrow Canyon Range faults are located within 1 mile of the ROW corridor. The Wildcat Wash fault last moved in the middle to late Quaternary (<750 thousands of years before the present) and the Arrow Canyon Range fault last moved sometime during the Quaternary (<1.6 millions of years ago; USGS and Nevada Bureau of Mines and Geology 2006). The Frenchman Mountain fault is located west of the proposed Silverhawk to Newport corridor and was last active during the late Quaternary (<130,000 years before the present).

3.2.2 Mineral Resources

The BLM and State of Nevada manage mineral resources in the Project area. An inventory of federal mineral resources was reviewed to identify locatable, leasable, and salable mineral resources present in the Project area. Locatable resources are typically metallic mineral deposits, such as copper and gold. Leasable resources include energy resources, such as petroleum, natural gas, and coal. Salable resources include sand and gravel. Information for the inventory was obtained primarily from the Geocommunicator online database maintained by the BLM and U.S. Forest Service (USFS; BLM and USFS 2011). Additional information was obtained from publications and maps of the USGS, BLM, and the Nevada Bureau of Mines and Geology.

3.2.2.1 Gemmill to Tortoise

There are many active mining claims located within one mile of the proposed Gemmill to Tortoise ROW corridor, including 54 placer claims located near the eastern end of the Project area (BLM and USFS 2011). These mining claims are mostly related to gypsum, limestone, or borate deposits (Longwell et al. 1965; Quade and Tingley 1985; BLM and USFS 2011).

Leasable mineral resources include fluid resources, such as oil and gas deposits, as well as geothermal resources. There are no active leases within or near the Project area. There is, however, some potential for the development of geothermal resources near the head of the Muddy River, based on the thermal springs located near Moapa, Nevada.

There are salable resources within the Project area, particularly silica sand and aggregate pits near Moapa, Nevada (Hess and Davis 2010).

3.2.2.2 Silverhawk to Newport

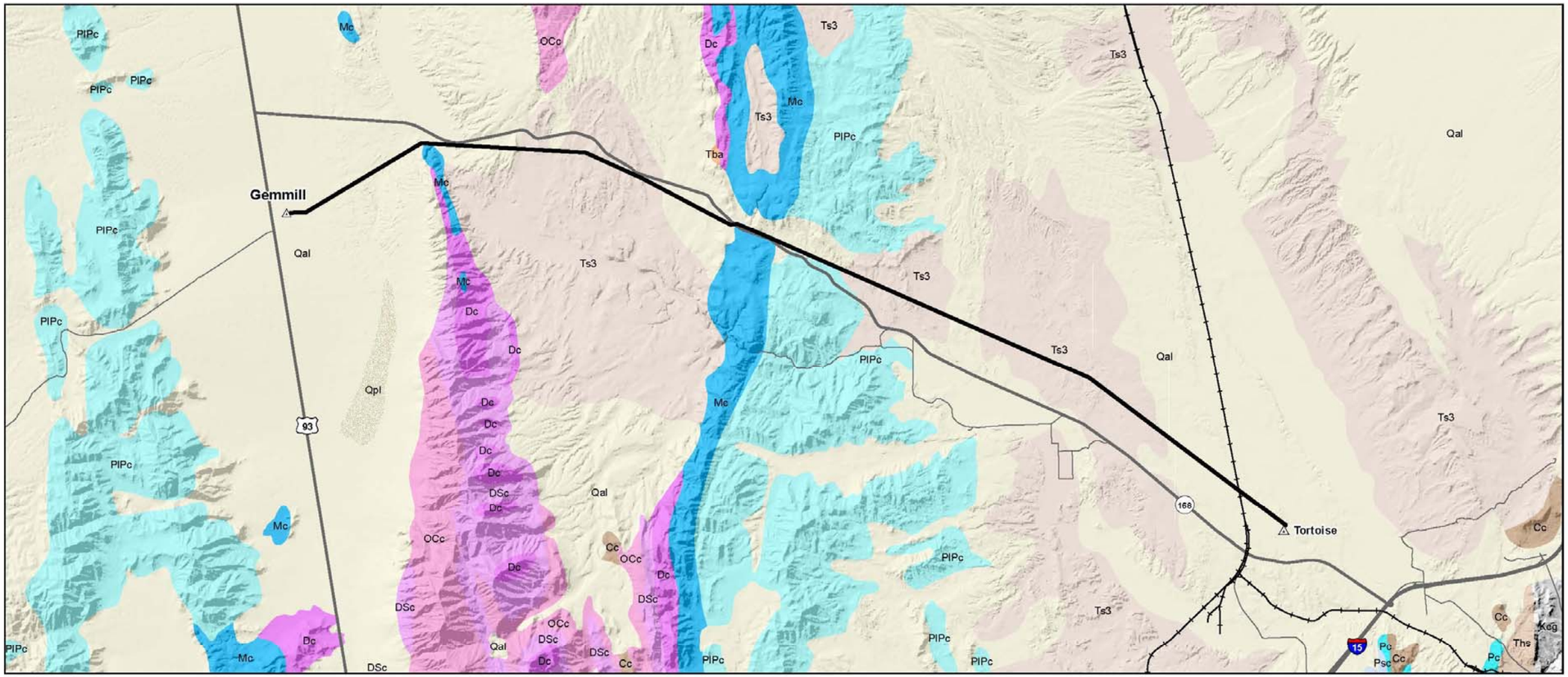
The largest currently active locatable mineral activities within the Silverhawk to Newport Project area are the Pabco and Pioneer gypsum mines, which are located within 1 mile east of the proposed Silverhawk to Newport ROW corridor (Hess and Davis 2010). Additional locatable mineral activities include a number of active mining claims within 1 mile of the proposed ROW corridor (BLM and USFS 2011). Currently, there are 29 placer claims located near the northern and southern ends of the proposed Silverhawk to Newport ROW corridor, and 5 mill site claims located along the northern half of the proposed corridor. These mining claims are mostly related to gypsum, limestone, or borate deposits (Longwell et al. 1965; Quade and Tingley 1985; BLM and USFS 2011). There are no active mineral resource leases within the Project area.

3.3 Soils

This section describes soil conditions within the two Project areas. The Proposed Action includes two non-adjacent transmission lines. Therefore, soil resources have been assessed separately along the two proposed alignments.

Soil data were obtained from the United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database. Soil data were derived from the following soil surveys: NV788 (Las Vegas Valley Area, Part of Clark County); NV755 (Clark County Area); and NV608 (Virgin River Area; USDA-NRCS 2010).

Soil map units were assessed for their susceptibility to both water and wind erosion. Susceptibility to water erosion was assessed based on the K-factor values assigned to the soil units by the NRCS. Generally, soils that have been assigned higher K-factors are more susceptible to water erosion. K-factors less than 0.20 have a low susceptibility, K-factors greater than 0.40 have a high susceptibility, and K-factors between 0.20 and 0.40 have a moderate susceptibility to water erosion. Susceptibility to wind erosion was assessed based on Wind Erodibility Groups (WEG) to which the individual soil units were assigned. Soils that are almost pure sand or silt with little to no binding agents, such as clay or organic material, are most susceptible to wind erosion; whereas



VICINITY MAP

PROJECT FEATURES

- Proposed Action

GENERAL REFERENCE

- Interstate, Highway
- Local Road, Dirt Road
- Railroad
- Exising Substation

Sources
Geology - USGS 2007; Roads - NV BLM; Railroad - ESRI;
Substations - Platts 2010

GEOLOGIC UNIT

- Qal - Alluvium, undifferentiated
- Qpl - Playa, lake bed, and flood plain deposits
- Tba - Andesite and basalt flows (Miocene and Oligocene)
- Ths - Tuffaceous sedimentary rocks (middle Miocene to upper Oligocene)
- Ts3 - Younger tuffaceous sedimentary rocks incl. Muddy Creek Formation (Pliocene and Miocene)
- Pc - Cherty limestone, dolomite, shale, and sandstone (Middle to Lower Permian)
- Psc - Siltstone, sandstone, limestone, and dolomite (Lower Permian, Leonardian and Wolfcampian)
- PIPc - Limestone, dolomite, siltstone, sandstone, and shale (Lower Permian and Pennsylvanian)
- Mc - Limestone including Monte Cristo Limestone (Mississippian)
- Dc - Limestone and minor dolomite (Upper and Middle Devonian)
- DSc - Dolomite (Lower Devonian and Silurian)
- OCc - Limestone, dolomite, and quartzite (Middle Ordovician to Upper Cambrian)
- Cc - Dolomite, limestone, and shale (Cambrian)

EASTERN NEVADA TRANSMISSION PROJECT

GEMMILL to TORTOISE

Figure 3-1
Geologic Units

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silver state energy association

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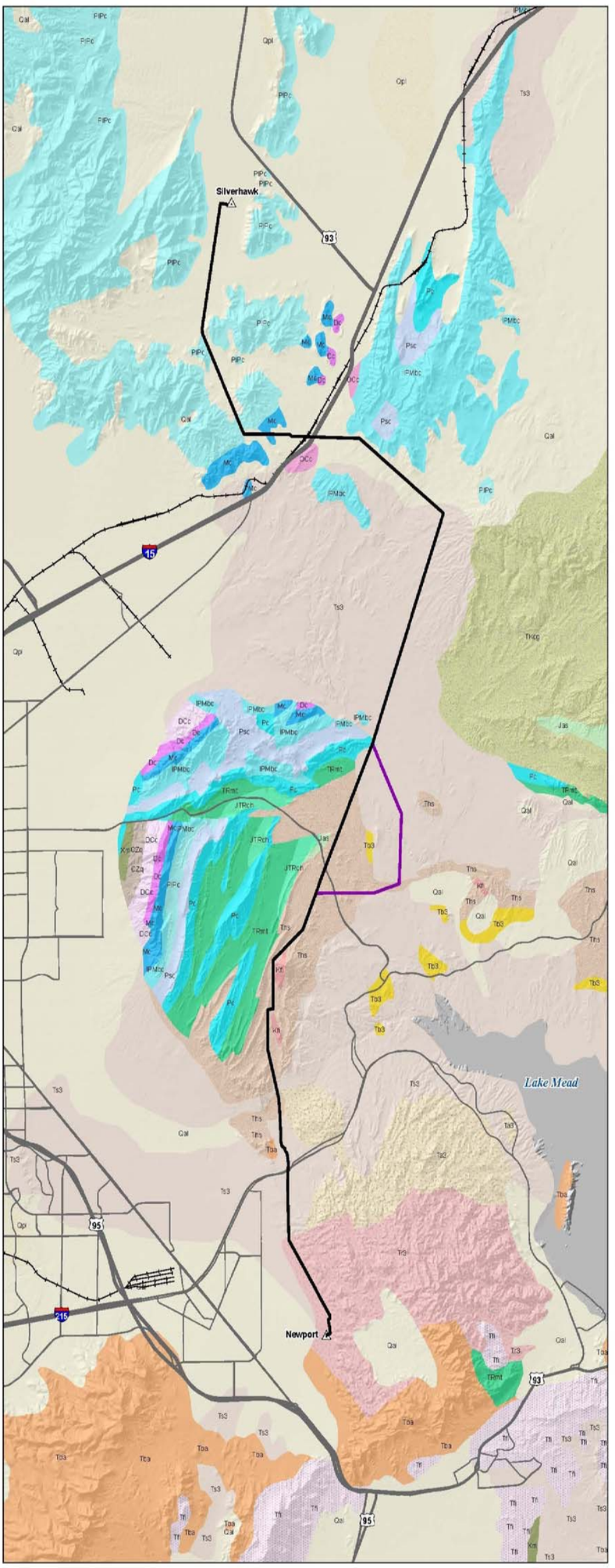
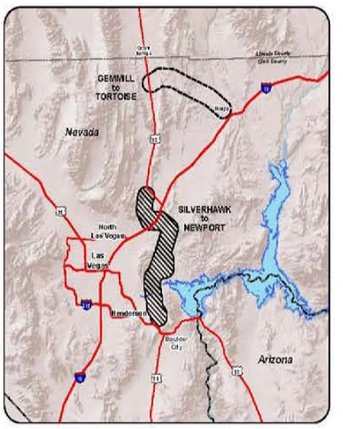


VICINITY MAP



PROJECT FEATURES

- Proposed Action
- Alternative Alignment

GEOLOGIC UNIT

- Qal - Alluvium, undifferentiated
- Qp - Playa, lake bed, and flood plain deposits
- Tba - Andesite and basalt flows (Miocene and Oligocene)
- Ths - Tuffaceous sedimentary rocks incl. Horse Spring Formation (middle Miocene to upper Oligocene)
- Ts3 - Younger tuffaceous sedimentary rocks (Pliocene and Miocene)
- Tb3 - Basalt (Miocene)
- Ta3 - Younger andesite and intermediate flows and breccias (Miocene)
- Ti5 - Younger rhyolitic flows and shallow intrusive rocks (Miocene)
- Ti - Felsic phaneritic intrusive rocks (Miocene to Eocene)
- Kfi - Felsic phaneritic intrusive rocks (Cretaceous)
- TKcg - Conglomerate and clastic rocks (Tertiary(?) and Cretaceous(?))
- Jas - Eolian cross-bedded sandstone incl. Aztec Sandstone (Jurassic)
- JTRch - Continentally derived siltstone and clay (Lower Jurassic and Upper Triassic)
- TRmt - Marine siltstone, limestone, and conglomerate incl. Chinle and Moenkopi formations (Middle(?) and Lower Triassic)
- Pc - Cherty limestone, dolomite, shale, and sandstone (Middle to Lower Permian)
- Psc - Siltstone, sandstone, limestone, and dolomite incl. Bird Spring Formation (Lower Permian, Leonardian and Wolfcampian)
- PIPc - Limestone, dolomite, siltstone, sandstone, and shale incl. Bird Spring Formation (Lower Permian and Pennsylvanian)
- IPMbc - Bioclastic limestone incl. Callville Limestone (Pennsylvanian and Upper Mississippian)
- Mc - Limestone incl. Monte Cristo Limestone (Mississippian)
- Dc - Limestone and minor dolomite (Upper and Middle Devonian)
- DCc - Limestone, dolomite, and quartzite incl. Ely Springs Dolomite, Eureka Quartzite, and Pogonip Group (Middle Ordovician to Upper Cambrian)
- DCc - Dolomite and limestone (Middle Devonian to Upper Cambrian)
- CZq - Cross-bedded quartzite, siltstone, and phyllite (Lower Cambrian and latest Proterozoic)
- Xm - Gneiss and schist (Early Proterozoic)

GENERAL REFERENCE

- Interstate, Highway
- Major Road
- Railroad
- Substation

SOURCES:
Geology - USGS 2007; Roads - NV DLM;
Hydrology - ESRI; Subdivisions - Plats 2010

EASTERN NEVADA TRANSMISSION PROJECT

SILVERHAWK to NEWPORT

Figure 3-2

Geologic Units

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ssea
silver state energy association

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rock outcrops or areas covered in a rock armature, such as desert pavement, are not as susceptible to wind erosion. Soils with a WEG of 1 or 2 have a high susceptibility and those with 3, 4, or 4L have a moderate susceptibility (USDA-NRCS 2010).

3.3.1 Existing Environment

3.3.1.1 Gemmill to Tortoise

The proposed Gemmill to Tortoise ROW corridor crosses nine soil map units. The soil map units, including a brief description of their characteristics are provided in Table 3-5.

Table 3-5 Soil Map Units (Gemmill-Tortoise)

Soil Map Unit	Component Series	Component Percentage	Drainage	Landscape Position	Slope	K-factor	WEG
Colorock-Tonopah association, moderately sloping association							
	Colorock	55%	Well drained	Fan remnants	2-8%	0.24	6
	Tonopah	40%	Excessively drained	Fan remnants	2-8%	0.24	6
Glendale loam consociation							
			Well drained	Floodplains	0-2%	0.49	4L
Glendale fine sand consociation							
			Well drained	Floodplains	0-2%	0.17	1
Rock land-St. Thomas association, very steep association							
	Rock land	60%	---	Mountains	15-50%	0.02	8
	St. Thomas	30%	Well drained	Mountains	15-50%	0.02	8
Tonopah gravelly sandy loam consociation							
			Excessively drained	Fan remnants	0-4%	0.10	5
Weiser cobbly sandy loam consociation							
			Well drained	Fan remnants	15-30%	0.17	4
Tonopah very gravelly, sandy loam consociation							
			Excessively drained	Fan remnants	4-15%	0.10	5
Gila loam, strongly saline consociation							
			Well drained	Floodplains	0-2%	0.49	4L
Bard gravelly fine sandy loam consociation							
			Well drained	Fan remnants	2-8%	0.17	2

Source: USDA-NRCS 2010

3.3.1.2 Silverhawk to Newport

The proposed Silverhawk to Newport ROW corridor crosses 22 soil map units. Alternative 1 crosses all 22 units in addition to 3 more. The soil map units, including a brief description of their characteristics is provided in Table 3-6. Soil units located only within Alternative 1 are denoted with an asterisk (*).

Table 3-6 Soil Map Units (Silverhawk-Newport)

Soil Map Unit	Component Series	Component Percentage	Drainage	Landscape Position	Slope	K-factor	WEG
Colorock-Tonopah association, moderately sloping association							
	Colorock	55%	Well drained	Fan remnants	2-8%	0.24	6
	Tonopah	40%	Excessively drained	Fan remnants	2-8%	0.24	6
Bard-Tonopah association							
	Bard	60%	Well drained	Fan remnants	2-4%	0.28	5
	Tonopah	40%	Excessively drained	Fan remnants	2-4%	0.28	5
Rock land-St. Thomas association, very steep association							
	Rock land	60%	---	Mountains	15-50%	0.02	8
	St. Thomas	30%	Well drained	Mountains	15-50%	0.02	8
Bard gravelly fine sandy loam consociation							
			Well drained	Fan remnants	2-8%	0.17	2
Weiser-Arizo association							
	Weiser	65%	Well drained	Fan remnants	2-8%	0.05	8
	Arizo	25%	Excessively drained	Fan remnants	2-8%	0.05	8
Wechech very gravelly fine sandy loam consociation							
			Well drained	Backslopes of fan remnants	8-30%	0.05	6
Upperline very gravelly, sandy loam consociation							
			Well drained	Rock pediments	4-15%	0.05	6
Guardian-Baseline-Guardian association							
	Guardian, calcareou	45%	Excessively drained	Pediments	2-15%	0.17	3
	Baseline	25%	Well drained	Fan remnants	2-15%	0.17	3
	Guardian	15%	Excessively drained	Pediments	2-15%	0.17	3

Table 3-6 Soil Map Units (Silverhawk-Newport)

Soil Map Unit	Component Series	Component Percentage	Drainage	Landscape Position	Slope	K-factor	WEG
Rock outcrop-Redneedle-Heleweiser association							
	Rock outcrop	35%	---	Cliffs	8-30%	0.24	8
	Redneedle	30%	Somewhat excessively drained	Hills	15-50%	0.24	6
	Heleweiser	20%	Well drained	Fan remnants	8-30%	0.24	6
Sunrock-Callville-Badland association							
	Sunrock	45%	Well drained	Mountains	15-50%	0.10	6
	Callville	25%	Well drained	Hills	15-30%	0.10	6
	Badland	---	---	Hills	15-30%	0.10	6
Drygyp fine sandy loam consociation*							
			Somewhat excessively drained	Pediments or summits	2-4%	0.15	1
Guardian-Baseline association*							
	Guardian	45%	Well drained	Pediments	2-30%	0.24	6
	Baseline	40%	Well drained	Fan remnants	2-30%	0.24	6
Baseline-Gypwash association							
	Baseline	65%	Well drained	Fan remnants	2-8%	0.05	8
	Gypwash	20%	Somewhat excessively drained	Fan remnants	2-8%	0.05	8
Carrizo-Carrizo-Riverbend association*							
	Carrizo, rarely flooded	65%	Excessively drained	Inset fans	2-15%	0.02	2
	Carrizo	25%	Excessively drained	Drainageways	2-15%	0.02	2
	Riverbend	20%	Excessively drained	Fan remnants	2-15%	0.02	2
Gypwash-Callville-Carrizo association							
	Gypwash	45%	Excessively drained	Fan remnants	0-30%	0.05	8
	Callville	25%	Well drained	Fan remnants	0-30%	0.05	8
	Carrizo	15%	Excessively drained	Drainageways	0-30%	0.05	8

Table 3-6 Soil Map Units (Silverhawk-Newport)

Soil Map Unit	Component Series	Component Percentage	Drainage	Landscape Position	Slope	K-factor	WEG
Baseline-Callville-Badland							
	Baseline	50%	Well drained	Fan remnants	2-20%	0.05	8
	Callville	20%	Well drained	Fan remnants	2-20%	0.05	8
	Badland	15%	Well drained	Pediments	2-20%	0.05	8
Sunrock-Haleburu-Rock outcrop association							
	Sunrock	40%	Well drained	Mountains	30-75%	0.10	8
	Haleburu	25%	Well drained	Mountains	30-75%	0.10	8
	Rock outcrop	20%	Well drained	Cliffs	30-75%	0.10	8
Land very fine sandy loam, wet association							
			Somewhat poorly drained	Alluvial flats	0-2%	0.28	3
Nickel very gravelly fine sandy loam association							
			Well drained	Fan remnants	2-8%	0.10	5
Arizo very gravelly fine sandy loam							
			Excessively drained	Inset fans	2-8%	0.05	8
Akela-Rock outcrop complex							
	Akela	55%	Well drained	Mountains	15-50%	0.10	5
	Rock outcrop	35%	Well drained	Mountains	15-50%	0.10	5
Caliza extremely cobbly fine sandy loam consociation							
			Well drained	Inset fans	2-8%	0.05	8
Arizo very gravelly loam sand, flooded consociation							
			Excessively drained	Channels	0-4%	0.05	8
Caliza-Pittman-Arizo complex							
	Caliza	60%	Well drained	Fan remnants	0-8%	0.05	8
	Pittman	20%	Well drained	Fan remnants	0-8%	0.05	8
	Arizo	15%	Well drained	Channels	0-8%	0.05	8
Tonopah-Arizo association							
	Tonopah	45%	Excessively drained	Fan remnants	4-15%	0.20	5
	Arizo	40%	Excessively drained	Fan aprons	4-15%	0.20	5

Source:USDA-NRCS 2010

3.3.2 Summary of Soil Resource Susceptibilities

3.3.2.1 Gemmill to Tortoise

Soil units within the proposed Gemmill to Tortoise Project ROW corridor generally exhibit low susceptibility to water erosion with some soils having a moderate to high erosion potential. Soils with a moderate to high susceptibility to water erosion include the Colorock-Tonopah, moderately steep association (moderate erosion potential) and the Glendale loam consociation and Gila loam, strongly saline consociation (high erosion potential; USDA-NRCS 2010).

Soil units within the proposed Gemmill to Tortoise ROW corridor exhibit the full range of the WEGs (WEG of 1 through 8). Soils within the ROW corridor generally have a moderate, low, or no susceptibility to wind erosion. Soil units that have a high to very high susceptibility to wind erosion include the Bard gravelly fine sandy loam consociation (high erosion potential) and the Glendale loam consociation (very high erosion potential; USDA-NRCS 2010).

3.3.2.2 Silverhawk to Newport

Soil units within the proposed Silverhawk to Newport ROW corridor generally exhibit low susceptibility to water erosion with some soils having a moderate to high erosion potential. Soils with a moderate susceptibility to water erosion include the Colorock-Tonopah, moderately sloping association, Bard-Tonopah association, Rock outcrop-Redneedle-Heleweiser association, Guardian-Baseline association, and the Land very fine sandy loam, wet consociation. The Guardian-Baseline association is only located along Alternative 1 and is not found along the proposed Silverhawk to Newport ROW corridor (USDA-NRCS 2010).

Soil units within the proposed Silverhawk to Newport ROW corridor exhibit the full range of the WEGs (WEG of 1 through 8). Soils within the ROW corridor generally have a moderate, low, or no susceptibility to wind erosion. Soils that have a high to very high susceptibility to wind erosion include the Bard gravelly fine sandy loam consociation and the Carrizo-Carrizo- Riverbend association (high erosion potential) and the Drygyp fine sandy loam consociation (very high erosion potential). The Carrizo-Carrizo-Riverbend association and the Drygyp fine sandy loam consociation are only located along the Alternative 1 corridor and are not found along the proposed Silverhawk to Newport ROW corridor (USDA-NRCS 2010).

3.4 Water Resources

This section describes the affected environment for water resources, including groundwater, surface water, floodplains, and water quality.

3.4.1 Surface Water

3.4.1.1 Gemmill to Tortoise

The proposed Gemmill to Tortoise ROW corridor crosses four separate hydrographic basins from west to east. These include the Coyote Springs Valley (Basin No. 210), Muddy River Springs Area

(Basin No. 219), California Wash (Basin No. 218), and Lower Meadow Valley Wash (Basin No. 205). All four hydrographic areas are part of the Colorado River Basin Hydrographic Region (Region 13; Figure 3-3).

Numerous dry washes cross the proposed ROW corridor. At approximately MP 3, the proposed corridor crosses the Pahranagat Wash. All washes in the Project area ultimately drain into the Muddy River. From approximately MP 12 to MP 16.5, the proposed ROW corridor parallels the Muddy River, which is approximately 1 mile to the south. At MP 16.5, the Muddy River turns south and then back southeast about 2.5 to 3 miles south of the Project.

3.4.1.2 Silverhawk to Newport

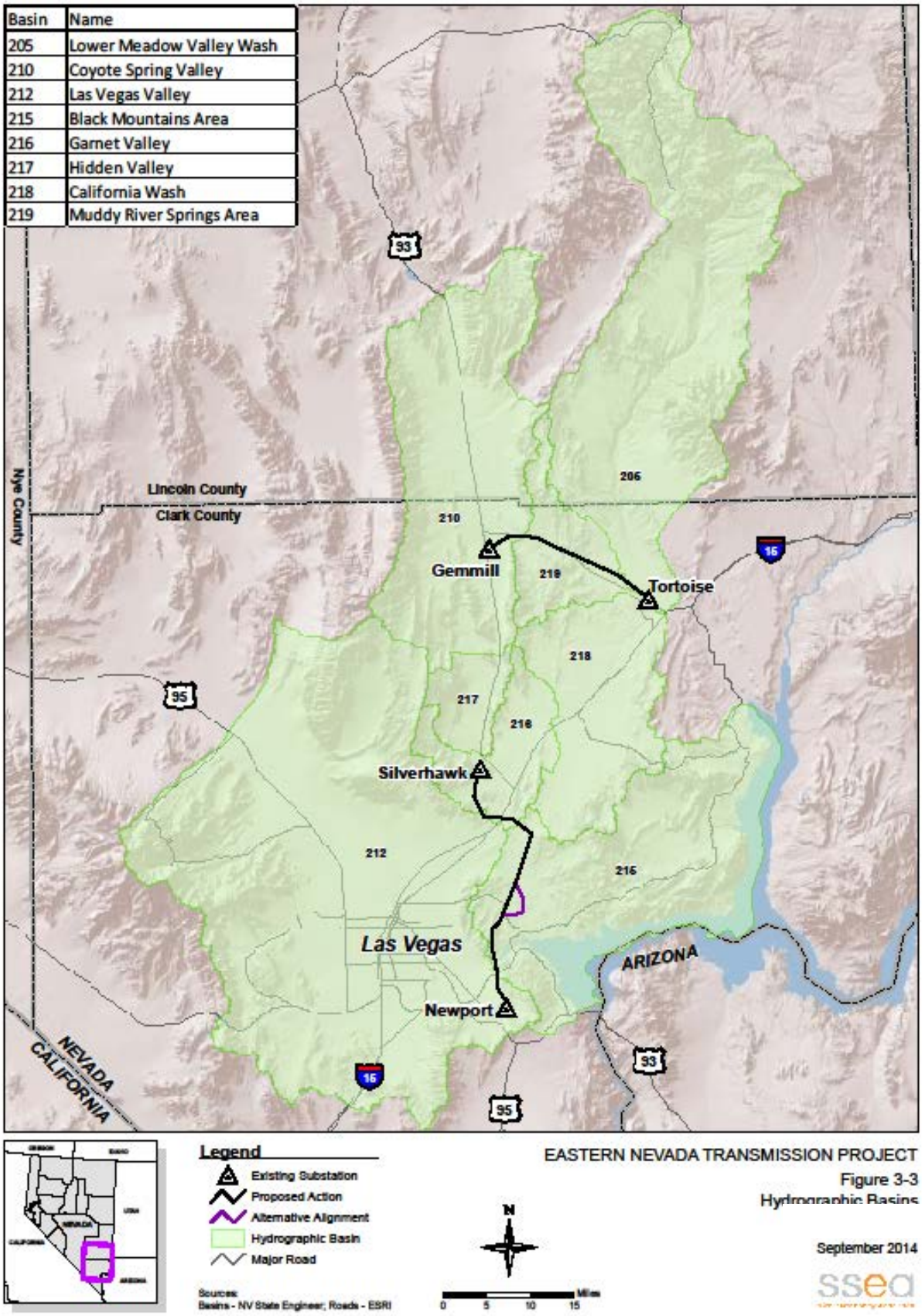
The proposed Silverhawk to Newport ROW corridor crosses three separate hydrographic basins from north to south. These include the Garnet Valley (Basin No. 216), Las Vegas Valley (Basin No. 212), and Black Mountain Area (Basin No. 215), and then re-entering the Las Vegas Valley (area 212). These three hydrographic areas are also part of the Colorado River Basin Hydrographic Region (Region 13; Figure 3-3).

The only major wash crossed by the proposed Silverhawk to Newport ROW corridor is the Las Vegas Wash (just south of MP 27). The Las Vegas Valley Wash is a 12-mile-long channel that feeds most of Las Vegas Valley's excess water into Lake Mead. The watershed encompasses approximately 1,550 square miles, and is generally bounded on the north by the Sheep Mountains, on the west by the Spring Mountains, on the south by the McCullough Mountains, and on the east by the River and Frenchman Mountains (Clark County Regional Flood Control District 2002). The terrain in the watershed include steep mountain slopes that transition to alluvial fans, which in turn drain to braided washes, sheet flow areas, and incised washes. There are many small ephemeral washes in the area that drain into the Las Vegas Wash.

The Las Vegas Wash is fed by urban runoff, groundwater, treated wastewater discharge, urban and agricultural irrigation, and stormwater. Due to constant inflow of treated wastewater, the Las Vegas wash has become a perennial waterway with an average flow of 153 million gallons per day or 220 cubic feet per second (Las Vegas Wash Coordination Committee 2010a).

3.4.2 Groundwater

As stated above, the Project area for both ROW corridors includes portions of six hydrographic basins. Extensive groundwater resources are located in these valley basins. The basins are a complex sequence of interfingered and intermixed deposits of boulders, gravels, sands, silts, and clays with depths up to 3,000 feet in some portions of the valleys. Groundwater occurs in four general aquifer systems: (1) shallow aquifers defined as waters from 0 to 50 feet below ground surface (bgs) with water table less than 20 feet bgs; (2) near surface aquifers defined as 0 to 200 ft bgs with the water table greater than 20 feet bgs; (3) principal aquifers, generally greater than 200 feet bgs; and (4) regional carbonate aquifers, normally occurring at depths of several thousand feet bgs (BLM 1998; BLM 1990).


Basin Name
205 Lower Meadow Valley Wash
210 Coyote Spring Valley
212 Las Vegas Valley
215 Black Mountains Area
216 Garnet Valley
217 Hidden Valley
218 California Wash
219 Muddy River Springs Area
93
Nye County
Lincoln County
Clark County
206
210
219
218
217
216
212
215
Gemmill
Tortoise
Silverhawk
Las Vegas
Newport
ARIZONA
NEVADA
CALIFORNIA
95
15
Legend
Existing Substation
Proposed Action
Alternative Alignment
Hydrographic Basin
Major Road
Sources:
Basins - NV State Engineer; Roads - ESRI
N
0 5 10 15 Miles
EASTERN NEVADA TRANSMISSION PROJECT
Figure 3-3
Hydrographic Basins
September 2014
ssea

3.4.2.1 Gemmill to Tortoise

There are approximately 250 groundwater wells within 2 miles of the proposed Gemmill to Tortoise ROW corridor (Nevada Department of Water Resources [NDWR] 2010). Based on a review of the NDWR well log database, 197 of these have been drilled to depths below 200 feet indicating use of a near-surface aquifer, while 53 have been drilled to depths ranging from 200 feet to over 1,000 feet indicating use of a principal or carbonate aquifer.

Along the proposed Gemmill to Tortoise ROW corridor, wells with a static water level less than 20 feet are clustered along the Muddy River and then along Meadow Valley Wash. The closest Muddy River well with a static water level less than 20 feet is more than 0.5 miles south of the proposed ROW corridor. Domestic wells are exempt from the State Engineer's permitting process, so the wells described above should be viewed as a sampling of the wells in the Project area and not a complete inventory (NDWR 2010; Berger et al. 1988).

3.4.2.2 Silverhawk to Newport

There are approximately 480 groundwater wells within 2 miles of the proposed Silverhawk to Newport ROW corridor (NDWR 2010). Of these, 368 wells have been drilled to depths below 200 feet and 116 wells have been drilled to depths ranging from 200 to over 2,000 feet. Along the proposed Silverhawk to Newport ROW corridor, wells with a static water level less than 20 feet are clustered along Las Vegas Wash.

3.4.3 Water Quality

3.4.3.1 Surface Water

Every two2 years, NDEP assesses water quality data for waters in the State. NDEP and the EPA have agreed that Nevada need not develop a 2008 303(d) Impaired Waters List, but can combine the 2008 and 2010 303(d) Impaired Waters Lists. The 2008-2010 report was published in May 2013.

3.4.3.2 Gemmill to Tortoise

The Muddy River from its source to Glendale has been found to be fully supporting of the following beneficial uses: watering of livestock, irrigation, propagation of wildlife, recreation without contact, and industrial supply. It has been found to be not supporting of the beneficial use "aquatic life support." Causes of this impairment are arsenic and boron, which are thought to be naturally occurring. Additional pollutants or stressors of concern are total iron, temperature, and total phosphorus (NDEP 2013).

3.4.3.3 Silverhawk to Newport

Water quality of the Las Vegas Wash has been established through a long-term monitoring program (Reclamation and NPS 2005). The pH values in the Las Vegas Wash are within the

required range for sustaining designated beneficial uses. Dissolved oxygen levels are adequate to support fish. However, the Las Vegas Wash is considered poor habitat for most fish species because of the high flow velocities, suspended sediment, unstable bottom, and more recently, blockage by erosion control structures. The Las Vegas Wash generally has low levels of algae, fecal coliform, and total suspended solids, except during storm runoff events when total suspended solid values increase due to runoff. The segment of the Las Vegas Wash below Telephone Line Road is on Nevada's 2006 303(d) Impaired Waters List due to total iron and molybdenum (NDEP 2013). The majority of iron is in particulate form in sediments.

3.4.3.4 Groundwater

The quality of groundwater in unconsolidated deposits in the Basin and Range area varies from basin to basin. The groundwater quality of deeper groundwater in this area of Clark County is generally good, with dissolved-solids concentrations ranging from less than 500 milligrams per liter (freshwater) to approximately 1,000 milligrams per liter. Shallow aquifers in the area are of generally poor quality. Groundwater has lower dissolved solids at the basin margins and on the slopes of alluvial fans. In the Project area, the ground water in the valley centers would be expected to have higher total dissolved solids; however, a deeper freshwater flow system is also present in the carbonate aquifers (USGS 2010).

3.4.4 Floodplains and Wetlands

Floodplain boundaries for the 100-year flood in the two Project areas have been established by the Federal Emergency Management Agency (FEMA) and presented in Flood Insurance Rate Maps (FIRM) for Clark County (FEMA 2002). The 100-year flood is defined as a flood that has a 1 percent chance of being equaled or exceeded in any given year.

3.4.4.1 Gemmill to Tortoise

The FIRMs covering the proposed Gemmill to Tortoise ROW corridor show that the proposed Project would cross a 100-year floodplain in five different locations. Just before MP 2, the proposed corridor crosses an unnamed wash with an estimated 400-foot wide floodplain. Between MP 3 and MP 3.5, the proposed corridor crosses the Pahranagat Wash 100-year floodplain which is approximately 0.3-miles wide. The proposed corridor then crosses the Wildcat Wash floodplain between MP 4.5 and MP 5 for approximately 400 feet. Between MP 7 and MP 7.5, the proposed corridor crosses the 400 foot wide Dead Man Wash floodplain. Finally, between MP 9 and MP 9.5, the proposed corridor crosses the 500-foot wide McKay Wash floodplain.

3.4.4.2 Silverhawk to Newport

The FIRMs that include the proposed Silverhawk to Newport ROW corridor show that the proposed Project would cross the 100-year floodplains of Las Vegas Wash, Gypsum Wash, and an unnamed wash. The width of the Las Vegas Wash 100-year floodplain varies significantly along the Wash, ranging from less than 200 feet wide where the wash has been channeled to over 2,000 feet in lower reaches of the Wash (i.e., Pabco Road area). The FEMA floodplain map shows that the proposed ROW corridor would cross the 100-year floodplain between MP 27 and MP 27.5.

The width of the floodplain at the proposed crossing is approximately 650 feet which includes a tributary to Las Vegas Wash.

The proposed Silverhawk to Newport ROW corridor crosses the 600-foot wide Gypsum Wash 100-year floodplain between MP 17.5 and MP 18. The alternative alignment re-crosses the Gypsum Wash floodplain as it turns to the southeast. The proposed ROW corridor then crosses the 300-foot wide floodplain of an unnamed wash between MP 21 and MP 21.5. The alternative alignment crosses the same floodplain approximately one mile before rejoining the proposed Silverhawk to Newport ROW corridor.

Although no formal wetland delineations were completed for the Project, portions of the Las Vegas Wash support communities dominated by hydrophytic vegetation. These areas are likely to support soils and hydrological characteristics that are consistent with jurisdictional wetlands. As previously noted, the proposed Silverhawk to Newport ROW corridor crosses the Las Vegas Wash between MP 27 and 27.5 (see Figure 1-2). Although there are no hydric soils in the Project area, there may be jurisdictional wetlands within or near this crossing.

3.5 Biological Resources

3.5.1 Regulatory Framework

3.5.1.1 Federal

The ESA of 1973 (16 USC Section 1531 et seq.), as amended, provides for the conservation of federally listed plant and animal species and their habitats. The ESA directs federal agencies to conserve listed species, and imposes an affirmative duty on these agencies to ensure that their actions are not likely to jeopardize the existence of a listed species or destroy their habitat.

The Migratory Bird Treaty Act of 1918 (16 USC 703-711), as amended, protects migratory bird species. The Migratory Bird Treaty Act prohibits hunting, taking, possessing, selling, purchasing, shipping, transporting, or possessing any migratory bird, part, nest, or egg, unless permitted by regulations.

The Bald and Golden Eagle Protection Act of 1940 (16 USC 668a-d), as amended, prohibits any form of taking or possession of bald and golden eagles.

The BLM Special Status Species Management 6840 establishes policy for the management and conservation of sensitive plant and animal species. Policy 6840 gives the BLM State Director the responsibility of designating BLM sensitive species in consultation with state wildlife agencies and Natural Heritage Programs.

Federal Executive Order 13112, *Prevention and Control of Invasive Species* (3 February 1999), requires any federal agency whose action may affect the status of invasive species to undertake reasonable and appropriate measures to prevent or minimize the spread of invasive species, and to monitor and manage their conditions. The order defines invasive species as “alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.”

NDOW and NDF have listed endangered and threatened animal and plant species in Nevada. NRS Chapter 503 regards the protection and management of special status wildlife species, while NRS Chapter 527 regards the protection and management of special status plant species, including all species of cacti and yucca and Christmas trees.

The Nevada Department of Agriculture regulates noxious and non-native, invasive weed presence. According to NAC 555.010, it is the responsibility of the landowner, both public and private, to manage and control listed noxious species.

3.5.1.2 Local

The Clark County Multiple Species Habitat Conservation Plan (MSHCP) was prepared by Clark County, the incorporated cities of Las Vegas, North Las Vegas, Henderson, Boulder City, Mesquite, and NDOT as a requirement for receiving an ESA Section 10 a; 1 B incidental take permit from the USFWS. The permit covers the incidental take of 78 covered species on non-federal lands within Clark County. The issuance of the permit by the USFWS and the implementation of the MSHCP allows for the continued development of non-federal lands within Clark County in exchange for conservation programs to benefit the covered species. The covered species include species that are currently listed as endangered or threatened by the USFWS along with species that are currently unlisted but were thought to have a chance to become listed in the near future without the implementation of the conservation measures. In addition to the covered species, the MSHCP also includes evaluation and watch list species that are not covered by the take permit but are available to receive conservation measures under the plan.

3.5.2 Vegetation

Both proposed Project ROW corridors are located within the Mojave Desert, the smallest of the four desert biomes in North America, intermediate between the Sonoran Desert and Great Basin Desert. The climate is arid with temperatures ranging between 20^{o}F to over 100^{o}F and average annual precipitation of 4 to 6 inches. The Mojave Desert is especially rich in ephemeral plants, many of which are endemic. These short-lived plants are primarily attuned to winter conditions and the rains that fall during the late autumn and winter months (Brown 1994).

3.5.2.1 Gemmill to Tortoise

The primary plant community in the Gemmill to Tortoise Project area is Mojave Desert scrub which is dominated by creosote (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). This open-plant community occupies areas characterized by gravelly bajadas and inconspicuous low plains. Other associated plants associated include box-thorn (*Lycium andersonii*), Mormon tea (*Ephedra* spp.), ratany (*Krameria* spp.), Mojave yucca (*Yucca schidigera*), and numerous cactus species.

The proposed Gemmill to Tortoise ROW corridor also crosses several areas that can be described as badlands. The two main badland locations along the proposed Gemmill to Tortoise ROW corridor are between MP 1 and 2.5 and between MP 12.5 and 15. These areas have soils high in clay and, in some areas, may be rich in gypsum. These areas are often highly eroded resulting in a

rugged topography of numerous small hills cut by deep drainages. These soil conditions can result in very sparse, species poor communities since many plant species cannot tolerate the harsher soil conditions. These areas though, often contain species that have adapted to grow in these harsh soil conditions. The Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*), a BLM sensitive species, is known to occur in the badland soils south and north of the Project area between MP 1 and 2.5.

In addition to the upland Mojave Desert scrub and badlands, the proposed ROW corridor crosses several small desert washes containing catclaw acacia (*Acacia greggii*) and desert willow (*Chilopsis linearis*). Between MP 12 and 16.5, the Project area parallels the Muddy River which is approximately 1 mile to the south of the proposed ROW corridor. Vegetation along the Muddy River includes cottonwood (*Populus fremontii*), willows (*Salix* sp.), mesquite (*Prosopis* spp.), and salt cedar (*Tamarix* spp.).

3.5.2.2 Silverhawk to Newport

Similar to the Gemmill to Tortoise Project area, the Silverhawk to Newport Project area is dominated by Mojave Desert scrub with areas of badlands and small desert washes. The primary badland area begins around MP 16.5 and continues to around a half mile south of the formerly-designated Sunrise Mountain ISA (MP 22). The Alternative alignment (Alternative 1) crosses primarily through similar badlands.

The proposed Silverhawk to Newport ROW corridor also crosses the Las Vegas Wash, a 12-mile long riparian channel that drains northeasterly into the western arm of Lake Mead, which drains into the Colorado River. The proposed ROW corridor crosses the Las Vegas Wash approximately 6 miles north of the Newport substation on the east side of the Las Vegas Valley. Vegetation along the wash in the Project area includes cottonwood (*Populus fremontii*), willows (*Salix* sp.), salt cedar (*Tamarix* spp.), and southern cattail (*Typha domingensis*).

3.5.2.3 Federally Listed, BLM Sensitive, and State Listed Plant Species

Consultation with federal and state agencies along with botanical field surveys conducted in Spring 2010 in the proposed Gemmill to Tortoise and Silverhawk to Newport Project areas were used for this analysis. The USFWS identified that there were no threatened or endangered plant species with the potential of occurring in either proposed ROW corridors (USFWS 2010). The Las Vegas buckwheat, a federal Candidate species at the onset of the project, was identified by the USFWS as having potential to occur in the Gemmill to Tortoise Project area. The BLM provided a list of sensitive species with the potential of occurring in the proposed ROW corridors. Information on rare plants was also requested from the Nevada Natural Heritage Program (NNHP) database (NNHP 2006). Botanical surveys were conducted in accordance with the BLM Las Vegas Field Office Rare Plant Survey Protocols (BLM no date). Surveys were not conducted along portions of Alternative 1 located within Lake Mead NRA (from approximately MP A4 through A5.5) due to lack of permission from NPS to access the area (EPG 2010a).

Table 3-7 lists the special status plant species (excluding cactus and yucca) that were identified as having potential to occur in either or both of the proposed ROW corridors. Under USFWS, Species

Table 3-7 Plant Species of Concern that May Occur within the Proposed Project Corridor (Excluding Cactus and Yucca)

Scientific Name	Common Name	USFWS Status[1]	BLM Status[2]	NDF State Status[3]	MSHCP Status[4]	Detected in 2010 Surveys
Anulocaulis leiosolenus var. leiosolenus	Sticky ringstem	Species of Concern	Special Status Species – State Sensitive	None	Covered	Yes – Silverhawk-Newport
Arctomecon californica	Las Vegas bearpoppy	Species of Concern	Special Status Species – State Sensitive	Critically Endangered	Covered	Yes – Silverhawk-Newport
Astragalus geyeri var. triquetrus	Threecorner milkvetch	Species of Concern	Special Status Species – State Sensitive	Critically Endangered	Covered	No
Enceliopsis argophylla	Silverleaf sunray	None	Special Status Species – State Sensitive	None	None	Yes – Silverhawk-Newport
Eriogonum corymbosum var. nilesii	Las Vegas buckwheat	Found Not Warranted on Sept. 24, 2014	Special Status Species-State Sensitive	Nominated as Critically Endangered	High Priority Evaluation Species	Yes – Gemmill to Tortoise (immediately outside of ROW)
Eriogonum viscidulum	Sticky buckwheat	Species of Concern	Special Status Species – State Sensitive	Critically Endangered	Covered	No
Pediomelum castoreum	Beaver dam breadroot	Species of Concern	Special Status Species – State Sensitive	None	Watch List	No
Penstemon bicolor ssp. roseus	Rosy two-toned beardtongue	Species of Concern	Special Status Species-State Sensitive	None	Watch List	Yes – Silverhawk-Newport

Sources: 1 – USFWS Environmental Conservation Online System (ecos.fws.gov); 2 – BLM 2011; 3 – NNHP 2010, NAC 527; 4 – Clark County MSHCP 2000.

of Concern is a term that refers to unlisted species that USFWS believes might be in need of concentrated conservation actions. This designation, though, does not afford the species any legal protection under the ESA. Nevada state protected species are categorized by NDF as (1) critically endangered, (2) recommended for listing as critically endangered, (3) protected as a cactus, yucca, or Christmas tree. Plant species that are state listed as critically endangered are not given an official special status designation by the BLM but are still considered sensitive species for management purposes. The BLM also considers plants given special status by the Clark County MSHCP as sensitive.

Threecorner milkvetch, sticky buckwheat, and Beaver Dam breadroot are normally found in areas of deep loose sandy soils. Neither these species nor their habitat were observed in the either proposed ROW corridors.

Gemmill to Tortoise

Las Vegas buckwheat occurs on gypsum and badland soils in eastern Clark County. While no individuals were found within the proposed Gemmill to Tortoise ROW corridor, this species was observed in the badlands near Coyote Springs just south of the proposed Gemmill to Tortoise ROW corridor near MP 1.5 (Figure 3-4; EPG 2010a). There are also other known populations of this species in the Coyote Springs area.

Silverhawk to Newport

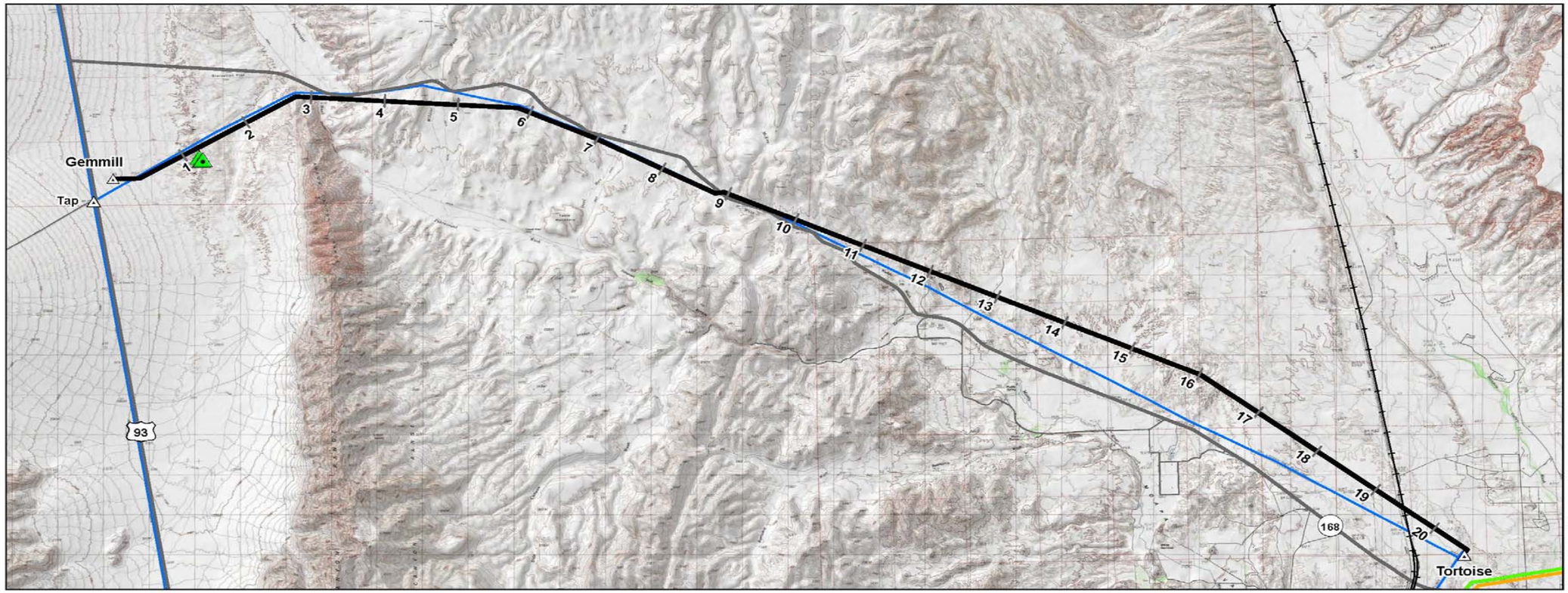
Las Vegas bearpoppy, sticky ringstem, and silverleaf sunray are found in the eastern portion of Clark County on gypsum soils in badlands and gypsum soils. Along the proposed Silverhawk to Newport ROW corridor, large numbers of these species were found co-occurring in the vicinity of the Pabco mine and the formerly-designated Sunrise Mountain ISA between MP 16.5 through MP 22.5. Silverleaf sunray and Las Vegas bearpoppy also extended south in patchy areas to the Las Vegas Wash area of the Project. The three species were also found along the Alternative 1 route on the east side of the ISA, primarily between MP A0 through MP A2.5 with the silverleaf sunray occurring throughout the route (Figure 3-5; Figure 3-6; Figure 3-7). The alternative alignment (Alternative 1) that runs closest to the Pabco mining operations had especially high densities of Las Vegas bearpoppy and sticky ringstem (EPG 2010a).

Rosy two-toned beardtongue grows in rocky areas, washes, and roadsides in eastern Clark County. In the proposed Silverhawk to Newport ROW corridor, this species was observed in a few patches on the previously disturbed soils of the Kern River Pipeline ROW between MP 2 and MP 2.5 (Figure 3-7). This species was seeded in the general area as part of the mitigation after the construction of the Kern River Pipeline (Hiatt 2010, personal communication). Just north of the Project area, several large patches of this species were observed growing alongside US 93 and a few scattered individuals were found in washes just north of the Silverhawk substation (Figure 3-7) (EPG 2010a).

3.5.2.4 Cactus and Yucca

Table 3-8 lists the cactus and yucca species that were observed along the proposed ROW corridors during the spring 2010 botanical surveys. A total of nine different cactus/yucca species were observed. All nine species were present along the proposed Gemmill to Tortoise ROW corridor. Seven species were present along the proposed Silverhawk to Newport ROW corridor (EPG 2010a).

Source: EPG 2010a



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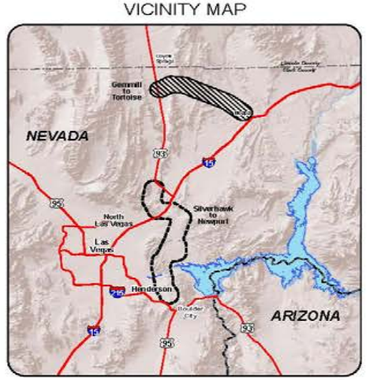

PROJECT FEATURES

- Proposed Action (with mileposts)

RARE PLANT SURVEY RESULTS

- Las Vegas Buckwheat

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- Interstate, Highway
- Local Road, Dirt Road
- Railroad

Sources
Roads - NV BLM, Railroad, Topo Map - ESRI 2009;
Transmission Lines, Substations, Power Plants - Platts 2010

EASTERN NEVADA TRANSMISSION PROJECT

GEMMILL to TORTOISE

Figure 3-4
Las Vegas Buckwheat Locations

0 0.5 1 1.5 2 Miles

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silver state energy association

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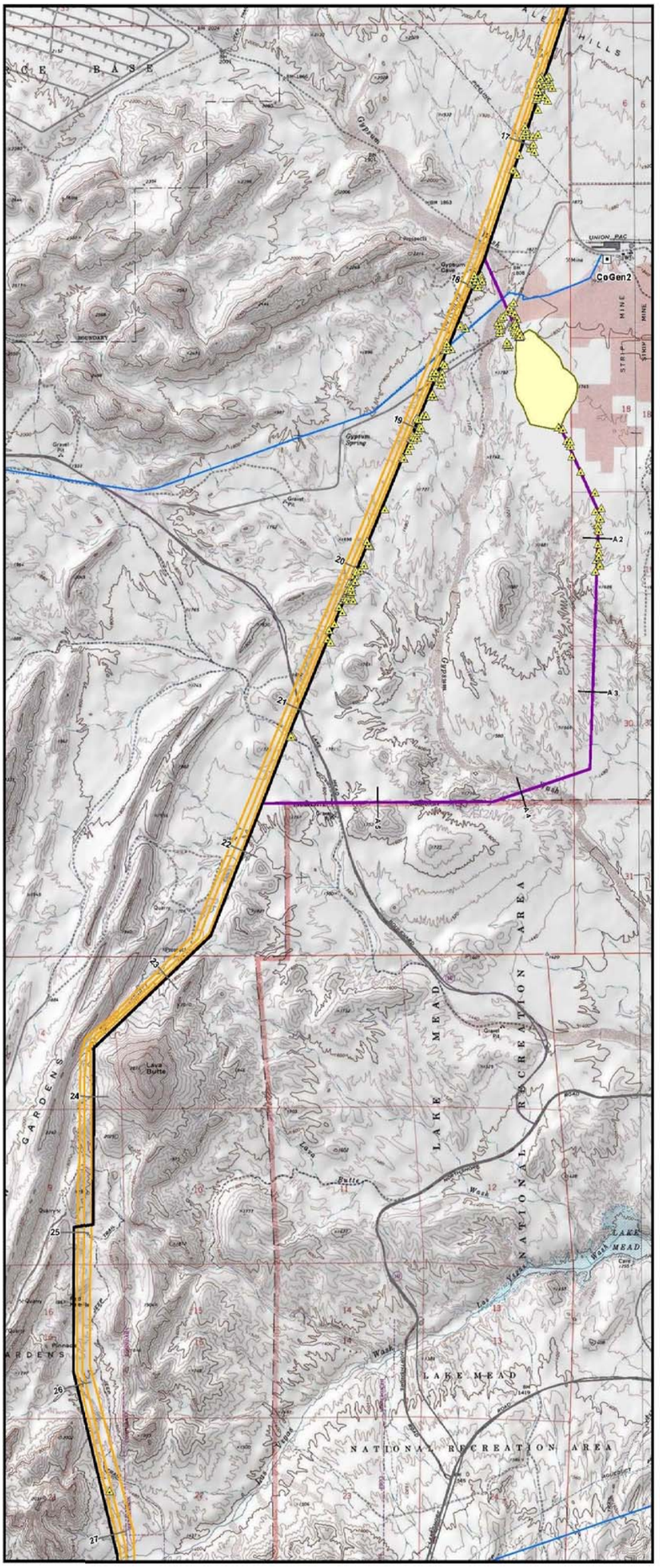

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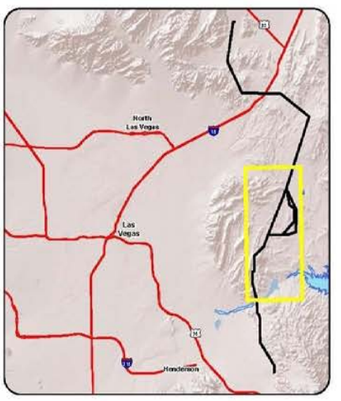

PROJECT FEATURES

- Proposed Action (with mileposts)
- Alternative Alignment (with mileposts)

LAS VEGAS BEARPOPPY SURVEY RESULTS

- Species Occurence
- Area of Dense Concentration

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- Interstate, Highway
- Major Road
- Railroad

SOURCES:
Transportation - ESRI & Local Governments;
Transmission Lines, Substations, Power Plants - Platts 2010

NOTE: Substations and transmission lines are schematic and do not necessarily represent accurate locations.

EASTERN NEVADA TRANSMISSION PROJECT

SILVERHAWK to NEWPORT

Figure 3-5

Las Vegas Bearpoppy Locations

N

0 0.25 0.5 1 Miles

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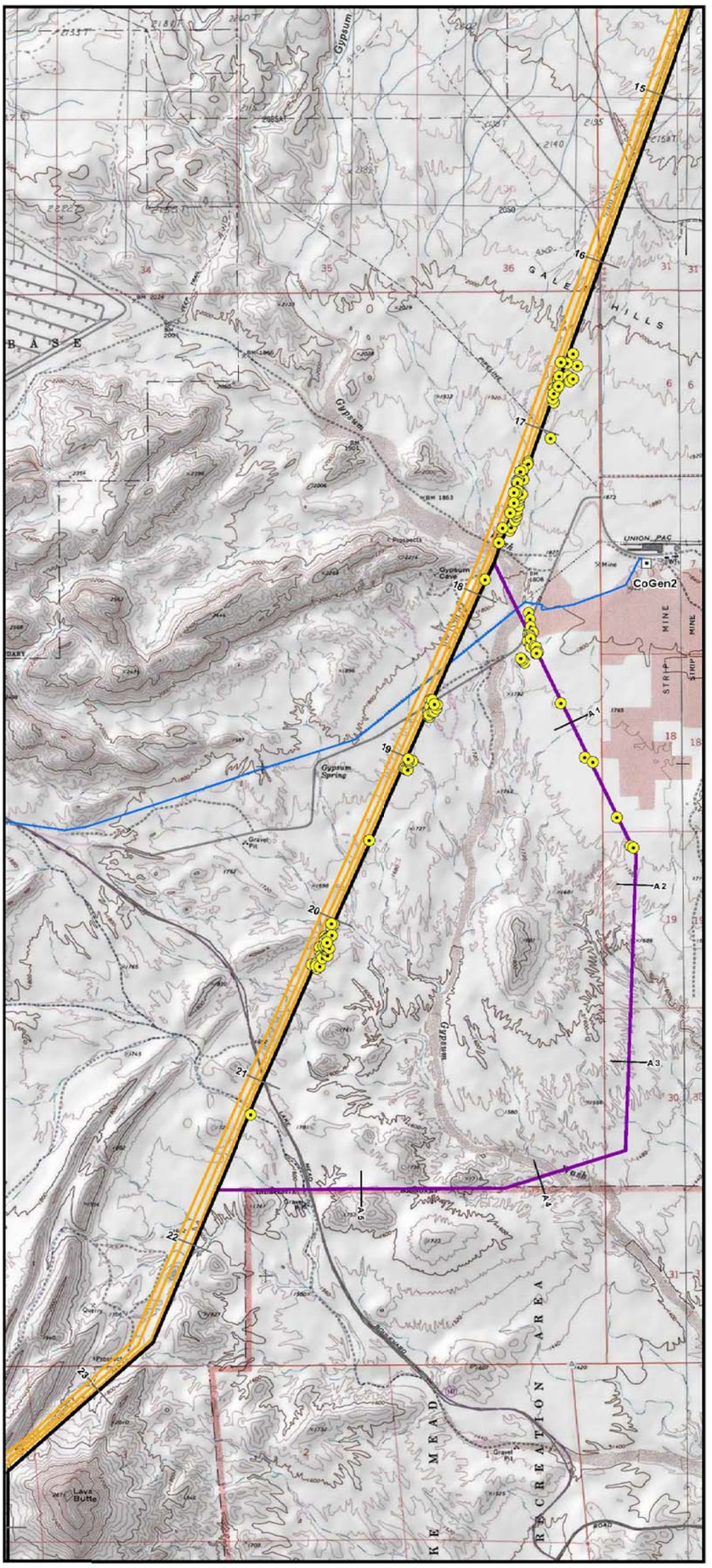

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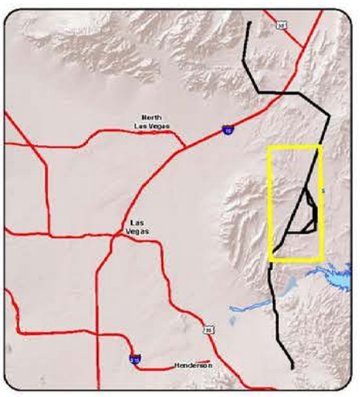

PROJECT FEATURES

- Proposed Action (with mileposts)
- Alternative Alignment (with mileposts)

STICKY RINGSTEM SURVEY RESULTS

- Species Occurence

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- Interstate, Highway
- Major Road
- Railroad

SOURCES:
Transportation - ESRI & Local Governments;
Transmission Lines, Substations, Power Plants - Platts 2010

NOTE: Substations and transmission lines are schematic and do not necessarily represent accurate locations.

EASTERN NEVADA TRANSMISSION PROJECT

SILVERHAWK to NEWPORT

Figure 3-6
Sticky Ringstem Locations

0 0.25 0.5 1 Miles

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silver state energy association

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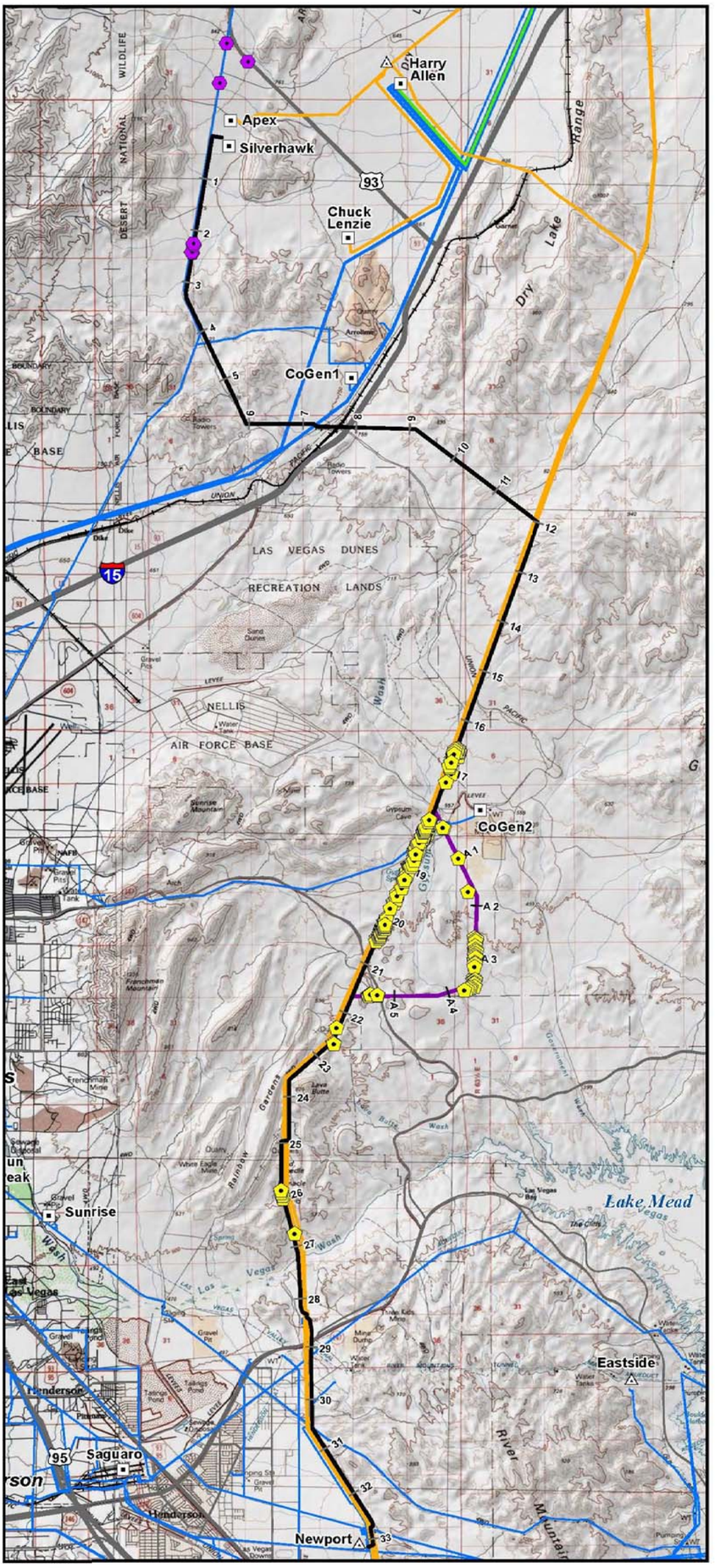

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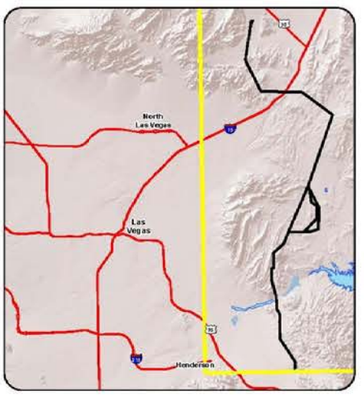

PROJECT FEATURES

- Proposed Action (with mileposts)
- Alternative Alignment (with mileposts)

RARE PLANT SURVEY RESULTS

- Rosy Twotone Beardtongue
- Silverleaf Sunray

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- Interstate, Highway
- Major Road
- Railroad

SOURCES:
Transportation - ESRI & Local Governments;
Transmission Lines, Substations, Power Plants - Platts 2010

NOTE: Substations and transmission lines are schematic and do not necessarily represent accurate locations.

EASTERN NEVADA TRANSMISSION PROJECT

SILVERHAWK to NEWPORT

Figure 3-7
Rosy Twotone Beardtongue and Silverleaf Sunray Locations

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silver state energy association

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Table 3-8 Cactus and Yucca Species Encountered (Spring 2010)			
Scientific Name	**Common Name**	**Gemmill to**	**Silverhawk to Newport**
Cylindropuntia echinocarpa	Silver cholla	x	x
Cyliondropuntia ramosissima	Pencil cholla	x	
Echinocactus polycephalus	Cottontop cactus	x	x
Echinocereus engelmannii	Hedgehog cactus	x	x
Ferocactus cylindraceus	Barrel cactus	x	x
Opuntia basilaris	Beavertail cactus	x	x
Opuntia polyacantha var. *erinaceae*	Old man cactus	x	
Sclerocactus johnsonii	Pygmy barrel cactus	x	x
Yucca schidigera	Mojave yucca	x	x

3.5.2.5 Invasive Species/Noxious Weeds

Table 3-9 lists the non-native species observed during the Spring 2010 botanical surveys of the ROW corridors. Only Sahara mustard (*Brassica tournefortii*; category B) and salt cedar (*Tamarix* sp.; category C) are on the Nevada State Noxious Weed List. Category B noxious weeds are those species established in scattered populations that are actively excluded where possible, eradicated from nursery stock, and control is required by the state in areas where populations are not well established or previously unknown to occur. Category C noxious weeds are those species currently established and generally widespread in parts of the state and are actively eradicated from nursery stock and abatement is at the discretion of the state quarantine officer (NV Dept of Agriculture 2010).

Table 3-9 Non-native Species Observed (Spring 2010)			
Scientific Name	**Common Name**	**Gemmill to Tortoise**	**Silverhawk to Newport**
Brassica tournefortii	Sahara mustard	x	x
Bromus madritensis ssp. rubens	Red brome	x	x
Bromus tectorum	Cheatgrass	x	x
Erodium cicutarium	Filaree	x	x
Malcolmia africanus	African mustard	x	x
Salsola tragus	Russian thistle	x	x
Schismus sp.	Mediterranean grass	x	x
Tamarix sp.	Salt Cedar	x	x
Source: EPG 2010a			

3.5.3 Wildlife

Wildlife species found in the study area include those that commonly occur in the Mojave Desert and are adapted to xeric, desert scrub habitats. Some wildlife species are restricted to mostly desert riparian habitats such as the Las Vegas Wash (crossed by the proposed Silverhawk to Newport ROW corridor) and the Muddy River (south of the proposed Gemmill to Tortoise ROW corridor).

3.5.3.1 Fish and Wildlife (Excluding Federally Listed Species)

Consultation with federal and state agencies were used for this analysis, along with wildlife surveys conducted in spring 2010 in the proposed Gemmill to Tortoise and Silverhawk to Newport Project areas. The USFWS provided a list of sensitive species with the potential of occurring within the proposed ROW corridors (USFWS 2010). Other technical information on rare species was derived from the NNHP database (NNHP 2006). Field surveys were conducted in accordance with the USFWS Pre-project Field Survey Protocol for Potential Desert Tortoise Habitats (USFWS 2010).

Table 3-10 lists the special status wildlife species that have the potential of occurring in either or both of the proposed ROW corridors. Under USFWS, Species of Concern is a term that refers to unlisted species that USFWS believes might be in need of concentrated conservation actions. This designation, though, does not afford the species any legal protection under the ESA.

Table 3-10 Special Status Wildlife Species that May Occur within the Proposed Project Corridor

Scientific Name	Common Name	Habitat	USFWS Status[1]	State/BLM Status[2]	MSHCP[3]
MAMMALS					
Antrozous pallidus	Pallid Bat	Diverse habitats and roosting sites	Species of Concern	Protected/Sensitive	None
Corynorhinus townsendii	Townsend's Big-eared Bat	Diverse habitats – roosts in caves	None	Sensitive/Sensitive	High Priority Evaluation Species
Eptesicus fuscus	Big Brown Bat	Diverse habitats and roosting sites	Species of Concern	None/Sensitive	None
Euderma maculatum	Spotted Bat	Diverse habitats; roosts in cliffs.	Species of Concern	None	Watch List
Eumops perotis californicus	Greater Mastiff Bat	Diverse habitats; roosts in cliffs	Species of Concern	Sensitive/Sensitive	Watch List
Idionycteris phyllotis	Allen's Big- eared Bat	Diverse habitats; roosts in caves and cliffs	Species of Concern	Protected/Sensitive	Watch List

Table 3-10 Special Status Wildlife Species that May Occur within the Proposed Project Corridor

Scientific Name	Common Name	Habitat	USFWS Status[1]	State/BLM Status[2]	MSHCP[3]
Lasionycteris noctivagans	Silver-haired Bat	Forests but found in other habitats during winter and migration; roosts in trees	Species of Concern	None/Sensitive	Covered
Lasiurus blossevillii	Western Red Bat	Riparian areas; Roosts in trees	Species of Concern	Sensitive/Sensitive	None
Lasiurus cinereus	Hoary Bat	Forests but found in other habitats during migration; roosts in trees	None	None/Sensitive	None
Macrotus californicus	California Leaf-nosed Bat	Desert scrub; roosts in caves	Species of Concern	Sensitive/Sensitive	Watch List
Myotis californicus	California Myotis	Diverse habitats and roosting sites	Species of Concern	None/Sensitive	None
Myotis ciliolabrum	Western Small-footed Myotis	Diverse habitats; roosts in cliffs and caves	Species of Concern	None/Sensitive	Medium Priority Evaluation Species
Myotis thysanodes	Fringed Myotis	Diverse habitats and roosting sites	Species of Concern	Protected/Sensitive	Medium Priority Evaluation Species
Myotis yumanensis	Yuma Myotis	Diverse habitats and roosting sites	Species of Concern	None/Sensitive	Watch List
Nyctinomops macrotis	Big free-tailed Bat	Diverse habitats; roosts in cliffs	Species of Concern	None/Sensitive	Watch List
Odocoileus hemionus	Mule Deer	Diverse habitats	None	Protected/None	None
Ovis canadensis nelsoni	Desert Bighorn Sheep	Mojave Desert scrub	None	Protected/Sensitive (economically important as a big game species	Watch List
Parastrellus hesperus	Canyon Bat	Diverse habitats; roosts in cliffs	Species of Concern	None/Sensitive	None
Tadarida brasiliensis	Brazilian Free-tailed Bat	Lower elevations in desert scrub; roosts in caves and cliffs	None	Protected/Sensitive	None

Table 3-10 Special Status Wildlife Species that May Occur within the Proposed Project Corridor					
Scientific Name	**Common Name**	**Habitat**	**USFWS Status[1]**	**State/BLM Status[2]**	**MSHCP[3]**
Myotis velifer	Cave Myotis	Diverse habitats; roosts in caves and mines	None	Protected/Sensitive	Watch List
BIRDS					
Aquila chrysaetos	Golden Eagle	Diverse habitats	Species of Concern	Protected/Sensitive	Watch List
Asio flammeus	Long-eared Owl	Mojave desert scrub; Riparian	Species of Concern	None	None
Athene cunicularia hypugaea	Western Burrowing Owl	Primarily agriculture, desert scrub; patchy in sagebrush and grassland	Species of Concern	Protected/ Sensitive	High Priority Evaluation Species
Buteo regalis	Ferruginous Hawk	Grasslands, desert scrub, agriculture, sagebrush (wintering)	Species of Concern	Protected/Sensitive	Watch List
Buteo swainsoni	Swainson's Hawk	Mojave desert scrub/sagebrush (wintering)	Species of Concern	Protected/Sensitive	None
Charadrius alexandrinus	Snowy Plover	Riparian (migrant)	Threatened (coastal population)	Protected/Sensitive	None
Chlidonias niger	Black Tern	Riparian (migrant)	Species of Concern	None	None
Falco mexicanus	Prairie Falcon	Diverse habitats	Species of Concern	None	None
Falco peregrinus anatum	American Peregrine Falcon	Diverse habitats; presence of cliffs appear to be important factor.	Species of Concern	Endangered/Sensitive	Covered
Lanius ludovicianus	Loggerhead Shrike	Mojave desert scrub, sagebrush	Bird of Conservation Concern	Sensitive/Sensitive	Low Priority Evaluation Species
Phainopepla nitens	Phainopepla	Mesquite/acacia	Species of Concern	None	Covered
Pyrocephalus rubinus	Vermilion Flycatcher	Riparian	Species of Concern	Protected/None	Covered

Table 3-10 Special Status Wildlife Species that May Occur within the Proposed Project Corridor

Scientific Name	Common Name	Habitat	USFWS Status[1]	State/BLM Status[2]	MSHCP[3]
Toxostoma crissale	Crissal Thrasher	Mesquite, riparian	Species of Concern	None	Low Priority Evaluation Species
Toxostoma lecontei	LeConte's Thrasher	Mojave desert scrub	Species of Concern	Protected/Sensitive	Medium Priority Evaluation Species
Vermivora luciae	Lucy's Warbler	Desert washes, mesquite	Species of Concern	None	None
Vireo bellii arizonae	Arizona Bell's Vireo	Riparian	Species of Concern	Protected/None	Covered
REPTILES AND AMPHIBIANS					
Bufo microscaphus microscaphus	Arizona (Southwestern) Toad	Riparian	Species of Concern	Sensitive/None	High Priority Evaluation Species
Heloderma suspectum cinctum	Banded Gila Monster	Mojave desert scrub	Species of Concern	Protected/Sensitive	High Priority Evaluation Species
Sauromalus obesus	Chuckwalla	Mojave desert scrub; associated with rocky hillsides and boulders	Species of Concern	Sensitive/Sensitive	High Priority Evaluation Species[4]
Chionactis occipitalis talipina	Nevada Shovel-nosed snake	Mojave desert scrub	None	Sensitive	None
Arizona elegans	Desert glossy snake	Sandy desert, arid scrub and rocky washes	None	Sensitive	Covered
Crotalus cerastes cerastes	Mojave Desert sidewinder	Diverse habitats	None	Sensitive	Covered

Sources: 1 – USFWS 2010; 2 – BLM 2011, NNHP 2010; 3 – Clark County MSHCP 2000. 4 – The chuckwalla was proposed under the MSHCP as a Covered species but was not included in the Section 10(a)(1)(B) take permit granted by the USFWS. It has subsequently been treated as an Evaluation Species (Sue Wainscott, Clark County Desert Conservation Program – personal communication on August 24, 2010).

Mammals

Big Game

Mule Deer and Bighorn Sheep are large mammals potentially occurring in both Project areas. Both species are state protected, and are managed as big game by NDOW. Mule Deer occupy diverse habitats from higher elevations to desert floor, depending on the season and available food sources. Generally they spend the summer months at higher elevations in mountainous areas and lower habitats including desert scrub in the winter.

Mule Deer occur in the Sheep Range west of US 93. They may occasionally enter the Project area at the western end of the Gemmill to Tortoise and northern end of the Silverhawk to Newport alignments in the winter; however, no NDOW-designated crucial mule deer winter habitat occurs in Clark County. No Mule Deer were observed in the Project area during the Spring 2010 wildlife surveys.

Nelson's Bighorn Sheep is present in the precipitous desert mountain ranges of northwestern Arizona, southeastern California, southern Arizona, southern Nevada, and southwestern Utah (Bighorn Institute, no date). These ranges, particularly in the southern part of Nevada, typically feature broken rock, numerous gullies, and relatively sparse vegetation. They spend little time on the flat land between ranges and would not readily range far from the safety of the steep, rocky terrain (Feldhamer et al. 2003).

Bighorn Sheep occur in most of the ranges in the vicinity of both proposed ROW corridors. For the proposed Gemmill to Tortoise ROW corridor, this includes the Meadow Valley Mountains to the north, Arrow Canyon Range to the south, and Las Vegas and Sheep Ranges to the west. For the proposed Silverhawk to Newport ROW corridor, nearby ranges with Bighorn Sheep include the Arrow Canyon Range to the north, Las Vegas and Sheep Ranges to the northwest, Sunrise Mountain and Rainbow Gardens to the west, and the River Mountains to the southeast. The 1994 Southwest Intertie Project EIS (Dames & Moore 1994) identified bighorn habitat and intermountain movement areas between the Las Vegas and Arrow Canyon Ranges which would indicate that Bighorn Sheep could potentially cross through either proposed ROW corridors. No Bighorn Sheep, though, were observed in either of the proposed ROW corridors during the spring 2010 wildlife surveys (EPG 2010b).

Bats

All 17 bat species listed in Table 3-10 forage for insects in a variety of habitats during the night hours and roost in caves, mines, buildings, crevices in cliffs or rocky outcrops, or trees during the daylight hours. Studies by the Las Vegas Wash Coordination Committee have documented sixteen of the 17 bat species listed in Table 3-10 along the Las Vegas Wash near the area crossed by the proposed Silverhawk to Newport ROW corridor (Las Vegas Wash Coordination Committee 2010b). Based on habitat requirements, the Spotted Bat may also occur in the proposed Silverhawk to Newport Project area. Ten of the 17 bat species have been documented by NNHP along the Muddy River south of the proposed Gemmill to Tortoise ROW corridor. These include the Pallid

Bat, Townsend's Big-eared Bat, Spotted Bat, Silver-haired Bat, Western Red Bat, Hoary Bat, California Leaf-nosed Bat, California Myotis, Fringed Myotis, and Brazilian Free-tailed Bat. Based on habitat requirements, the other 7 bat species also have the potential to occur in the Gemmill to Tortoise Project area.

Birds

Raptors

The Golden Eagle, Prairie Falcon, and Peregrine Falcon are all predominately cliff nesters that forage for small mammals, reptiles, and small birds in open habitats including desert scrub. Golden Eagles are also known to use utility poles for nesting. There is suitable nesting habitat and known nesting locations for all three species in the mountain ranges surrounding both Project areas including the Arrow Canyon Range, Las Vegas Range, Sheep Range, Sunrise Mountain, and the River Mountains. Both Project areas possess suitable foraging habitat for all three species. A Golden Eagle was observed near the Silverhawk substation during Spring 2010 wildlife surveys (EPG 2010b).

The Long-eared Owl usually nests in dense, coniferous or mixed woodlands that are often associated with a water source such as riparian habitat, and it forages in adjacent open habitat including desert scrub. There is suitable nesting habitat for the Long-eared Owl along the Muddy River south of the proposed Gemmill to Tortoise ROW corridor and along the Las Vegas Wash in the Silverhawk to Newport Project area (EPG 2010b).

The Western Burrowing Owl inhabits open areas in deserts, grasslands, and agricultural and range lands and feeds on small mammals and reptiles. It may also occupy areas near human habitation such as golf courses and airports (Dechant et al. 1999; Ehrlich et al. 1988; Terres 1980). In Mojave Desert scrub, Western Burrowing Owls nest in burrows made by other animals such as Badgers and Desert Tortoise. They may also use natural cavities in rocks (Dechant et al. 1999). The majority of both Project areas provides suitable habitat for Burrowing Owls although no Burrowing Owls were observed along either of the proposed ROW corridors during Spring 2010 wildlife surveys (EPG 2010b).

In Nevada, the Ferruginous Hawk and Swainson's Hawk breed in the central and northern part of the state but may occur in the southern part of the state in the winter. Both utilize open habitats including desert scrub during the winter and both species may occur in either Project area during the winter. Neither species was observed in either of the proposed ROW corridors during Spring 2010 wildlife surveys (EPG 2010b).

Upland Birds

The Loggerhead Shrike is relatively common in the western U.S. but populations have shown significant declines (Floyd et al. 2007). The LeConte's Thrasher occurs in low numbers throughout the southwestern U.S. and due to its secretive nature, is not very tolerant of development (Floyd et al. 2007). Both species potentially inhabit Mojave Desert scrub habitats along both of the proposed ROW corridors. A Loggerhead Shrike was observed along the proposed Gemmill to Tortoise ROW corridor during Spring 2010 wildlife surveys (EPG 2010b).

Riparian Birds

Five of the bird species listed in Table 3-10 are riparian or mesquite-acacia nesting species including Vermilion Flycatcher, Lucy's Warbler, Arizona Bell's Vireo, Crissal Thrasher, and Phainopepla. These species are of conservation concern due to the loss of riparian and mesquite habitat in the southwest due to development, water withdrawal, and invasion of salt cedar. The most prominent riparian corridors in the Project area are Las Vegas Wash, which is crossed by the proposed Silverhawk to Newport ROW corridor near its southern end, and the Muddy River, which parallels the eastern portion of the proposed Gemmill to Tortoise ROW corridor about 1 mile to the south.

The Phainopepla can also occur in patches of mesquite-acacia in desert washes. There were a few isolated mesquite and acacia trees observed along both ROW corridors during botanical surveys. These isolated patches are most likely not dense enough, though, to support nesting Phainopepla. A Phainopepla was observed along the proposed Gemmill to Tortoise ROW corridor during Spring 2010 wildlife surveys (EPG 2010b).

In Nevada, Snowy Plovers and Black Terns nest on playa edges and marsh habitats in the northern part of the state. They are species of concern due to loss of wetland habitats across their range. In the Silverhawk to Newport Project area, Snowy Plovers and Black Terns are known to migrate along the Las Vegas Wash corridor (Las Vegas Wash Coordination Committee 2010c). Neither species was observed in either of the proposed ROW corridors during the Spring 2010 wildlife surveys (EPG 2010b).

Reptiles and Amphibians

Chuckwallas are found in rocky terrain throughout the Mojave Desert. Potential habitat for the Chuckwalla occurs in pockets throughout both Project areas. During the Spring 2010 wildlife survey, a Chuckwalla was observed along the proposed Silverhawk to Newport ROW corridor near MP 2.5 (EPG 2010b).

In the Mojave Desert, the banded Gila monster is often found in Mojave Desert scrub near washes and intermittent streams. Both Project areas possess suitable Gila monster habitat and the Gila monster is known to occur in both areas (NNHP 2006, Biological Resources Research Center 2001). No Gila monsters were observed in Project areas during Spring 2010 wildlife surveys (EPG 2010b). However, they are a secretive species and can be difficult to locate, spending >95% of their lives underground.

The Arizona Toad historically occurred in riparian areas in the southwest including southern Nevada but it has not been documented recently in Clark County (Bradford et al. 2005, Las Vegas Wash Coordination Committee 2010d). Although not thought to currently occur in either Project area, the Las Vegas Wash, which is crossed by the proposed Silverhawk to Newport ROW corridor, and the Muddy River south of the proposed Gemmill to Tortoise ROW corridor may provide suitable habitat for the species.

3.5.3.2 Threatened, Endangered, or Candidate Animal Species

The USFWS provided a list of listed species with the potential of occurring within the proposed ROW corridors (USFWS 2010). Table 3-11 below lists these species and identifies corresponding protection status for the BLM, State of Nevada, and MSHCP. Surveys were conducted in spring 2010 in accordance with the USFWS's Pre-project Field Survey Protocol for Potential Desert Tortoise Habitats (USFWS 2010). The protocol followed is a draft version still under review, but was approved for use on this Project by the BLM Las Vegas Field Office.

Table 3-11 Federally Listed and Candidate Wildlife Species that May Occur within the Proposed Project Corridor

Scientific Name	Common Name	Habitat	ESA Status	State of Nevada Status	BLM Status	MSHCP
Gopherus agassizii	Desert Tortoise (Mojave population)	Mojave desert scrub	Threatened	Threatened	Sensitive	Covered
Empidonax traillii extimus	Southwestern Willow Flycatcher	Lowland riparian	Endangered	Protected	Sensitive	Covered
Rallus longirostris yumanensis	Yuma Clapper Rail	Freshwater and brackish	Endangered	Protected	Sensitive	Covered
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo	Riparian	Threatened	Protected	Sensitive	Covered

Source: USFWS 2010; NNHP 2010

Mojave Desert Tortoise

Tortoises of the Mojave population are found primarily in Mojave Desert scrub, but also in vegetation characteristic of the Lower Colorado River Subdivision of Sonoran desert scrub (Brown 1994). They are generally associated with communities dominated by creosote bush and other sclerophyll shrubs and small cacti (Germano et al. 1994). Some parts of their range may contain abundant Joshua trees. In the Mojave Desert, the terrain is generally gently rolling alluvial fans with sandy or gravelly soils (Ernst et al. 1994).

Adequate burrowing substrate and thermal cover species are a crucial habitat component for Desert Tortoises. In the Mojave region, Desert Tortoises construct their own burrows to avoid extreme hot or cold temperatures. Mojave Desert Tortoises often excavate burrows under vegetation, and they can be up to 10 meters (33 feet) deep (Arizona Game and Fish Department [AZGFD] 2001). Elevations at which tortoises occur in the Mojave range from below sea level in Death Valley, California, up to about 5,000 feet at Yucca Mountain, Nevada (AZGFD 2001).

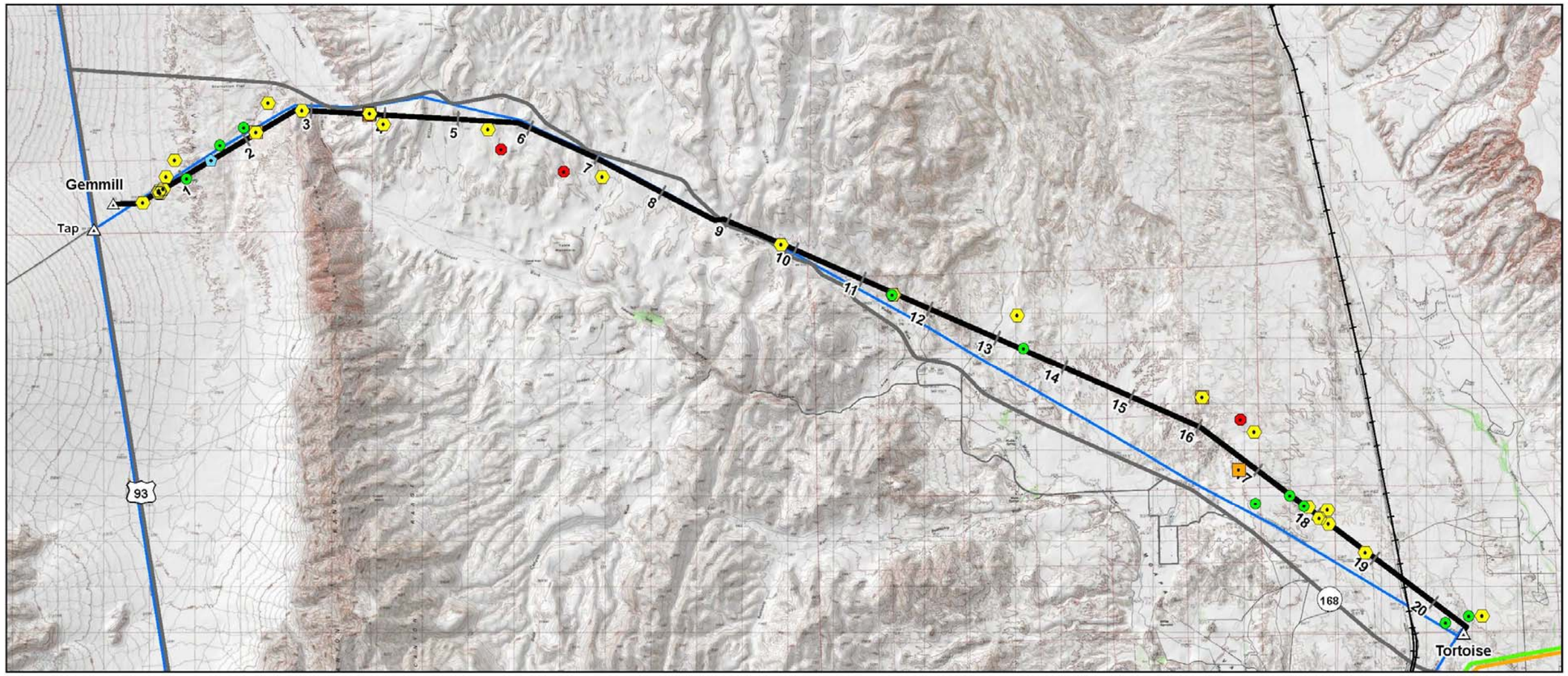
Desert Tortoises are herbivores, consuming a wide variety of plant materials including dicot annuals, grasses, herbaceous perennials, trees, shrubs, subshrubs/woody vines, and succulents (AZGFD 2001). Selective food preferences for individual tortoises within a population make plant diversity an important constituent of tortoise habitat (Tracy 2001).

Desert Tortoise surveys were conducted between April 7 and May 14, 2010, that included 25 survey days that covered a total of 439 transect miles. A total of 22 live tortoises and 160 sign were documented during the survey period. In addition, a total of 110 burrows, 18 scat signs, 26 carcasses, 1 site of egg shells, and 4 sets of tracks were recorded. Lowest densities of tortoise signs along the proposed Gemmill to Tortoise ROW corridor were found between MP 7 and MP 16 with higher densities of sign on the eastern and western ends. No signs were found between MP 18 and MP 29 along the proposed Silverhawk to Newport ROW corridor (EPG 2010b; Table 3-12; Figure 3-8; Figure 3-9).

Table 3-12 Results of Spring 2010 Desert Tortoise Surveys

Sign	Gemmill to Tortoise	Silverhawk to Newport
Live Tortoise	10	12
Burrows	27	83
Scat	5	13
Carcass	5	21
Egg Shells	0	1
Tracks	1	4

Source: EPG 2010b



VICINITY MAP

PROJECT FEATURES

- Proposed Action (with mileposts)

DESERT TORTOISE SIGN

- Desert Tortoise
- Burrow
- Carcass
- Egg Shells
- Scat
- Tracks

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- Interstate, Highway
- Local Road, Dirt Road
- Railroad

Sources
Roads - NVBLM, Railroad, Topo Map - ESRI,
Transmission Lines, Platts 2010

EASTERN NEVADA TRANSMISSION PROJECT

GEMMILL to TORTOISE

Figure 3-8
Desert Tortoise Survey Results

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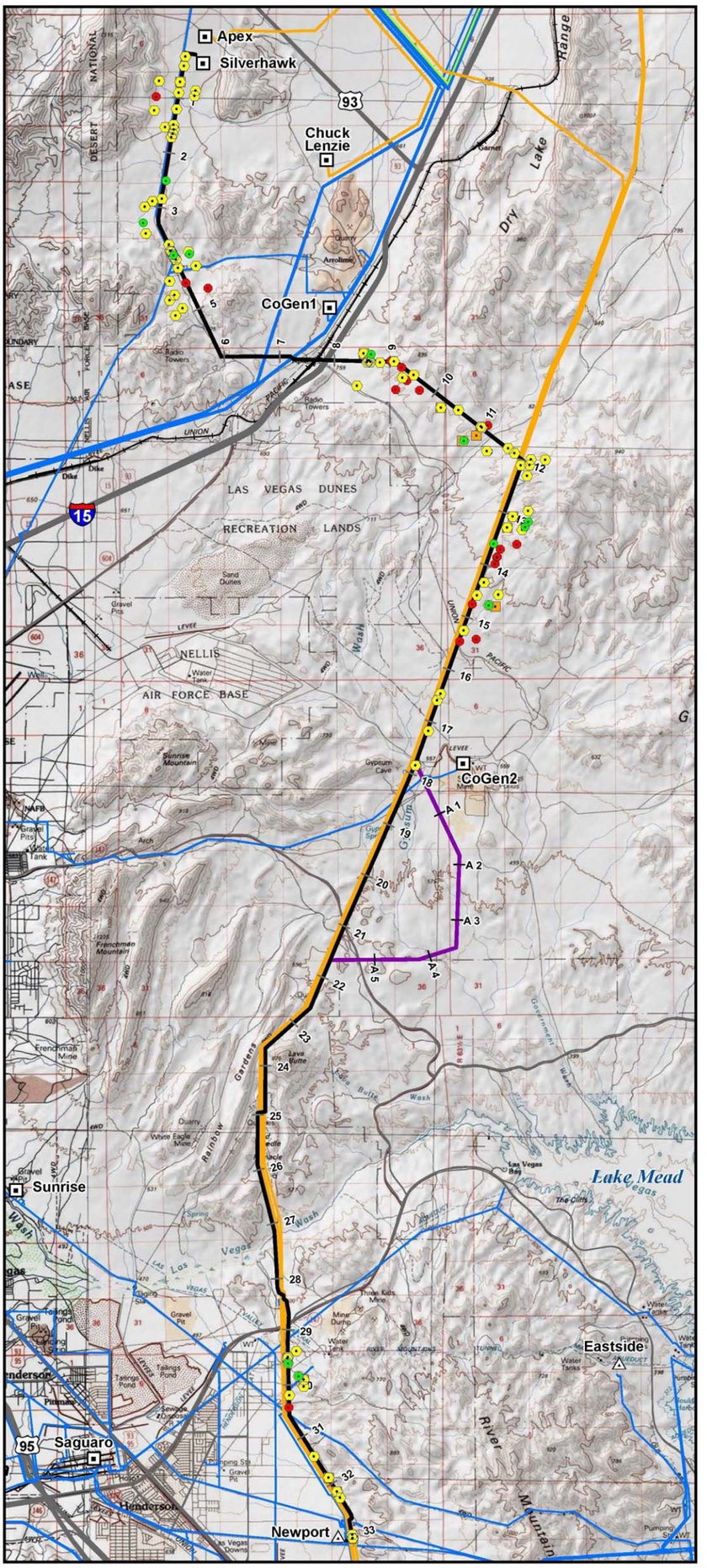
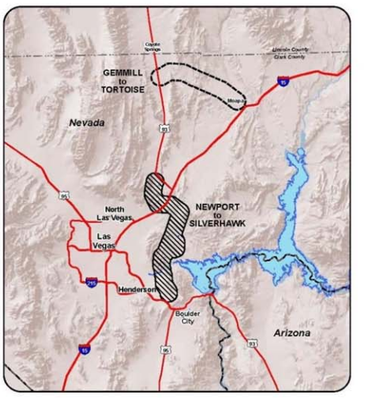


VICINITY MAP



PROJECT FEATURES

- Proposed Action (with mileposts)
- Alternative Alignment (with mileposts)

DESERT TORTOISE SIGN

- Desert Tortoise
- Burrow
- Carcass
- Egg Shells
- Scat
- Tracks

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- Interstate, Highway
- Major Road
- Railroad

SOURCES:
Transportation - ESRI & Local Governments;
Transmission Lines, Substations, Power Plants - Platts 2010

NOTE: Substations and transmission lines are schematic and do not necessarily represent accurate locations.

EASTERN NEVADA TRANSMISSION PROJECT

SILVERHAWK to NEWPORT

Figure 3-9
Desert Tortoise Survey Results

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silver state energy association

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Southwestern Willow Flycatcher

In the western United States, the Southwestern Willow Flycatcher can be found on willow- covered islands, brush along watercourses, beaver meadows, and mountain parks, but almost always in close association with riparian waters and lentic waters (USFWS 2002). It may be found as high as 2,400 meters (7,875 feet) elevation, and they also follow willow- or cottonwood-lined streams out into desert regions (Terres 1980). Southwestern Willow Flycatcher territories and nest sites are usually located near open water, cienagas, marshy seeps, or saturates soils (Sogge et al. 1997). In the semiarid and arid parts of the southwest, hydrologic conditions can vary radically both within a season and between years. Many sites have surface water or saturated soil only during the early part of the breeding season. Breeding habitat on the edge of a reservoir may have standing water during a wet year, or it may be further from surface water during dry conditions.

The historic distribution of the Southwestern Willow Flycatcher is unclear, but it apparently occurs only sporadically throughout the Mojave region of Nevada, in lowland riparian areas and wetlands (Great Basin Bird Observatory 2010; Clark County MSHCP 2000; USFWS 2002). The Southwestern Willow Flycatcher is known to nest along the Muddy River south of the proposed Gemmill to Tortoise ROW (Floyd et al. 2007). During surveys conducted by SWCA Environmental Consultants (SWCA) in 2007, the first resident Southwestern Willow Flycatcher was detected within the Las Vegas Wash. This individual was detected along the Las Vegas Wash approximately 2.4 km (1.5 miles) upstream from the proposed Silverhawk to Newport crossing (SWCA 2008). In a 2004 survey, three migrants were detected in a tamarisk stand immediately east of the proposed Silverhawk to Newport crossing (SWCA 2008). Migrant willow flycatchers have been detected along the Wash for 9 of the 13 years the Wash has been monitored. However, residents are uncommon and have only been detected 2 of the 13 monitoring years (2007 and 2008; Van Dooremolen 2010a). Southwestern Willow Flycatchers are the only subspecies that nest in Clark County. Migrants cannot be confirmed as Southwestern as other unlisted subspecies may migrate through the area. No Southwestern Willow Flycatchers were observed during spring 2010 wildlife surveys performed for the Project (EPG 2010b).

Yuma Clapper Rail

The Yuma Clapper Rail is the only clapper rail species that breeds in freshwater marshes. This species also inhabits brackish marshes. Preferred habitat appears to be mature cattail-bulrush stands in shallow water near high ground (USFWS 1983). Territories are distributed along a zone where standing water gives way to saturated soils with marshes. Sites are abandoned when ground surfaces dry out (AZGFD 2006). This interface between the water, soil, and vegetation appears to be more important to site selection than does the presence of specific plants. The most dominant plant species, and that which typifies Yuma Clapper Rail habitat, is the cattail (*Typha* spp.). This species is frequently associated with the giant bulrush (*Schoenoplectus* spp.) along the Lower Colorado River. Salt cedar has been found to form part of the cover used by territorial individuals in some areas. However, this salt cedar typically indicates a drying trend at the soil surface thus eventually making the site a less preferred location for Yuma Clapper Rails (AZGFD 2006).

Winter habitat may consist of overgrown, narrow, wet sloughs and backwaters. These areas tend to have a higher variety of vegetation types including more mature herbaceous and woody species than do lacustrine marshes (AZGFD 2006).

The historic distribution of the Yuma Clapper Rail is unclear, but it has recently been documented as far north as the Virgin River, Muddy River, and Las Vegas Wash in Clark County, Nevada (SWCA 2008). During Southwestern Willow Flycatcher surveys along the Las Vegas Wash in 1998, a Yuma Clapper Rail was detected in the active floodplain of the Wash downstream from Pabco Road (SWCA 1998). Systematic surveys were conducted from 2000 through 2004 and from 2006 through 2010 for Yuma Clapper Rails. A single individual was detected during 2006 surveys and a single individual was detected during 2005 surveys for Southwestern Willow Flycatchers. No other detections have been made during these ten years of surveys (Van Dooremolen 2010b). All located individuals have been detected during annual Southwestern Willow Flycatcher surveys (SWCA 2008).

SWCA (2008) delineated numerous sites within the Las Vegas Wash that have been identified as potentially suitable habitat for the Yuma Clapper Rail, including a site at the proposed Silverhawk to Newport crossing. No individuals have been detected within the Project area and there are no known nesting locations within the Las Vegas Wash, although potential nesting habitat is present in the Las Vegas Wash (Van Dooremolen 2010b; EPG 2010b).

Western Yellow-billed Cuckoo

The Western Yellow-billed Cuckoo is a migratory species historically found in very limited patches of riparian habitat in California, Arizona, New Mexico, and Mexico, and is considered a rare species in Nevada. In the western United States, the Yellow-billed Cuckoo breeds in riparian forests with cottonwood (*Populus fremontii*) and willow (*Salix* sp.) (USFWS 2009). Dense understory foliage, possibly including mesquite (*Prosopis* sp.), ash (*Fraxinus* sp.), and hackberry (*Celtis* sp.) and large tracts seem to be preferred breeding and nesting habitat (Hughes 1999). The Yellow-billed Cuckoo may also utilize higher elevations containing pinyon (*Pinus* sp.) and juniper (*Juniperus* sp.) communities for a limited time prior to breeding (Hughes 1999).

The historic distribution of the Yellow-billed Cuckoo in Nevada is poorly documented, but it apparently nested along the Truckee, Carson, Virgin, and Colorado Rivers. Birds were found at Beaver Dam Wash in 1979, and NDOW conducted surveys in 2000 – 2003 that documented scattered Yellow-billed Cuckoos along the lower Colorado River. Nesting Yellow-billed Cuckoos have been documented in the past along the Muddy River south of the proposed Gemmill to Tortoise ROW corridor (Floyd et al 2007). In the Silverhawk to Newport Project area, systematic surveys for Yellow-billed Cuckoo were conducted along the Las Vegas Wash by various researchers between 2000 and 2004 (SWCA 2004), detecting no migrant or nesting cuckoos. One Yellow-billed Cuckoo is documented from the Nature Center area of the Clark County Wetlands in 1998 (SWCA 1998), with no prior information available. No Cuckoos were observed in either Project area during spring 2010 wildlife surveys (EPG 2010b).

3.6 Historic and Cultural Resources

This section of the EA provides a description of the affected cultural resources environment, including the results of the records review completed in support of the Project.

3.6.1 Regulatory Framework

Section 106 of the NHPA, 16 USC § 470 requires federal agencies to take into account the effects of their undertakings on historic properties. For the purposes of Section 106, historic properties are defined as including prehistoric and historic sites, buildings, structures, districts, landscapes, and objects included in or eligible for inclusion in the National Register of Historic Places (NRHP), as well as artifacts, records, and remains related to such properties (National Register Bulletin 36). Historic properties can also include those cultural resources that are associated with the cultural practices or beliefs of a living community (National Register Bulletin 38).

Eligibility of cultural resources is measured against the following NRHP criteria for evaluation (36 CFR 60.4):

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, felling, and association and also

a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

b) That are associated with the lives of persons significant in our past; or

c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) That has yielded, or may be likely to yield, information important in prehistory or history.

3.6.2 Affected Environment

A cultural resource study consisting of a detailed records review was conducted in support of the Proposed Action. The study was conducted to determine whether any historic sites and structures or archaeological sites were in the vicinity of the proposed ROW corridors and how they might be affected by the construction of the Project. This study was undertaken to support the preparation of the EA and the BLM's compliance with the NHPA.

3.6.3 Records Review Methodology

A records review was conducted to determine the presence of historic properties within the proposed Area of Potential Effect (APE). The initial APE consists of the ROW areas and measures 130 feet (65 feet on each side of the transmission centerline). A 1-mile cultural resource study area surrounding the proposed APE and all alternatives was researched to determine the number of cultural resources in the area and the number of cultural resource studies that have been previously conducted in the area. Records were consulted at the Harry Reid Center for Environmental Studies archives in Las Vegas, as well as Nevada Cultural Resource Information System, an online cultural resource database. In addition, General Land Office (GLO) maps were consulted on the BLM Nevada State Office website to determine if any potential historic features are located within the APE.

3.6.4 Records Review Results

3.6.4.1 Previously Conducted Surveys

Gemmill to Tortoise

A total of 70 previously conducted surveys are located within the cultural resource study area for the proposed Gemmill to Tortoise ROW corridor; the earliest dating to the 1970s. Per the state protocol between the Nevada BLM and State Historic Preservation Office, only those surveys that have been conducted within the past 10 years can be considered when determining whether an area has been previously and adequately surveyed. Of the 70 previously conducted surveys, 16 have been conducted since 2000. The majority of these projects are related to utilities, including pipelines, transmission lines, and generation stations. Other projects include water projects, NDOT projects and various industrial projects. Survey acreage varies from less than 5 acres to over 35,000 acres studied.

Silverhawk to Newport

A total of 129 previously conducted surveys are located within the cultural resource study area for the proposed Silverhawk to Newport ROW corridor; the earliest dating to the 1970s. Of the 129 previously conducted surveys, 24 have been conducted since 2000. The majority of these projects are related to utilities, including pipelines, transmission lines, telephone, fiber optic lines, and generation stations. Other projects include water projects, NDOT projects, land sales, school projects, and mining projects. Survey acreage varies from less than 5 acres to over 45,000 acres studied.

3.6.4.2 Previously Recorded Sites

Gemmill to Tortoise

A total of 163 sites have been previously recorded within the cultural resource study area for the proposed Gemmill to Tortoise ROW corridor. The 163 sites include the following:

- Twenty-nine isolated finds. All are considered categorically ineligible for listing on the NRHP under Appendix E of the Nevada State Protocol Agreement.
- Twenty-two historic sites, including fence line and roads, mines, trash scatters, a historic town, railroads and railroad camp, and industrial sites. Of the 22 historic sites, 3 have been recommended eligible for listing on the NRHP, 18 have been recommended as not eligible and 1 has an unknown eligibility recommendation.
- Ninety-nine prehistoric sites, including campsites, rockshelters, rock art, lithic scatters, artifact scatters, fragile patterns, rock rings, rock alignments, foot trails, and quarry areas. Of the 99 sites, 41 have been recommended as eligible on the NRHP, 37 have been recommended as not eligible and 21 have an unknown eligibility recommendation.
- Eleven multi-component sites (both prehistoric and historic components). Of these, 4 were recommended eligible, 5 have been recommended as not eligible, and 2 have an unknown eligibility recommendation.
- Two sites with unknown information.

Silverhawk to Newport

A total of 229 sites have been previously recorded within the cultural resource study area. The 229 sites include the following:

- Twenty-eight isolated finds. All are considered categorically ineligible for listing on the NRHP.
- Thirty-five historic sites, including trails, roads, mines and mining related sites, telephone lines, campsites, trash scatters, corrals, ranches and associated features, railroads and railroad related sites, and water features. Of the 35 historic sites, 9 have been recommended eligible for listing on the NRHP, 24 have been recommended as not eligible and 2 have an unknown eligibility recommendation.
- One hundred fifty eight prehistoric sites, including campsites, habitations, rockshelters, rock art, lithic scatters, artifact scatters, fragile patterns, rock rings, rock alignments, a hunting blind, an intaglio, trails, and quarry areas. Of the 158 sites, 62 have been recommended as eligible on the NRHP, 84 have been recommended as not eligible and 12 have an unknown eligibility recommendation.
- Two multi-component sites (both prehistoric and historic components). Both have been recommended as not eligible.
- Six sites with unknown information.

The Las Vegas Wash Archaeological District is located within the cultural resource study area. The Wash was designated an Archaeological District in 1977 but the boundaries were extended to include all the Clark County Wetlands Park area in 2001. Site types within the district include fragile pattern sites, stone circle features, rock shelters, historic and prehistoric artifact scatters, masonry structures, mining features, irrigation features, trails, and historic roads. Investigations in the area have revealed artifacts dating from the Paleoindian period (approximately 12,000 years before present) through to historic times, including Spanish explorers and miners. The proposed Silverhawk to Newport ROW corridor crosses through the Las Vegas Wash Archaeological District.

3.6.4.3 GLO Records Review

Gemmill to Tortoise

The following Township and Ranges were reviewed:

- Township 13 South, Range 63 East (Sections 25, 26, 27, 33, and 34)
- Township 13 South, Range 64 East (Sections 28, 29, 30, 33, 34, and 35)
- Township 13 South, Range 65 East (Section 31)
- Township 13.5 South, Range 64 East (Sections 35 and 36)
- Township 14 South, Range 65 East (Sections 4, 5, 6, 9, 10, 11, 13, and 14)
- Township 14 South, Range 66 East (Sections 18, 19, 20, 28, and 29)

Three historic roads were noted on the GLOs within the Township, Range and Sections crossed by the APE. These roads include the Road from Muddy Valley to Hiko (1881), the Road from Pioche to Arizona (1881) and an unnamed Wagon Road (1881).

Silverhawk to Newport

The following Township and Ranges were reviewed:

- Township 18 South, Range 63 East (Sections 5, 8, 17, 18, 19, 29, 30, and 32)
- Township 19 South, Range 63 East (Sections 1, 2, 3, 4, 5, and 36)
- Township 19 South, Range 64 East (Sections 6, 7, 8, 17, 19, 20, 30, and 31)
- Township 20 South, Range 63 East (Sections 1, 12, 13, 14, 23, 25, 26, 27, 34 and 35)
- Township 20 South, Range 64 East (Sections 18, 19, and 30)
- Township 21 South, Range 63 East (Sections 3, 4, 9, 16, 21, 27, 28, and 34)
- Township 22 South, Range 63 East (Sections 3, 10, 14, 15, and 23)

Four potential historic features were noted on the GLOs within the Township, Range and Sections crossed by the APE. These include the Old Emigrant Road to California (1882), the Union Pacific Railroad, Los Angeles to Salt Lake City (1933 the Bell Telephone Line (1944), and the Old Arrowhead Trail (1944).

The records review indicates that all portions of the APE have not been previously inventoried for cultural resources within the past 10 years, although large portions have been surveyed.

3.7 Paleontological Resources

Paleontological resources are any fossilized remains, traces, or imprints of organisms that are preserved in the Earth's crust and provide information about the history of life on Earth. Fossil remains may include bones, teeth, shells, leaves, and wood. Paleontological resources include not only the actual fossils, but also the collecting localities and the geological deposits that contain the fossils. Paleontological resources are recognized as non-renewable scientific resources and are protected by Federal statutes and policies.

3.7.1.1 Data Collection Methods

Information for the paleontological inventory was obtained from a review of the scientific literature and from record searches at the Nevada State Museum and the University of California, Museum of Paleontology. Results from record searches at the San Bernardino County Museum that were done by previous environmental studies were also used (Power Engineers 2004, SWCA 2007). A search for paleontological localities was also conducted using records from the Paleobiology Database operated by the University of California, Santa Barbara. Paleontological localities located within 1 mile of the proposed Gemmill to Tortoise ROW corridor and the proposed Silverhawk and Newport ROW corridor were noted.

Information about the geological units and known fossil localities in the region were used to identify the paleontological potential of areas within 1 mile of the centerline. Paleontological potential levels were assigned to each geological unit using the Potential Fossil Yield Classification (PFYC) system that was adopted by the BLM in 2007 for assessing paleontological potential on federal land. The PFYC system is a five-tiered system that the BLM uses to classify geological units based on the relative abundance of vertebrate fossils or scientifically significant invertebrate and plant fossils and their potential to be adversely impacted, with a higher class number indicating a higher potential. This classification system is applied to the geological formation, member, or other distinguishable map unit, preferably at the most detailed mappable level. This approach was followed in recognition of the direct relationship that exists between paleontological resources and the geological units within which fossils are entombed. By understanding the geology of a particular area and the fossil productivity of particular geological units that occur in the area, it is possible to predict where fossils are likely be found.

- PFYC 5 – Very High Potential, monitoring required
- PFYC 4 – High Potential, monitoring required
- PFYC 3 – Moderate or Unknown Potential, monitoring may be required
- PFYC 2 – Low Potential, no monitoring required
- PFYC 1 – Very Low Potential, no monitoring required

3.7.2 Existing Environment

3.7.2.1 Gemmill to Tortoise

The Project area for the proposed Gemmill to Tortoise ROW corridor contains one geological unit, the Muddy Creek Formation which has a high paleontological potential (PFYC of 5; Table 3-13). The Muddy Creek Formation of Miocene to Pliocene age contains ten known fossil localities within one mile of the proposed ROW. These fossil localities primarily contain fossil trackways made by land mammals (carnivores and camelids) and birds (Varhalmi 2007; SWCA 2007). Fossil material described elsewhere from the Muddy Creek Formation include two carnivores: dog (*Aelurodon* sp. cf. *A. validus*) and bear (*Indarctos* sp.); horse (*Equinae)*; and five artiodactyls; camel (*Megatylopus* sp.), camel (*Alforjas* sp.), llama (*Hemiauchenia* sp.), pronghorn (*Texoceros* sp.), and bovid (*Neotragoceras* sp.); Longwell et al. 1965; Reynolds and Lindsay 1999; Tedford et al. 2004).

3.7.2.2 Silverhawk to Newport

The Project area for the proposed Silverhawk to Newport ROW corridor contains five geological units that have a moderate to high paleontological potential (PFYC of 3, 4, or 5; Table 3-13). There are also two fossil localities present within one mile of the proposed Silverhawk to Newport ROW corridor. Fossil material collected from these localities include ground sloth (*Nothrotheriops shastaensis)* and deer (*Odocoileus* sp.) from a locality near the northern end of the proposed Silverhawk to Newport ROW corridor, and various invertebrates from the locality at the southern end of the same corridor. Geological units that have a moderate paleontological potential and occur within one mile of the proposed Silverhawk to Newport ROW corridor, include deposits of Permian age - Kaibab, Toroweap, and Coconino formations, deposits of Triassic age - undifferentiated Chinle and Moenkopi formations, and the Aztec Sandstone of Jurassic age. Geological units that have a high paleontological potential include the Horse Spring and Muddy Creek formations, both of Tertiary age.

The deposits of Permian age do not contain any known paleontological localities within the Project area. However, there are other Paleozoic geological units with a lower paleontological potential that do contain paleontological localities within the Project area (Table 3-13). These paleontological localities contain marine invertebrate fossils. The deposits of Triassic and Jurassic age also do not contain any known paleontological localities within the Project area.

The Horse Spring Formation of Oligocene to Miocene age is not known to contain fossil localities within the Project area. Elsewhere, the Horse Spring Formation contains fossils of bat (*Myotis* sp.) and fossil trackways of canids, camelids, and birds (Czaplewski 1993; Kissell-Jones and Rowland 2003). Fossils of mollusks and plants have also been found (Longwell et al. 1965). The Thumb Member is considered to be a member of the Horse Spring Formation (Stewart 1980; Bohannon 1984).

The Muddy Creek Formation of Miocene to Pliocene age does not contain any known fossil localities within one mile of the proposed Silverhawk to Newport ROW corridor (Table 3-13). Fossil material described elsewhere from the Muddy Creek Formation include two carnivores: dog, (*Aelurodon* sp. *cf. A. validus)* and bear (*Indarctos* sp.); a horse (*Equinae*); five artiodactyls – camel (*Megatylopus* sp.), camel (*Alforjas* sp.), llama (*Hemiauchenia* sp.), pronghorn (*Texoceros* sp.), and bovid (*Neotragoceras* sp.); and fossil trackways made by carnivores, camelids, and birds (Longwell et al. 1965; Reynolds and Lindsay 1999; Tedford et al. 2004; Varhalmi 2007; SWCA 2007).

Although Quaternary deposits have a low paleontological potential (PFYC of 2), there are two paleontological localities of Quaternary age within one mile of the proposed Silverhawk to Newport ROW corridor (Table 3-13). Perhaps the most significant of any of the paleontological localities in the Project area is Gypsum Cave, a limestone cave located approximately 1,640 feet west of the proposed Silverhawk to Newport ROW corridor. Previous excavations at Gypsum Cave have found fossils of land mammals that include camel (*Camelops* sp.), Dire Wolf (*Canisdirus*), Shasta Ground Sloth (*Nothrotheriops shastensis*), llama (*Hemiauchenia* sp.), horse (*Equus* sp.), and Bighorn Sheep (*Ovis canadensis;* Nevada State Museum record search; University of California, Museum of Paleontology record search; Stock 1931; Laudermilk and

Table 3-13 Geological Units and their Associated Paleontological Potential Along the Eastern Nevada Transmission Project

Geological Unit	Map Symbol	Geological Age	Rock Type	Geographic Distribution	Paleontological Localities Within Project Area	PFYC	Paleontological Potential	Survey/ Monitoring
Quaternary Terrestrial Sediments								
Alluvium, undifferentiated	Qal	Quaternary	Unconsolidated sand and gravel	Gemmill-Tortoise Silverhawk-Newport	2 along Silverhawk to Newport	2	Low	No
Tertiary Igneous Rocks								
Undifferentiated volcanic rocks (basalt)	Tb3	Tertiary	Basaltic flows and ash deposits	Silverhawk-Newport	0	1	Low	No
Tertiary Sedimentary Rocks								
Muddy Creek Formation	Ts3	Miocene-Pliocene	Sandstone, siltstone, and clay	Gemmill-Tortoise Silverhawk-Newport	10 along Gemmill to Tortoise	5	High	Yes
Horse Spring Formation	Ths	Oligocene-Miocene	Limestone and dolomite with siltstone	Silverhawk-Newport	0	4	High	Yes
Mesozoic Igneous Rocks								
Felsic phaneritic intrusive rocks	Kfi	Cretaceous	Granite porphyry, rhyolite, trachydolerite	Silverhawk-Newport	0	1	Low	No
Mesozoic Sedimentary Rocks								
Aztec Sandstone	Jas	Jurassic	Sandstone	Silverhawk-Newport	0	3	Moderate	Yes
Chinle and Moenkopi formations	TRmt	Triassic	Continental sandstone, conglomerate, and shale; marine conglomerate with shale and sandstone	Silverhawk-Newport	0	4	High	Yes

Table 3-13 Geological Units and their Associated Paleontological Potential Along the Eastern Nevada Transmission Project

Geological Unit	Map Symbol	Geological Age	Rock Type	Geographic Distribution	Paleontological Localities Within Project Area	PFYC	Paleontological Potential	Survey/ Monitoring
Paleozoic Marine Sedimentary Rocks								
Kaibab, Toroweap, and Coconino formations	Psc	Permian	Limestone with abundant chert, sandstone	Silverhawk-Newport	0	3	Moderate	Yes
Bird Spring Formation	PIPc	Mississippian-Permian	Limestone and dolomite with layers of shale and sandstone	Gemmill-Tortoise Silverhawk-Newport	1	2	Low	No
Callville Limestone	IPMbc	Mississippian-Permian	Limestone with interbedded sandstone and dolomitic limestone	Silverhawk-Newport	0	2	Low	No
Monte Cristo Limestone	Mc	Mississippian	Limestone with minor chert layers	Gemmill-Tortoise	0	2	Low	No
Ely Springs Dolomite, Eureka Quartzite, and Pogonip Group	Occ	Ordovician	Dolomite, quartzite, limestone and dolomite with calcareous shale	Silverhawk-Newport	1	2	Low	No

Munz 1934; Harrington 1933; Hendrick et al. 1998; Power Engineers 2004). Another Quaternary fossil locality within the Project area contains fossils of non-marine invertebrates.

3.8 Land Use, Transportation, and Access

This section provides a description of the existing land use conditions within the two separate Project areas.

3.8.1 Project Setting and Land Use – Gemmill to Tortoise

The proposed Gemmill to Tortoise ROW corridor is located entirely on BLM-managed lands in unincorporated Clark County. Portions of the proposed ROW corridor are located within the existing LCCRDA utility corridor and follow an existing Lincoln County Power District 115-kV transmission line.

For the first 11 miles, the proposed ROW corridor would be located within the LCCRDA corridor between MP 2.5 to approximately 5, and from MP 6 to approximately MP 11. The segment between the Gemmill substation (MP 0) and MP 2.5, which is outside the LCCRDA corridor, was selected to avoid the Arrow Canyon Wilderness Area and to follow the existing Lincoln County Power District 115-kV transmission line.

At approximately MP 11, the proposed Gemmill to Tortoise ROW corridor exits the LCCRDA corridor and heads in a northeasterly direction to avoid private property and tribal lands. The proposed ROW corridor was selected based on these factors and also in consideration of the local topography, avoidance of large slope cuts, and potential viewshed issues along Highway 168.

There are two Areas of Critical Environmental Concern (ACEC) along the proposed Gemmill to Tortoise ROW corridor. Between the Gemmill substation (MP 0) and approximately MP 3, the proposed corridor crosses the Coyote Springs ACEC. Once the corridor exits the Coyote Springs ACEC, it immediately enters into the Mormon Mesa ACEC. The proposed ROW corridor remains within the Mormon Mesa ACEC until approximately MP 11. Both ACECs were established to protect desert tortoise and their habitat.

Other BLM special protection areas near the proposed Gemmill to Tortoise ROW corridor include the Arrow Canyon ACEC and the Arrow Canyon Wilderness Area. At its nearest location, the Arrow Canyon ACEC is located approximately one mile south of the proposed ROW corridor, and approximately one-half mile from the Arrow Canyon Wilderness Area.

Non-federal lands in the Project area include SR 168, which is maintained by NDOT, and privately held lands near the Coyote Springs development area, on the western end of the Project area; small pockets of residential development in the Muddy Springs area; and the town of Moapa, at the eastern end of the Project area. The Coyote Springs development area, located on private lands approximately one mile north of the Gemmill substation, is currently specified as a Planned Unit Development under Clark County Comprehensive Planning Development Code 30.24. With the exception of a developed golf course, currently there are no residential developments under construction.

The Muddy Springs area, located south of SR 168 and approximately one mile south of the proposed Gemmill to Tortoise ROW corridor between MP 14 and MP15, includes isolated pockets of residential development, a church-operated recreational area, the Warm Springs Ranch which is owned by SNWA, and the Moapa National Wildlife Refuge (NWR) which is managed by the USFWS as part of the Desert NWR.

The actual town of Moapa is located approximately one mile south of the Tortoise substation, north of I-15. The Moapa town limit covers an area of 150.8 square miles and includes the Muddy Springs area. Small pockets of residential development within the town of Moapa, occurs primarily north of I-15, east of the Union Pacific Railroad.

Tribal lands belonging to the Moapa Band of Paiute are located south of the proposed Gemmill to Tortoise ROW corridor, near the Tortoise substation. The proposed ROW corridor deviated from the LCCRDA corridor in this area to avoid crossing tribal lands. At its closest point, the proposed ROW corridor is less than 100 feet from the Reservation boundary; however, the closest residence on tribal lands is more than 2 miles south of the proposed ROW corridor.

3.8.2 Project Setting and Land Use – Silverhawk to Newport

The proposed Silverhawk to Newport ROW corridor would mostly parallel existing transmission lines within designated utility corridors, with the exception of approximately 8 miles between MP 4 to MP 12, which is primarily undeveloped desert land. The proposed ROW corridor crosses I-15 and other minor roadways at approximately MP 8. From MP 0 to MP 4 and from MP 12 to MP 33, the proposed ROW corridor would be located adjacent to multiple high voltage transmission lines, primarily within designated utility corridors. This multimodal, 3,500-foot- wide corridor contains a number of existing utility facilities including; one 500-kV alternating current (AC) transmission line, one 230-kV AC transmission line, one transmission line below 230-kV, one 500-kV direct current (DC) transmission line, and a number of underground water and natural gas pipelines. The Apex, CoGen1, and CoGen2 powerplants area also located within or near the designated utility corridor.

From MP 0 to MP 16.5, the proposed Silverhawk to Newport ROW corridor is located entirely on BLM-managed land. At approximately MP 19.5, the proposed ROW corridor enters into the area formerly designated the Sunrise Mountain ISA. The ISA was designated in 1970 as the Sunrise Mountain Natural Area (BLM 1998). The area was identified as having unique geologic, biologic, and aesthetic values. Section 603 (a) of FLPMA directed that all areas designated as “natural or primitive areas” prior to November 1, 1975 be studied for their wilderness values. A total of 29,475 acres were studied, and the area was determined to lack wilderness characteristics. The BLM recommended that the “Natural Area” be dropped from wilderness review process. In March 2009, 70 acres of the Sunrise Mountain ISA were released as part of Public Law 111-11. The remaining 10,140 acres of the Sunrise Mountain ISA were released in January 2014 when Congress adopted BLM’s non-wilderness recommendation for the ISA.

There are two existing utility corridors within the area formerly designated as the Sunrise Mountain ISA; a BLM 368 utility corridor and a BLM Southern Nevada District Office utility

corridor. The BLM 368 corridor was included in the Approved RMP Amendments/ROD for Designation of Energy Corridors on Bureau of Land Management Administered Lands in the 11 Western United States (BLM 2009), and the Southern Nevada District Office utility corridor was included in the Las Vegas RMP/EIS, (BLM 1998). The NV Energy Centennial Project, Harry Allen to Mead 500-kV transmission line is located within this utility corridor. The Harry Allen to Mead 500-kV transmission line includes 48 miles of single-circuit and 3 miles of double-circuit construction extending from the Harry Allen substation near the Silverhawk substation, to the Western Area Power Administration Mead substation in the El Dorado Valley south of Boulder City, Nevada. The proposed Silverhawk to Newport transmission line would parallel the Harry Allen to Mead 500-kV transmission line through the former ISA.

Alternative 1 is not within a BLM-approved utility corridor, however a few miles of the alternative lie on undeveloped, BLM-managed land.

Alternative 1 connects back to the continuation of the proposed Silverhawk to Newport ROW corridor at MP 21.5. The proposed alignment continues on BLM-managed land for 5.5 miles, until reaching a mix of different land owners including lands managed by Reclamation. The final 4 miles of the proposed ROW corridor (MP 29 through MP 33) lie entirely on lands managed by the Reclamation (Figure 3-10).

The proposed Silverhawk to Newport ROW corridor crosses two ACECs. Between MP 16 to MP 27 the proposed ROW corridor crosses the Rainbow Gardens ACEC. The Rainbow Garden ACEC was established to protect sensitive plant species and unique geological, scientific, and cultural resources. Between MP 29.5 to 32.5, the proposed ROW corridor crosses the western edge of the River Mountain ACEC. The River Mountain ACEC was established to protect Bighorn Sheep habitat, and the scenic viewshed from the City of Henderson and Boulder City. The Coyote Springs ACEC is located east of the proposed ROW corridor between the Silverhawk substation (MP 0) and approximately MP 4.

Non-federal lands along or near the proposed Silverhawk to Newport ROW corridor include private lands associated with the Union Pacific Railroad near MP 7.5, the Pabco gypsum mining operation near MP 17.5, and various roads maintained by NDOT. Other private lands along or near the proposed ROW corridor include the Apex Industrial Park area near the Silverhawk substation and isolated pockets of residential development in the City of Henderson between MP 28 to the terminus at the Newport substation. Near MP 28, the proposed ROW corridor crosses into the Lake Las Vegas area. The Lake Las Vegas resort area is built around a 320 acre man- made lake and includes residential and commercial development. The proposed ROW corridor crosses private lands on the western edge of the Lake Las Vegas development.

Although of the majority of lands crossed by the proposed Silverhawk to Newport ROW corridor are federally-managed lands, a number of jurisdictions oversee development in the area. The Silverhawk substation is located within the Apex Industrial Park, an area designated for heavy industrial development (City of North Las Vegas 2010). The land jurisdiction in the Apex Industrial Park area is governed by Clark County and the City of North Las Vegas. The City of North Las Vegas has designated the area as Industrial – M-2 General, with little to no residential or commercial dwellings (City of North Las Vegas 2009).

According to Clark County Land Use Planning documents, those areas along the proposed ROW corridor within their jurisdiction are designated as a mix of heavy industrial, open lands, or public facilities. The proposed Silverhawk to Newport ROW corridor would cross the Las Vegas Valley Wash between MP 27 and MP 27.5. This portion of the Las Vegas Valley Wash falls within Clark County's jurisdiction.

The area between MP 28 to the terminus at the Newport substation is under the City of Henderson planning area. Current and planned land uses along the proposed ROW corridor in this area includes public/semipublic, planned community, and low density residential. Areas along the proposed ROW corridor are zoned as a mix of public, semi-public, or development holding. Public and semi-public land uses include: parks and recreational facilities, churches, schools, and government land and buildings. The majority of the land within the southeastern portion of the City of Henderson is designated as development holding. This means that development cannot occur within those areas until proper utilities can be brought to the development site, and an acceptable finance plan is brought to the City of Henderson (City of Henderson 2010).

3.8.3 Transportation

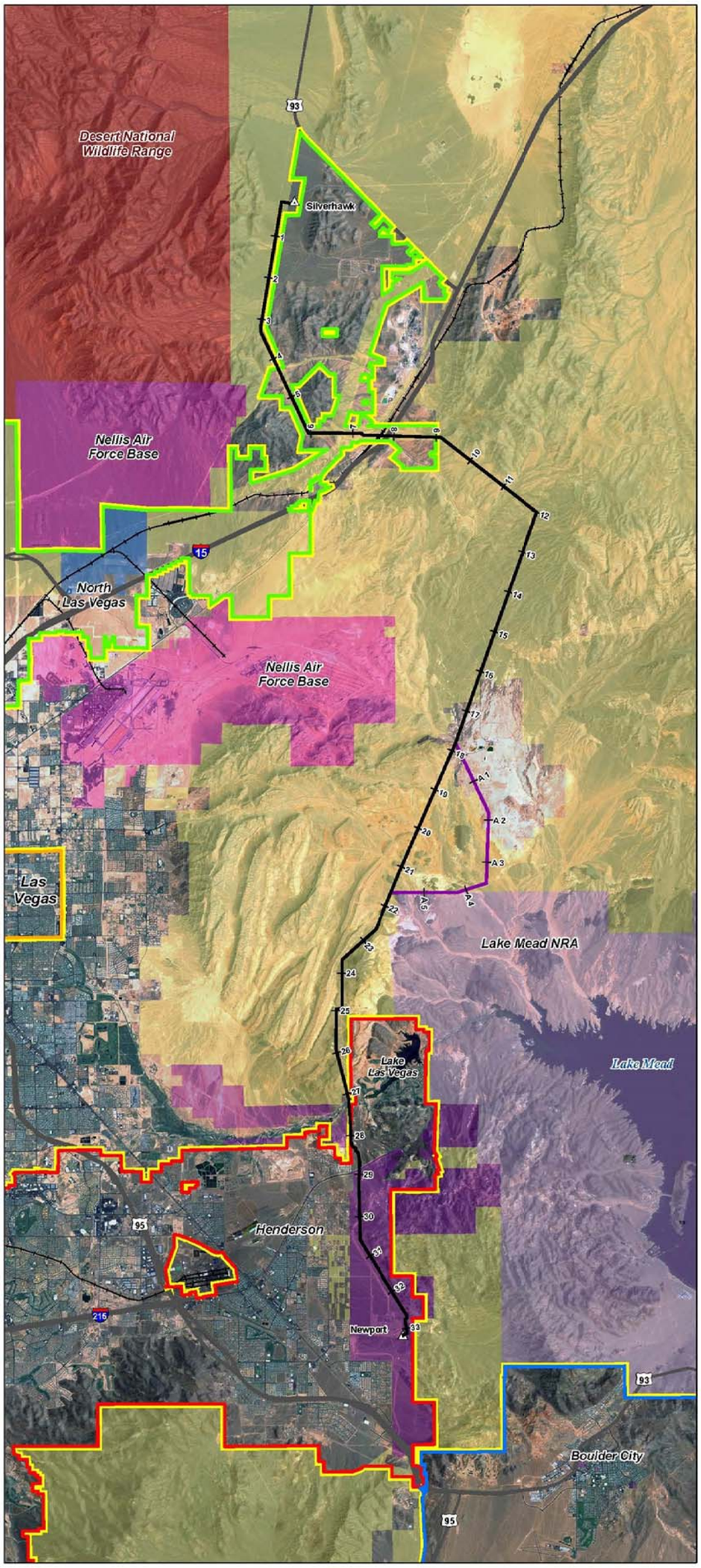
The transportation network in the two Project areas includes principal regional highways, paved and unpaved roadways, and the Union Pacific Railroad. There are no airports near the proposed ROW corridors. Other transportation resources within the Project areas include non-motorized transportation facilities such as bicycle paths, pedestrian sidewalks and trails, and horse trails. The majority of the non-motorized transportation facilities are located in the populated areas along the proposed Silverhawk to Newport ROW corridor.

3.8.3.1 Gemmill to Tortoise

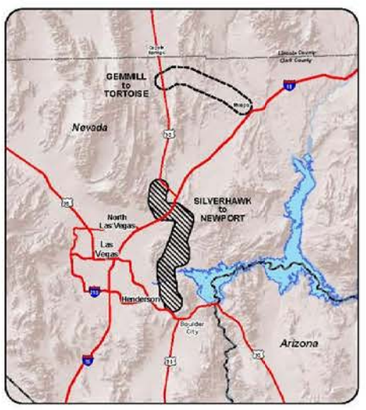
The western edge of the proposed Gemmill to Tortoise ROW corridor begins at the Gemmill substation which is located approximately 0.5 miles southeast of the intersection of SR 168 and US 93. SR 168 connects I-15 with US 93 between Moapa and Coyote Springs. The proposed ROW corridor is located south of SR 168 between the Gemmill substation and approximately MP 9, then crosses the highway and travels in a southeasterly direction north of SR 168. Between MP 19 and MP 20 the proposed ROW corridor crosses the Union Pacific Railroad. The line terminates at the Tortoise substation approximately 1 mile north of SR 168. The majority of Tortoise to Gemmill construction traffic would be expected to travel along SR 168, coming from I-15, to access the various job sites.

3.8.3.2 Silverhawk to Newport

The proposed Silverhawk to Newport ROW corridor begins at the Silverhawk substation which is located approximately 4.2 miles northwest of the intersection of US 93 and I-15. The proposed alignment crosses the I-15 and the Union Pacific Railroad at approximately MP 8. Other major roadways crossed by the proposed ROW corridor include Lake Mead Boulevard/SR 147 (near MP 16 and MP 21), and East Lake Mead Drive/SR 564 (between MP 28.5 and MP 29).



VICINITY MAP



PROJECT FEATURES

- Proposed Action (with mileposts)
- Alternative Alignment (with mileposts)

FEDERAL JURISDICTION

- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- National Park Service
- U.S. Fish & Wildlife Service
- State Land
- Private

LOCAL JURISDICTION

- Boulder City
- Henderson
- Las Vegas
- North Las Vegas
- Unincorporated Clark County

GENERAL REFERENCE

- Substation
- Interstate, Highway
- Railroad

SOURCES:
Federal Jurisdiction, Roads - NV RLM; Local Jurisdiction - CC GISMO;
Railroad, Imagery - ESRI; Substations - Platts 2010

NOTE: Substations and transmission lines are schematic and do not necessarily represent accurate locations.

EASTERN NEVADA TRANSMISSION PROJECT

SILVERHAWK to NEWPORT

Figure 3-10
Jurisdiction

N

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silver state energy association

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3.9 Socioeconomic Resources

3.9.1 Existing Environment

The socioeconomic analysis characterizes the social and economic resources that may be affected by the Proposed Action. Both areas associated with the proposed Project are located within the limits of Clark County, therefore all Clark County data is presented as representative of the proposed Project as a whole.

3.9.1.1 Economic Characteristics

Clark County's economy is dominated by the tourism industry (Nevada Department of Employment, Training and Rehabilitation 2010). Since 2000, Las Vegas has hosted over 35,000,000 visitors annually (Las Vegas Convention and Visitors Authority 2010). In response to this, the large resort casinos are the major employers within the region. However, the single largest employer in Clark County in 2009 was the Clark County School District, which employed over 30,000 employees. The Clark County Government and Las Vegas Metropolitan Police were also among the top employers within Clark County in 2009. Due to the recent economic downturn, the unemployment rates in Nevada and the Las Vegas Valley in June 2010 were 14.2 percent and 14.5 percent respectively (Nevada Department of Employment, Training, and Rehabilitation 2010).

3.9.1.2 Public Services

Gemmill to Tortoise

The Clark County Fire Department provides fire protection and emergency medical response in the unincorporated portions of Clark County. Fire stations near the proposed Gemmill to Tortoise ROW corridor include stations in Moapa and Logandale, which are manned by volunteer firefighters (Bunkerville, Moapa & Moapa Valley Town Advisory Boards 2006).

Law enforcement for the proposed Gemmill to Tortoise ROW corridor would be provided by the Las Vegas Metropolitan Police Department. The Las Vegas Metropolitan Police has a resident officer program with approximately eight officers that serve the communities of Moapa, Moapa Valley, and Bunkerville (Bunkerville, Moapa & Moapa Valley Town Advisory Boards 2006). The Nevada Highway Patrol is responsible for traffic regulation enforcement on the state highways in the area. In addition, BLM rangers patrol federal lands in the area.

The Overton Power District provides electric service to the rural communities along the eastern portion of the proposed Gemmill to Tortoise ROW corridor and the Lincoln County Power District Number 1 serves the Coyote Springs area at the western end of the proposed ROW corridor. Natural gas service is not available in the rural communities near the proposed Gemmill to Tortoise ROW corridor.

The Moapa Valley Water District provides water service in Moapa, Glendale, Logandale, and Overton (Bunkerville, Moapa & Moapa Valley Town Advisory Boards 2006). Properties outside

of the service areas can apply for individual water well permits from the Nevada Division of Water Resources.

Sewer service is not provided in the Moapa area; instead property owners use septic systems.

Republic Services provides solid waste collection services in Moapa and Moapa Valley. The waste is taken to the Apex Regional Waste Management Center.

Public education in the Project area is provided by the Clark County School District which was the fifth largest school district in the United States in 2008 (Snyder et al. 2009). In the 2009-2010 school year, the school district had a student enrollment of 313,688, at a total of 353 schools (Clark County School District 2010). In addition to the public schools, there were 14 charter schools and 106 private schools within Clark County in 2010 (Nevada Department of Education 2010).

Silverhawk to Newport

The Clark County Fire Department provides fire protection and emergency medical response in the unincorporated portions of the Silverhawk to Newport Project area. In the northern section of the proposed Silverhawk to Newport ROW corridor, there is a fire station located in the Apex Industrial Park, which is manned by volunteer firefighters (Bunkerville, Moapa & Moapa Valley Town Advisory Boards 2006). Fire protection and emergency medical response in the northern portion of the proposed Silverhawk to Newport ROW corridor may also be provided by the North Las Vegas Fire Department. In the southern portion of the proposed Silverhawk to Newport ROW corridor, fire protection and emergency medical response would be provided by the Clark County fire Department and the City of Henderson Fire Department with multiple fire stations in that portion of the Project area (Clark County Department of Comprehensive Planning 2007).

In the northern portion of the proposed Silverhawk to Newport ROW corridor, law enforcement would be provided by the Las Vegas Metropolitan Police and the City of North Las Vegas Police Department. In the southern portion of the proposed Silverhawk to Newport ROW corridor, law enforcement would be provided by the Henderson Police Department and the Las Vegas Metropolitan Police. The Nevada Highway Patrol is responsible for traffic regulation enforcement on the state highways in the area. In addition, BLM rangers patrol federal lands in the area.

NV Energy provides electrical service in the Las Vegas Valley and Apex Industrial Park area. Natural gas in the Las Vegas Valley is provided by Southwest Gas.

The Las Vegas Valley Water District provides water service to the city of Las Vegas and the unincorporated portions of Las Vegas Valley. The City of North Las Vegas Utility Operations Division provides water service in North Las Vegas and some sections of unincorporated Clark County. The City of Henderson Department of Utility Services provides water service in the city of Henderson. Properties outside of the service areas can apply for individual water well permits from the Nevada Division of Water Resources.

The Clark County Water Reclamation District provides the primary sanitary sewer service in the unincorporated portions of the Las Vegas Valley. The City of North Las Vegas Utility Operations

Division provides sanitary sewer service in North Las Vegas. The City of Henderson Department of Utility Services provides wastewater services to the city of Henderson.

Republic Services provides solid waste collection services in all areas crossed by the proposed Silverhawk to Newport ROW corridor. The waste is taken to the Apex Regional Waste Management Center.

Public education is the same as it is for the Gemmill to Tortoise portion of the proposed Project.

3.9.1.3 Fiscal Resources

The proposed Project has the potential to generate revenue for three local government entities - Clark County, Henderson, and North Las Vegas. The significant revenue sources for these entities are intergovernmental resources, property taxes, and licenses and permits. The proposed Gemmill to Tortoise ROW corridor does not reside within the jurisdiction of an incorporated city. However, portions of the proposed Silverhawk to Newport ROW corridor cross areas under the jurisdiction of the City of North Las Vegas and the City of Henderson.

3.10 Environmental Justice

3.10.1 Introduction

All federal actions must address and identify as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations in the United States. U.S. Census tract data for 2000 was used to analyze minority and low-income population.

3.10.2 Population

In 2000, Clark County comprised 68.8 percent of the population in Nevada (U.S. Census 2010). Clark County and the Las Vegas Valley have experienced tremendous growth over the past several decades. The population of Clark County has grown 40 percent from 2000 to 2009. However, due to recent economic downturns, growth has slowed dramatically in the past few years. Between 2007 and 2008 there was actually a small decline in population reported (Clark County Department of Comprehensive Planning 2010).

Gemmill to Tortoise

The proposed Gemmill to Tortoise ROW corridor is entirely within Census Tract 59.02, which had a population of 1,589 in 2000 (Figure 3-11) (U.S. Census 2010). Tract 59.02 is the largest tract in Clark County, covering most of the northern third of the county, and includes the community of Moapa which accounts for most of the population in the tract. This tract also includes the Moapa River Indian Reservation.


93
Lincoln County
Clark County
Gemmill
Tortoise
15
59.02
Silverhawk
56.13
61.02
61.01
NEVADA
ARIZONA
Las Vegas
54.11
54.31
Newport
93
15
95
Legend
Existing Substation
Proposed Alignment
Alternative Alignment
Census Tract
Major Road
Sources:
Census Tracts - Tiger; Roads - ESRI
N
0
4
8
12
Miles
EASTERN NEVADA TRANSMISSION PROJECT
Figure 3-11
September 2014
ssea

Silverhawk to Newport

The proposed Silverhawk to Newport ROW corridor crosses six census tracts. The combined population of these tracts in 2000 was 19,084 people (U.S. Census 2010). Table 3-14 shows the population breakdown for these tracts along with the population of the state and county in 2000. The most populated tracts are present in the proposed Silverhawk to Newport ROW corridor between the Las Vegas Wash and Newport substation (tracts 54.11 and 54.31). These two tracts include portions of the City of Henderson. Census tracts in these highly populated areas cover a much smaller area than those tracts in less populated areas. Tract 61.02 includes portions of the City of North Las Vegas and areas around Nellis Air Force Base. This tract is only crossed by approximately 3 miles of the proposed ROW on its eastern edge away from any populated areas. Tract 56.13 extends from the Pabco mine area east to Logandale and Overton. Most of the population in this tract lives in the Moapa Valley area and not near the proposed Silverhawk to Newport ROW corridor. The northern portion of the proposed Silverhawk to Newport ROW corridor crosses Tract 59.02. As discussed above, this tract is the largest in Clark County. Most of the population in this tract is located in Moapa and not near the proposed Silverhawk to Newport ROW corridor.

Table 3-14 Total Population 2000

	Nevada	Clark County	Tract 54.11	Tract 54.31	Tract 56.13	Tract 59.02	Tract 61.01	Tract 61.02	Moapa River Reservation, (part of Tract 59.02)
Total	1,998,257	1,375,765	4,865	4,353	4,222	1,589	1,897	3,958	211

Source: U.S. Census 2010

3.10.3 Demographic Profile

Gemmill to Tortoise

Census Tract 59.02 had just over a 50 percent minority population in 2000, which was higher compared to either the state or Clark County (Table 3-15). This tract includes the community of Moapa and the Moapa River Indian Reservation. Even with removing the Reservation, the tract still has a higher percentage of minorities (44.63 percent) than the county or state.

Silverhawk to Newport

The demographic profile of the majority of the census tracts crossed by the proposed Silverhawk to Newport ROW corridor exhibits a higher proportion of white residents than minority residents when compared to the state and county (Table 3-15). The exceptions to this are tracts 59.02 and 61.02. As stated above, the proposed Silverhawk to Newport ROW corridor crosses these two tracts in mostly uninhabited areas.

Table 3-15 Racial Breakdown 2000									
	Nevada	**Clark County**	**Tract 54.11**	**Tract 54.31**	**Tract 56.13**	**Tract 59.02**	**Tract 61.01**	**Tract 61.02**	**Moapa River Reservation**
Total:	1,998,257	1,375,765	4,865	4,353	4,222	1,589	1,897	3,958	211
White	1,301,738	827,342	3,736	3,598	3,751	785	1,456	2,182	22
Hispanic or Latino	393,539	301,830	577	385	348	563	195	933	35
Black or African American	129,288	120,132	180	113	14	0	32	487	0
American Indian / Alaska Native	22,123	8,427	55	0	20	168	0	10	148
Asian	87,872	70,564	240	100	23	2	95	194	2
Native Hawaiian / Other Pacific Islander	7,309	5,601	19	49	34	51	62	0	0
Other	2,690	1,960	0	8	0	0	0	0	0
Two or more races	53,698	39,909	58	100	32	20	57	152	4
Percent Minority	34.86%	39.86%	23.21%	17.34%	11.16%	50.60%	23.25%	44.87%	89.57%
Source: U.S. Census 2010									

3.10.3.2 Income

Gemmill to Tortoise

Tract 59.02 had income levels slightly lower and poverty levels slightly higher than the county and state (Table 3-16 and Table 3-17). These differences are probably due to the low incomes and high poverty level on the Moapa River Indian Reservation within the tract.

Silverhawk to Newport

Median household income levels in most of the tracts crossed by the proposed Silverhawk to Newport ROW ranged from slightly to much higher than those in the county and state as a whole. Thus poverty levels in these tracts were all lower than the county and state as a whole (Table 3-16 and Table 3-17). Census tracts 59.02 and 61.02 had lower incomes and higher poverty levels than the county and state. As stated above, the proposed Silverhawk to Newport ROW corridor crosses uninhabited portions of these tracts.

Table 3-16 Median Household Income in 1999									
	Nevada	**Clark County**	**Tract 54.11**	**Tract 54.31**	**Tract 56.13**	**Tract 59.02**	**Tract 61.01**	**Tract 61.02**	**Moapa River Reservation**
Median household income in 1999	$44,581	$44,616	$55,763	$66,356	$45,417	$44,250	$89,497	$37,991	$22,292
Source: U.S. Census 2010									

Table 3-17 Poverty Level in Project Vicinity in 1999									
	Nevada	**Clark County**	**Tract 54.11**	**Tract 54.31**	**Tract 56.13**	**Tract 59.02**	**Tract 61.01**	**Tract 61.02**	**Moapa River Reservation**
Total:	1,962,948	1,355,075	4,851	4,332	4,203	1,589	1,897	3,928	211
Income below poverty level	205,685	145,855	213	62	275	181	71	562	61
Income at or above poverty	1,757,263	1,209,220	4,638	4,270	3,928	1,408	1,826	3,366	150
Percent below poverty level:	10.48%	10.76%	4.39%	1.43%	6.54%	11.39%	3.74%	14.31%	28.91%
Source: U.S. Census 2010									

3.11 Noise

3.11.1 Regulatory Framework

There are no federal noise standards that directly regulate noise from operation of electrical transmission lines and substation facilities. For such circumstances, the EPA (1974) has developed and published criteria for environmental noise levels with a directive to protect public health and welfare with an adequate margin of safety. That is, EPA developed this criterion *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA 1974) for use as an acceptable guideline when no other local, county, or state standard has been established. However, the EPA criterion is not meant to substitute agency regulations or standards where states and localities should use the developed criteria accordingly to their individual needs and situations (EPA 1974).

The EPA established its criteria using the day-night level average sound exposure metric. This metric is a 24-hour average noise level calculated by obtaining the daytime noise level from the hours of 7 a.m. to 10 p.m. and applies a 10 decibel penalty for the more restrictive quietest nighttime noise levels between the hours of midnight to 7 a.m. to 11:00 pm to midnight.

Clark County Noise Standards

Title 30.68.020 of the Clark County Unified Development Code provides regulation regarding noise levels and standards. However, Title 30.68.020(h) states that construction activities conducted during daytime hours are exempt from Clark County's noise requirements. Daytime hours are defined in Title 30.08.030 as being from 6 a.m. to 10 p.m. (Clark County 2010). Construction of the transmission line would fall between these hours.

City of Henderson Noise Standards

The City of Henderson noise standards are only applicable to the southern portions of the proposed Silverhawk to Newport ROW corridor, as this is the only portion of the proposed Project that enters into the city limits. Noise control is regulated in the Henderson Municipal Code under Section 8.84.030 which specifically prohibits construction operations to occur outside of the hours of 6 a.m. and 6 p.m. If Project construction should need to be conducted during the prohibited hours then permission would be obtained from the Superintendent of Building as stated in the Henderson Municipal Code (Section 8.84.030).

City of North Las Vegas Noise Standards

The City of North Las Vegas noise standards are only applicable to the northern portions of the proposed Silverhawk to Newport ROW corridor as this is the only portion of the proposed Project that enters into the city limits. The City of North Las Vegas – Code of Ordinances Chapter 8.28 Noise Control states that construction may occur only between the hours of 6 a.m. and 9 p.m., except in cases of urgent necessity in the interest of public health and safety and minor construction work not creating a noise disturbance in the neighborhood. If construction should need to occur outside of the acceptable hours the building official would evaluate the situation and may grant permission for the work to be done outside of those hours (City of North Las Vegas 2010).

3.11.2 Existing Conditions

3.11.2.1 Gemmill to Tortoise

The proposed Gemmill to Tortoise ROW corridor is located within rural, sparsely populated residential, commercial, and industrial areas. The existing ambient noise environment in the vicinity of the proposed ROW corridor is mainly made up of natural sounds, vehicle noise associated with nearby roadways (e.g., SR 168, US 93, I-15), and various small road segments, and community activity, as well as over-flight aircraft traffic. The Tortoise substation is located near residential and heavy industrial areas that, during construction only, would contribute to the ambient noise level. There are no other identified noise sources located within the vicinity of the proposed ROW corridor.

Sensitive receptors in the area would include any listed sensitive or endangered species, schools, hospitals, libraries, parks, or other areas that could be adversely affected by elevated noise levels. The nearest residential and commercial areas to the proposed Gemmill to Tortoise ROW corridor is approximately one mile away.

3.11.2.2 Silverhawk to Newport

The northern-most area of the proposed Silverhawk to Newport ROW corridor is sparsely populated, with little to no residential development, and is surrounded mostly by heavy industrial facilities. The proposed ROW corridor between MP 28 to the terminus at the Newport substation is located near residential, commercial, and recreational areas. Ambient noise levels in these areas consist of highway traffic, community activity, over-flight aircraft traffic, and industrial noise. No other noise sources have been identified within the vicinity of the proposed ROW corridor.

3.12 Visual Resources

This section of the EA addresses visual resources, including visual resource management, scenic quality, and key observation points (KOPs) related to visual resources potentially being affected by the construction, operation, and maintenance of the proposed Project.

The proposed Project is located within the planning area of the BLM Las Vegas Field Office. The inventory of existing visual resources is based on methods derived from the BLM Visual Resource Management (VRM) system (Manual H-8410-1) and consultation with the BLM Las Vegas Field Office VRM staff.

3.12.1 Project Setting

The localized setting is within the Mojave Desert section of the Basin and Range Province as characterized by linear desert mountains separated by large desert plains and dominant stands of low-growing vegetation such as creosote, and yucca.

The proposed Gemmill to Tortoise ROW corridor crosses landforms such as desert plains (basins) and foothills, with the proposed Silverhawk to Newport ROW corridor crossing landforms such as desert plains (basins), desert mountains, and rolling hills.

3.12.1.1 Description of Existing Utilities/Cultural Modifications

Gemmill to Tortoise

The proposed Gemmill to Tortoise ROW corridor would mostly parallel an existing 115-kV transmission line and SR 168. Other existing cultural modifications along the proposed Gemmill to Tortoise ROW corridor include dispersed residential and commercial development near the Town of Moapa, an underground waterline (and associated ground disturbance), a water tank, substations (at either terminus end) and the nearby decommissioned Moapa Paiute Energy Center.

Silverhawk to Newport

The proposed Silverhawk to Newport ROW corridor would mostly parallel existing transmission lines within designated utility corridors with the exception of approximately 8 miles (approximately MP 4 to MP 12). From MP 0 to MP 4 and from MP 12 to MP 33 the proposed ROW corridor would be located adjacent to multiple high voltage transmission lines primarily within the BLM designated utility corridors on federal lands.

The multimodal, 3,500-foot-wide corridor contains portions of a number of existing utility facilities including one 500-kV AC transmission line, one 230-kV AC transmission line, one transmission line below 230-kV, one 500-kV DC transmission line, and a number of underground water and natural gas pipelines. The Apex, CoGen1, and CoGen2 power plants are also located within the Project area. Gravel extraction areas and the Northeast C-1 Detention Basin (which is highly visible) are located within the Project area. Communities within the area range from medium density to low density residential. These communities are concentrated near the central portion of the Project area and include the City of Henderson. The aforementioned development has substantially modified the landscape setting along the proposed ROW corridor.

3.12.2 VRM Resource Management Classes and Scenic Quality

The BLM's VRM system establishes guidelines for assessing and determining the level of acceptable visual change allowed in the landscape. The BLM VRM methodology consists of an inventory of existing visual resources, which are comprised of planning level Visual Resource Inventory (VRI) and include scenic quality, distance zones, and Sensitivity Level Rating Units (SLRU).

Scenic Quality is defined as the measurement of a visual appeal of land with measurements ranging from Class A (high scenic value) to Class C (low scenic value). Distance Zones represent the relative visibility from a particular viewing location and are defined by the BLM as foreground/middleground (0-5 miles) and background (5-15 miles). SLRUs represent the measure of public concern of land and are dependent on several factors. The three VRI components (scenic quality, distance zones, and SLRUs) are mapped individually to determine Visual Resource Inventory Classes, which range from Class I (existing landscape to be maintained), to Class IV (The level of change can be high). Visual Resource Inventory Classes do not establish management guidelines, but rather provides a basis for considering visual values in establishing the RMP and informing the VRM agency management objectives.

The management objectives pertaining to the BLM are Class I, II, III, and IV. Class I objectives preserve the existing character of landscape and allows very low levels of change ranging to Class IV objectives that allow major modification of the landscape and the level of change can be high. VRM class designations are typically determined by the scenic quality of the landscape, public concern for the maintenance of the scenic quality, KOPs and associated visibility, and specific management prescriptions based on land use, such as wilderness study areas or ACECs.

VRM classes were inventoried within the study area using Geographic Information System data acquired from the BLM (BLM 2008). For the purposes of this study, the visual project buffer is three miles as determined by the BLM.

Class IV areas that would be crossed by the proposed Project are characterized by open desert scrub lands consisting of creosote-bursage. Class III landscapes are typically rolling hills or open plains with high vegetative diversity. Areas designated as Class II are associated with moderate to high topographic relief landforms with uncommon features. The two proposed ROW corridors would not cross any Class I areas, as there are no Class I landscapes located within the three-mile Project buffer.

3.12.2.1 Gemmill to Tortoise

The majority of lands crossed by the proposed Gemmill to Tortoise ROW corridor are comprised of either open desert or the alluvial areas and foothills associated with the Arrow Canyon Range and Meadow Valley Mountains. The Gemmill to Tortoise Project area is located wholly within a landscape described as Class C scenic quality. The proposed ROW corridor lies within VRM Inventory Class IV from approximately MP 0 to MP 3, Class II from approximately MP 3 to MP 18.5, and re-enters Class III from MP 18.5 to the terminus at the Tortoise substation at approximately MP 20.5. The VRM management class is Class III from MP 0 at the Gemmill substation to approximately MP 2.75, VRM management Class II from MP 2.75 to approximately MP 14.25, and re-enters Class III from MP 14.25 to the terminus at the Tortoise substation at approximately MP 20.5 (Figure 3-12).

The majority of land crossed by the proposed Gemmill to Tortoise ROW corridor is designated as Class II (approximately 11.5 miles) with approximately 9 miles crossing Class III landscape.

3.12.2.2 Silverhawk to Newport

The majority of lands crossed by the proposed Silverhawk to Newport ROW corridor are either open desert or the alluvial areas and foothills associated with the Las Vegas Range, Dry Lakes Range, Sunrise Mountains, Frenchman Mountains, and River Mountains. The proposed Silverhawk to Newport ROW corridor is located on lands designated as Class III (approximately 26 miles) and approximately 4.25 miles crossing Class IV landscape. Approximately 4.5 miles are located on private land (with approximately 3.2 miles on the Pabco site).

The proposed Silverhawk to Newport ROW corridor is within Class C scenic quality in the northern area (16 miles); Class B in the middle section (11 miles); and Class C in the southern section (6 miles). Sensitive viewing locations and their associated sensitive viewers typically include residences, travel routes and recreational areas.

The proposed Project alignment would cross approximately 33-38 miles of federally managed, municipal, and private lands. VRM classes have not been assigned to Reclamation or private lands; however, these lands are adjacent to BLM lands that have a VRM Class III or IV designation (Figure 3-13).

Beginning in the northern section of the proposed Silverhawk to Newport ROW corridor, approximately 16.75 miles lies within VRM Inventory Class III. Proceeding south, the ROW corridor enters private land for approximately 1.75 miles then enters Class III for approximately 8.75 miles. The ROW corridor then crosses onto private land for 0.5 miles and then enters BLM Class III for 0.5 miles. It re-enters private land for approximately 0.75 miles, and then Class IV for approximately 4.25 miles ending at the terminus at the Newport substation.

3.12.3 Inventory Results

The inventory of sensitive viewers and KOPs included three components: (1) the identification of sensitive viewer locations and visual sensitivity, (2) distance zones, and (3) viewing conditions. The distance from the viewer to the proposed transmission line also was considered in the analysis. The distance zones noted below are based on previous 230-kV transmission studies in similar settings. Typically, for 230-kV transmission line projects, in the 0- to 0.25-mile and 0.25- to 0.5-mile range, individual objects are seen in greater detail and textures and colors appear more vivid and clear. In the 0.5- to 1-mile and the 1- to 2-mile range, objects are typically viewed in less detail and are seen in relationship to patterns rather than an emphasis on individual features; form and line become more obvious than texture and color. In areas where views are from 2 miles or more, landscapes are viewed as horizon lines and tones and atmospheric conditions often dominate.

3.12.4 Sensitive Viewers and Key Observation Points

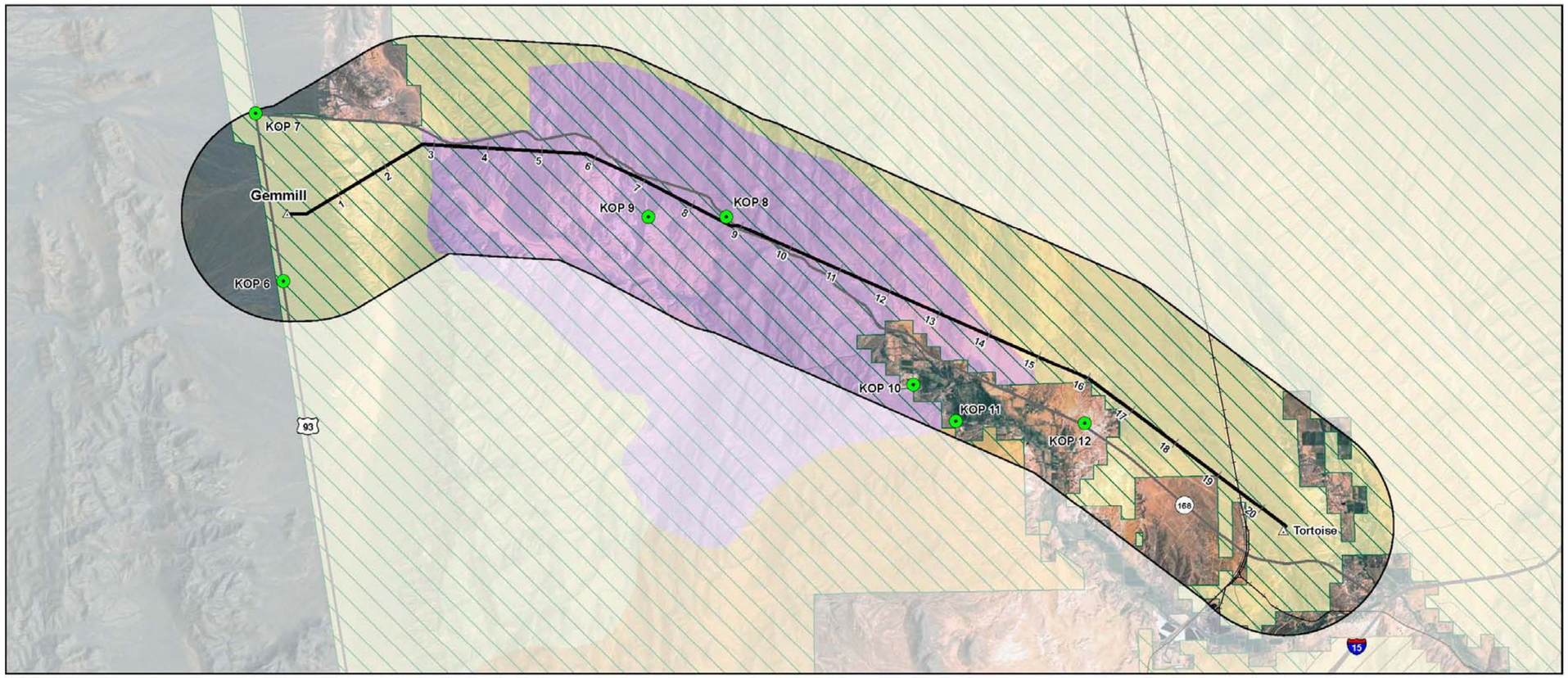
KOPs, their associated viewers, and corresponding viewsheds were identified through secondary data, field reconnaissance, aerial photograph interpretation, and agency consultation. The sensitive viewers were organized into three categories, including: residential, recreation, and transportation views. These are described below. Sensitive viewers are assigned visual sensitivity per BLM guidelines. Visual sensitivity is defined as the degree of concern for changes in the landscape that, for the purposes of this study, range from high to moderate to low.

3.12.4.1 Gemmill to Tortoise

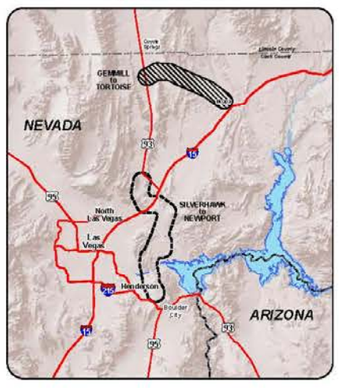
In consultation with the BLM Visual Resources staff, seven KOPs were selected to represent the sensitive viewers for the proposed Gemmill to Tortoise ROW corridor; 3 travel routes (2 along US 93, 1 along SR 168), 2 residential areas, and 2 recreational areas (1 campsite, 1 from the Moapa NWR).

Residential Views

Low-density residences are dispersed within the Project area as well as within the Town of Moapa and along SR 168 along the eastern half of the Project area (approximately MP 11.5 to MP 20.5). An existing transmission line on H-frame structures is located between most residential viewers and the proposed ROW corridor resulting in viewers looking through existing lines to see the proposed Project. Residential viewers are typically assigned a high sensitivity rating – refer to Table 3-18 for sensitivity levels. Refer to KOP 10 and KOP 12 for representational views (Appendix A).



VICINITY MAP



PROJECT FEATURES
- Proposed Action (with mileposts)
- Study Area (2-mile buffer)

GENERAL REFERENCE
- Interstate, Highway
- Local Road, Dirt Road
- Railroad
- Existing Substation

Sources:
VRM, Scenic Quality, Roads - NV BLM; Imagery,Railroad - ESRI;
Substations - Platte 2010

VISUAL RESOURCE
- Key Observation Point (KOP)

Scenic Quality
- B
- C

Visual Resource Management Class
- Class II
- Class III
- Class IV

EASTERN NEVADA TRANSMISSION PROJECT

GEMMILL to TORTOISE

Figure 3-12
Visual Resource Management Inventory

N

0 1 2 3 Miles

ssea
silver state energy association

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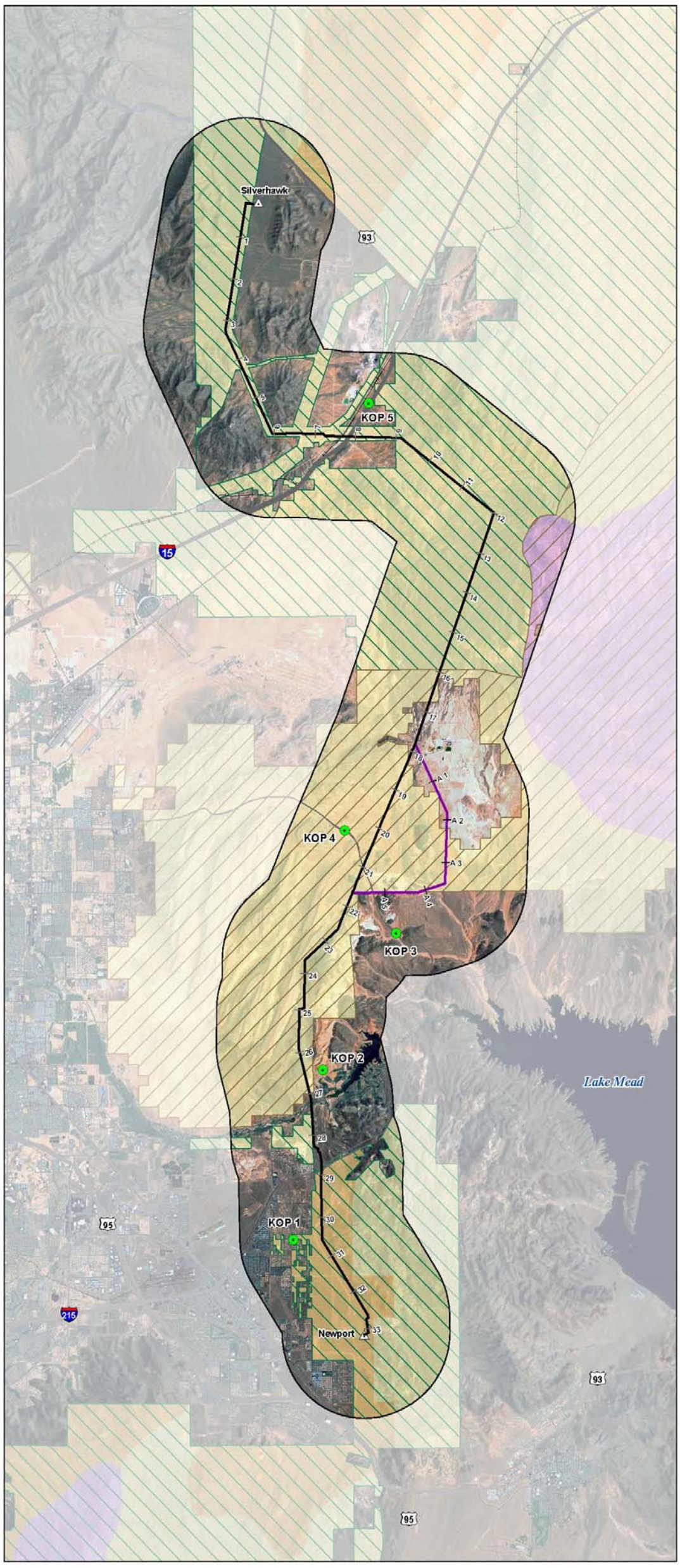
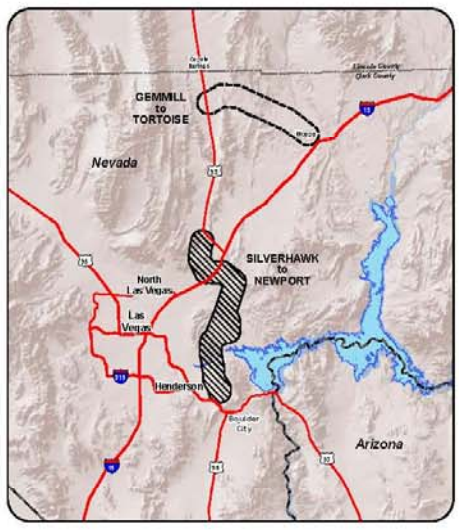


VICINITY MAP



PROJECT FEATURES

- Proposed Action (with mileposts)
- Altenative Alignment (with mileposts)
- Study Area (2-mile Buffer)

VISUAL RESOURCE

- Key Observation Point (KOP)

Scenic Quality

- B
- C

Visual Resource Management Class

- Class II
- Class III
- Class IV

GENERAL REFERENCE

- Interstate, Highway
- Major Road
- Railroad
- Existing Substation

SOURCES:
VRM, Scenic Quality, Roads - NV BLM;
Imagery - ESRI; Substations - Platts 2010

EASTERN NEVADA TRANSMISSION PROJECT

SILVERHAWK to NEWPORT

Figure 3-13

Visual Resource Management Inventory

N

0 0.5 1 2 3 Miles

ssea
silver state energy association

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Recreation Views

There are numerous dispersed recreational areas surrounding the proposed ROW corridor. These include the Coyote Springs ACEC, Arrow Canyon ACEC, Mormon Mesa ACEC, Muddy Mountains Wilderness, Moapa NWR and the Desert NWR.

Other recreational viewers in the proposed Gemmill to Tortoise ROW corridor would include visitors to the Coyote Springs Golf Course, Moapa NWR, Warm Springs Recreation Facility, and the Moapa Cemetery. Recreation viewers are assigned sensitivity levels on a case-by-case scenario. KOPs 9 and 11 were selected by the BLM to represent dispersed recreation viewers. Refer to Table 3-18 for a list of recreational Sensitive Viewers and their associated sensitivity analysis.

Travel Routes Views

US 93 is a designated scenic byway with the southern-most extents beginning at the intersection of SR 318 (Crystal Springs) approximately 60 miles north of the western portion of the Gemmill substation. Within the limits of the 3 mile buffer of the proposed Gemmill to Tortoise ROW corridor, however, there is no scenic byway designation, although northbound travelers would travel through the area to reach the designated scenic route. Travelers along SR 168 would parallel the proposed ROW corridor from approximately MP 3.0 to MP 9.0 with the proposed transmission line being south of SR 168 with a distance ranging from approximately 300 feet to approximately 1,900 feet from the edge of the road. At approximately MP 8.75 the line crosses the road to the north side and varies in range from approximately 130 feet to approximately 4,400 feet from the edge of the road and ending at the terminus at the Tortoise substation. For the purposes of this study, travel route viewers are assigned a moderate rating. Refer to Table 3-18 for a list of sensitive viewers along travel routes and their associated sensitivity analysis and KOP 6 and KOP 7 for more information regarding US 93 and KOP 8 for SR168.

3.12.4.2 Silverhawk to Newport

Five KOPs were selected for the proposed Silverhawk to Newport ROW corridor with consultation with the BLM: 2 travel routes (I-15 and SR 147), 2 residential, and 1 recreation (entrance to Lake Mead NRA). Refer to Table 3-18 for a list of Sensitive Viewers and their associated sensitivity analysis.

Residential Views

Residential development is concentrated in the southern portion of the proposed Silverhawk to Newport ROW corridor in the City of Henderson and Boulder City. The northern most residences within the proposed ROW corridor are located within the Lake Las Vegas development in the City of Henderson. Lake Las Vegas is located on the east side of the proposed ROW corridor and consists of a mixture of low, medium and high density residential. These residences are located approximately 0.10 to 2 miles from the proposed ROW corridor. The landscape in this area has been locally modified by existing transmission lines within a designated utility corridor that runs along the west side of the development. Within this utility corridor there are between 3 and 4

existing transmission lines, which include two 500-kV AC, one 500-kV DC, and a double-circuit line. Viewers would be looking through these existing transmission lines to the proposed ROW corridor, which would be located west of the existing transmission lines. Views of the proposed transmission line may be partially screened by existing homes within the development. In addition, the topography of the Rainbow Gardens ACEC would potentially provide back dropping of the proposed route.

South of Lake Las Vegas, also in the City of Henderson, low, medium, and high-density residences are located exclusively on the west side of the proposed ROW corridor and the existing utility corridor. The existing utility corridor in this area consists of those transmission lines noted above in addition to a 230-kV AC transmission line, multiple transmission lines below 230-kV, a water treatment facility, a detention basin and associated drainage channel, and a number of underground water and natural gas pipelines. Views of the proposed transmission line would involve looking through the existing transmission lines. The proposed ROW corridor would be located approximately 3 miles from the city limits of Boulder City, but would be obscured from the residents due to topography. Residential viewers are typically assigned a high sensitivity rating. Refer to KOPs 1 and 2 for representational views (Appendix A).

Recreation Views

Multiple recreational areas are located east of Las Vegas and many of these are within the 3-mile study area buffer. The River Mountains Loop Trail, Railroad Pass and Equestrian Park Trailhead, and Bootleg Canyon Park Trails, were formally designated or defined as high sensitivity trails/trailheads within the study area. Recreational users within Lake Mead NRA and Lake Las Vegas were ranked as having high sensitivity.

The River Mountain Loop Trail is located at the base of the River Mountains. The trail system surrounds the entire mountain range and leads into the Lake Mead NRA. Most of the trail system within the Project area is located to the west of the proposed ROW corridor and runs parallel to (and within) the existing utility corridor. Existing modifications for this area include 3 to 4 existing 500-kV and 230-kV transmission lines. Views from the trail in this area would involve looking through the existing transmission lines. As a result of these conditions, there would be only intermittent and modified views of the proposed transmission line from the trail.

The Equestrian Park trailhead that connects to the River Mountains Trail Loop was designated as a high sensitivity trailhead because of the aesthetic concerns associated with the River Mountains ACEC. The Railroad Pass Trailhead connecting to the River Mountains Trail Loop has historic significance due to the trailhead being part of the Historic U.S. Government Construction Railroad Hiking Trail (thus adding to the high sensitivity rating) although potential views from the trailhead itself would be obscured by topography.

Trails within Bootleg Canyon Park meander in and out of the Project study area with the nearest trails located approximately 1.25 miles or more from the proposed ROW corridor. Potential views of the proposed transmission line would be partially to fully-screened by the rolling topography of the River Mountains wherein the trails are located.

Lake Mead NRA and The Lakes at Lake Las Vegas were both designated a high sensitivity recreation area due to their recreational value (e.g. boating, swimming, etc.). The Lake Mead NRA is renowned for its' sightseeing qualities and photographic opportunities. The Lakes at Lake Las Vegas has a centralized location within the residential/resort community serving as a focal point for the community and is an amenity for the development including two resorts and the residential communities. The lake is located 0.4 miles or more from the proposed ROW corridor. Similar to many other viewing locations within the study area, views from the lake to the west would be looking through existing 500-kV transmission lines. Refer to KOP 3 for a representational view from the Lake Mead Entrance (Appendix A).

Other recreation views that are of moderate sensitivity include the Clark County Museum outdoor exhibit area and amphitheater, Union Pacific Railroad Trail, Boulder Highway Trail, dispersed recreation in the River Mountains ACEC, Rainbow Gardens ACEC, Muddy Mountains Wilderness Area, Desert NWR, Coyote Springs ACEC, various churches, community and neighborhood parks, and parks associated with schools. These facilities are dispersed throughout the southern portion of the Project area and are primarily within residential areas.

Nellis Dunes NRA and the Sunrise Mountain Off-Highway Vehicle (OHV) trails were designated as a moderate sensitivity recreation area due to the fact that their primary use is for off-road vehicles, such as all-terrain vehicles, motorcycles, and dirt bikes. Nellis Dunes NRA is located approximately 0.5 mile or more west of the proposed ROW corridor. Potential views of the proposed transmission line would be partially to fully-screened by the rolling topography. OHV trails associated with Sunrise Mountain are located from within 0.25 mile to more than 2 miles, with some of the trails crossing under the proposed transmission lines. Potential views of the proposed transmission line for most of the trails would be partially or completely screened by the mountain topography. Areas where the proposed transmission line would be seen, (e.g. where trails cross the proposed route) the proposed transmission line would be seen in the context of three existing transmission lines. Refer to Table 3-18 for sensitivity levels for these recreational areas.

Travel Routes Views

Lakeshore Scenic Road was ranked as a high sensitivity roadway due to the scenic road status within the Lake Mead NRA.

Other transportation routes that occur within the Project study area that would have views of the existing and proposed transmission lines include I-15, one of the main transportation routes into the Las Vegas metropolitan area from the northeast. I-15 is also a primary travel route for visitors of the surrounding parks, such as the Valley of Fire State Park and the Lake Mead NRA. SR 147 (Lake Mead Boulevard) and East Lake Mead Parkway (SR 564) connect to Lake Mead NRA. Interstate Route 515 (I- 515/US 93/US 95) and the local roads are also listed as moderate sensitivity. Refer to Table 3-18 for a list of travel route sensitive viewers and their associated sensitivity analysis and to KOP worksheet 5 for additional information (Appendix A).

Table 3-18 Key Viewers and Viewer Sensitivity Analysis						
Sensitive Viewer	**Sensitivity**					
	Use Duration	**Use Volume**	**Aesthetic Concern**	**Scenic/ Historic**	**Overall Sensitivity**	**KOP**
Gemmill to Tortoise						
Residents/Communities	M	M	H		H	Y (2)
Parks and Recreation						
Moapa NWR	M	L	M		M	Y
Arrow Canyon Wilderness - Disbursed Camping	M	L	M		M	Y
Recreational Areas	M	M	M		M	Y
Schools K-12	M	M	M		M	N
Golf Courses	H	M	M		M	N
Churches	H	M	M		M	N
Travel Routes						
Interstate 15 (I-15)	L	H	M		M	N
State Route 168 (SR 168)	L	M	M		M	Y
US Route 93 (US 93)	L	M	M		M	Y (2)
Silverhawk to Newport						
Residents/Communities	M	M	H		H	Y (2)
Parks and Recreation						
Cinnamon Ridge Park	M	M	M		M	N
Equestrian Park	M	H	M		M	N
Mission Hills Park	M	M	M		M	N
Hayley Hendricks Park	M	M	M		M	N
River Mountain Park	H	H	M		M	N
Sewell School Park	M	H	M		M	N
Tuscany Park	M	H	M		M	N
Saguaro Park	M	H	M		M	N
Roadrunner Park	M	H	M		M	N
Basic High Ball fields	H	H	M		M	N
Lake Las Vegas	H	M	H		H	N
Clark County Museum	M	M	M		M	N
Wetlands Park	H	L	H		H	N
Las Vegas/"Nellis" Dunes NRA	H	H	M		H	N
Equestrian Trailhead	M	M	H		M	N
Golda Trailhead	M	M	H		M	N

Table 3-18 Key Viewers and Viewer Sensitivity Analysis						
Sensitive Viewer	**Sensitivity**					
	Use Duration	**Use Volume**	**Aesthetic Concern**	**Scenic/ Historic**	**Overall Sensitivity**	**KOP**
River Mountains Loop	H	H	H	S	H	N
Boulder Highway Trail	M	M	M		M	N
Union Pacific RR Trail South	M	M	H	Hi	M	N
Lake Mead NRA Entrance (SR 147 entrance w/ views; SR 564 no views)	M	H	M		M	N
Schools K-12	M	M	M		M	N
Golf Courses	H	M	M		M	N
Churches	H	M	M		M	N
Travel Routes						
I-15	L	H	M		M	Y
Interstate 515 (I-515/US 93/US 95)	L	H	M		M	N
State Route 147 (Lake Mead Blvd)	M	M	M		M	Y
State Route 564 (East Lake Mead Parkway)	M	M	M		M	N
Lakeshore Road	M	M	H		H	N
H = High; M = Medium; L = Low; Hi = Historic; S = Scenic						

3.13 Health and Safety/Hazardous Materials

3.13.1 Electric and Magnetic Fields

Electric and magnetic fields (EMF) are phenomena that occur both naturally and as a result of human activity. Naturally occurring EMF are caused by the weather and Earth's geomagnetic field. Magnetic fields associated with transmission lines are created when current flows through power lines, with their strengths determined mainly by line current, line height, and distance. Electrical transmission and distribution systems are not the only sources of magnetic fields. Local sources of magnetic fields in homes and workplaces include electric wiring and appliances. Typical magnetic levels from common household appliances are provided in Table 3-19.

The electrical effects of transmission lines are those related to electric fields, magnetic fields, and corona. Electric fields from power lines are directly dependent on the line voltage, and field strength is reduced as the distance from the source increases. Table 3-19 lists typical EMF levels associated with 115-kV, 230-kV, and 500-kV transmission lines.

EMF can also interfere with computer monitors, cardiac pacemakers, and defibrillators. At close range, corona discharges can generate audible noise (crackle) and interference with radio and television signals. Corona problems are generally not associated with 230-kV transmission lines.

Table 3-19 Typical 60-Hz Magnetic Levels of Common Household Products		
Product	**Magnetic Field 6 Inches from Product (mG)**	**Magnetic Field 2 Feet from Product (mG)**
Electric Shaver	100	-
Vacuum Cleaner	300	10
Electric Oven	9	-
Dishwasher	20	4
Microwave Oven	200	10
Hair Dryer	300	-
Computers	14	2
Fluorescent Lights	40	2
Fax Machine	6	-
Copy Machines	90	7
Garbage Disposals	80	2
Source: Western Area Power Administration 2010 mG - milligauss		

Table 3-20 Typical 60-Hz EMF Levels from Overhead Power Lines					
Line Voltage	**Centerline**	**Approximate Edge of ROW**	**100 feet**	**200 feet**	**300 feet**
115-kV					
Electric (kV/m)	1.0	0.5	0.07	0.01	0.003
Magnetic Field (mG)	30	6.5	1.7	0.4	0.2
230-kV					
Electric (kV/m)	2.0	1.5	0.3	0.05	0.01
Magnetic Field (mG)	57.5	19.5	7.1	1.8	0.8
500-kV					
Electric (kV/m)	7.0	3.0	1.0	0.3	0.1
Magnetic Field (mG)	86.7	29.4	12.6	3.2	1.4
Source: Western Area Power Administration 2010 mG – milligauss; kV – kilovolts; kV/m – kilovolts per meter, ROW – right-of-way					

Some studies have reported a weak association between residential magnetic field exposure and certain types of childhood cancer. These studies have not demonstrated or concluded that the exposure to magnetic fields from transmission lines causes cancer. Other studies on workers have found associations between magnetic field exposure and some forms of cancer, but these results

have been highly inconsistent. Laboratory experiments have shown that exposure to levels typically well above those normally found in residences can produce biological responses in cells, but there is little or no evidence that these changes constitute a health risk.

The magnetic field values for both 230-kV transmission lines would not exceed thresholds established by the American Conference of Governmental Industrial Hygienists, and therefore do not pose a potential impact for wearers of pacemakers and defibrillators.

3.13.2 Hazardous Materials

3.13.2.1 Affected Environment

Existing and past land uses are indicator of hazardous materials storage or use. A limited review of environmental databases was conducted to identify known hazardous waste sites within or in the vicinity of the proposed and alternative ROW corridors.

The EPA has a database of all superfund sites throughout the country. A Superfund site is an uncontrolled or abandoned place where hazardous waste is located, possibly affecting local ecosystems or people. Superfund sites are listed on the National Priorities List (NPL). The Comprehensive Environmental Response, Compensation, and Liability Information Systems (CERCLIS) contain data on potentially hazardous waste sites that have been reported to the EPA, as well as sites listed on the NPL. A geographic search for CERCLIS sites in both Project areas was performed on the EPA website. There are no sites listed on the NPL within or near the proposed and alternative ROW corridors and vicinity (EPA 2010c).

Gemmill to Tortoise

A zip code search was used to determine if there were any NPL sites or underground storage tank leaks are located within or near the vicinity of the proposed Gemmill to Tortoise ROW corridor. No sites were identified in the general vicinity using the CERCLIS database. There were also no sites identified as having a known underground storage tank leak according to NDEP within the proposed Project vicinity.

Silverhawk to Newport

A zip code search was used to determine if there were any NPL sites or underground storage tank leaks within the vicinity of the proposed Silverhawk to Newport and the Alternative 1 ROW corridors. A total of four sites were identified in the general vicinity using the CERCLIS database. None of the sites identified are on the NPL.

Out of the 472 records that NDEP has on underground storage tank leaks, there were 12 located within the vicinity of the proposed Silverhawk to Newport and Alternative 1 ROW corridors (NDEP 2010).

Table 3-21 Silverhawk to Newport CERCLIS Site Identified on the EPA Website		
Zip Code	**CERCLIS ID**	**Site Name**
89015	NVD074150798	Basic Management Inc.
890153.5	NVD074150798	Henderson Lead Contamination Soil Site
89015	NVD062081500	Stauffer Chemical Co. ICD
89122	NVN000905935	Fiestives Manufacturing Site
Source: EPA 2010c		

In 1997 it was discovered that perchlorate, originating from the BMI Complex, was migrating into the Las Vegas Wash in the vicinity of Pabco Road. The source was determined to be Kerr- Mcgee Chemical Corporation and American Pacific Corporation facilities. A groundwater interception system has been installed to intercept and treat the contaminated groundwater. Treated groundwater is returned to the Las Vegas Wash.

The Three Kids Mine Site is located in the River Mountains west of Lake Mead and south of Lake Mead Parkway. The mine was in operation during 1917-1961. Manganese was the material being mined from the site. The area is known to have metal and petroleum contamination that were the result of historical mining operations. There have been site investigations; however, no remediation has occurred. A portion of the Silverhawk to Newport corridor would be in the vicinity of the Three Kids Mine site (miles 30-33). Ground disturbance in this area would require environmental sampling for total metals and petroleum contamination. A copy of the results would be provided to the land managers where the sampling took place. If contamination is found to exceed state remediation requirements, remediation or an alternative route would be required.

The Henderson Landfill located west of Calico Hills and north of Lake Mead Parkway, has known metal contamination. Land use in the area is deed-restricted, with no residential development or water supply well construction allowed.

3.14 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in proptery held in trust by the United States for Indian tribes or individuals. The Secretary of the Interior, acting as the trustee, holds many assets in trust. Examples of objects that may be trust assets are lands (including tribal trust, fee title, and allotted lands); minerals; hunting and fishing rights, and water rights. While most ITAs are on reservations, they may also be found off-reservations. The United States has a trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or Indian individuals by treaties, statutes, and executive orders. These are sometimes further interpreted through court decisions and regulations.

3.15 Indian Sacred Sites

Executive Order 13007 “Indian Sacred Sites” and 512 DM 3 require Federal agencies with legal or administrative responsibility for management of Federal lands, “to the extent practicable by law,

and not clearly inconsistent with essential agency functions to (1) accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners, and (2) avoid adversely affecting the physical integrity of such sacred sites." Executive Order 13007 defines Indian Sacred Sites as "any specific, discrete, narrowly delineated location on Federal land that is identified by and Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

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CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES

This section contains a discussion of potential impacts that would result from the construction, operation, and maintenance of the Proposed Action and alternatives. The Proposed Action includes the construction and operation of two separate transmission lines:

- An approximately 33 mile-long 230-kV overhead double-circuit transmission line from the Silverhawk substation to the Newport substation
- An approximately 21 mile-long 230-kV overhead single-circuit transmission line from the Gemmill substation to the Tortoise substation

Alternative 1 follows the same corridor as the Proposed Action from the Silverhawk substation until it reaches the northern boundary of the formerly designated Sunrise Mountain ISA. The alternative corridor bypasses the former Sunrise Mountain ISA by routing around the eastern edge and extending south into the Lake Mead NRA before turning west to rejoin the Proposed Action – Silverhawk to Newport ROW corridor. The Alternative 1 bypass corridor is approximately 5.75 miles long and would cross approximately 1.5 miles of NPS-managed lands 65 feet south of the ISA boundary.

The basis for evaluating Project-related impacts was the Affected Environment as described in Chapter 3. The specific types, duration, and intensity of impacts that could occur as a result of the action alternatives are identified. The Project's contribution to global climate change was not assessed since greenhouse gas emissions would not result from operation and would be negligible for maintenance of the project. Project construction would result in greenhouse gas emissions; however, emissions would be temporary and have a negligible impact on global climate change.

The specific location of transmission line structures and associated access roads cannot be determined until final design is complete. Estimates of permanent and temporary ground disturbance were calculated to help assess and compare the potential impacts of the Proposed Action alternatives upon specific resources. Disturbance estimates were based on design specifications for a 230-kV transmission line (Chapter 2, Tables 2.1). These estimates would be recalculated for the Plan of Development when final design is complete and the precise locations of structures and roads are known.

4.1 Air Quality

This section discusses the effects on existing air quality that may occur with implementation of the Proposed Action or alternatives.

4.1.1 Proposed Action

Under the Proposed Action, impacts to air quality would be similar in nature for both Projects. Both segments would be constructed and operated within the boundaries of Clark County and therefore under the same regulating agency DAQEM. Both would be constructed in similar areas consisting of Mojave Desert Scrub, therefore impacts due to dust would be similar. The proposed

Silverhawk to Newport ROW corridor is located in an area of Clark County that is currently in non-attainment for PM_{10}, specifically between MP 5 and MP 6.5 and again between MP 26.5 and Newport substation.

Air emissions associated with the Proposed Action are primarily short-term and chiefly associated with engine exhaust due to combustion of fossil fuel in construction equipment and fugitive dust during the 24-month construction period.

There are no permanent, large stationary sources slated to be located on site, therefore operational emissions would primarily be from vehicles associated with maintenance activities.

Before construction can commence the SSEA would need to apply for a DAQEM Dust Control Permit for Construction Activities, and related Dust Mitigation Plan. Dust control permits are required by DAQEM when project disturbance exceeds 0.25 acre or more, or when 100 feet of trenching is planned. Dust Mitigation Plans are required by DAQEM when project disturbance exceeds ten acres or more. The Proposed Action would require one or two dust permits depending upon if each transmission line will need a separate permit. As part of the dust permit SSEA will need to establish and implement BMPs for dust control in order to stay compliant with the dust permit.

SSEA would be required to maintain compliance with the stipulations of the permit and adhere to the BMPs set forth in the Dust Mitigation Plan. Enforcement of the permit would be the responsibility of DAQEM. As a result of the temporary nature of air emissions and through adherence to DAQEM regulations, impacts to air quality will be minimal.

4.1.2 Silverhawk to Newport - Alternative 1

The portions of Alternative 1 that are located within the Clark County non-attainment area for PM_{10} are the same locations as those in the Proposed Action Silverhawk to Newport ROW corridor. BMPs and mitigation utilized under the Proposed Action would also be applicable under Alternative 1. As such, impacts to air quality under Alternative 1 would be similar to the Proposed Action.

4.1.3 No Action Alternative

Under the No Action Alternative, the proposed Project would not proceed and there would not be any Project-related impacts to air quality.

4.1.4 Mitigation

SSEA would obtain a DAQEM Dust Control Permit for Construction Activities and develop a related Dust Mitigation Plan. As part of the dust permit SSEA will establish and implement BMPs for dust control in order to stay compliant with the permit.

4.2 Geology and Geologic Hazards Impacts

This section discusses effects on existing geology and from geological hazards that may occur with the implementation of the Proposed Action or alternatives.

4.2.1 Proposed Action

The potential for geologic hazards, such as earthquakes, is low for both the proposed Gemmill to Tortoise and Silverhawk to Newport transmission lines. Damage to tower structures from ground shaking as a result of earthquakes represents the most significant geologic hazard to Project components. Although large earthquakes have not been recorded near either of the Project areas, there are several Quaternary faults in and near both of the Project areas that have the potential for large earthquakes in the future. Earthquakes from these faults may potentially impact Project components.

Site-specific geotechnical, seismic, and soil conditions would be appropriately addressed during the design and construction of the proposed Project. In accordance with the NESC, SSEA would design and construct the Project facilities to withstand geological hazards by taking seismicity and fault locations into consideration.

The Project area includes numerous mineral resource locations, such as the Pabco and Pioneer gypsum mines along the proposed Silverhawk to Newport ROW corridor and numerous active placer claims along both of the proposed ROW corridors. Project construction may limit access to or permanently occupy mineral resource locations.

Impacts on mineral resources would be mitigated through the placement of towers and access roads, such that Project construction and facilities do not restrict access to mineral resources within the Project area.

4.2.2 Silverhawk to Newport - Alternative 1

Impacts to geologic resources and from geologic hazards under Alternative 1 would be similar to the Proposed Action Silverhawk to Newport ROW corridor as they are located within similar geologic units.

4.2.3 No Action Alternative Impacts

Under the No Action Alternative, the Project would not proceed and there would be no Project-related impacts to geologic resources.

4.2.4 Mitigation

In accordance with the National Electrical Safety Code, SSEA would design and construct Project facilities to withstand geological hazards by taking seismicity and fault locations into consideration.

Towers and access roads would be placed such that Project construction and facilities do not restrict access to mineral resources within the Project area.

4.3 Soils Impacts

This section discusses the effects on soil resources that may occur with implementation of the Proposed Action or alternatives.

4.3.1 Proposed Action

Construction activities may result in crushed vegetative cover, compacted soils, rutting, and increased soil erosion. Physical effects of soil compaction would be short-term, minor to moderate, and include reduced permeability and porosity, damage to microbiotic crusts, increased bulk density, decreased available water holding capacity, increased erosion potential, reduced gaseous exchange, and loss of soil structure.

The proposed Gemmill to Tortoise ROW corridor contains soils which are moderately to highly susceptible to water erosion, and highly to very highly susceptible to wind erosion. Soils which may be moderately to highly susceptible to water erosion include the Colorock-Tonopah, moderately steep association at the western end and midpoint of the proposed ROW corridor; the Glendale loam along the western half of the proposed corridor; and the Gila loam at the eastern end of the ROW corridor in the vicinity of MP 13 and MP 14. Soils which may be highly to very highly susceptible to wind erosion include the Bard gravelly fine sandy loam and the Glendale loam. These soils are located at the eastern end of the proposed ROW corridor near the Tortoise substation.

The proposed Silverhawk to Newport ROW corridor contains soils which are moderately to highly susceptible to water erosion, and highly susceptible to wind erosion. Soils which may be moderately to highly susceptible to water erosion include the Colorock-Tonopah, moderately steep association near the north end of the proposed ROW corridor; the Bard-Tonopah association north and west of the I-15; the Rock outcrop-Redneedle-Heleweiser association within and south of the formerly-designated Sunrise Mountain ISA; and the very fine sandy loam where the proposed ROW corridor would cross the Las Vegas Wash. Soils which may be highly susceptible to wind erosion include areas containing the Bard gravelly fine sandy loam soils. These soils are located in the area where the proposed ROW corridor crosses I-15.

Proper mitigation measures would be required during construction of the proposed Project in order to avoid or minimize damage resulting from erosion and prevent acceleration of natural- erosion processes. The placement of tower sites and temporary access roads would be selected to avoid soils that are moderately or highly sensitive to accelerated rates of water or wind erosion.

Access roads would also be selected to minimize the clearing of vegetation and re-contouring of the land surface. If new temporary roads or construction areas are cut in undisturbed areas, top soil would be saved and used during restoration to promote vegetation regrowth which would assist in stabilizing soils. Impacts from heavy-land-disturbance activities, such as road cutting would be mitigated by restoring natural round contours, re-seeding to hasten the recovery of surface

vegetation, installation of cross drains and water bars to limit water erosion, and the filling of ditches.

4.3.2 Silverhawk to Newport - Alternative 1

Impacts to soil resources under Alternative 1 would be similar to the Proposed Action; however, in addition to the soils presented above, there are three additional soil map units present along Alternative 1 all of which are moderately to highly susceptible to erosion. The Guardian- Baseline association is moderately susceptible to water erosion. The Carrizo-Carrizo-Riverbend association and the Drygyp fine sandy loam are both highly susceptible to wind erosion. These soils may be adversely affected through the removal of existing vegetation cover. BMPs and mitigation utilized under the Proposed Action would also be applicable under Alternative 1.

4.3.3 No Action Alternative

Under the No Action Alternative, the Project would not proceed and there would be no Project-related impacts to soils.

4.3.4 Mitigation

The placement of tower sites and temporary access roads would be selected to avoid soils that are moderately or highly sensitive to accelerated rates of water or wind erosion.

Access roads would be selected to minimize the clearing of vegetation and re-contouring of the land surface. If new temporary roads or construction areas are cut in undisturbed areas, top soil would be saved and used during restoration to promote vegetation regrowth which would assist in stabilizing soils. Impacts from heavy-land-disturbance activities, such as road cutting would be mitigated by restoring natural round contours, re-seeding to hasten the recovery of surface vegetation, installation of cross drains and water bars to limit water erosion, and the filling of ditches.

4.4 Water Resources Impacts

This section discusses effects on water resources/hydrology that may occur with implementation of the Proposed Action or alternatives.

4.4.1 Proposed Action

The Las Vegas Wash, along the proposed Silverhawk to Newport ROW corridor is the only perennial waterway that occurs within the requested ROW. Dry washes that only flow during high precipitation events occur along both of the proposed corridors. These include the Pahranagat Wash, Wildcat Wash, McKay Wash, and several unnamed minor washes along the proposed Gemmill to Tortoise ROW corridor, and the Gypsum Wash and an unnamed minor wash along the proposed Silverhawk to Newport ROW corridor. To the extent practical, SSEA would span all segments along the proposed transmission corridor that cross washes or the 100-year floodplain. If spanning would not be feasible, and if jurisdictional waters of the U.S. are identified through onsite

delineation, SSEA would secure the appropriate permits and authorizations from the United States Army Corps of Engineers prior to construction activities.

Groundwater depths along the proposed Gemmill to Tortoise and Silverhawk to Newport ROW corridors is almost exclusively located below 20 feet bgs, although in some locations, a shallow aquifer may be present with a water table at less than 20 feet bgs. Shallow aquifers may be present near the Las Vegas Wash area along the proposed Silverhawk to Gemmill ROW corridors and near wash crossings along both corridors.

Project activities include the construction of self-supporting steel pole structures that are imbedded in the ground less than 20 feet. Although these structures may be in contact with water in the shallow aquifer, because of the small footprint and the materials of construction, impacts to groundwater flows and groundwater quality would be negligible.

The potential for Project activities to impact surface water or groundwater quality is minimal. Because the proposed Project is a construction project that would disturb greater than one acre, a National Pollutant Discharge Elimination System (NPDES) permit is required. The Project would be covered by the NDEP general storm water permit for construction activities. The NPDES permit requires the preparation and implementation of a SWPPP. The SWPPP would define the BMPs required for the Project. BMPs may either be nonstructural or structural. Nonstructural BMPs include management and operational procedures regarding work activities. Examples of nonstructural BMPs include minimizing land disturbances, preventive maintenance, and preserving natural vegetation.

Structural BMPs are physical structures designed to protect storm water quality. Examples of structural BMPs include diversions, silt fences, re-seeding, and detention basins. The BMPs for a site usually consist of the following major elements:

- Source controls, such as surface controls that stabilize disturbed soils and help minimize erosion.
- Sediment controls, such as silt fence and sediment basins, capture sediment that has been eroded.
- Materials handling and spill prevention measures are designed to prevent the release of petroleum products and other chemicals and substances into storm water runoff.
- Waste management measures are designed to prevent the introduction of waste streams into storm water runoff.

General pollution prevention BMPs are designed to reduce pollutants introduced to runoff from ongoing operations (i.e. vehicle maintenance) and ensure that necessary operations are performed in a manner that reduces pollutants (i.e. temporary stream crossing, dewatering operations, and clear water diversion).

After implementation of site-specific BMPs, impacts to surface water, groundwater, and water quality are expected to be negligible to minimal. Impacts related to floodplains for individual pole structures and roads are negligible.

4.4.2 Silverhawk to Newport - Alternative 1

Impacts to water resources under Alternative 1 would be similar to the Proposed Action Silverhawk to Newport ROW corridor as they are located within the same watershed.

4.4.3 No Action Alternative Impacts

Under the No Action Alternative, the Project would not proceed and there would be no Project-related impacts to water resources.

4.4.4 Mitigation

To the extent practical, SSEA would span all segments along the proposed transmission corridor that cross washes or the 100-year floodplain. If spanning would not be feasible, and if jurisdictional waters of the U.S. are identified through onsite delineation, SSEA would secure the appropriate permits and authorizations from the United States Army Corps of Engineers prior to construction activities.

4.5 Biological Resources Impacts

4.5.1 Vegetation

This section discusses effects on vegetation resources that may occur with implementation of the Proposed Action or alternatives.

4.5.1.1 Proposed Action

Construction activities including construction and use of access roads, construction of tower sites, temporary construction lay down areas, and use of setup and pull-and-tension sites have the potential to impact vegetation resources. Direct impacts include loss of, or damage to, individual plants and the seed bank, loss or compaction of native soil, and permanent alteration and loss of plant species habitat. Indirect impacts include the introduction or spread of non-native, invasive and noxious weeds that could compete with native plant species for resources.

Maintenance activities could impact vegetation during periodic access to the Project area for routine inspection, repairs, and other activities. However, maintenance activities would occur infrequently and would use designated access roads and areas of existing disturbance.

The construction and operation of the proposed Gemmill to Tortoise transmission line would result in the permanent loss of approximately 26 acres of vegetation at tower sites and along newly constructed access roads. An additional 93 acres of temporary disturbance would occur at tower sites, pull-and- tension sites, and construction yards. Construction and operation of the proposed Silverhawk to Newport transmission line would result in the permanent loss of approximately 42 acres of vegetation at tower sites and along newly constructed access roads as well as an additional 134 acres of temporary disturbance sites. Overall, this is a very small percentage of the available Mojave Desert scrub and badlands in the area.

Applicant-proposed environmental protection measures were developed to reduce or eliminate potential impacts to botanical resources from construction, operation and maintenance of the Proposed Action. Areas that are to be excavated and backfilled or otherwise cleared of vegetation would be addressed in a Restoration Plan that would be approved by the BLM. SSEA has proposed salvaging grasses, forbs, cacti and yucca, with transplanting to reclaimed sites. In addition, topsoil salvage would be required to speed recovery of the native vegetation. The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction. The stockpile zone would contain a double windrow of topsoil and spoil materials. This approach would integrate with the objectives of erosion control and mitigation of visual impacts.

Avoidance is the preferred mitigation measure for protected and sensitive plant species. SSEA has proposed to conduct pre- construction surveys to flag sensitive plant species for avoidance, as well as to flag work areas. Project design measures such as tower location, span width, and access road location would be incorporated to avoid sensitive species where feasible. In areas where avoidance is not feasible, SSEA would implement plant and/or seed salvage, and either grow additional plants from seed or apply the seeds with the seeding program as identified in the Restoration Plan.

Sensitive Plant Species

The Las Vegas buckwheat was found just outside of the proposed Gemmill to Tortoise ROW corridor near MP 1.5 during rare plant surveys (EPG 2010a). In addition, there is suitable habitat for the species along the proposed Project between MP 1.0 and MP 2.5. Approximately six acres of suitable Las Vegas buckwheat habitat would be lost as a result of the Project construction.

Four sensitive plant species were observed in the proposed Silverhawk to Newport ROW corridor during rare plant surveys (EPG 2010a). The acres of disturbance to habitat for these species are presented in Table 4-1. Three of the four species are located mostly in gypsum and badland soils with high plant densities being found during rare plant surveys between MP 16.5 and MP 21. These gypsum endemics have proven difficult to transplant or re-seed; therefore, avoidance is the preferred mitigation for these species. Mitigation measures for sensitive plant species are discussed below.

Table 4-1 Approximate Acres of Sensitive Plant Habitat Disturbance along the Silverhawk-Newport Alignment

Species	Proposed Action (acres)	Alternative Alignment (acres)
Las Vegas Bearpoppy	25	28
Sticky Ringstem	25	25
Silverleaf Sunray	35	50
Rosy Twotone beardtongue	40	40

Source: EPG 2010a

4.5.1.2 Silverhawk to Newport - Alternative 1

Impacts to biological resources under Alternative 1 would be similar to the Proposed Action Silverhawk to Newport ROW corridor. However, Alternative 1 crosses a very large and dense patch of Las Vegas bearpoppies between MP A0.5 and A1.5. Impacts to this population could further exacerbate the decline of this species. Similar mitigation and avoidance measures utilized under the Proposed Action would also be applicable under Alternative 1.

4.5.1.3 No Action Alternative Impacts

Under the No Action Alternative the Project would not proceed and there would be no Project-related disturbance to vegetation and rare plants.

4.5.1.4 Mitigation

Existing roads and previously disturbed areas would be used for the proposed Project alignments to the extent feasible to minimize surface disturbance.

Topsoil salvage would be included in the Restoration Plan for areas that are to be excavated and backfilled or otherwise cleared of vegetation.

The Project would be designed as much as feasible to reduce the acreage of rare plant habitat that would be converted to permanent disturbance by construction of the Project. For those acres that cannot be avoided, SSEA would pay a $20,000 per acre mitigation fee to implement actions to mitigate the unavoidable loss of rare plant habitat. In lieu of the mitigation fee and with BLM approval, SSEA may propose mitigation actions commensurate with the mitigation fee.

To the maximum extent possible, cacti and yucca are to be salvaged and replaced after disturbance. Individuals are to be properly moved, stockpiled out of harm's way, and then replaced within the authorized area. The material would be salvaged by a BLM-approved contractor, stockpiled in an area approved by the BLM within a short term or the permanent ROW, and then transplanted to the reclaimed site. The BLM's protocols for proper maintenance of the material would be followed according to the restoration plan that would be developed for the Project.

If cacti and/or yucca are required to be removed from the Project area and not replaced within the ROW, consultation with the BLM and the NDF would take place to ensure full compliance with State statutes. The plants will be handled with BLM and NDF guidance and in accordance with the Restoration Plan.

A Noxious Weed Plan would be prepared in consultation with the BLM. The plan would include a discussion on (1) the plan purpose and goals and objectives, (2) the noxious weed inventory, (3) noxious weed management practices, (4) monitoring, and (5) the use of pesticides.

A Weed Risk Assessment would be completed prior to the construction of the proposed Project. Stipulations for weed control typically include the following.

- Vehicles and equipment would be cleaned prior to arrival on the work site.
- If noxious weeds are identified, any cleared vegetation or topsoil would be separately stockpiled and disposed of properly.
- Any seed or organic material used on site would be obtained from a state cleared source free of noxious/invasive weeds.

4.5.2 Wildlife

This section discusses effects on wildlife resources that may occur with implementation of the Proposed Action or alternatives.

4.5.2.1 Proposed Action

Impacts to the wildlife would result from ground disturbance and altering the habitat in the Project area from construction activities. In order to construct the proposed structures and facilities, soil would be compacted and vegetation cover would be removed within both ROWs. The ground disturbance could alter the soil characteristics thus potentially changing the vegetation upon which local wildlife depends.

Maintenance activities also have the potential to impact wildlife during periodic access to the Project area for routine inspection, repairs, and other activities. Impacts could include mortality from vehicles and equipment along with harassment.

Prior to ground clearing, biological surveys to remove most wildlife from the construction areas would be required under BLM ROW grant stipulations and applicable biological opinions issued by USFWS. Other impacts could result from soil contamination due to fuel spills, the harassment by humans, and the increase of noise and vibrations due to the construction.

Desert Tortoise

Desert Tortoises were found along both ROW corridors during Spring 2010 wildlife surveys. A total of 22 live tortoises and 160 tortoise signs were documented. Ten live tortoises and 32 signs were found along the Gemmill to Tortoise corridor; 12 live tortoises and 128 signs were found along the Silverhawk to Newport corridor. Lower densities of tortoise signs along the Gemmill to Tortoise corridor were found between MP 7 and MP 16 with higher densities of sign on the eastern and western ends. No signs were found between MP 18 and MP 29 along the proposed Silverhawk to Newport ROW corridor (EPG 2010b). The location of each live tortoise and sign encountered is depicted in Figures 3-8 and 3-9.

An estimated 248.53 acres of tortoise habitat on BLM land would be disturbed during construction of the project; 58.64 acres of permanent disturbance and 1189.89 acres of temporary disturbance. The total disturbed acreage within Desert Tortoise Critical Habitat would be approximately 58.39 acres; 14.05 acres of permanent disturbance and 44.34 acres of temporary disturbance. The potential impacts to the Desert Tortoise could include increased mortality or injury from vehicles or equipment; falls into excavated areas, utility borings or trenches upon entering a construction site; burrows crushed by construction equipment; and forage and water sources removed or

destroyed. Indirect impacts to Desert Tortoise could include habitat fragmentation and degradation, harassment, noise and vibration from vehicles, increased predation, and fire hazard.

The construction of overhead utility lines could provide perching areas for tortoise predators such as raptors and common ravens. Predation is a natural means of tortoise mortality; however the addition of overhead utility lines could increase the predator access to Desert Tortoise.

The ENTP was appended to the BLM's Southern Nevada District Programmatic Biological Opinion (File No. 84320-2010-F-0365) on June 11, 2015 (Proposed Action File No. 84320-2015-F-0386). Project-specific reasonable and prudent measures and terms and conditions were provided in that authorization. These include, but are not limited to, desert tortoise education program, desert tortoise monitoring, vehicle travel restrictions, litter and predator control, weed prevention, and restoration. A full list of the required measures is provided in Appendix C. The USFWS also authorized incidental take for the ENTP.

USFWS Listed Birds

There are no anticipated direct impacts to the Southwestern Willow Flycatcher, Yuma Clapper Rail, or Western Yellow-Billed Cuckoo. As described in Section 3.5.3.2, there is potential habitat for these species along the Muddy River south of the proposed Gemmill to Tortoise ROW corridor and along the Las Vegas Wash crossed near the southern end of the proposed Silverhawk to Newport ROW corridor. The proposed Gemmill to Tortoise ROW corridor is approximately a mile north of the Muddy River and construction and operation of the transmission line would not impact the river or the riparian vegetation in the area. The proposed Silverhawk to Newport ROW corridor would cross the Las Vegas Wash but the transmission line would span the Wash and thus it is expected that the Wash and the riparian habitat would not be directly impacted.

There may be a temporary indirect impact due to noise, vibrations, and traffic during construction of the proposed transmission line structures on either side of Las Vegas Wash. BMPs would dictate that these activities take place outside of the breeding season to minimize impacts to potential nests and young.

Raptors

Transmission poles may provide nesting and perching habitat for some species of raptors. Raptors and other large aerial perching birds, though, are susceptible to electrocution when coming in contact with power line structures because of their size and behavior. Because raptors and other large aerial perching birds often perch on tall structures that offer optimal views of potential prey, the design characteristics of transmission poles appear to be a major factor in raptor electrocutions. Electrocution occurs only when a bird simultaneously contacts two energized phase conductors or an energized conductor and grounded hardware. This happens most frequently when a bird attempts to perch on a transmission pole with insufficient clearance between these elements. As described in section 2.4.1.1, transmission line structures would include avian-safe design features and would be in accordance with APLIC guidelines. Any transmission structures constructed for the proposed Project would have clearances between phase conductors or between phase conductors and grounded hardware (as recommended by APLIC (2006)) that are sufficient to

protect even the largest birds, and therefore would present little to no risk of bird electrocution. With the application of appropriate construction designs for all transmission lines and their structures, impacts associated with bird electrocution would be minimized.

Additional impacts could result from nest abandonment and/or reproductive failure due to disturbance from increased public access and loss of habitat. To minimize impacts associated with increased public access and loss of habitat, existing access roads will be utilized whenever possible. Permanent disturbance associated with new access roads and structures will be limited to the amount necessary to construct the project.

Migratory Birds

Impacts to migratory birds (including raptors) could result from construction, operation and maintenance of the proposed Project. Migratory bird nests could be abandoned or destroyed as a result of the activities at these times. Additional impacts could result from human disturbance due to increased public access, loss of habitat, and bird strikes on lines.

The project area contains potential Burrowing Owl habitat. The burrows could be collapsed by ground moving activities or construction traffic and activities. Other potential impacts to the Western Burrowing Owl include loss of habitat and disturbance of breeding or foraging birds. Loss of individuals including young is possible if construction occurs during the breeding season. To help prevent this, Burrowing Owl burrows potentially impacted by construction will be collapsed during the non-breeding season to avoid interfering with breeding. Mitigation measures implemented for the desert tortoise would also reduce impacts to the Western Burrowing Owl.

Chuckwalla and Gila Monster

Impacts to these two reptiles could include direct loss of individuals and habitat during construction and maintenance activities of the proposed Project. Indirect effects could include increased predation by raptors perching on the transmission towers. Some of the mitigation measures implemented to avoid adverse impacts to the desert tortoise would also reduce impacts to the Chuckwalla and Gila monster.

In compliance with NAC regarding protection of the Gila monster, standard NDOW protocols would be followed if a Gila monster is encountered during construction activities.

Bats

The potential impact the proposed Project may have on bats is disturbance to a small amount of foraging habitat in the Las Vegas Wash. This impact would be temporary and following construction, the habitat would once again be available to them. The presence of the transmission lines and substations could lead to an increased risk of collision but any adverse impacts are expected to be minor.

4.5.2.2 Silverhawk to Newport - Alternative 1

No signs of Desert Tortoise were found along the portion of Alternative 1 that differs from the Proposed Action Silverhawk to Newport ROW corridor. Avoidance and mitigation measures described above would be implemented under Alternative 1. As such, impacts to wildlife resources under Alternative 1 would be similar to the Proposed Action.

4.5.2.3 No Action Alternative Impacts

Under the No Action Alternative there would be no disturbance within the proposed Project area. This would result in no disturbance to wildlife and their habitat.

4.5.2.4 Mitigation

Design features would adhere to the BLM's Common Raven Management Plan (BLM 2014) or be detailed in a project-specific Raven Management Plan, which would be approved by the BLM prior to issuance of a Notice to Proceed for the Project.

To minimize the likelihood of migratory bird nest abandonment or other impacts to breeding, construction within areas containing active nesting would be conducted, to the extent practicable, outside of typical nesting season (February 15 through August 31).

To minimize impacts associated with increased public access and loss of habitat, existing access roads will be utilized whenever possible. Permanent disturbance associated with new access roads and structures will be limited to the amount necessary to construct the project. Bird strikes on lines will be minimized via implementation of measures such as visual markers on guy wires.

Pre-construction surveys for nesting raptors and migratory birds would be conducted in areas where activities that are proposed to occur during the nesting season (February 15 through August 31). If active migratory bird nests are located, a protective buffer would be delineated and the area would be avoided until the fledglings leave or the nests are no longer active.

4.6 Historic and Cultural Resources Impacts

This section discusses effects on cultural resources that may occur with implementation of the Proposed Action or alternatives.

4.6.1 Proposed Action

Based on the records review, NRHP eligible properties may be affected by construction of the proposed Project. The records review shows that sites have been located within the study area, although the exact number and specific sites that may be affected by construction of the Project is not known at this point. Potential impacts to properties eligible for inclusion in the National Register of Historic Places (NRHP) would be avoided or minimized through implementation of the measures required under the cultural resources Programmatic Agreement for the Project, signed in April 2016. These measures include historic properties identification, avoidance through

Project design or relocation, development of Treatment or Data plan when required, avoidance of any discoveries, and consultation and coordination.

Gypsum Cave

Gypsum Cave was established on the National Register of Historical Places in 2010 under Criterion "A" for its spiritual values to the Nuwu (Paiute) people. It is also listed under Criterion "B" for its association with Mark Harrington, an archaeologist in the 1920's and 1930's who originally excavated the cave, and under Criterion "D" for its information potential. The property encompasses the land between Gypsum Spring in the south and private property on the north. The Criterion "A" listing recognizes that the property is a traditional cultural property (TCP) of the Nuwu. Numerous visits to the site with members and leadership of the Nuwu Bands have reiterated their concern with power line development within the TCP. Executive Order 13007, May 24, 1996, requires the BLM to avoid adversely affecting the physical integrity of such sacred sites.

Gypsum cave was partially mitigated in 2003 under Section 106, Criterion "D" for NV Energy's Harry Allen to Mead (HAMD) power line for the direct physical effects, which included an ethnographic study of Gypsum Cave, a re-excavation of some of the work done by Harrington, and a cataloging of all of Harrington's collection. This information was used to develop the TCP.

Gypsum Cave is located approximately 1,640 feet west of the Silverhawk to Newport corridor, and the Project would not have any direct impact to the cave. However, however, indirect impacts are the unintended impacts to the view shed from and to the TCP by structures and land scaring from roads as well as those indirect physical impacts caused by allowing access to the TCP via existing power line roads. The visual impacts from ENTP's spur roads and towers cause problems from both the religious and cultural perspectives of the Nuwu, affecting their sacred landscape.

Old Spanish Trail

The National Trails System Act of 1968 established national recreation, scenic, and historic trails. National scenic trails are designated as such "to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass." The Act states that measures may be in place to protect visual resources associated with these trails. The Old Spanish National Historic Trail (OST) was designated by Congress in 2009.

Section 106 of the National Historic Preservation Act of 1966 requires that Federal agencies take into account the effects of their projects on historic properties included in, or eligible for inclusion in, the National Register of Historic Places (36 CFR Part 800). Adverse effects to historic properties must be identified; examples of adverse effects include, "Introduction of visual elements that diminish the integrity of the property's significant historic features" which often includes the larger setting and view shed. The viewshed analysis of the OST's impacts by the ENTP was done by first locating the areas of the OST crossed by the ENTP. The crossing point was buffered by a half mile. A view shed analysis was done on the one half mile area around the origin of the impact to the trail. A GIS view shed analysis of the three points where the ENTP crosses the OST found that 5.6 miles of trail landscape were visually impacted by the undertaking. The impacts occur at

Apex where the undertaking crosses a ground-verified segment of the OST and visually affects 2.7 miles of trail landscape. The second crossing comes at the west end of the California Wash. Given the topography of the area the visual impact covers 1.5 miles. The third trail crossing happens near Las Vegas Wash. 1.2 miles of trail landscape are visually impacted by the undertaking.

4.6.2 Silverhawk to Newport - Alternative 1

Impacts to NRHP eligible properties under Alternative 1 are expected to be similar to the Proposed Action.

4.6.3 No Action Alternative Impacts

Under the No Action Alternative the proposed Project would not be constructed, no NRHP eligible properties would be affected, and no environmental consequences would occur.

4.6.4 Mitigation

The Project shall be constructed, operated, and maintained in accordance with the stipulations of the Programmatic Agreement among the Las Vegas Field office of the Southern Nevada District office of the BLM, the Bureau of Reclamation, the National Park Service, the Advisory Council on Historic Preservation, SSEA, and The Nevada State Historic Preservation Officer, signed in April 2016.

To mitigate cumulative indirect visual impacts to Gypsum Cave, SSEA will pay a $100,000 mitigation fee to implement actions to mitigate impacts to the TCP. In lieu of the mitigation fee and with BLM approval, SSEA may propose mitigation actions commensurate with the mitigation fee.

To mitigate cumulative indirect visual impacts to the Old Spanish National Historic Trail, SSEA will pay a $12,444 mitigation fee to implement actions for the 5.6 miles of trail landscape visually impacted by the ENTP. In lieu of the mitigation fee and with BLM approval, SSEA may propose mitigation actions commensurate with the mitigation fee.

4.7 Paleontological Resources Impacts

This section discusses effects on paleontological resources that may occur with implementation of the Proposed Action or alternatives.

4.7.1 Proposed Action

The Proposed Action may impact paleontological resources present in the proposed Project area. The paleontological inventory described in Section 3.7.2 demonstrates that paleontological resources are present within the proposed Project area. Twelve paleontological localities that contain fossils of land mammals, marine invertebrates, non-marine invertebrates, and land plants exist within 1 mile of the proposed alignments. Ten are located along the proposed Gemmill to Tortoise ROW corridor with the Muddy Creek Formation and two are along the proposed

Silverhawk to Newport ROW corridor within the undifferentiated alluvium. In addition, there are four other geological units that have a moderate to high potential for paleontological resources (PFYC of 3 to 5) (see Table 3-13).

The primary impact issue for paleontological resources is the loss of scientifically significant fossils and their contextual data. Two types of impacts could potentially affect paleontological resources:

- Direct impacts resulting from ground disturbance during construction
- Indirect impacts due to changes in public accessibility or erosion

It is possible that ground disturbance, such as grading and cutting of access roads, auguring or blasting for tower footings and anchors, or preparing staging areas, could encounter important paleontological resources. In addition, adverse impacts indirectly associated with construction are a concern. For example, fossils could be subject to damage or destruction by erosion that is accelerated by construction disturbance. Improved access and increased visibility as a result of construction could cause fossils to be damaged, destroyed, or collected as a result of unauthorized collection or vandalism. However, not all impacts of construction are adverse to paleontology. Excavation can and often does reveal significant fossils that would otherwise remain buried and unavailable for scientific study. In this manner, excavation can result in beneficial impacts. Such fossils can be collected properly and catalogued into the collection of a museum repository so that they can be available for scientific study.

A more detailed inventory is necessary for those portions of the proposed route that warrant further investigation (i.e., areas containing geological units with a PFYC of 3, 4, or 5). A rating of low residual impact assumes that scientifically significant fossil specimens and contextual information would be adequately collected from localities if they could not be avoided by the proposed route. Therefore, residual impacts on paleontological resources would be considered low to nonexistent, as long as proper mitigation procedures collected significant fossils along with their contextual data. The scientific and educational value of the fossils and their associated contextual data constitute the chief significance of the resource. Their collection, therefore, mitigates the impacts to paleontological resources.

4.7.2 Silverhawk to Newport - Alternative 1

All known paleontological localities within 1 mile of the Proposed Action are also within 1 mile of the Alternative 1 alignment. No additional localities are known to exist within 1 mile of Alternative 1. Therefore, impacts to paleontological resources under Alternative 1 would be similar to the Proposed Action.

4.7.3 No Action Alternative Impacts

Under the No Action Alternative, the Project would not proceed and there would be no Project-related impacts to paleontological resources.

4.7.4 Mitigation

A Paleontological Treatment Plan (Paleontological Resources Monitoring and Mitigation Plan) would be developed and include: (1) a pre-construction survey in areas containing known fossil localities or geological units with a PFYC of 3, 4, or 5; (2) determination of areas that may require on-site paleontological monitoring during construction; and (3) mitigation of paleontological resources that may be discovered during construction; primarily through paleontological monitoring, fossil collection, curation, and deposition in a federally-approved repository (as stated in BLM Manual 8270 and BLM Handbook H-8270-1).

In addition, an in-field worker education program would be implemented to train construction personnel on awareness and protections for paleontological resources. The education program would be approved by the BLM, and may be provided in conjunction with the education programs for desert tortoise and cultural resources.

4.8 Land Use, Transportation, and Access Impacts

This section describes potential impacts to land use, and transportation and access as a result of construction, operation, and maintenance of the Proposed Action or alternatives.

4.8.1 Proposed Action

4.8.1.1 Gemmill to Tortoise

The construction and operation of the proposed Gemmill to Tortoise transmission line would remove approximately 26 acres of BLM land from multiple uses. The entire length of the proposed Gemmill to Tortoise ROW corridor is on federal land, with portions within the designated LCCRDA corridor. The proposed Project would be constructed on vacant BLM land and would not conflict with any existing or planned facilities.

Indirect impacts from construction of the proposed Gemmill to Tortoise transmission line would include conversion of undeveloped desert land to utility-related uses. Title III of LCCRDA designated utility corridors on BLM lands to encourage consolidation of utilities within a common corridor. Operation and maintenance of the proposed transmission line would not conflict with existing federal, state or county land use plans, policies or regulations applicable to the project area.

The construction and operation of the proposed Gemmill to Tortoise transmission line is not anticipated to interrupt recreational activities on adjacent BLM lands. Vacant BLM lands are used for low-density informal recreation such as hiking, picnicking, off-road driving, and driving on existing paved and unpaved roads.

After completion of construction, disturbed areas, with the exception of permanent aboveground facilities, would be restored. The construction and operation of the Gemmill to Tortoise transmission line would not affect the overall low-density recreation use of the surrounding vacant BLM lands.

Road access impact would be low because only a few miles of new access roads would be required to be upgraded or constructed. Although no recreation use data for public lands directly affected by the proposed Project is available, use is primarily seasonal hunting, rockhounding, backcountry driving and OHV use, and sightseeing. The proposed Project would not preclude the use of these areas, but rather would temporarily displace recreational users to surrounding recreation areas if access roads are restricted due to construction. Operation and maintenance of the Project facilities would not limit public access to recreation opportunities in the surrounding area.

4.8.1.2 Silverhawk to Newport

The majority of the proposed Silverhawk to Newport ROW corridor is located within federally designated utility corridors which function to minimize environmental and land use impacts and the proliferation of multiple rights-of-way. Located primarily on BLM administered lands, the proposed transmission line corridor crosses several jurisdictional boundaries and types of land uses, including the City of North Las Vegas and the City of Henderson, unincorporated Clark County, the Las Vegas Valley Wash, and several ACECs.

The proposed Silverhawk to Newport transmission line facilities would cross or would be adjacent to several BLM land use authorizations. These are primarily in the form of rights-of- way for transmission lines, roads, and telephone and fiber optic facilities. Because transmission line spans can be modified to avoid potential impacts, no adverse effects to existing rights-of- way are anticipated. Operation and maintenance of the proposed transmission line would not conflict with existing federal, state or county land use plans, policies or regulations applicable to the project area.

The construction and operation of the proposed Silverhawk to Newport transmission line is not anticipated to interrupt recreational activities on adjacent federal and private lands. Adjacent undeveloped land are used for low-density informal recreation such as hiking, picnicking, off- road driving, and driving on existing unpaved and paved roads. The proposed Project would not preclude the use of these areas, but rather would temporarily displace recreational users to surrounding recreation areas if access roads are restricted due to construction.

After completion of construction, disturbed areas, with the exception of permanent aboveground facilities, would be restored. The construction and operation of the Silverhawk to Newport transmission line would not affect the overall low-density recreation use of the surrounding lands.

Road access impact would be low because only a few miles of new access roads would be required to be upgraded or constructed. Operation and maintenance of the project facilities would not limit public access to recreation opportunities in the surrounding area. BLM lands affected by the proposed Project would remain available for dispersed recreation activities during construction and operation.

4.8.2 Silverhawk to Newport - Alternative 1

Impacts to land use, transportation, and access under Alternative 1 would be different from the Silverhawk to Newport Proposed Action as it would avoid directly crossing the formerly-designated Sunrise Mountain ISA. Alternative 1 would instead cross private lands, an ACEC, and traverse NPS administered lands for approximately 1.5 miles. The use of NPS lands would require an amendment to the Lake Mead NRA Lake Management Plan. Only the NPS may amend an NPS Plan. Any plan amendment to the Lake Mead NRA Lake Management Plan would be considered separately from this EA.

4.8.3 No Action Alternative Impacts

Under the No Action Alternative there would be no impacts to land use, transportation, or access.

4.8.4 Mitigation

No additional mitigation required.

4.9 Socioeconomic Resources Impacts

This section describes the potential socioeconomic impacts that could result from the construction and operation of the proposed transmission lines.

4.9.1 Proposed Action

4.9.1.1 Economic Characteristics

The Las Vegas area's population and economy is large, diverse, and dynamic; therefore, the economic effects of constructing the transmission line would have little discernable effect on the overall levels of personal income and employment in the region. Accordingly, the Project would make a relatively small contribution to the overall economy of the region. More substantially, the Project would benefit the economy over the long-term by maintaining reliable electric power service for the growing number of residents and industries in the region.

Apart from the benefits of reliable service to customers in general, benefits would also accrue to jurisdictions along each ROW corridor in the form of property taxes. Payments would also be made to federal jurisdictions providing ROW easements.

Some positive effects would also result during construction, not only in the form of direct employment, but also from procurements of construction materials and services from local suppliers and businesses.

4.9.1.2 Public Services

The proposed Project would have a positive impact on the electrical service in the areas due to the increased capacity and reliability of electrical transmission by the members of the SSEA. Because

the Project is expected to hire local workers and due to the scale of the Project compared to the population of Clark County, impacts to local law enforcement and emergency services are expected to be negligible. Since the workers hired are expected to come from the existing population in Clark County, there is not expected to be a significant impact to public school system. In addition, due to the size of the Clark County School District, if outside workers do relocate and bring school-age children, the addition of these children to the local schools would have a negligible impact.

Water needed at the Project site during construction would be provided by water trucks. The source of the water would be obtained from an off-site source yet to be determined. Sanitation services during construction would be provided by chemical toilets and no additional wastewater facilities would be needed. Solid waste generated during construction would be placed in temporary dumpsters and taken to the Apex Regional Waste Management Center.

4.9.2 Silverhawk to Newport – Alternative 1

Impacts to socioeconomic resources under Alternative 1 would be similar to the Proposed Action.

4.9.3 No Action Alternative Impacts

If the proposed Project is not built, the local electricity providers would not have the increased capacity and reliability that the proposed Project would provide. The economy of the area would also not see the benefit of the jobs created and tax revenue generated under the other alternatives.

4.9.4 Mitigation

No additional mitigation is required.

4.10 Environmental Justice Impacts

4.10.1 Proposed Action

The purpose of an environmental justice analysis is to determine whether adverse environmental impacts would disproportionately affect minority and low-income communities compared to other communities in a project area. Impacts related to environmental justice would be significant if environmental justice populations exist in the affected area, and those populations are disproportionately affected by adverse impacts compared to other population groups.

The proposed Gemmill to Tortoise ROW corridor crosses a census tract that contains a minority population over 50 percent. This is due to the presence of the Moapa River Indian Reservation. The ROW does not cross the boundary of the Reservation and would be located approximately 2 miles from the closest Reservation residences that are located along the Muddy River on the opposite side of SR 168 from the proposed Project. Due to the location of the proposed Project, impacts to this population from the Project are anticipated to be negligible.

None of the census tracts along the proposed Silverhawk to Newport ROW corridor contain predominantly minority or low-income population groups; therefore there would be no environmental justice impacts from implementation of the Project. There would be no direct or indirect impacts to minority or low-income populations as a result of the Project. Therefore, mitigation would not be required.

4.10.2 Silverhawk to Newport - Alternative

The impacts to environmental justice under Alternative 1 would be similar to the Proposed Action.

4.10.3 No Action Alternative Impacts

Under the No Action Alternative, the Project would not be built and there would be no impacts to minority or low income populations.

4.10.4 Mitigation

No mitigation is required.

4.11 Noise Impacts

4.11.1 Proposed Action

Construction noise would occur from the operation of heavy equipment such as dozers and backhoes. Noise levels would vary for different construction activities with maximum levels expected during dozer operation. Noise generation would be intermittent over the short-term.

The construction of the transmission lines may also require blasting and impact-pile driving. These activities, and implosive would cause intermittent noise and ground-borne vibration impacts at close distances. Ground-borne noise or vibration would attenuate rapidly from the source and would not be perceptible outside of the construction areas.

The City of Henderson and Clark County have ordinances that specifically restrict construction activities during night-time hours. SSEA would comply with these ordinances which would reduce the short-term noise impact associated with construction noise levels. Operational noise levels would be considered well below regulated thresholds.

4.11.2 Silverhawk to Newport - Alternative 1

The portion of Alternative 1 that differs from the Proposed Action is located in a rural, undeveloped area far from any residences. Noise levels would be maintained at levels below the regulated thresholds and within the hours allowed by local ordinances. As such, the noise impacts for Alternative 1 would be similar to the Proposed Action.

4.11.3 No Action Alternative Impacts

Under the No Action Alternative there would be no construction or operation of the Project, therefore there would be no noise resulting from Project-related activities.

4.11.4 Mitigation

No additional mitigation is required.

4.12 Visual Resources Impacts

The purpose of the visual impact assessment is to identify and characterize the level of visual modification in the landscape that could result from the construction, operation, and maintenance of the proposed Project. Modification of the landscape is described in levels of visual contrast, which affects scenic quality, sensitive viewers, and compliance with VRM objective. The potential contrasts resulting from the proposed Project were assessed using a methodology consistent with the BLM's Contrast Rating System (BLM Manual 8431) and previous 230-kV siting studies. The visual impact analysis considered contrast as a result of introducing new facilities to the existing landscape setting, access, and potential vegetation clearing, and the presence of existing facilities (e.g., power plants, substations, and transmission lines), distance zones, and sensitive viewers.

Visual contrast (changes to the landscape) would occur based on (1) the landform modifications that are necessary to upgrade and construct new access roads and tower pad sites; (2) the removal of vegetation to construct roads and maintain ROW and clearance zones associated with the conductors and towers; and (3) the introduction of new structures to the landscape. Based on the establishment of the existing landscape character; the resulting levels of contrast are defined in Table 4-2 below (BLM VRM manual 8431 – Visual Resource Contrast Rating).

Table 4-2 Visual Resource Contrast Rating

Degree of Contrast	Criteria
Strong	The element contrast demands attention, would not be overlooked, and is dominant in the landscape.
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.
Weak	The element contrast can be seen but does not attract attention.
None	The element contrast is not visible or perceived.

Sensitive Viewers

Impacts to sensitive viewers and their associated KOPs were identified using the following criteria: Viewer Sensitivity, Distance of Sensitive Viewer, Viewing Position, Visibility, and Project Contrast. The consideration of these elements resulted in a contrast level rating for each KOP.

Compliance with VRM Classifications

Compliance with VRM classifications was assessed by evaluating Project contrast as perceived by sensitive viewers from Project KOPs. Table 4-3 identifies the VRM Class and the associated level of project-created contrast allowed in order to meet BLM management objectives. Note that an action can affect visual resources yet still comply with the VRM Class objective, since VRM classes allow for different levels of management protection based on the scenic values of the area. Per BLM requirements, visual contrast rating worksheets (BLM form 8400-4) were prepared from the Project KOPs (see Appendix A). The rating process provides a means for determining visual impacts and for identifying measures to mitigate these impacts.

Table 4-3 Compliance with Agency Management Objectives

Project Contrast Level	VRM Class			
	I	II	III	IV
Strong	No	No	No	Yes
Moderate	No	No	Yes	Yes
Weak	No	Yes	Yes	Yes
None	Yes	Yes	Yes	Yes

4.12.1 Proposed Action

Weak project contrast would occur where the proposed transmission line would parallel multiple existing transmission lines within the BLM-designated utility corridor with existing access roads. This condition occurs for a majority of the proposed Project. Moderate contrast occur in limited areas where the proposed transmission line does not parallel existing transmission lines, but is within close proximity of several transmission lines and access roads. Weak project contrast also occurs in locations where the proposed Project would cross areas that require minimal vegetation clearing and modifications to landforms in order to create tower pad sites and access. These occur intermittently along the proposed Project where the line would cross foothills or rolling hills. Moderate contrast occurs in limited areas where the proposed Project is located in either very close proximity to residential areas, where the proposed Project is not located directly adjacent to existing transmission lines, where the proposed Project would be elevated above existing lines due to rolling topography or where the proposed structures and lines would potentially be sky-lined. These areas are concentrated within the City of Henderson, along the west side of the River Mountains ACEC.

Following is a discussion of visual impacts associated with sensitive viewers and KOPs, scenic quality, and VRM compliance.

Gemmill to Tortoise

The proposed Project would introduce an overall low level of project contrast resulting from the introduction of a transmission line using steel tubular structures, construction and maintenance of access roads and associated Project activities related to the construction and operation of the proposed Project (e.g., construction lay down areas, conductors, etc.).

Scenic Quality

The proposed Project would be located within a BLM-designated Class C landscape where primarily flat to low rolling topography is occupied by primarily low-growing creosote shrubs. The local setting has been modified by an existing transmission line and underground water line (with associated ROW ground disturbance) as well as an existing paved road for the length of the Project and by groupings of dispersed residences on the eastern half of the proposed Project near and within the Town of Moapa. Although a substantial portion of the Gemmill to Tortoise ROW corridor is located within a Class II landscape associated with the Arrow Canyon Wilderness and the Mormon Mesa ACEC, impacts to scenic quality are anticipated to be weak with the implementation of project environmental protection and mitigation measures (see Appendix A).

KOPs/Sensitive Viewers

Impacts to sensitive viewers are anticipated to range from low to moderate where sensitive viewers would have unobstructed views of the Project in the foreground distance zone (line crossing on SR 168 at approximately MP 9). Refer to Table 4-4 for contrast levels for the Gemmill to Tortoise routes (KOPs 6-12).

Silverhawk to Newport

The proposed Silverhawk to Newport transmission line would introduce an overall low level of project contrast resulting from the introduction of lattice towers, construction and maintenance of access roads and associated Project activities related to the construction and operation of the proposed Project (e.g., construction lay down areas, conductors, etc.). The low impacts are a result of existing lines within an established utility corridor as well as the Project being located within a modified environment. Implementation of project environmental protection and mitigation measures will also reduce impacts (see Appendix A).

Scenic Quality

Low impacts to scenic quality would occur for the majority of the Project because the proposed transmission line would parallel existing transmission lines within a BLM-designated utility corridor within Class C landscapes. Low to moderate impacts are anticipated for portions of the foothills and mountains associated with the River Mountains ACEC, Rainbow Gardens ACEC, and the Dry Lake Mountain Range, within Class B landscapes, as well as the Las Vegas Wash. These impacts would be minimized because the proposed transmission line parallels multiple transmission lines within a BLM-designated utility corridor in these areas, and project environmental protection and mitigation measures would be implemented.

Chapter 4 - Environmental Consequences

Table 4-4 Key Observation Points – Contrast Levels

KOP #	Description	Sensitive Viewer	Contrast Level			Overall Contrast	Overall Impacts
			Land / Water	Vegetation	Structure		
1	Henderson Residence	Residential	None	None	Weak	Weak	Low
2	Lake Las Vegas Residence	Residential	Weak	Weak	Weak	Weak	Low
3	Lake Mead NRA Entrance	Recreation/other	Weak	Weak	Weak	Weak	Low
4	Former Sunrise ISA	Recreation/other	Moderate	Weak	Weak	Weak	Low
5	I-15 southbound	Travel Route	Weak	Moderate	Moderate	Moderate	Moderate
6	US 93 northbound	Travel Route	Weak	Weak	Weak	Weak	Low
7	US 93 southbound	Travel Route	Weak	Weak	Weak	Weak	Low
8	SR 168 eastbound	Travel Route	Weak	Weak	Weak	Weak	Low
9	Campground	Recreation/other	Weak	Weak	Weak	Weak	Low
10	Moapa Residence	Residential	Weak	Weak	Weak	Weak	Low
11	Moapa NWR	Recreation/other	Weak	Weak	Weak	Weak	Low
12	Moapa Residence	Residential	Moderate	Moderate	Weak	Moderate	Moderate

KOPs/Sensitive Viewers

Impacts to sensitive viewers are anticipated to occur due to the construction of the proposed Project. Impacts are typically low for the Project because it is within a BLM-designated multimodal utility corridor and parallels existing transmission lines for the majority of its entire length and it is within close proximity of other utility lines in areas where it is not paralleling existing lines. Refer to Table 4-4 for contrast levels for the Silverhawk to Newport route (KOPs 1-5).

4.12.1.1 VRM Compliance

Portions of the proposed route that lie within BLM lands crosses either VRM Class III or IV landscapes for the Silverhawk to Newport section and VRM Class II or III landscapes for the Gemmill to Tortoise section. Since the proposed route would parallel an existing utility corridor with a similar structure type and thus producing a weak and moderate level of contrast in the Class II and III landscape, respectively, the Proposed Action would comply with objectives for the Gemmill to Tortoise section. For the Silverhawk to Newport section the Proposed Action follows an existing utility corridor and parallels existing transmission lines for the majority of its length for a contrast level ranging from weak to moderate thus complying with VRM objectives (see Appendix A). The Proposed Action does not cross any Class I landscapes.

4.12.2 Silverhawk to Newport – Alternative 1

KOP 3 is the only KOP to assess the portion of Alternative 1 that differs from the Proposed Action Silverhawk to Newport ROW corridor. Overall impacts from KOP 3 are anticipated to be low. Given the rural, undeveloped location of this area, there are no residences located near this portion of the proposed corridor. Alternative 1 is located in similar VRM Class landscapes. As a result, impacts to Visual Resources under Alternative 1 would be similar to the Proposed Action.

4.12.3 No Action Alternative Impacts

Under the No Action alternative, there would be no impacts related to visual resources.

4.12.4 Mitigation

The proposed Project would parallel multiple transmission lines within a BLM-designated utility corridor along the entire alignment. Measures that would be implemented as EPMs or mitigation for other resources, including implementation of a Restoration Plan, using existing access roads and previously disturbed areas to the extent feasible, selecting access roads to follow landform contours and minimize the clearing of vegetation and re-contouring of the land surface, salvage and replacement of topsoil, reclaiming unneeded roads, placing structures to avoid sensitive features and to minimize disturbance, and the use of non-specular conductors would offset visual impacts. To further reduce visual impacts, the following additional measures would be implemented for the proposed Project.

In addition to locating power pole structures to avoid sensitive resources, the structures would be sited to match the spans of existing power lines in the utility corridor, to the extent feasible.

Any rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend in with the background rock color.

Within the Rainbow Gardens ACEC, when steel poles are necessary instead of lattice towers for power line crossings or other special situations, the poles would be treated to remove glare.

4.13 Health and Safety/Hazardous Materials Impacts

This section describes the potential impacts from environmental contamination and hazardous materials, EMFs, and non-EMF electric power field issues related to construction, operation, and maintenance of the proposed transmission lines.

4.13.1 Proposed Action

4.13.1.1 Environmental Contamination

Based on a limited environmental hazardous materials review conducted for the two Project areas, no known NPL or CERCLIS sites are located within the proposed ROW corridors. However, four CERCLIS sites are located within the general vicinity of the proposed Silverhawk to Newport ROW corridor and the NDEP list also identified leaking underground storage tank sites (petroleum) in Clark County that may exist in the urban portion of the Project area. Encountering known pre-existing soil or groundwater contamination would be unlikely since SSEA would avoid construction in known contaminated sites, and excavation would be limited to areas of transmission structure installation.

Unknown pre-existing contaminated soil sites could be encountered during grading or excavation, particularly at or near commercial and industrial areas. If contaminated soils are observed during construction, work would be halted until the proper agencies are notified.

4.13.1.2 Hazardous and Non-Hazardous Waste

Solid waste streams generated during construction of the proposed transmission lines would include solid waste, sewage, construction debris, non-hazardous regulated wastes, and small quantities of hazardous wastes. Solid waste from the workforce would be collected, contained and trucked to an off-site permitted Class I landfill or equivalent. Sewage would be collected in portable sanitary facilities and removed by a contractor for off-site treatment and disposal in an existing permitted treatment facility.

Non-hazardous construction debris would be generated during construction consisting of concrete, wood, scrap metal and waste packaging materials. These materials would be recycled or disposed of off-site in a permitted landfill.

Hazardous materials such as vehicle fuels, oils, and other vehicle maintenance fluids would be used and stored in construction staging yards. There is potential for incidents involving release of gasoline, diesel fuel, oil, hydraulic fluid, and lubricants from vehicles or other equipment or the release of paints, solvents, adhesives, or cleaning chemicals from construction activities.

Improperly maintained equipment could leak fluids during construction activities and while parked. Spills and leaks of hazardous materials during construction activities could potentially result in soil or groundwater contamination and result in exposure of facility workers and the public to hazardous materials. However, adherence to the SWPPP and Spill Prevention, Control, and Countermeasure plans and implementation of appropriate BMPs to prevent and properly control accidental spills would ensure that the potential for these incidents are minimized. In addition, the Project's EPMs include having spill supplies and equipment readily available at the construction site and all staff trained in hazardous materials safety, handling, clean up and removal.

Wastes produced during construction and operation of the transmission lines would be managed in compliance with state and federal regulations and recycled or disposed of in existing, permitted facilities. These management practices would therefore produce negligible environmental impacts.

4.13.1.3 Fire

There is a risk of wildfire from construction equipment. During operation of the transmission lines, there is a risk that a conducting object could come into close contact with the transmission line, or a live line or conductor could fall to the ground igniting a wildfire.

The Project's EPMs include instructing workers not to drive or park vehicles where catalytic converters can ignite dry vegetation, and that vehicles would carry water and shovels or fire extinguishers during times of high fire hazards. Additionally, fire protective mats or shields shall be used during grinding or welding, and workers would be instructed to exhibit care when smoking in natural areas.

4.13.1.4 Electric Magnetic Fields

Much attention has focused recently on reports of health effects associated with EMF. The evidence based on numerous scientific studies, however, has not established a direct cause and effect relationship. Some studies have reported a weak association between estimates of residential magnetic field exposure and certain types of cancer. These studies have not shown that the magnetic fields from power lines actually cause cancer. As described in Chapter 3-13, while transmission lines are a source of EMF, the majority of human exposure to magnetic fields is generally from electronic appliances and wiring inside the home or office.

The magnitude of electric field strengths from the proposed transmission lines would not produce significant induced currents in objects near the ROW corridor. The NESC requires a 5.0-milliamp limit based on the clearance from the transmission line to objects in proximity of the line. Typically, grounding the object would eliminate the possibility of a person being subjected to induced currents from these objects. Buildings, storage sheds, and other large conducting objects would not be permitted within the permitted ROW.

4.13.2 Silverhawk to Newport - Alternative 1

Impacts would be similar to those described for the Proposed Action.

4.13.3 No Action Alternative Impacts

Under the No Action Alternative the proposed Project would not be built, therefore, there would be no potential impacts to health and safety.

4.13.4 Mitigation

To prevent risk of wildfire, protective mats or shields shall be used during grinding or welding, and workers would be instructed to exhibit care when smoking in natural areas.

4.14 Indian Trust Assets

4.14.1 Proposed Action

The Moapa Indian Reservation was identified as an Indian Trust Land in the vicinity of the Project area (personal communication, Stanley Plum BLM District Archeologist, August 21, 2014). However, the proposed corridor does not intersect the reservation. The proposed Project is not expected to impact ITAs.

4.14.2 Silverhawk to Newport - Alternative 1

Impacts would be the same as those described for the proposed action.

4.14.3 No Action Alternative Impacts

Implementation of the No Action Alternative would not result in impacts on ITAs.

4.14.4 Mitigation

No additional mitigation is required.

4.15 Indian Sacred Sites

4.15.1 Proposed Action

No Indian Sacred Sites were identified in the Project area during preparation of the ENTP EA. The cultural resources Programmatic Agreement, signed in April 2016, includes measures to address and mitigate potential direct and indirect effects to historic properties from the Project, including sites of traditional religious or cultural significance (also known as TCPs).

As described in Section 4.6.1, Gypsum Cave is located approximately 1,640 feet west of the Silverhawk to Newport corridor and has been identified as a TCP. The Project would not have any direct impact to Gypsum Cave, however, visual impacts from ENTP's spur roads and towers cause problems from both the religious and cultural perspectives of the Nuwu, affecting their sacred landscape.

4.15.2 Silverhawk to Newport - Alternative 1

Impacts would be the same as those described for the proposed action.

4.15.3 No Action Alternative Impacts

Implementation of the No Action Alternative would not result in impacts on Indian Sacred Sites.

4.15.4 Mitigation

Mitigation for the indirect and visual impacts to Gypsum Cave is described in Section 4.6.4. No additional mitigation is required.

4.16 Cumulative Impacts

4.16.1 Impact Criteria

The analysis presented in this section addresses the potential cumulative impacts in the vicinity of the two proposed ROW corridors. The CEQ defines cumulative impacts as an "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time by various agencies (federal, state, and local) or individuals. Informed decision-making is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future. The timeframe for the cumulative impact analysis begins at the time of Project construction (assume 2015, if the Project is approved) and extends sufficiently forward in time with consideration of past trends and activities on current and reasonably foreseeable future actions and trends that may affect the sustainability of the resource.

Information about past, present, and reasonably foreseeable future activities in the cumulative resource area were gathered from the BLM, USFWS, Clark County, and other agencies; adopted plans; environmental documents; and personal communications with public agencies and utility companies. The approach to cumulative impacts of the proposed Project considers "past" or "existing" projects to be those that have completed construction and are in operation. "Present" projects include those that are currently under construction or have been fully permitted such that they are likely to be part of the existing environment when the proposed Project would begin construction. The past and present actions have combined to form what is the existing environment for the proposed Project. This existing environment is discussed by resource in Section 3, Affected Environment.

Types of "reasonably foreseeable" future projects considered include:

- Proposal for which NEPA documents are in preparation or finalized;
- Proposals in a detailed design phase;
- Proposals listed in formal Notice of Intents published in the Federal Register or state publication;
- Proposals for which enabling legislation has been passes; and
- Proposals that have been submitted to federal, state, or county regulators to begin the permitting process.

Because the disturbance areas associated with the Proposed Action would be confined within a linear ROW corridor (130 feet wide), the geographic extent of the cumulative impacts analysis in this EA includes a 2-mile buffer surrounding the ROW corridors. While impacts from construction of the proposed transmission lines are expected to be localized and short-term in nature (i.e. increased noise, fugitive dust and traffic in the local area, and use of limited amounts of groundwater), the selection of the 2-mile buffer considers impacts following construction which may include alteration of the visual landscape and use of adjacent land for other purposes.

Reasonably foreseeable projects that may have cumulative effects when added to the Proposed Action are shown on Figure 4-1 and Figure 4-2.

4.16.2 Reasonably Foreseeable Future Projects - Transmission/Pipeline Projects

In response to Section 368 of the Energy Policy Act of 2005, the BLM, Department of Energy, and the USFS, prepared the West-Wide Energy Corridor Programmatic EIS, which evaluated issues associated with designation of energy corridors on federal lands in 11 western states including Nevada. With the exception of approximately 2 miles between MP 9.5 and MP 11.5, the entirety of the proposed Silverhawk to Newport ROW corridor on BLM managed land, is located within a Section 368 corridor. The two mile segment not within the Section 368 utility corridor is located within a designated BLM utility corridor. Listed below are other electric transmission providers who are evaluating various transmission line alternatives in the regional area and, oftentimes, within the same corridor. The projects listed below are those that have submitted applications or other filing documents with the BLM, Federal Energy Regulatory Commission, or the Public Utilities Commission of Nevada.

Great Basin Southwest Intertie Project (One Nevada Transmission Line)

Great Basin Transmission, LLC, an affiliate of LS Power, intends to construct, operate, and maintain a 570-mile single-circuit, overhead, 500-kV transmission line known as the Southwest Intertie Project (SWIP). The project, stretching between Idaho and southern Nevada, is divided into three portions: northern, central, and southern. The southern portion extends from the Thirtymile substation northwest of Ely, Nevada to the Harry Allen substation northeast of Las Vegas. From the Thirtymile substation the transmission line would head south along the east side of Jakes Valley before entering the White River Valley. Near the south end of this valley the alignment would head east and enter the Delamar Valley. South of the town of Alamo, the alignment would join with US 93. The transmission line would parallel US 93 until reaching SR

168 where it would cross to the east side of US-93 at which point it would be located within 0.25 mile of the west end of the Gemmill to Tortoise ROW corridor. The alignment would parallel US 93 before crossing the Arrow Canyon Range and entering the Harry Allen substation from the north.

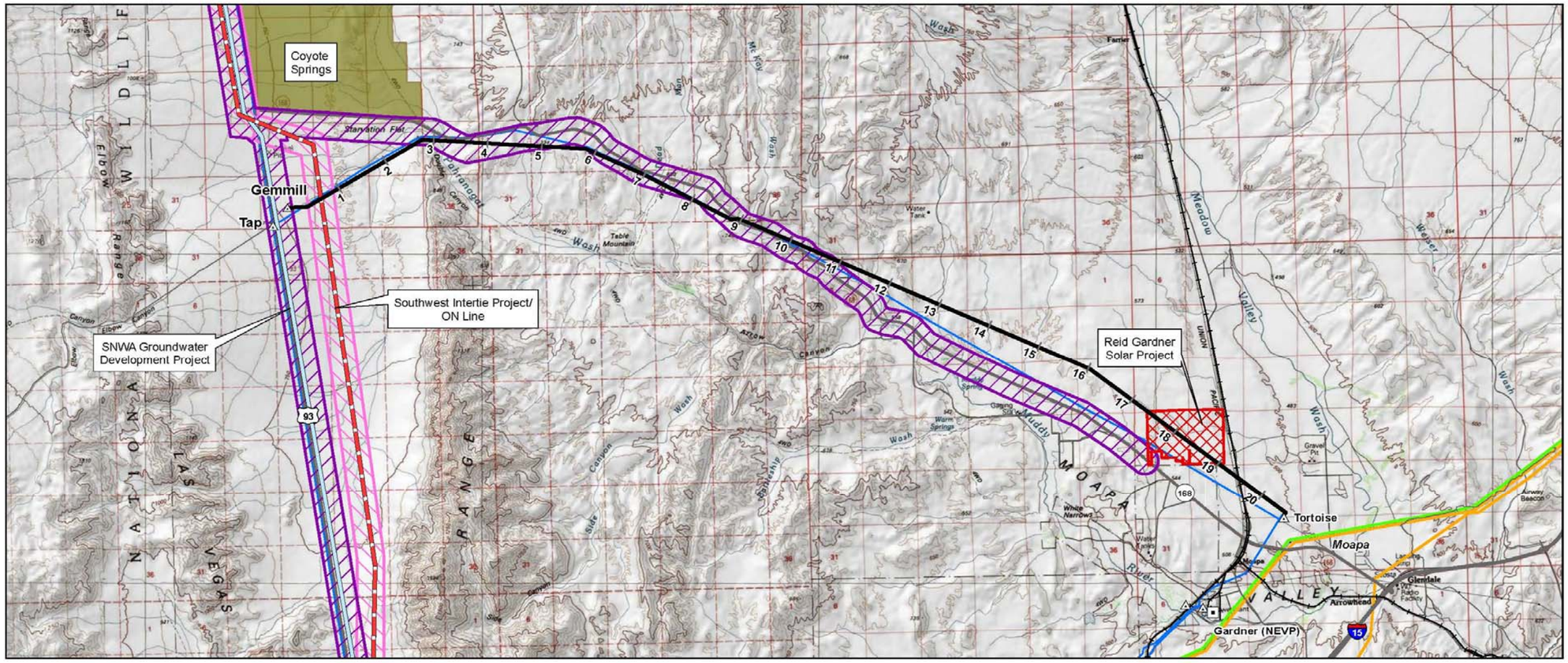
In late 2010, Great Basin Transmission and NV Energy signed an agreement to jointly construct and own the 500-kV One Nevada Transmission Line (ON Line) in eastern Nevada. The ON Line is the first phase of a 570-mile project in the SWIP corridor. ON Line, previously known as SWIP South, is a 235-mile connection between Southern Nevada and Northern Nevada. This portion of the ON Line was completed and put into operation in January 2014. The next phase, the 275-mile SWIP-North, would reach north to Southern Idaho and is expected to achieve commercial operation as early as 2014. A third phase, known as the Southern Nevada Intertie Project, is planned to extend 60 miles south to El Dorado Valley near Boulder City (see Great Basin Southern Nevada Intertie Project below).

Great Basin Southern Nevada Intertie Project

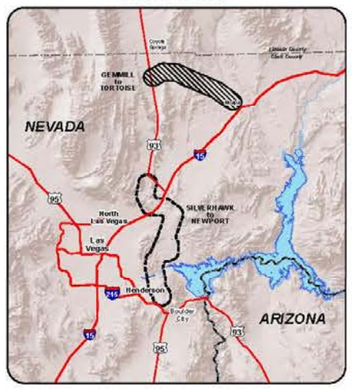
Great Basin Transmission, LLC, in partnership with NV Energy, intends to construct, operate, and maintain a single- or double-circuit, overhead, 500-kV transmission line within a 60-mile, 200-foot ROW between the Harry Allen substation north of Las Vegas to the El Dorado substation west of Boulder City. The project, known as the Southern Nevada Intertie Project, would run from the Harry Allen substation north to the Crystal substation and east across I-15 before heading south to the El Dorado substation. This alignment would primarily run within the existing West-wide Energy Corridor and would parallel the proposed Silverhawk to Newport transmission line from MP 12 to the Newport substation, a distance of approximately 11 miles.

TransWest Express Transmission Project

TransWest Express, LLC intends to construct, operate, and maintain an extra-high-voltage direct-current transmission system along a route that is over 700 miles long and 250 feet wide. The general route for this 500-600-kV transmission system begins in south-central Wyoming, extends through northwestern Colorado and central Utah, turns southwest into southern Nevada, and would end near or at the Marketplace substation west of Boulder City. There are numerous alternative alignments proposed for this project. On January 4, 2011, the Notice of Intent to prepare an EIS was published in the Federal Register by BLM and the Western Area Power Administration. The comment period for the Draft EIS closed on September 30, 2013. The Final EIS is currently being prepared. Construction is anticipated to begin in 2015 with an in-service date of 2016 or 2017. Much of the TransWest Express Transmission Project will be located within the West-wide Energy Corridor including areas where it would parallel the proposed Silverhawk to Newport transmission line (MP 12 to the Newport substation) and the proposed Southern Nevada Intertie Project.



VICINITY MAP



PROJECT FEATURES

- Proposed Action (with mileposts)

FUTURE PROJECT

- Proposed Solar Project
- Proposed SNWA Groundwater Development Project
- Proposed Transmission Line Project
- Proposed Coyote Springs Development

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- Lincoln County Conservation, Recreation, and Development Act (LCCRDA) Corridor
- West-Wide Energy Corridor (Sect. 368)
- Interstate, Highway
- Local Road, Dirt Road
- Railroad

Sources
LCCRDA, WWEC, Future Projects - BLM; Railroad, Topo - ESRI;
Transmission Lines,Substations, Power Plants - Platts 2010

NOTE: Substations and transmission lines are schematic and do not necessarily represent accurate locations.

EASTERN NEVADA TRANSMISSION PROJECT

GEMMILL to TORTOISE

Figure 4-1
Future Projects

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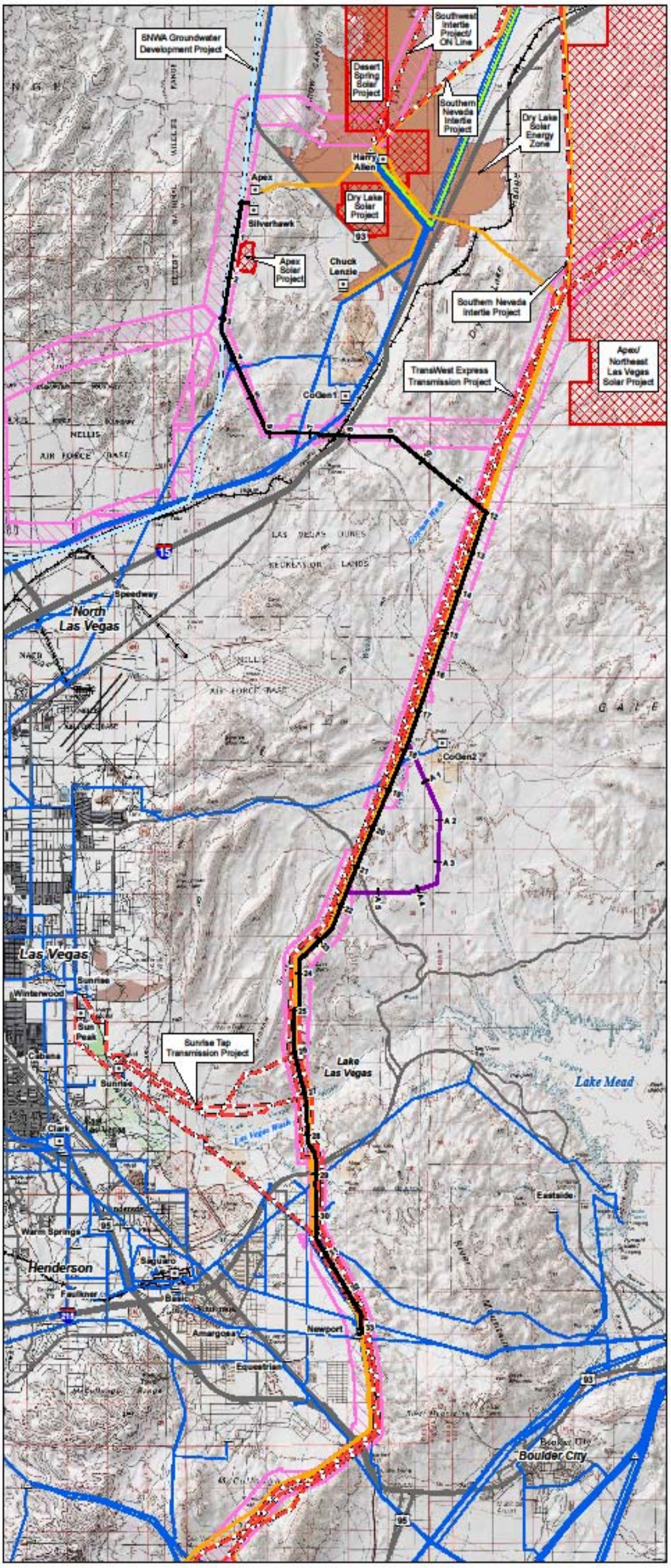
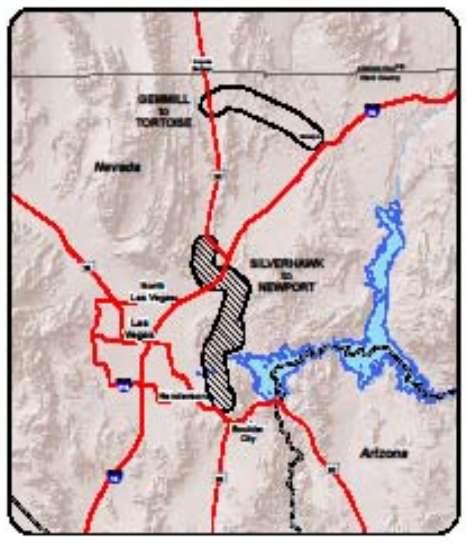


VICINITY MAP



PROJECT FEATURES

- Proposed Action (with mileposts)
- Alternative Alignment (with mileposts)

FUTURE PROJECT

- Proposed Solar Project
- Proposed SNWA Groundwater Development Project
- Proposed Transmission Line Project
- BLM Solar Energy Zone

GENERAL REFERENCE

- 500kV - 1000kV Transmission Line
- 345kV Transmission Line
- 230kV and Below Transmission Line
- Substation
- Power Plant
- West-Wide Energy Corridor (Sect. 368)
- Interstate, Highway
- Major Road
- Railroad

SOURCES:
Roads, WWEC, Future Projects - NV BLM, Railroad, Topo - ESRI;
Transmission Lines, Substations, Power Plants - Platts 2013

NOTE: Substations and transmission lines are schematic and do not necessarily represent accurate locations.

EASTERN NEVADA TRANSMISSION PROJECT

SILVERHAWK to NEWPORT

Figure 4-2
Future Projects

September 2014

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TransCanada Zephyr Transmission Line Project

TransCanada is proposing to construct a 500-kV high-voltage direct current transmission project with a capacity of 3,000 MW. The project would originate in southeast Wyoming, and terminate in the Eldorado Valley south of Las Vegas.

The proposed project would transport wind-generated electricity from wind resources in Wyoming to markets in the U.S. Southwest, including California, Nevada and Arizona. On May 20, 2010, TransCanada concluded a successful open season for the project and successfully signed precedent agreements for the full 3,000 MW of capacity with renewable energy developers in Wyoming. The decision to proceed with the regulatory/permitting phase and the proposed $3 billion construction phase is predicated on a favorable regulatory environment and support from key markets. If the project was to proceed, it would most likely utilize the same West-wide Energy Corridors under consideration by other electric transmission providers in the area.

Sunrise Tap Transmission Project

NV Energy intends to construct, operate, and maintain the Sunrise Tap Transmission Project. This project has several components including (1) construction of a new double-circuit 500-kV transmission line between the existing Harry Allen-Mead 500-kV line near Lake Las Vegas and the Sunrise substation on the northeast side of Las Vegas along a 200-foot ROW, (2) upgrading the existing Las Vegas #3 69-kV transmission line to a quad-circuit 230-kV/lower voltage line, construction a new quad-circuit 230-kV/lower voltage transmission line from the existing Las Vegas #3 to the Equestrian substation on the southeast side of Henderson along a 100-foot ROW, (3) upgrading the existing Las Vegas #1 69-kV transmission line to a quad-circuit 230-kV/lower voltage between the Sunrise substation and the Clark substation, (5) upgrading the existing transmission lines between the Sunrise substation and the Winterwood substation to double- circuit 138-kV and quad-circuit 138/69-kV, and (6) upgrading four existing NV Energy substation (Sunrise, Winterwood, Clark, and Equestrian) to support the new 500-kV and 230-kV transmission lines.

Portions of this project would coincide with areas of impact from the proposed Project. The proposed Silverhawk to Newport transmission line would parallel the Harry Allen-Mead transmission line where the Sunrise Tap Project would intersect with it near Lake Las Vegas (at approximately MP 12). Additionally, the Equestrian substation is located immediately north of the Newport substation. Portions of the proposed Sunrise Tap transmission line would parallel the proposed Silverhawk to Newport transmission line from approximately MP 30.5 to MP 33.

Renewable Energy Projects

In a broad geographic context, the BLM has received hundreds of ROW applications from developers to construct and operate utility-scale renewable energy projects on BLM- administered lands. These applications cover more than 2.3 million acres of land in the southwestern U.S. In addition, there are an unknown number of renewable energy development projects being proposed on private lands throughout the Southwest. Regional cumulative impacts could occur as a result of

implementation of the proposed Project in conjunction with these solar, wind, or geothermal energy projects.

Within the cumulative effects analysis area, there are 5 proposed solar facilities within 3 miles of the proposed ROW corridors; one proposed solar facility near the Gemmill to Tortoise ROW corridor, and four proposed solar facilities near the Silverhawk to Newport ROW corridor. In addition, the BLM has designated a 5,717 acre Solar Energy Zone (SEZ) east of the northern end of the Silverhawk to Newport ROW corridor.

Of the five solar ROW applications within cumulative effects area, one project has been built, one has formally withdrawn their ROW application and the remaining three projects have not advanced their planning process beyond the initial application stage. There are several solar developers who have submitted applications to the BLM Las Vegas Field Office that are "second in line," meaning that they proposed development of sites for which applications have already been submitted. The applicants have not submitted detailed Project-specific information for these projects, but only basic information such as type of technology to be used, proposed size, and requested acreage. This information is publicly available on BLM's LR-2000 database (BLM and USFS 2014). In an effort to be conservative, the available data were used to evaluate the potential cumulative effects when considered with the proposed Project even though these projects ultimately may not be developed.

Dry Lake Solar Energy Zone

As part of the Final Programmatic Environmental Impact Statement (EIS) for Solar Energy Development in Six Southwestern States, the Dry Lake Solar Energy Zone (SEZ) partially overlaps three locally designated transmission corridors that are heavily developed with natural gas, petroleum product, and electrical transmission lines. The SEZ is located adjacent to Interstate 15 and U.S. Highway 93 and is approximately 1.5 miles east of the northern end of the proposed Silverhawk to Newport ROW corridor. The SEZ has a total area of 5,717 acres of developable land and is bounded on the northwest by the Arrow Canyon Range and on the southeast by the Dry Lake Range. According to the Final Programmatic EIS (BLM and Department of Energy [DOE] 2012), maximum development of the SEZ (or 80 percent of the developable area over a period of 20 years) would allow development of facilities with an estimated total of between 508 MW and 915 MW of electrical power capacity.

Apex Solar Project

Fotowatio Renewable Ventures, Inc. (FRV) initially planned to construct, operate, and maintain a 20-MW photovoltaic solar power facility on private lands within the Apex Industrial Park south of the Silverhawk substation. A 1,100-foot 69-kV generation tie-in line would connect the facility to an existing NV Energy transmission line which is parallel to the proposed Silverhawk to Newport transmission line at approximately MP 1.5. FRV has obtained a BLM ROW grant to construct the gen-tie line across BLM managed lands, and has obtained all required permits from the City of North Las Vegas and Clark County to commence construction activities. The solar energy developer SunEdison acquired FRV and began building the facility in October 2011. The Apex Solar facility went into full commercial operation in the third quarter of 2012. On June 29,

2012, SunEdison announced the sale of the 20 MW Apex Solar Facility to the joint venture of Southern Company and Turner Renewable Energy; however, SunEdison will continue to be responsible for ongoing operation and maintenance for the facility. Electricity generated by the plant will serve a 25-year power purchase agreement with NV Energy.

Bright Source Energy – Apex/Northeast Las Vegas Solar Project (NVN-084631)

In July 2008, Bright Source Energy Power Partners, LLC submitted a ROW application to construct and operate the Apex/Northeast Las Vegas Solar Project. The project would be a concentrated solar facility generating up to 1,000 MW of energy. It would occupy 2,000 acres between Pabco and the Valley of Fire Highway along the existing Harry Allen-Mead 500-kV transmission line approximately 2.5 miles northeast of MP 12 along the proposed Silverhawk to Newport ROW corridor. In August 2010, the BLM requested additional information from the applicant (BLM and USFS 2011). The ROW NVN-084631 is still currently pending.

First Solar – Desert Spring Solar Project (NVN-084232)

In July 2007, First Solar, Inc. submitted a ROW application to the Las Vegas Field Office to construct and operate the Desert Spring Solar Project. The proposed 400 MW photovoltaic solar project would be constructed on 3,214 acres, approximately 3 miles northeast of the Silverhawk substation. In July 2008, CoGentrix Solar Services, LLC filed an overlapping or "second in line" ROW application on top of First Solar, Inc. application in this area. In May 2009, the BLM requested additional information from the applicant (BLM and USFS 2011). In August 2011, BLM rejected the CoGentrix ROW application, as the company didn't submit required paperwork or show interest in moving forward with their solar application. No additional information is available for the Desert Spring Solar project.

GASNA 39 – Reid Gardner Solar Project (NVN-089560))

The partnership of Gestamp Solar and Sierra Nevada Corporation (GASNA 39, LLC) proposes to construct the Reid Gardner Solar Project. The project would occupy 825 acres and would be located between MP 17.5 and MP 19 along the Gemmill to Tortoise alignment. This project is in the very early stages of design and development. The application to construct on BLM-administered lands was submitted in May 2010 (BLM and USFS 2011). A May 9, 2012, letter requested GASNA 39, LLC contact the BLM regarding their application. No additional information is available for this project.

Magic Solar Project

In March 2014, First Solar Development LLC submitted an application to Reclamation to construct, own, and operate the Magic Solar Facility on Reclamation land in the River Mountains. This is proposed as a nominal 50-megawatt alternating current solar photovoltaic facility on approximately 575 acres of Reclamation land. The power produced by the project would be conveyed to the local power grid via a generation-tie transmission line.

Aiya Solar Project

On November 21, 2014, the Bureau of Indian Affairs, in cooperation with the Moapa Band of Paiute Indians, the BLM, and other federal agencies, issued a Notice of Intent to prepare an Environmental Impact Statement for Aiya Solar Project. The 100 MV photovoltaic project would encompass approximately 800 acres on the Moapa River Indian Reservation. The corridors for the transmission interconnection line would be located on the reservation, federal land managed by the BLM, and possibly private lands. Approximately 0.7 miles of the line would be located on BLM-administered land. Construction of the project is expected to take 12 months and be in operation for 25 years.

Other Ongoing and Foreseeable Projects

Clark, Lincoln, and White Pine Counties Groundwater Development Project

The SNWA plans to construct, operate, and maintain the Clark, Lincoln, and White Pine Counties Groundwater Development (GWD) Project. This project consists of approximately 263 miles of buried water pipelines, 3 pumping stations, 5 regulating tanks, 3 pressure reducing stations, a 40-million-gallon buried storage reservoir, a water treatment facility, and power facilities consisting of approximately 272 miles of transmission lines, 2 primary substations, and 4 secondary substations. Transmission lines will run from Baker and Ely to Las Vegas and pipelines will run from Baker and Spring Valley (east of Ely) to Las Vegas. SNWA received a BLM ROW grant for this project on May 23, 2013. Portions of this project are located within close proximity to the proposed Gemmill to Tortoise ROW corridor. The main pipeline would be constructed parallel to US 93 within the LCCRDA corridor where it intersects with SR 168 (approximately 0.5 miles west the Gemmill substation). Approximately 1.3 miles north of the Silverhawk substation, a water treatment facility including a 40-million-gallon buried storage reservoir would be constructed. This facility would be completely fenced and would occupy a permanent ROW of approximately 75 acres. The pipeline will exit the treatment facility and run south towards Las Vegas via existing Section 368 ROW corridors. Portions of the pipeline would parallel the Silverhawk to Newport alignment for approximately four miles.

A 230-kV transmission line would be built alongside the main pipeline. This alignment would be built parallel to US 93 within the LCCRDA corridor where it intersects with SR 168 (approximately 0.5 miles west of the Gemmill substation). However, instead of following the pipeline to Las Vegas, the transmission line will terminate at the Silverhawk substation.

Coyote Springs Investment Development Project

Coyote Springs Investment (CSI) intends to develop a new town in southern Lincoln County northeast of the junction of US 93 and SR 168. The master-planned community would include residential, commercial, and industrial land uses on 21,454 acres. Plans call for more than 111,000 residential dwelling units at a density of 5 units per acre. Utilities and other infrastructure would be developed to serve the town, including power facilities, sanitary sewer and wastewater treatment facilities, stormwater facilities, water storage, transmission and distribution facilities, solid waste disposal transfer stations, and telecommunication facilities. The southern boundary of

the proposed CSI development is less than 0.5 miles north of the Gemmill substation.

A golf course and ancillary facilities have been constructed, but additional work has been on hold due to the economic recession in southern Nevada. BrightSource Energy announced in March 2009, that it would build a 960-MW solar thermal power plant within the CSI development. BrightSource never obtained permits to tie into the power grid and terminated the project.

4.16.3 Cumulative Impacts on Resources

Cumulative impacts on resources that would result from the construction and operation of the Proposed Action when added to other past, present, and reasonably foreseeable future actions described in the previous section are described below. Because of the uncertain nature of future projects in terms of size, number, location, and types of technology that would be used, cumulative impacts are discussed qualitatively or semi-qualitatively, with ranges given as appropriate. More detailed analyses of cumulative impacts would be performed in the environmental reviews for the specific projects in relation to all other existing and proposed projects in the cumulative effects area.

4.16.3.1 Air Quality

Cumulative impacts to air quality associated with construction and operation of the two Project transmission lines are anticipated to be minimal as air-related impacts are primarily short-term in duration resulting from the construction of the proposed facilities and limited operation and maintenance activities. Cumulative impacts to air quality could occur if other projects within the corridor were constructed at the same time as the Proposed Action (e.g., other transmission line or solar energy projects); however, at this time the sequence for the construction of these facilities is unknown. If multiple projects were constructed during the same time period, adherence to air permit requirements, and mitigation measures including dust suppression as outlined in their respective dust control permits would effectively reduce these cumulative effects. Exceedance of NAAQS regulatory standards is not anticipated.

4.16.3.2 Geology and Geologic Hazards

Geological resources vary according to the geological formations that they occur within, therefore, the impacts of the Proposed Action to geological hazards and resources would be localized within the immediate ROW corridor. Incremental impacts to geological resources and from geologic hazards from other reasonably foreseeable projects when combined with the Proposed Action is anticipated to be low.

There are a number of active mining claims within or near the proposed ROW corridor. Construction and operation of the Proposed Action when combined with other reasonably foreseeable future projects would not restrict access to these sites.

4.16.3.3 Soils

Cumulative impacts to soil resources would occur during Project construction if multiple projects are constructed concurrently. Within the Gemmill to Tortoise cumulative effects area, additive

impacts to soil resources may occur if construction of the proposed transmission line and the proposed Gestamp solar facility were to occur during the same period. Within the Silverhawk to Newport cumulative effects area, additive impacts to soil resources may occur if construction of the proposed transmission line and other proposed transmission lines or solar projects were to occur during the same period. However, in both instances, since construction activities would be located in Clark County, construction contractors would be required to obtain and comply with a state-issued NPDES permit, and prepare a site-specific SWPPP. Construction contractors would be required to implement site-appropriate BMPs to maintain compliance with their NPDES permit and SWPPP. While PM_{10} or fugitive dust emissions may increase if overlapping construction periods were to occur, these events would be short-term in nature and would be mitigated through site-appropriate BMPs. In addition, all contractors would be required to implement soil erosion control measures in accordance with associated state permits for water quality and point source discharge to control erosion. Restoration of all land disturbances on BLM managed lands would be a requirement of each applicants ROW grant.

4.16.3.4 Water Resources

The amount of water needed during construction of the two Project transmission lines is minimal. Water would be obtained from off-site locations and trucked to the construction site as needed. Similar activities would most likely occur for other reasonably foreseeable transmission line projects in the cumulative effects areas. Each project would be required to obtain and comply with a state-issued water quality or NPDES permit, prepare a site-specific SWPPP, and implement appropriate BMPs to minimize erosion and sedimentation potential.

Other than short-term use of groundwater for dust suppression and construction, construction and operation of the proposed Project and other reasonably foreseeable future transmission lines do not consume a large amount of water resources. The amount of water needed for solar projects in the cumulative effects area is unknown. Photovoltaic technology uses minimal water (normally less than 5 - 10 acre-feet per year, while dry- or wet-cooled parabolic trough technology can require large amounts of water (estimated between several hundred to several thousand acre-feet per year). Each solar developer would be required to secure a water supply source and obtain appropriate permits and approvals for their project. Therefore, the proposed Project when added to other reasonably foreseeable future projects is not expected to contribute measurably to cumulative impacts to water resources.

4.16.3.5 Biological Resources

Vegetation

Mojave Desert brush scrub habitat, cacti, yuccas, and other sensitive plants beyond the corridor of the two proposed ROW corridors may experience cumulative adverse effects due to the volume of projects proposed in the immediate vicinity. This increase would result in an overall increase in use of public lands that may lead to compacted soils and increased soil erosion; crushed, removed or destroyed vegetation; altered hydrology; and increased non-point source pollution.

Cumulative effects on rare plants and rare plant habitat would occur depending upon the final footprints of the future projects. However, each project would be required to avoid or minimize disturbance footprints and implement restoration, including topsoil salvage and plant salvage as appropriate. Mitigation for the permanent loss of rare plant habitat would be required for each project located in rare plant habitat, with either a per-acre mitigation fee or commensurate mitigation actions. These mitigation actions would reduce the unavoidable impacts on rare plant habitat from the cumulative projects.

The construction of numerous projects throughout the cumulative effects area presents increased opportunities for weed invasions. Although no noxious weeds were found within the immediate vicinity of the proposed Project, they have been found within a few miles of the proposed Project. These identified species have included Sahara mustard, salt cedar and Malta starthistle. An increase in the volume of disturbed area created as a result of numerous projects in the region can leave the area susceptible to the proliferation of invasive and noxious weeds species resulting in a cumulative impact. Adherence by all projects to noxious weed management plans and restoration plans including measures identified by the BLM will minimize the introduction and spread of noxious and invasive weeds during, and following, construction.

Wildlife

Cumulative effects to wildlife at a local level will vary. This is most evident within the BLM utility corridors where additional transmission lines are proposed to be constructed. However, by concentrating these projects, there is a goal of minimizing habitat fragmentation.

Desert Tortoise habitat is known to be present throughout the vast majority of the cumulative impacts study area. Should all of the proposed solar energy projects be constructed, approximately 7,000 acres of desert tortoise habitat would be utilized. The Clark County Department of Comprehensive Planning and USFWS have addressed cumulative effects to biological resources from development and construction activities on a county-wide basis and the Final MSHCP (prepared by Clark County; the Cities of Las Vegas, North Las Vegas, Boulder City, Mesquite, and Henderson; and the Nevada Department of Transportation) address sensitive and protect biological resources and require mitigation for effects to Desert tortoise. Section 7 Consultation with USFWS has been completed for the SWIP and the Biological Assessment and Biological Opinion address mitigation measures including compensation and other measures that are included in the Construction, Operation, and Maintenance Plan. Because plans and mitigation requirements have been, and will continue to be, developed to address potential impacts to the Desert Tortoise and because consultation and detailed mitigation planning will occur on other future projects including the solar projects listed above, cumulative effects associated with other future development should be minimized and/or mitigated.

Other non-Federal projects occurring within Clark County would fall under the purview of the Clark County MSHCP and associated incidental take permit for impacts to Desert Tortoise and other covered wildlife and plant species. Other Federal projects would require separate consultation for listed species pursuant to Section 7 of the ESA.

Opening up areas to casual vehicular access by the public causes indirect impacts. Increased

hunting, wildlife harassment, vehicle collisions, and spread of noxious weeds can result in areas that had previously been inaccessible. Increased surface disturbance would result in cumulative loss of habitat for wildlife that inhabits the areas proposed for future projects. The significance of the loss would depend on the availability of adjacent suitable replacement habitat and the mobility of the wildlife to escape harm. Other indirect effects to wildlife result from providing additional perching and/or nesting structures for birds that may prey on juvenile tortoises and other sensitive species.

Increasing access to wildlife habitat areas also increases the chances for human/wildlife encounters and conflicts within Clark and Lincoln Counties. These interactions lead to an increased work load for wildlife managers who must deal with resolving these conflicts both on an individual basis and on a large scale, through negotiations and consultation with other government agencies and private corporations.

Mojave Desert brush scrub habitat beyond the Project area may be adversely affected by the anticipated increase in population, particularly due to construction of the Coyote Springs Development. The Coyote Springs Development would include residential homes, hotels, golf courses and other recreational facilities. The overall increase in use of lands that may lead to compacted soils, crushed or destroyed vegetation, removal of vegetation, increased soil erosion, altered hydrology, and increased non-point source pollution. All of these activities may result in cumulative harm to the Mojave Desert Tortoise through habitat loss or degradation. Additional mortality of tortoises and fragmentation of their habitat outside the Project area may result from road and trail construction and maintenance, as well as off-highway vehicle or other recreational uses, especially on adjacent public lands.

4.16.3.6 Historic and Cultural Resources

The potential exists for cumulative impacts to NRHP eligible properties as a result of the construction of the proposed Project and other reasonably foreseeable projects. However, through implementation of mitigation measures, it is anticipated that any potential direct impacts from Project construction would be fully mitigated through commonly employed practices, such as data recovery, avoidance, or construction monitoring activities. Important resources that would be affected by construction activities would be avoided, or if this is not possible, recovered for their scientific value.

The Gypsum Cave TCP is within Rainbow Gardens and is crossed by the Sunrise Corridor. The corridor is a part of the Westwide Energy Corridor and is classified as a “corridor of concern”. There are currently three power lines in the corridor: Intermountain Power Project; Navajo-McCullough, and Centennial. The BLM currently has applications for three more lines, TransWest Express, Southern Nevada Intertie Project, and the ENTP in the corridor. The power lines collectively pass within a few hundred feet of Gypsum Cave, resulting in cumulative impacts to the TCP. The indirect impacts are the unintended impacts to the view shed from and to the TCP by structures and land scaring from roads as well as those indirect physical impacts caused by allowing access to the TCP via existing power line roads. Mitigation for the cumulative indirect visual impact on the TCP from the ENTP is described in Section 4.6.4.

4.16.3.7 Paleontological Resources

Effects to paleontological resources are localized and do not generally result in regionally cumulative effects. Paleontological resources vary according to the geological formations that contain them. Geological formations may also vary significantly over short distances, effectively limiting the geographic range of impacts to paleontological resources. Therefore, the impacts of the Proposed Action when added to other reasonably foreseeable future projects on paleontological resources would be localized within the Project area.

While impacts on significant paleontological resources are unlikely to occur within the cumulative effects area, a review of the geological deposits in the specific project footprint would be needed to determine whether a paleontological survey was warranted. Any paleontological resources encountered would be mitigated to the extent possible as determined through consultation with the BLM. Therefore, the potential construction impacts of the Proposed Action in combination with other reasonably foreseeable projects in the area would not contribute to a cumulatively significant effect to paleontological resources.

4.16.3.8 Land Use, Transportation, and Access

The Proposed Action and alternatives, and the majority of foreseeable transmission and renewable energy projects would be located on BLM land, within or adjacent to designated utility corridors. SSEA's selection of the proposed transmission alignment within designated utility corridors was intentionally designed to minimize potential cumulative impacts to multiple resources.

Traffic in the vicinity of the proposed Project and foreseeable projects would likely increase during construction. Heavy equipment and materials would need to be transported along the major highways that run along both of the proposed Project sites. Some of the projects would require full-time staff members during operation, therefore, it would be expected that there would be a long-term increase in traffic with the influx of people travelling to and from work in these areas.

The proposed Project and cumulative projects would also result in a more reliable network of utilities, including renewable electric generating stations and increased reliability of electrical transmission lines.

4.16.3.9 Socioeconomic Resources and Environmental Justice

Present and future projects, including the Proposed Action, are identified within existing plans and zoning standards so are anticipated in regional infrastructure planning. The increment demand would not have an adverse impact on housing availability.

Public services and public utilities in the area have the capacity to serve present and future projects, and thus cumulative impacts would not be measurable. Implementation of the Proposed Action and present and future projects would create socioeconomic effects in the form of increased employment, and increased local and state tax revenue associated with economic activity generated by these projects. However, these changes would not have a measurable socioeconomic impact within the cumulative geographic area.

The proposed Project, in addition to the other cumulative projects, would contribute to the orderly development in the region, as authorized under Federal laws (Southern Nevada Public Land Management Act and Clark County Conservation of Public Land and Natural Resources Act) and by land use and related plans approved by local governments. Each of the cumulative projects requires Federal action and associated environmental compliance documentation. Potential socioeconomic impacts have been or would be considered in the environmental analyses and approvals for each of the cumulative projects.

Depending on the progress regarding the development of the other proposed projects described above, additional long-term employment opportunities and income to Clark and Nye counties could result in beneficial effects.

The proposed Project would have no effect on environmental justice and therefore, would not contribute to cumulative impacts within the Las Vegas Valley or Lincoln County.

4.16.3.10 Noise

Existing noise sources along the proposed Gemmill to Tortoise ROW corridor is mainly made up of natural sounds, vehicle noise associated with nearby roadways, community activity near Moapa, as well as over-flight aircraft traffic. Along the proposed Silverhawk to Newport ROW corridor, ambient noise levels consist of highway traffic, community activity in the populated areas, over-flight aircraft traffic, and industrial noise in the northern section. Overlapping construction activities could result in short-term increases of noise levels in the surrounding area, but there would be little or minimal noise impacts during operations of the transmission lines or solar facilities. Because the Proposed Action and other reasonably foreseeable future transmission line and solar energy projects are located away from residential areas, cumulative noise effects during construction and operation of these facilities are unlikely.

4.16.3.11 Visual Resources

Both sections of the proposed Project would be located in BLM-designated utility corridors that contain existing transmission lines. Increased modifications to the landscape due to the addition of transmission towers within a multi-line corridor typically result in an increase in the visibility at longer distances because of the cumulative physical contrast with the natural landscape. Normally, the first constructed objects in a natural setting cause the most noticeable change because of the contrast of form, line, color, and texture with the surroundings. Each successive change becomes less noticeable than the first. However, the sum of all the changes (e.g., form, line, color, and texture) is more evident to the casual observer. Therefore, the first transmission line in a natural area normally causes the greatest incremental change, but the cumulative visual impact of a corridor increases with the addition of each new line.

The proposed Gemmill to Tortoise transmission line would mostly parallel an existing transmission line, underground waterline and SR 168. Existing modifications in the area include the Coyote Springs Development north of the Gemmill substation, and isolated pockets of residential and commercial development associated with the town of Moapa along the eastern end

of the proposed ROW corridor. The build-out of the Coyote Springs Development, along with future transmission lines along US 93 (e.g. SWIP/ON Line, TransWest, etc), when added to the Proposed Action would add further to the visual cumulative impacts in those areas. Construction of the proposed solar facility near the Tortoise substation when added to the proposed transmission line would modify the viewshed from SR 168. Each project would be required to undergo a separate NEPA analysis to address visual impacts from their actions.

The entirety of the proposed Silverhawk to Newport ROW is located within an existing designated utility corridor. Additional transmission lines within the designated corridor, if constructed, will add further to the visual cumulative impacts in these areas. Grouping of facilities within the designated utility corridor would minimize overall cumulative effects on a regional basis through consolidation. However, in the immediate viewshed of the corridor area, the cumulative visual contrast could be slightly increased as each new project is added, and the multiple lines become more noticeable to the casual observer. Measures to minimize these impacts, such as the selective location of towers within the corridor, the use of similar structures and the similar placement of structures (matching spans), dulled finishes on structures, the use of non-specular conductors, following landform contours where practicable, using existing access roads, and the development of project restoration plans, will reduce these cumulative effects.

4.16.3.12 Health and Safety/Hazardous Materials

The construction of additional transmission lines would have a cumulative EMF effects within a ROW. This impact would be reduced by design modifications, such as arrangement of conductors. Therefore, there would be little or no difference in EMF levels at the edge of the corridor caused by adding one or more transmission lines to an existing corridor.

The amount of hazardous materials needed to construct the proposed Project is negligible and would be managed by implementing chemical handling and storage plans. Spill prevention plans would be required and would include construction of chemical handling and containment facilities. In addition, staff would be trained in hazardous materials safety, handling, clean up and removal. With implementation of these measures, the proposed Project would not contribute to cumulative impacts with the Project area from hazardous materials.

4.16.3.13 Indian Trust Assets/Indian Sacred Sites

Cumulative impacts on Indian Trust Assets are not anticipated. The potential exists for cumulative impacts to Indian sacred sites such as TCPs. However, through implementation of mitigation measures under project-specific Programmatic Agreements, it is anticipated that any potential direct impacts would be fully mitigated. Gypsum Cave is the only known Indian sacred site that may be cumulatively indirectly affected by the ENTP. Mitigation for the cumulative indirect visual impact on the Gypsum Cave TCP is described in Section 4.6.4.

4.16.4 Silverhawk to Newport - Alternative 1

Cumulative impacts for most resources would be similar to those described for the Proposed Action – Silverhawk to Newport. This alternative would require coordination with a private

landowner (Pabco) and the NPS and possibly an amendment to the Lake Mead NRA Park Plan. In addition, the proposed Alternative 1 ROW corridor has a higher density of Las Vegas bearpoppy and sticky ringstem population and as such, cumulative impacts to those species would be higher if both the SSEA and TransWest Express transmission lines were constructed along this corridor.

4.16.5 No Action Alternative Impacts

Under the No Action Alternative the proposed Project would not be considered in any cumulative effects analysis; however, the No Action Alternative for the proposed Project does not include other facilities from being constructed and operated.

CHAPTER 5 - CONSULTATION AND COORDINATION

5.1 Introduction

The EA process began with the original filing of the ROW application by SSEA in 2007 to construct the two segments of the 230-kV transmission line. Following the acceptance of the application, the BLM staff conducted internal scoping and determined that an EA would be required. BLM implementing regulations require an EA be completed for this federal action to determine whether there are significant environmental impacts from the construction and operation of the proposed transmission lines and associated ancillary construction activities on BLM and non-BLM lands.

5.2 Agency Consultation and Coordination

SSEA has coordinated the development of this Draft EA with the BLM Las Vegas Field Office. The BLM is the lead federal agency Reclamation is a cooperating federal agency for the consultation, preparation, and review of the EA for the Project. A Memorandum of Understanding was finalized between the BLM and Reclamation on January 10, 2011. The BLM has agreed to provide ESA Section 7 coverage for Reclamation under their Biological Opinion for the project.

5.3 Formal Consultation with Federal Agencies

In order to comply with the ESA (1973) as amended and the implementing regulations for Section 7 consultation, a species lists was requested from the USFWS at the beginning of the EA process. This information can be found in Appendix B. Consultation with the USFWS resulted in the ENTP being appended to the BLM Southern Nevada District's Programmatic Biological Opinion (File No. 84320-2010-F-0365) on June 11, 2015 (Proposed Action File No. 84320-2015-F-0386). This appended Biological Opinion can be found in Appendix C.

Section 106 of the NHPA of 1966 requires that any undertaking on Federal land or land requiring a Federal permit take into account potential effects to cultural resources that are on or eligible for the NRHP. A Programmatic Agreement among the Las Vegas Field office of the Southern Nevada District office of the BLM, the Bureau of Reclamation, the National Park Service, the Advisory Council on Historic Preservation, SSEA, and The Nevada State Historic Preservation Officer, was signed in April 2016.

5.4 Public Review of the EA

The EA and Finding of No Significant Impact will be posted on the BLM's Southern Nevada District website prior to issuance of the ROW Grant.

5.5 Tribal Consultation

Federal law (Section 106 of the National Historic Preservation Act) and agency guidance require the BLM to consult with Native American tribes concerning the identification of cultural values,

religious beliefs, and traditional practices of Native American people that may be affected by actions on BLM-administered lands. This consultation includes the identification of places (i.e., physical locations) of traditional cultural importance to Native American tribes. BLM conducted tribal consultation during preparation of the cultural resources Programmatic Agreement. The Programmatic Agreement also commits to ongoing tribal consultation during construction and operation of the project.

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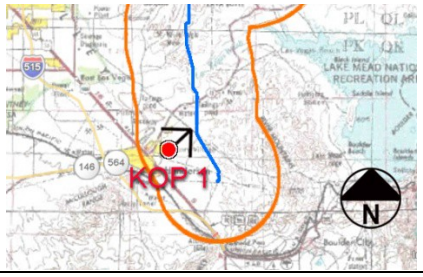
Appendix A

Key Observation Point Worksheets

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 1** Henderson residence **VRM Class: IV**	**Location** Township 22S Range 63E Section 9	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Highly developed residential (foreground), Rolling hills (mid-ground) Mountainous (background)	Low, patchy (foreground) Sparse, irregular (mid-ground)	Geometric; solid (foreground) Tall, transparent geometric; solid geometric (mid-ground)
Line	Horizontal, straight; undulating (foreground) Diagonal, undulating (mid-ground) Horizontal, undulating (background)	Irregular (foreground) Vertical, weak; irregular (mid-ground)	Simple geometric; diagonal & horizontal (foreground) Simple geometric; vertical (mid-ground)
Color	Light grey, light tan (foreground) Light tan, tan (mid-ground) Dull grey (background)	Light and dark green (fore-middle ground)	Reds, browns, light grey (foreground) Black, whites, matted grey (mid-ground)
Texture	Medium-fine (fore-middle ground)	Medium to fine (fore-middle ground)	Medium, ordered (foreground) Fine, uniform, smooth (mid-ground)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Highly developed residential (foreground), Rolling hills (middle ground) Mountainous (background)	Low, irregular (foreground) Sparse, irregular (middle ground)	Geometric; solid (foreground) Tall, transparent geometric; solid geometric (mid-ground)
Line	Horizontal, straight; undulating (foreground) Diagonal, undulating (middle ground) Weak, horizontal, undulating (background)	Irregular (foreground) Vertical, weak; irregular (middle ground)	Simple geometric; staggered horizontal (foreground) Simple geometric; vertical (mid-ground)
Color	Light grey, light tan (foreground) Light tan, tan (middle ground) Dull grey (background)	Light and dark green (fore-middle ground)	Reds, browns, light grey (foreground) Black, whites, matted grey (mid-ground)
Texture	Medium-fine (fore-middle ground)	Medium, sparse (fore-middle ground)	Medium, ordered; fine, (foreground) Fine, uniform, smooth (mid-ground)

Degree of Contrast

Degree of Contrast		Features											
		Landform/ Water Body				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form				X				X			X	
	Line				X				X			X	
	Color				X				X				X
	Texture				X				X				X

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

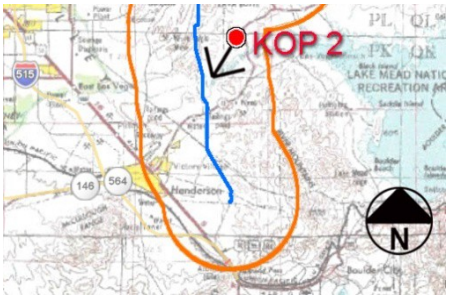
Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 1 – Henderson Residence

Weak contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class IV. The proposed structures would be similar in form and color as compared to existing lattice structures located within the utility corridor. The construction of the project would also result in minimal vegetation clearing and landform modification based on the use of existing access and the sparse vegetation present. It is unlikely that the contrast of these disturbances will be visible from this view point due to the rolling topography land level viewing position. With implementation of the following mitigation, overall visual impacts are anticipated to be low:

- Non-specular conductors would be used to reduce visual impacts.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 2** Lake Las Vegas residence **VRM Class: III**	**Location** Township 21S Range 63E Section 22	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Terraced for residential development (fg) Rolling hills to mountainous (mid-ground) mountainous (background)	Irregular, vertical (foreground) Sparse, irregular patchy (background	Geometric, vertical (foreground) Tall vertical, transparent (mid-ground)
Line	Linear, horizontal (foreground) Diagonal (mid-ground) Diagonals, undulation, horizontal (bg)	Irregular vertical (foreground)	Complex, geometric (foreground) Horizontal, vertical (mid-ground)
Color	Reddish-tan (fg to mg) Brown and dark brown (background)	Green/dark green (foreground) Grey-green (mid-ground)	Reds, browns, light tan (foreground) Reds, matted grey (mid-ground)
Texture	Fine (foreground) Coarse (background)	Course, dense (foreground) Sparse, fine (mid-/background)	Course, dense (foreground) Fine, uniform (mid-ground)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Terraced for residential development (fg) Rolling hills to mountainous; clearing for pads (mid-ground) Mountainous (background)	Irregular vertical (foreground) Sparse, irregular patchy (background)	Geometric, vertical (foreground) Tall vertical, transparent (mid-ground)
Line	Linear, horizontal (foreground) Diagonal for access roads (mid-ground) Diagonals, Undulation, horizontal (bg)	Irregular, vertical (foreground)	Complex, geometric (foreground) Horizontal, vertical, repeating (mid-ground)
Color	Reddish-tan w/ tans for pad clearing (fg to mg) Brown and dark brown (background)	Dark green - Green (foreground) Grey-green (mid-ground)	Reds, browns, light tan (foreground) Reds. grey, matted (mid-ground)
Texture	Fine, smooth (fore/mid-ground) Course to fine texture (background)	Course, dense (foreground) Sparse, fine (mid-/background)	Course, dense (foreground) Fine, uniform (mid-ground)

Degree of Contrast

Degree of Contrast		Features											
		Landform/ Water Body				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X				X				X	
	Line			X				X				X	
	Color			X					X				X
	Texture				X				X				X

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 2 – Lake Las Vegas Residence

Weak contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class III. The proposed structures would be similar in form and color as compared to existing lattice structures located within the utility corridor. The construction of the project would result in minimal vegetation clearing and landform modification for the accommodation of lay down areas based on the use of existing access and the sparse vegetation present. Views from this vantage point would be superior, however, and seen in the context of existing utility lines. Overall impacts are anticipated to be low with the implementation of the following mitigation:

- Non-specular conductors would be used to reduce visual impacts.
- Steel poles, when used instead of the lattice towers at power line crossings, would be treated to remove glare.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The temporary lay down areas adjacent to residents would be restored.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 3** Lake Mead National Recreation Area entrance **VRM Class: III**	**Location** Township 20S Range 63E Section 35	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Flat; gently rolling hills (foreground), Rolling hills (mid-ground) Mountainous (background)	Low, irregular (foreground)	Tall vertical, geometric, boxy (fore-middle ground)
Line	Linear; horizontal; diagonal (foreground) Diagonal; curving (mid-ground) Irregular, diagonals (background)	Low, irregular (foreground)	Horizontal, vertical (foreground) Vertical (mid-ground)
Color	Brown, tan, red, (fore-middle ground) Dull brown, beige (background)	Light green, tan, dark green (foreground) Tan (mid-ground)	Brown, tans (foreground) Grey, matted (middle ground)
Texture	Fine, smooth (fore/middle ground) Medium to fine (background)	Medium, uneven sparse (foreground) Fine, sparse (mid-/background)	Course (fore-middle ground)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Flat; gently rolling hills (foreground), Rolling hills (middle ground) Mountainous (background)	Low, irregular (foreground)	Tall vertical, geometric, boxy (fore-middle ground)
Line	Linear; horizontal; diagonal (foreground) Diagonal; curving (middle ground) Irregular, horizontal (background)	Weak, irregular (foreground) Weak (Middle ground)	Horizontal, vertical (foreground) Vertical, repeating (mid-ground)
Color	Brown, tan, red, (fore/middle ground) Dull brown, beige, red, tans from pads (bg)	Light green, tan, dark green (foreground) Tan, light green (middle ground)	Brown, tans (foreground) Grey, matted (middle ground)
Texture	Fine, smooth (fore/middle ground) Medium to fine (background)	Medium, uneven sparse (foreground) Fine, sparse (middle/background)	Course (fore-middle ground)

Degree of Contrast

Degree of Contrast		Features											
		Landform/ Water Body				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form				X			X				X	
	Line				X			X				X	
	Color			X					X				X
	Texture			X					X				X

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

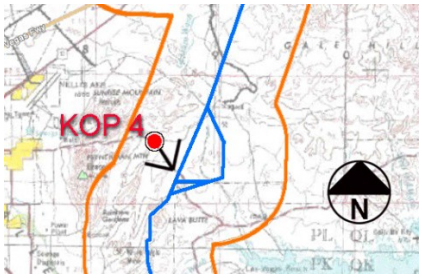
Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 3 – Lake Mead Recreational Area Entrance

Weak contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class III. The proposed structures would be similar in form and color as compared to existing lattice structures located within the utility corridor. The construction of the project would result in minimal vegetation clearing and landform modification based on the use of existing access and the sparse vegetation present. It is unlikely that the contrast created by the proposed project will be visible from this view point due to the distance of the project (approximately 1 mile from a level viewing position). Overall impacts are anticipated to be low with the implementation of the following measures:

- Non-specular conductors would be used to reduce visual impacts.
- Power poles would be sited to match existing spans to the extent feasible.
- Steel poles, when used instead of the lattice towers at power line crossings, would be treated to remove glare.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 4** Former Sunrise Mountain Instant Study Area **VRM Class: III**	**Location** Township 20S Range 63E Section 26	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Flat; gently rolling hills (foreground), Rolling hills (mid-ground) Mountainous (background)	Low, patchy, irregular (foreground)	Tall vertical, transparent (fore-middle ground)
Line	Curvilinear; diagonal (foreground) Diagonal; curving (mid-ground) Irregular, horizontal (background)	Weak, irregular (foreground)	Geometric, vertical (fore-middle ground)
Color	Grey, tans, reds (foreground) Dark brown, red, (mid-ground) Dull brown, beige, light-red (background)	Light green, dark green, tans (foreground) Dark green (mid-ground)	Grey, matted (fore-middle ground)
Texture	Medium to fine (fore-middle ground) Medium to fine (background)	Medium, uneven sparse (foreground) Fine, sparse (mid-background)	Fine, uniform (fore-middle ground)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Flat; gently rolling hills (foreground), Rolling hills (mid-ground) Mountainous (background)	Low, irregular (foreground) Geometric from vegetation clearing (fg to mg)	Tall vertical, transparent (fore-middle ground)
Line	Curvilinear; diagonal (foreground) Diagonal; curving (mid-ground) Irregular, horizontal (background)	Weak, irregular (foreground) Linear from vegetation clearing (fg to mg)	Geometric, vertical, rhythmic (fore-middle ground)
Color	Grey, tans, reds (foreground) Dk brown, red, tans from tower pads (mg) Dull brown, beige, light-red (background)	Light green, dark green, tans (foreground) Dark green (mid-ground)	Grey, matted (fore-middle ground)
Texture	Medium to fine (fore-middle ground) Medium to fine (background)	Medium, uneven sparse (foreground) Fine, sparse (mid-background)	Fine, uniform (fore-middle ground)

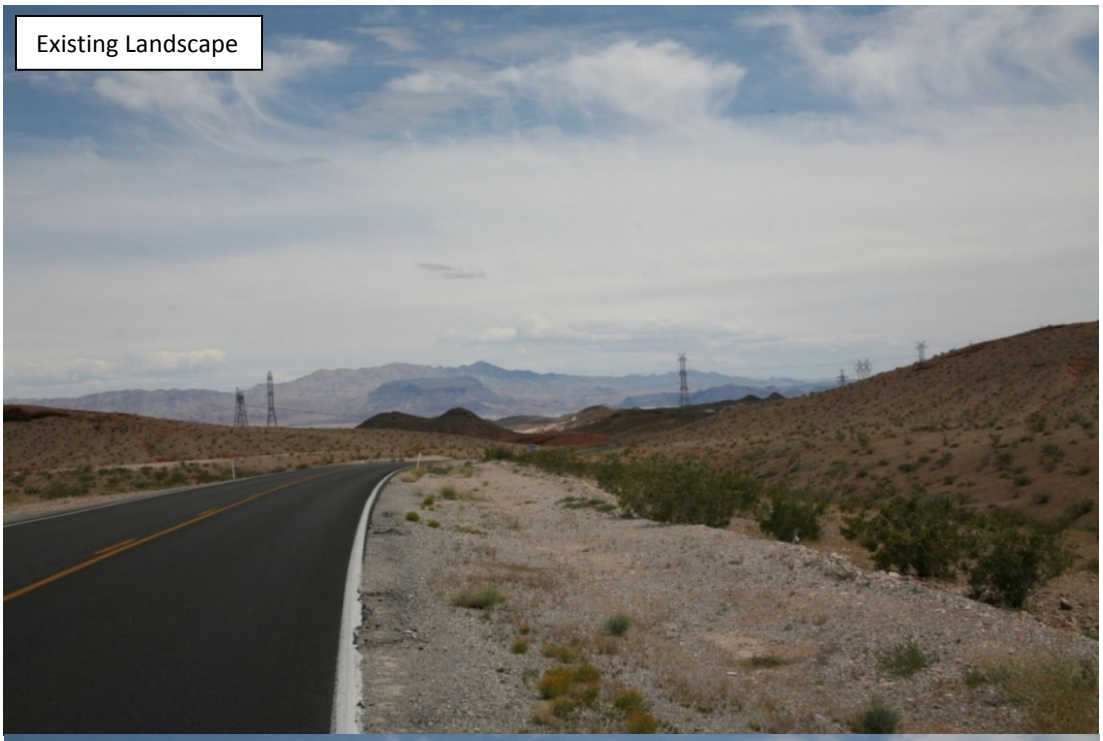
Degree of Contrast

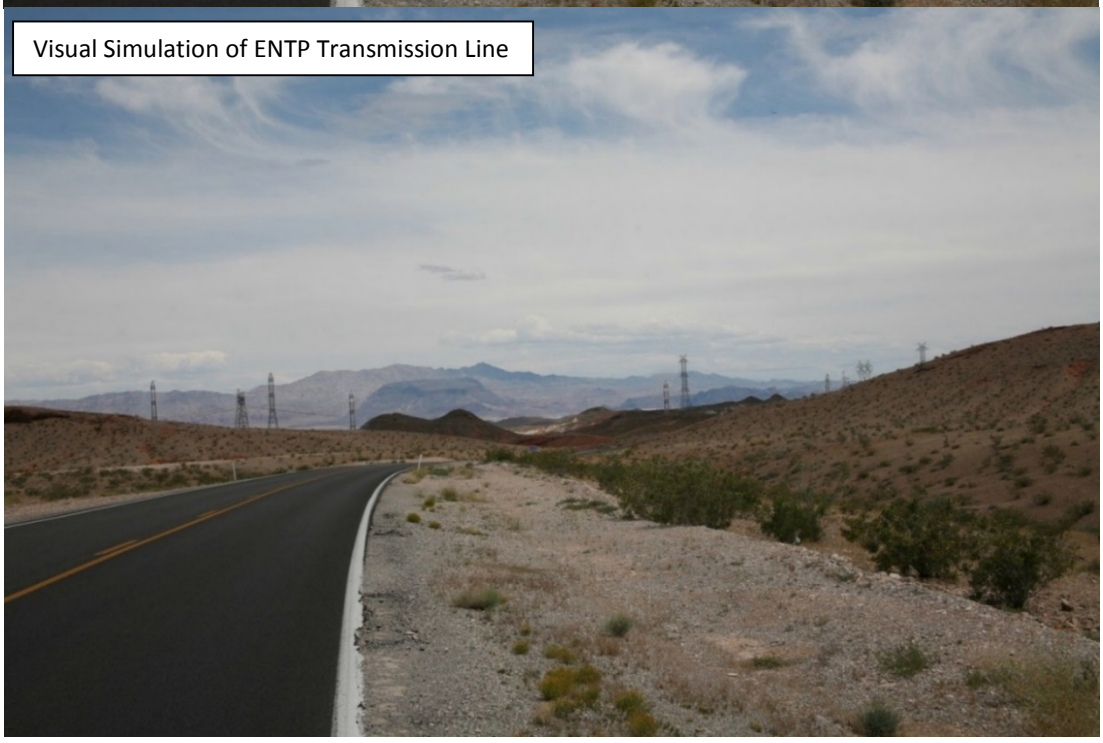
		Features											
		Landform/ Water Body				Vegetation				Structures			
Degree of Contrast		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X				X				X	
	Line			X				X				X	
	Color		X						X				X
	Texture		X						X				X

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey



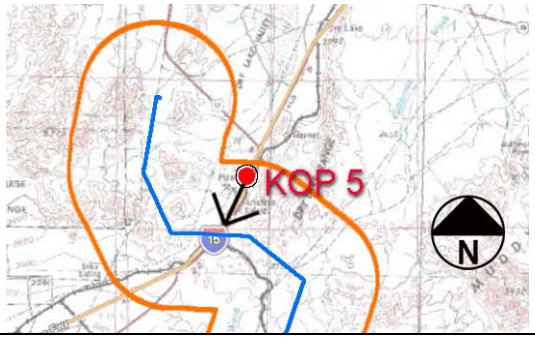


KOP 4 – Former Sunrise Mountain Instant Study Area

Weak contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class III. The proposed structures would be similar in form and color as compared to existing lattice structures located within the utility corridor. Construction of the project would also result in minimal vegetation clearing and landform modification for the accommodation of lay down areas based on the use of existing access and the sparse vegetation present. The proposed project would be seen at a distance of approximately 0.75 miles from a level viewing position. With implementation of the following mitigation, overall impacts are anticipated to be low:

- Non-specular conductors would be used to reduce visual impacts.
- Power poles would be sited to match existing spans to the extent feasible.
- Steel poles, when used instead of the lattice towers at power line crossings, would be treated to remove glare.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- The temporary lay down areas adjacent to Lake Mead Boulevard would be restored.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 5** I-15 Southbound **VRM Class: III**	**Location** Township 18S Range 63E Section 35	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Flat, horizontal (foreground), Rolling hills, mountainous (mid-ground)	Small, low, sparse patches (foreground) Sparse, irregular patch (mid-ground)	Tall repeating, vertical, transparent (mid-ground)
Line	Smooth, straight, horizontal (foreground) Undulating; curving (mid-ground)	Irregular (foreground)	Curving, vertical (mid-ground)
Color	Tan, beige (foreground) Brown, tan (mid-ground)	Green, tan (foreground) Tan, green (mid-ground)	Grey-matted (fore-middle ground)
Texture	Fine (foreground) Fine, smooth-medium (mid-ground)	Medium, uneven, random, (foreground) Even, random (mid-ground)	Fine, uniform (foreground)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Flat, horizontal (foreground), Rolling hills, mountainous (mid-ground)	Small, low, sparse patches (foreground) Sparse, patchy w/ geometric clearings (mg)	Tall repeating, vertical, transparent, rhythmic (fore to middle ground)
Line	Smooth, straight, horizontal (foreground) Undulating; curving from access rd.(mg) Undulating, diagonal (background)	Irregular w/ lines for vegetation clearing (foreground)	Curving, (transmission line) vertical and diagonals (towers) (foreground to mid-ground)
Color	Grey, tan, beige (foreground) Brown, tan from pad clearing (fg to mg)	Green, tan (foreground) Tan, green (mid-ground)	Grey-matted (fore-middle ground)
Texture	Fine (foreground) Fine, smooth-medium (mid-ground)	Medium, uneven, random, (foreground) Even, random, smooth for pads (fg to mg))	Fine to medium (fore-background)

Degree of Contrast

		Features											
		Landform/ Water Body				Vegetation				Structures			
Degree of Contrast		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X			X				X		
	Line			X				X			X		
	Color		X					X			X		
	Texture			X			X					X	

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

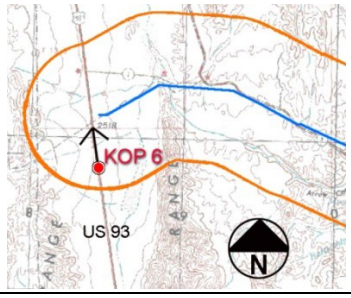
Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 5 – I-15 Southbound

Moderate contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class III. Due to the occurrence of moderate topography, portions of the proposed project will be back-dropped, yet tower tops would predominantly be sky-lined. However, the proposed structures would be similar in form and color as compared to existing lattice structures located within the utility corridor. The construction of the project would result in minimal vegetation clearing and landform modification based on the use of existing access and the sparse vegetation present. The proposed project would be seen at a distance of approximately 0.4 miles from a level viewing position. With implementation of the following mitigation, overall impacts are anticipated to be moderate:

- Power poles would be sited to match existing spans to the extent feasible.
- Non-specular conductors would be used to reduce visual impacts.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 6** US 93 Northbound **VRM Class:** III	**Location** Township 14S Range 63E Section 4	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Flat, horizontal (foreground) Mountainous, angular; geometric (background)	Low, irregular (fore-middle ground) Irregular patch (background)	Tall, vertical, transparent (foreground) Indistinct, vertical (background)
Line	Horizontal (foreground) Jagged irregular, and diagonal (background)	Irregular, horizontal (fore-middle ground) Horizontal, irregular (background)	Simple, straight, vertical (foreground) Weak, vertical (background)
Color	Tan (foreground) Brown and dark brown; tan (background)	Green-yellow to green (fore-middle ground) Dark green to light green (background)	Grey, matted (foreground) Dull/matted grey (background)
Texture	Fine (foreground) Course- medium; striated (background)	Even/random, medium (fore-middle ground) Fine, smooth, patchy (background)	Fine, uniform (foreground) Very fine (background)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Flat, horizontal (fore-middle ground), Mountainous (background)	Low, irregular; geometric clearing (fore-middle ground) Irregular patch (background)	Tall, vertical, transparent (foreground) Indistinct, vertical (background)
Line	Straight, horizontal (fore/middle ground) Irregular, jagged; horizontal (background)	Irregular, horizontal; linear clearings (fore-middle ground) Horizontal, irregular (background)	Straight, vertical; repeating (fg to mg) Weak, vertical (background)
Color	Brown/Tan; light brown for tower pad clearing (foreground to middleground) Dark brown, tan (background)	Green-yellow to green (fore-middle ground) Dark green to light green (background)	Grey, matted (foreground) Dull/matted grey (background)
Texture	Fine, uniform (fore/middle ground) Course- medium; striated (background)	Even/random, medium (fore-middle ground) Fine, smooth, patchy (background)	Fine, uniform (foreground) Very fine (background)

Degree of Contrast

		Features											
		Landform/ Water Body				Vegetation				Structures			
Degree of Contrast		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X				X				X	
	Line				X			X				X	
	Color			X				X				X	
	Texture			X				X				X	

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

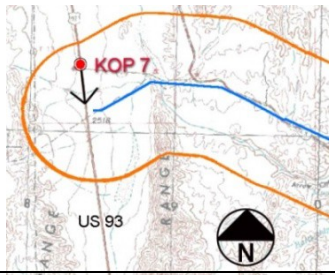
Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 6 – US 93 Northbound

Weak overall contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class III. The proposed structures would be similar in form and color as compared to existing H-frame structures located within the utility corridor. The construction of the project would also result in minimal vegetation clearing and landform modification for the accommodation of lay down areas based on the use of existing access. It is likely that the contrast from this location will be weak due to the distance of the project from the KOP (approximately 1.25 miles north-northeast from a level viewing position) and vegetation coverage over the valley floor. Overall impacts are anticipated to be low with the implementation of the following measures:

- Non-specular conductors would be used to reduce visual impacts.
- Power poles would be sited to match existing spans to the extent feasible.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 7** US 93 Southbound **VRM Class:** III	**Location** Township 13S Range 63E Section 20	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Flat, horizontal (foreground) Mountainous, triangular (background)	Low, undulating, angular (fore-middle ground) Irregular patch (background)	Geometric (foreground) Indistinct, vertical (background)
Line	Horizontal (foreground) Irregular, undulating, jagged and diagonal (background)	Irregular, horizontal (foreground) Horizontal (middle ground) Horizontal, irregular (background)	Simple, straight (foreground) Weak, vertical (background)
Color	Tan (foreground) Brown and dark brown (background)	Yellow green, green (foreground) Green to dark green (middle ground) Dark green to light green (background)	Dark grey (foreground) Grey (middle ground) Dull/matted grey (background)
Texture	Fine (foreground) Course- medium; striated (background)	Medium (foreground) Dense, uniform, fine (mid-ground) Fine, smooth (background)	Fine, uniform (foreground) Very fine (background)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Flat, horizontal (fore-middle ground), Mountainous, triangular (background)	Low, irregular; geometric clearing (fg/mg) Irregular patch (background)	Geometric (foreground) Indistinct, vertical (mid-background)
Line	Straight, horizontal (fore-middle ground) Straight, geometric for clearing (mg) Irregular, jagged; horizontal (background)	Irregular, horizontal (foreground) Horizontal (mid-ground) Horizontal, irregular (background)	Simple, straight (foreground) Straight, rhythmic (mg to bg) Weak, vertical (background)
Color	Tan; light tan for clearings (fore-middle ground) Dark brown, tan (background)	Yellow green, green (foreground) Green to dark green (mid-ground) Dark green to light green (background)	Grey/dark grey matted (fore-middle ground) Dull/matted grey (background)
Texture	Fine, uniform (fore-middle ground) Course- medium; striated (background)	Medium (foreground) Dense, uniform, fine (mid-ground) Fine, smooth (background)	Fine, uniform (foreground) Very fine (background)

Degree of Contrast

	Degree of Contrast	Features											
		Landform/ Water Body				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X				X				X	
	Line			X				X				X	
	Color			X				X					X
	Texture			X					X				X

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

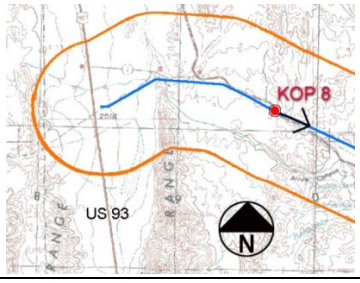
Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 7 – US 93 southbound

Weak contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class III. The proposed structures would be similar in form and color as compared to existing H-frame structures located within the utility corridor. The construction of the project would result in minimal vegetation clearing and landform modification for the accommodation of lay down areas based on the use of existing access. It is unlikely that the contrast at these locations will be visible from this view point due to the distance of the project (approximately 1.5 miles as seen from a level viewing position) southeast of the US 93. Overall impacts are anticipated to be low with the implementation of the following measures:

- Non-specular conductors would be used to reduce visual impacts.
- Power poles would be sited to match existing spans to the extent feasible.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 8** SR168 Eastbound **VRM Class:** II	**Location** Township 13S Range 64E Section 36	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Gently rolling hills; flat areas (foreground)	Low, irregular (foreground)	Tall vertical, blocky (foreground)
Line	Straight, linear; curving (foreground)	Weak, irregular (foreground)	Vertical, repeating, diagonals/ Horizontals; curving for lines (foreground)
Color	Brown, tan, dark browns (foreground)	Light green, dark green (foreground)	Browns (foreground) Dark browns (mid-ground)
Texture	Fine, smooth (fore-middle ground)	Fine, sparse (foreground)	Medium, uniform (foreground)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Gently rolling hills; flat for pads (foreground)	Low, irregular; geometric from clearing (foreground)	Tall vertical, blocky (foreground)
Line	Straight, linear; curving (foreground)	Weak, irregular (foreground)	Vertical, repeating; diagonals/ horizontals; curving for lines (foreground)
Color	Brown, tan, dark browns; tans from clearing (foreground)	Light green, dark green (foreground)	Greys and brown (foreground) Dark browns (mid-ground)
Texture	Fine, smooth (fore-middle ground)	Fine, sparse (foreground)	Medium, uniform (foreground)

Degree of Contrast

		Features											
		Landform/ Water Body				Vegetation				Structures			
Degree of Contrast		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X				X				X	
	Line			X				X				X	
	Color			X				X				X	
	Texture			X				X				X	

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?

Yes (see next page)

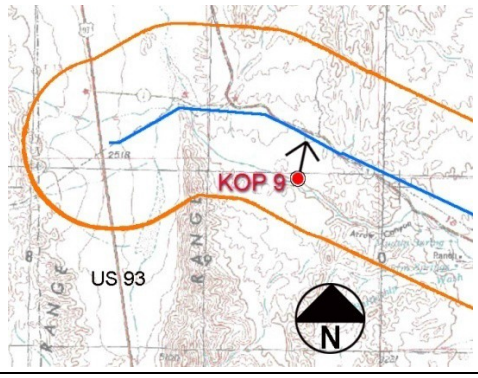
Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 8 – SR168 Eastbound

Weak contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class II. Due to close proximity to the proposed project (approximately 0.25 miles) and slightly inferior viewing position, project contrast is expected. However, the proposed structures would be similar in form, line, color, and texture as compared to existing H-frame structures located within the utility corridor. The construction of the project would also result in minimal vegetation clearing and landform modification for the accommodation of lay down areas based on the use of existing ground disturbances and existing access. With implementation of the following mitigation, overall impacts are anticipated to be low:

- Power poles would be sited to match existing spans to the extent feasible.
- Non-specular conductors would be used to reduce visual impacts.
- Alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- To speed recovery of the native vegetation, the seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project**	**Location**	Location Sketch
Key Observation Point : 9 Campground	Township 14S Range 64E Section 4	
VRM Class: II		

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Flat, horizontal (foreground) Triangular (background)	Low to tall (foreground) Low (mid to background)	Geometric, rectangular, linear, vertical (fore-middle ground)
Line	Horizontal (foreground) Jagged and diagonal (background)	Regular, vertical (foreground) Regular, horizontal (mid ground)	Vertical repeating (mid-ground)
Color	Tan, light brown (foreground) Brown and dark brown (background)	Dark greens, browns (foreground to mid-ground)	Brown (mid-ground)
Texture	Fine (foreground) Coarse (background)	Coarse (foreground) Fine (mid and background)	Fine (background)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Flat, horizontal for pads (foreground) Triangular (background)	Low to tall; geometric from clearing (fore-middle ground) Low (mid-background)	Geometric, rectangular, linear, vertical; repeating (fore-middle-ground)
Line	Horizontal (foreground) Jagged and diagonal (background)	Regular, vertical (foreground) Regular, horizontal (mid-ground)	Vertical repeating (mid-ground)
Color	Tan, light browns, tans from clearing (foreground)	Dark greens and browns (fore-middle ground)	Brown and dark grey (mid-ground)
Texture	Fine (foreground) Coarse (background)	Coarse (foreground) Fine (mid-background)	Fine (background)

Degree of Contrast

Degree of Contrast		Features											
		Landform/ Water Body				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X				X				X	
	Line			X				X				X	
	Color			X				X				X	
	Texture			X				X				X	

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

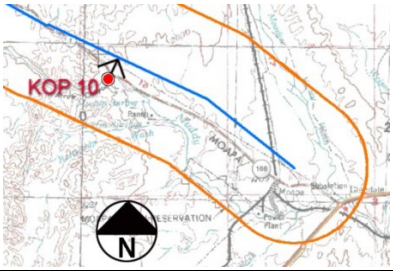
Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 9 – Campground

Weak contrast would result from the construction and operation of the proposed project within a semi-naturalistic setting designated as VRM Class II as seen from dispersed campgrounds within the Mormon Mesa ACEC, the adjacent Arrow Canyon Wilderness Area, and a level-to-inferior viewing position approximately 0.5 miles from the proposed project alignment. The proposed structures would be similar in form, line, color, and texture to the existing H-frame structures located within the utility corridor. Due to the rolling topography and relatively low vegetation, contrast with existing landforms and vegetation would result due to the added access roads and ground disturbance needed for construction. Construction of the project would result in minimal vegetation clearing and landform modification for the accommodation of lay down areas based on the use of existing access. With application of the following measures, overall impacts are anticipated to be low:

- Non-specular conductors would be used to reduce visual impacts.
- Power poles would be sited to match existing spans to the extent feasible.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 10** Moapa residence **VRM Class: II**	**Location** Township 14S Range 65E Section 8	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Rural-residential (foreground), Rolling hills (mid-ground) Mountainous (background)	Low, patchy, geometric (foreground) Sparse, patchy, irregular (mid-ground)	Geometric horizontal (foreground) Tall, transparent geometric; solid geometric (mid-ground)
Line	Horizontal, straight (foreground) Diagonal, undulating (mid-ground) Weak, horizontal, undulating (background)	Irregular (foreground) Vertical, weak; irregular (mid-ground)	Geometric; horizontal (foreground) Geometric; vertical (mid-ground)
Color	Light grey, light tan (foreground) Tan, reddish-brown (mid-ground) Brown-dark brown (background)	Light and dark green (fore-middle ground)	Reds, tan, beige, dark brown (foreground) Black, tan (mid-ground)
Texture	Medium-fine (fore-middle ground) Course to medium (mid-background)	Medium, clumpy (fore-middle ground) Fine (ag fields) (foreground)	Medium, ordered (foreground) Fine, uniform, smooth (mid-ground)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Rural-residential (foreground), Rolling hills (mid-ground) Mountainous (background))	Low, patchy, geometric (foreground) Sparse, patchy, irregular; geometric clearings (mid-ground)	Geometric; horizontal (foreground) Tall; solid geometric (mid-ground)
Line	Horizontal, straight (foreground) Diagonal, undulating (mid-ground) Weak, horizontal, undulating (background)	Irregular (foreground) Vertical, weak; irregular (mid-ground)	Geometric; horizontal (foreground) Geometric; vertical (mid-ground)
Color	Light grey, light tan (foreground) Reddish-brown; light tans (access rds) (mg) Brown-dark brown (background)	Light and dark green (fore-middle ground)	Reds, tan, beige, light grey (foreground) Black, wood; matted grey (mid-ground)
Texture	Medium-fine (fore-middle ground) Course to medium (mid-background)	Medium, clumpy (fore-middle ground) Fine (ag fields) (foreground)	Medium, ordered; Fine, uniform, smooth (mid-ground)

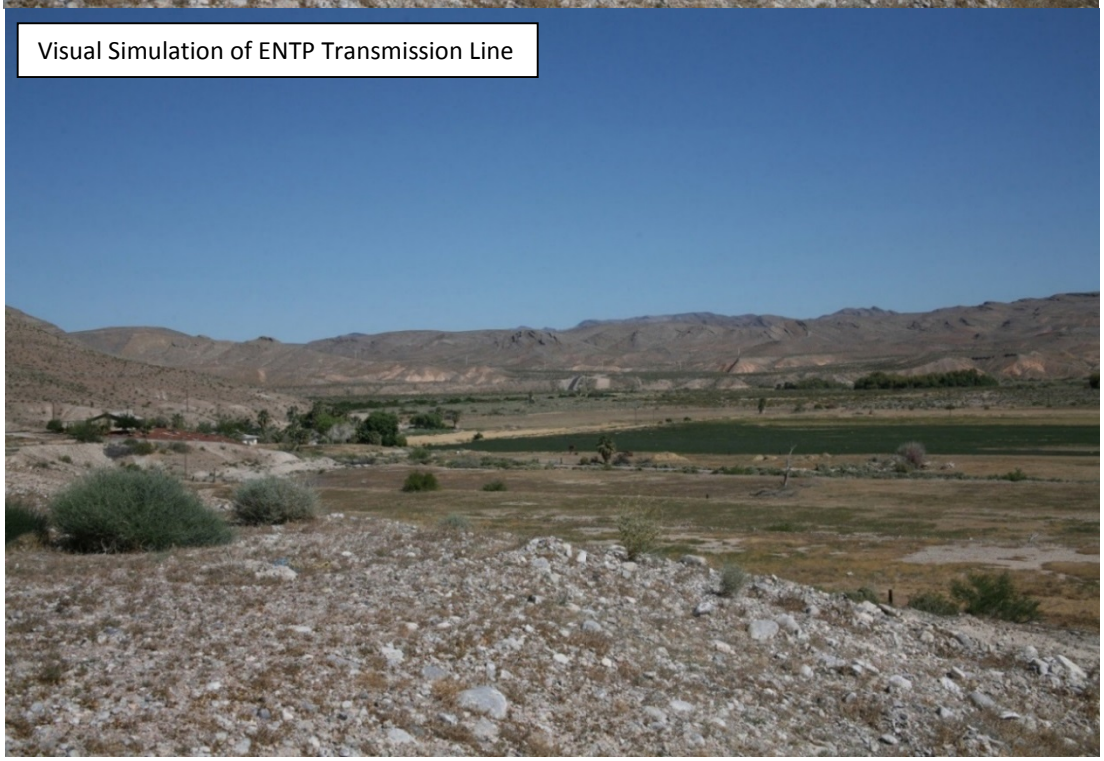
Degree of Contrast

		Features											
		Landform/ Water Body				Vegetation				Structures			
Degree of Contrast		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X				X				X	
	Line			X				X				X	
	Color			X					X			X	
	Texture			X					X			X	

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

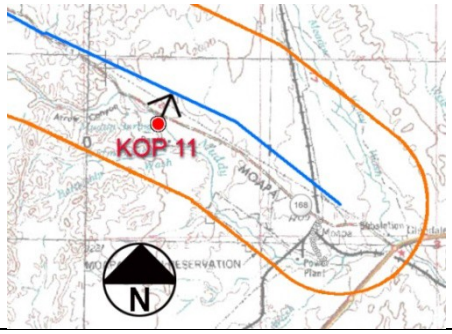


KOP 10 – Moapa Residence

Weak contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class II as seen from private residences approximately 1.5 miles from the proposed project alignment from a slightly superior viewing position. The proposed structures would be similar in form, line, color, and texture to the existing H-frame structures, however, the proposed structures will be approximately 0.4 miles north of the existing lines, increasing contrast. Construction of the project would result in minimal vegetation clearing and landform modification for the accommodation of lay down areas based on the use of existing access. Implementation of the following measures would reduce the overall impact to low:

- Power poles would be sited to match existing spans to the extent feasible.
- Non-specular conductors would be used to reduce visual impacts.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name: **Eastern Nevada Transmission Project** **Key Observation Point : 11** Moapa National Wildlife Reserve **VRM Class: II**	**Location** Township 14S Range 65E Section 16	Location Sketch 

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Flat (foreground) Rolling hill (mid-ground) Mountainous (background)	Geometric, irregular (foreground) Sparse, irregular (mid-ground)	Horizontal, narrow (foreground) Vertical, regular (mid-ground)
Line	Horizontal, straight (foreground) Slightly undulating (mid-ground) Strong diagonals, undulating (background)	Irregular (foreground) Vertical, weak; irregular (mid-ground)	Simple horizontal (foreground) Straight vertical (mid-ground)
Color	Red-brown , tan (fore-middle ground) Dark brown, reddish-brown (background)	Green and dark green (foreground) Grey-green (mid-ground)	Light grey (foreground) Brown (mid-ground)
Texture	Fine to medium (fore-middle ground) Course (background)	Course/medium (foreground) Medium (mid-ground)	Medium, ordered; fine (foreground)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Flat (foreground) Rolling hills (mid-ground) Mountainous (background)	Geometric, irregular (foreground) Sparse, irregular from vegetation clearing (mid-ground)	Horizontal, narrow (foreground) Vertical, regular; repeating (mid-ground)
Line	Horizontal, straight (foreground) Slightly undulating (mid-ground) Strong diagonals, undulating (background)	Irregular (foreground) Vertical, weak; irregular, geometric (mid-ground)	Simple horizontal (foreground) Straight, verticals, repeating (mid-ground)
Color	Red-brown , tan (fore-middle ground) Dark brown, reddish-brown (background)	Green and dark green (foreground) Grey-green (mid-ground)	Light grey (foreground) Brown (mid-ground)
Texture	Fine to medium (fore-middle ground) Course (background)	Course/medium (foreground) Medium (mid-ground)	Medium, ordered; fine (foreground)

Degree of Contrast

		Features											
		Landform/ Water Body				Vegetation				Structures			
Degree of Contrast		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form				X			X				X	
	Line			X				X				X	
	Color			X				X				X	
	Texture				X				X				X

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

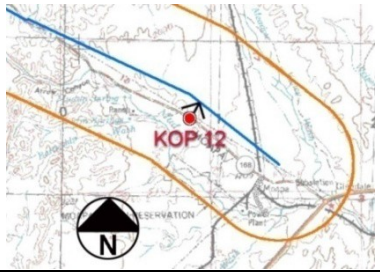
Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 11 – Moapa National Wildlife Reserve

Weak contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class II. The proposed structures would be similar in form, line, color, and texture as compared to existing H-frame structures located within the utility corridor. The construction of the project would result in minimal vegetation clearing and landform modification for the accommodation of lay down areas based on the use of existing access. It is unlikely that the contrast at these locations will be visible from this view point due to the distance of the project (approximately 1.5 miles) south of the road as seen from a level viewing position and due to dense vegetation coverage in the foreground. Overall impacts are anticipated to be low with the implementation of the following measures:

- Non-specular conductors would be used to reduce visual impacts.
- Power poles would be sited to match existing spans to the extent feasible.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

District: Southern Nevada District
Resource Area: Las Vegas
Activity (program): Transmission Line

Project Name:	**Location**	Location Sketch
Eastern Nevada Transmission Project	Township 14S	
Key Observation Point : 12 Moapa residence	Range 65E	
VRM Class: III	Section 24	

Characteristic Landscape Description

	Landform/Water	Vegetation	Structures
Form	Rural-developed residential (foreground), Low-rolling hills (mid-ground) Mountainous (background)	Clumped, irregular (foreground) Sparse, irregular (mid-ground)	Geometric; horizontal (foreground) Tall, Solid geometric (mid-ground)
Line	Series of diagonals, undulating (foreground) diagonals, undulating (mid-ground) Abrupt diagonals, undulating (background)	Serrated, irregular (foreground) irregular (mid-ground)	Simple geometric; staggered horizontal & diagonals (foreground) Geometric, simple, vertical (mid-ground)
Color	Reds, light tan, greys (foreground) Reddish-brown (mid-ground) Dark brown (background)	Light and dark green (fore-middle ground)	Reds, tan, beige, light grey; white (foreground) Brown, grey (mid-ground)
Texture	Course to medium (fore-middle ground)	Course (foreground) Medium (mid-ground)	Medium, smooth (foreground) Uniform (mid-ground)

Proposed Activity Description

	Landform/Water	Vegetation	Structures
Form	Rural-developed residential, flat pads (fg), Low-rolling hills (mid-ground) Mountainous (background)	Clumped, irregular; geometric clearings (foreground) Sparse, irregular (mid-ground)	Geometric; horizontal; repeating (foreground) Tall, Solid geometric (mid-ground))
Line	Series of diagonals, undulating (foreground) diagonals, undulating (mid-ground) Abrupt diagonals, undulating (background)	Serrated, irregular; linear clearing (foreground) irregular (mid-ground)	Simple geometric; staggered horizontal & diagonals; rhythmic (foreground) Geometric, simple, vertical (mid-ground)
Color	Reds, light tan, greys from clearing (fg) Reddish-brown (mid-ground) Dark brown (background)	Light and dark green (fore-middle ground)	Reds, tan, beige, light grey; white (foreground) Brown, grey (mid-ground)
Texture	Course to medium; smooth clearings (fore-middle ground)	Course (foreground) Medium (mid-ground)	Medium, smooth (foreground) Uniform (mid-ground)

Degree of Contrast

		Features											
		Landform/ Water Body				Vegetation				Structures			
Degree of Contrast		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form		X				X				X		
	Line		X				X					X	
	Color			X				X				X	
	Texture			X				X				X	

Does project design meet visual resource management objectives?
Yes

Additional mitigating measures recommended?
Yes (see next page)

Evaluators Names:
Conrad Langley, Marc Schwartz, and Chiaki Lowrey

KOP 12 – Moapa Residence

Weak/Moderate contrast would result from the construction and operation of the proposed project within a modified setting designated as VRM Class III as seen from private residences approximately 0.7 miles from the proposed project alignment from a level-to-slightly-superior viewing position. The proposed structures would be similar in form, line, and texture to the existing H-frame structures, however, the proposed structures will be approximately 0.6 miles north of the existing lines, increasing contrast due to the distance. The construction of the project would result in minimal vegetation clearing and landform modification for the accommodation of lay down areas based on the use of existing access. With the application of the following measures, overall impacts are anticipated to be weak to moderate:

- Non-specular conductors would be used to reduce visual impacts.
- Power poles would be sited to match existing spans to the extent feasible.
- The alignment of any new access roads or cross-country route would follow the landform contours where practicable.
- Rock cut faces would be treated with Permeon® or other BLM-approved rock-coloring agent to blend with background rock color.
- The seed bank present in the topsoil in these areas would be stockpiled for replacement upon completion of construction in order to speed recovery of the native vegetation.
- A BLM-approved Restoration Plan would be developed for the Project.

Appendix B

USFWS Species List for the Project

Scientific Scientific Name	Common Common Name	FWS FWS Status	NV NV Status	Global Global Status	State State Status	NV NV Range	Districts Districts Contain	BLM BLM Criteria	New BLM New to 2011 BLM List
Amphibians									
Bufo nelsoni	Amagosa Toad			G1G2	S1S2	YR	S	1,2	N
Rana onca	Relict Leopard Frog	candidate		G1	S1	YR	S	1	Y
Birds									
Aquila chrysaetos	golden eagle			G5	S4	YR	S	2	N
Buteo swainsoni	Swainson's hawk			G5	S2B	all	statewide	1	N
Coccyzus americanus	Western yellow-billed cuckoo	CS			S1B	B	S	2	Y
Empidonax traillii extimus	Southwestern willow flycatcher	E	SE	T1	S1B	YR	S	1,2	Y
Lanius ludovicianus	loggerhead shrike		SS	G4	S4	YR	S	1	N
Melanerpes lewis	Lewis woodpecker			G4	S3	Wintering	S	1	N
Rallus longirostris yumanensis	Yuma clapper rail	E	SE	G5T3	S1	YR	S	1,2	Y
Toxostoma lecontei	Le Conte's Thrasher			G3	S2	YR	S	2	N
Toxostoma bendirei	Bendire's Thrasher			G4G5	S1		S	1,2	Y
Fish									
Catostomus clarkii ssp. 2	Meadow Valley Wash desert sucker		SS	G3G4T2	S2	YR	S	1	N
Cyrpinodon nevadensis mionectes	Ash Meadows Amargosa Pupfish	E	SE	G2T1	S2	YR	S	1	Y
Cyrpinodon diabolis	Devils Hole Pupfish	E		G1	S1	YR	S	1	Y
Cyrpinodon nevadensis pectoralis	Warm Springs Pupfish	E	SE	G2T1	S1	YR	S	1	Y
Empetrichthys latos	Pahrump Poolfish	E	SE	G1T1	S1	YR	S	1	Y
Gila elegans	Bonytail chub	E	SE	G1	S1	YR	S	1	Y
Gila seminuda	Virgin River chub	E	SS	G1T1Q	S1	YR	S	1,2	N
Moapa coriacea	Moapa dace	E	SE	G1	S1	YR	S	1	Y
Plagopterus argentissimus	Woundfin	E	SE	G1	S1	YR	S	1,2	Y
Rhinichthys osculus moapae	Moapa speckled dace		SS	G5T1	S1	YR	S	2	N
Rhinichthys osculus nevadensis	Ash Meadows speckled dace	E	SE	G5T1	S1	YR	S	1, 2	Y
Rhinichthys osculus ssp 11	Meadow Valley speckled dace			G5T2	S2	YR	S	2	N
Rhinichthys osculus ssp. 6	Oasis Valley speckled dace		SE	G5T1	S1	YR	S	2	N
Xyrauchen texanus	Razorback sucker	E	SE	G1	S1	YR	S	1,2	Y
Mammals									
Eumops perotis californicus	greater western mastiff bat		SS	G5G4	S1	YR	S	2	N
Idionycteris phyllotis	Allen's big-eared bat		PM	G3G4	S1	YR	S	1,2	N
Lasiurus blossevillii	western red bat		SS	G5	S1	YR	S	2	N
Macrotus californicus	California leaf-nosed bat		SS	G4	S2	YR	S	1,2	N
Myotis californicus	California myotis			G5	S4	YR	S	2	N
Myotis velifer	cave myotis			G5	S1	YR	S	1,2	N
Myotis yumanensis	Yuma myotis			G5	S3S4	YR	S	2	N
Nyctinomops macrotis	big free-tailed bat			G5	S1S2	Transient	S	2	N
Microdipodops pallidus	pale kangaroo mouse		SP	G3	S2	YR	S	1	Y
Reptiles									
Heloderma suspectum cinctum	banded Gila monster		SP	G4T4	S2	YR	S	2	N
Sauromalus ater	chuckwalla			G5	S3	YR	S	2	N
Chionactis occipitalis talpina	Nevada shovel-nosed snake			G3(species)	?	YR	S	2	Y

Scientific Scientific Name	Common Common Name	FWS FWS Status	NV NV Status	Global Global Status	State State Status	NV NV Range	Districts Districts Contain	BLM BLM Criteria	New BLM New to 2011 BLM List
Chionactis occipitalis occipitalis	Mojave shovel-nosed snake			G3 (species)	?	YR	S	2	Y
Arizona elegans eburnata	desert glossy snake			G3 (species)	?	YR	S	2	y
Crotalus cerastes cerastes	Mojave Desert sidewinder			G3 (species)	?	YR	S	2	Y
Gopherus agassizii	Desert Tortoise	T		G4	S2	YR	S	1,2	Y
Insects									
Aegialia magnifica	large aegialian scarab	petitioned 2010		G1	S1	YR	S	1,2	N
Andrena balsamorhizae	Mojave gypsum bee			G2	S2	YR	S	2	N
Aphodius sp. 1	Big Dune aphodius scarab			G1Q	S1	YR	S	2	N
Euphilotes mojave virginensis	northern Mojave blue			G2G3T1T2	S1	YR	S	2	N
Hesperopsis gracielae	MacNeill sooty wing skipper			G2G3	S1	YR	S	2	N
Icaricia shasta charlestonensis	Mt Charleston Blue Butterfly	CS		G1	S1	YR	S	1,2	Y
Miloderes sp. 1	Big Dune miloderes weevil			G1	S1	YR	S	2	Y
Perdita meconis	Mojave poppy bee			G2	S2	YR	S	2	N
Pseudocotalpa giulianii	Giuliani's dune scarab	petitioned 2010		G1	S1	YR	S	1,2	N
Stenelmis calida calida	Devils Hole warm spring riffle beetle			GNRT1	S1	YR	S	2	N
Stenelmis moapa	Moapa Warm Spring riffle beetle			G1	S1	YR	S	2	N
Molluscs									
Ambrysus amargosus	Ash Meadows Naucorid	T		G1	S1	YR	S	1,2	Y
Pygulopsis avernalis	Moapa pebblesnail	petitioned 2009		G1G2	S1S2	YR	S	2	Y
Pyrgulopsis carinifera	Moapa Valley Pryg	petitioned 2009		G1	S1	YR	S	2	Y
Pyrgulopsis crystalis	Crystal springsnail	petitioned 2009		G1	S1	YR	S	2	Y
Pyrgulopsis deaconi	Spring Mountains pyrg	petitioned 2009		G1	S1	YR	S	2	N
Pyrgulopsis erythropoma	Ash Meadows pebblesnail	petitioned 2009		G1	S1	YR	S	2	Y
Pygulopsis fairbanksensis	Fairbanks springsnail	petitioned 2009		G1	S1	YR	S	2	Y
Pyrgulopsis isolatus	Elongate gland springsnail	petitioned 2009		G1	S1	YR	S	1,2	Y
Pyrgulopsis nanus	Distal gland springsnail	petitioned 2009		G1	S1	YR	S	1,2	Y
Pyrgulopsis pisteri	Median gland Nevada pyrg	petitioned 2009		G1	S1	YR	S	1,2	Y
Pyrgulopsis turbatrix	Southeast Nevada pyrg	petitioned 2009		G2	S2	YR	S	1,2	Y
Tryonia angulata	Sportinggoods tryonia	petitioned 2009		G1	S1	YR	S	2	Y
Tryonia elata	Point of Rocks tryonia	petitioned 2009		G1	S1	YR	S	2	Y

Scientific Scientific Name	Common Common Name	FWS FWS Status	NV NV Status	Global Global Status	State State Status	NV NV Range	Districts Districts Contain	BLM BLM Criteria	New BLM New to 2011 BLM List
Tryonia ericae	Minute tryonia	petitioned 2009		G1	S1	YR	S	1,2	Y
Tryonia variegata	Amargosa tryonia	petitioned 2009		G2	S2	YR	S	2	N
Plants									
Angelica scabrida	Rough angelica	Species of Concern		G2	S2	Y	S	2	N
Anulocaulis leiosolenus var. leiosolenus	Sticky ringstem					Y	S	1, 2	Y
Arctomecon californica	Las Vegas bearpoppy	Species of Concern	CE	G3	S3	Y	S	1, 2	Y
Arctomecon merriamii	White bearpoppy	Species of Concern		G3	S3	Y	S	1	N
Astragalus calycosus var. *monophyllidius*	Torrey milkvetch			G5T2Q	S2	Y	S	2	Y
Astragalus funereus	Black woollypod	Species of Concern		G2	S2	Y	S	2	N
Astragalus funereus	Black woollypod	Species of Concern		G2	S2	Y	S	2	N
Astragalus geyeri var. triguetrus	Threecorner milkvetch	Species of Concern	CE	G4T2T3	S2S3	Y	S	1, 2	Y
Astragalus gilmanii	Gilman's milkvetch	Species of Concern		G2G3	S1	Y	S	1,2	N
Astragalus lentiginosus var. *stramineus*	Straw milkvetch			G5T2T3	S1S2	Y	S	1	Y
Astragalus mohavensis var. *hemigyrus*	Halfring milkvetch	Species of Concern		G3G4T2T3	S2S3	Y	S	1	N
Astragalus mokiacensis	Mokiak milkvetch			G2G3Q	S1S2	Y	S	2	N
Astragalus phoenix	Ash Meadows milkvetch	LT	CE	G2	S2	Y	S	1	Y
Astragalus remotus	Spring Mountains milkvetch	Species of Concern		G2	S2	Y	S	1	N
Atriplex argentea var. *longitrichoma*	Pahrump silverscale			G5T1T2	S1	Y	S	1	Y
Calochortus striatus	Alkali mariposa lily	Species of Concern		G2	S1	Y	S	1, 2	N
Centaurium namophilum	Spring-loving centaury	LT	CE	G2Q	S2	Y	S	1, 2	Y
Cirsium mohavense	Virgin River thistle	Species of Concern		G2	S1	Y	S	1, 2	Y
Cordylanthus tecopensis	Tecopa birdbeak	Species of Concern		G2	S2	Y	S	1, 2	N
Cylindropuntia multigeniculata (Opuntia whipplei var. *multigeniculata)*	Blue Diamond cholla	Former candidate	CE, CY	G2	S2	Y	S	1, 2	Y
Dermatocarpon luridum	Stream stippleback lichen			G4G5	S1	Y	S	1	N
Didymodon nevadensis	Gold Butte moss			G2G3	S1	Y	S	1	N
Enceliopsis argophylla	Silverleaf sunray			G2G3	S1	Y	S	1	N

Scientific Scientific Name	Common Common Name	FWS FWS Status	NV NV Status	Global Global Status	State State Status	NV NV Range	Districts Districts Contain	BLM BLM Criteria	New BLM New to 2011 BLM List
Enceliopsis nudicaulis var. *corrugata*	Ash Meadows sunray	LT	CE	G5T2	S2	Y	S	1, 2	Y
Epilobium nevadense	Nevada willowherb	Species of Concern		G2	S2	Y	S	1	N
Ericameria cervina	Antelope Canyon goldenbush			G3	S1	Y	S	1	Y
Erigeron ovinus	Sheep fleabane	Species of Concern		G2	S2	Y	S	1, 2	N
Eriogonum bifurcatum	Pahrump Valley buckwheat	Species of Concern		G2	S2	Y	S	1	N
Eriogonum concinnum	Darin buckwheat			G2	S2	Y	S	1, 2	Y
Eriogonum corymbosum var. *nilesii*	Las Vegas buckwheat	C	CE	G5T2	S1S2	Y	S	1	N
Eriogonum heermannii var. *clokeyi*	Clokey buckwheat			G5T2	S2	Y	S	1	N
Eriogonum viscidulum	Sticky buckwheat	Species of Concern	CE	G2	S2	Y	S	1, 2	Y
Glossopetalon pungens var. *glabrum*	Smooth dwarf greasebush			G2G3T1Q	S1	Y	S	1	N
Grindelia fraxinopratensis	Ash Meadows gumplant	LT	CE	G2	S2	Y	S	1, 2	Y
Ionactis caelestis	Red Rock Canyon aster			G1	S1	Y	S	1, 2	N
Ivesia arizonica var. saxosa	Rock purpusia			G3G4T1	S1	Y	S	1	N
Ivesia jaegeri	Jaeger ivesia	Species of Concern		G2G3	S2S3	Y	S	1	N
Ivesia kingii var. *eremica*	Ash Meadows mousetails	LT	CE	G3T1T2Q	S1S2	Y	S	1, 2	Y
Lathyrus hitchcockianus	Bullfrog Hills sweetpea			G2	S2	Y	S	1	Y
Lotus argyraeus var. multicaulis	Scrub lotus			G4?T1	S1?	Y	S	1	N
Mentzelia leucophylla	Ash Meadows blazingstar	LT	CE	G1Q	S1	Y	S	1, 2	Y
Mentzelia polita	Polished blazingstar			G2	S1S2	Y	S	2	Y
Nitrophila mohavensis	Amargosa niterwort	LE	CE	G1	S1	Y	S	1, 2	Y
Pediomelum castoreum	Beaver Dam breadroot	Species of Concern		G3	S3	Y	S	1, 2	Y
Penstemon albomarginatus	White-margined beardtongue	Species of Concern		G2	S2	Y	S	1, 2	N
Penstemon bicolor ssp. *bicolor*	Yellow twotone beardtongue	Species of Concern		G3T2Q	S2	Y	S	1	N
Penstemon bicolor ssp. *roseus*	Rosy twotone beardtongue	Species of Concern		G3T3Q	S3	Y	S	1	N
Penstemon fruticiformis ssp. *amargosae*	Death Valley beardtongue	Species of Concern		G4T3	S2	Y	S	1	N
Penstemon pahutensis	Pahute Mesa beardtongue	Species of Concern		G3	S3	Y	S	1	N
Penstemon thompsoniae ssp. *jaegeri*	Jaeger beardtongue			G4T2	S2	Y	S	1	Y
Phacelia beatleyae	Beatley scorpionflower			G3	S3	Y	S	1,2	N
Phacelia parishii	Parish phacelia	Species of Concern		G2G3	S2S3	Y	S	1	N

Scientific Scientific Name	Common Common Name	FWS FWS Status	NV NV Status	Global Global Status	State State Status	NV NV Range	Districts Districts Contain	BLM BLM Criteria	New BLM New to 2011 BLM List
Salvia funerea	Death Valley sage			G3	S1	Y	S	1	Y

Appendix C

Action Appended Programmatic Biological Opinion

ACTION APPENDED TO THE BLM'S SOUTHERN NEVADA DISTRICT PROGRAMMATIC BIOLOGICAL OPINION (File No. 84320-2010-F-0365)

This consultation consists of the programmatic biological opinion (PBO), the Bureau of Land Management's (BLM's) request to append the proposed action to the PBO with project-specific information (Part A, provided by BLM), referenced sections of the biological assessment (BA) provided with the request, and the Fish and Wildlife Service's (Service) response (Part B, below).

Project: Eastern Nevada Transmission Project Append

Service File No. for Proposed Action: 84320-2015-F-0386

Part A: Information provided by the BLM

Part B: Fish and Wildlife Service Response

Date received: May 11, 2015 **Date of response:** June 12, 2015

1. Description of the Proposed Action

BLM proposes to grant a right-of-way (ROW) to to Silver State Energy Association for the construction, operation, and maintenance of a 230-kilovolt transmission line consisting of 21 miles of above-ground transmission line stretching from the western terminus at the Gemmill substation near Coyote Springs to the eastern terminus at the Tortoise substation near Moapa (Figure 1-1 of BA); and 33 miles of above-ground transmission line stretching from the northern terminus at the Silverhawk substation near Apex to the Newport substation near Henderson (Figure 1-2 of BA). The project would occur on land administered by the BLM, Bureau of Reclamation (BOR), and on private lands. Construction is anticipated to take approximately 24 months.

In its entirety, the project would include approximately 54 miles of new and upgraded 10-foot-wide roads; approximately 350 structure bases with structure work areas, each 100 by 200 feet; 350 counterpoise ground trenches, each 1 by 200 feet; 28 wire-pulling and tensioning sites, each 130 by 500 feet; and 5 construction yards, each 5 acres. For the Gemmill to Tortoise segment, these project features would result in the disturbance of approximately 58.4 acres of designated desert tortoise critical habitat and 61.0 acres of non-critical habitat. For the Silverhawk to Newport segment, the features would result in the disturbance of only non-critical desert tortoise habitat with approximately 129.1 acres occurring on BLM-managed land, 29.22 acres on BOR-managed land, and 18.0 acres on private lands. The BLM provided project details and proposed measures to minimize potential effects of the project on the desert tortoise in the request for consultation (Part A and section 5.1 of the BA).

2. Environmental baseline

The status of the species and factors affecting the species in the action area are described in Section 6.2.1 and 6.2.2 of the PBO and information provided by the BLM (Part A and Parts 3.2, 3.3, and 3.4 of the BA).

Desert tortoises surveys of the Gemmill to Tortoise segment resulted in observation of 10 live tortoises, 27 tortoise burrows, 5 tortoise carcasses, 5 scats, and 1 set of tracks (Figure 3-1 of BA). Desert tortoise surveys of the Silverhawk to Newport segment resulted in observation of 12 live tortoises, 83 tortoise burrows, 21 tortoise carcasses, 13 scats, and 4 sets of tracks (Figure 3-2 of BA).

The entire 21-mile Gemmill to Tortoise transmission line segment would occur on BLM-managed lands in Clark County. The majority of this segment would occur within the Lincoln County Conservation, Recreation, and Development Act (LCCRDA) Corridor along Highway 168. Approximately 11.2 miles of the western portion of the Gemmill to Tortoise segment would be in designated critical habitat for the desert tortoise in the Mormon Mesa Critical Habitat Unit. Where the line runs through desert tortoise critical habitat, approximately 3.5 miles of this occurs outside the LCCRDA corridor; however, the majority (2.6 miles) of this follows an existing transmission line and would utilize the existing maintenance road (Sawmill Road) for access.

For the Silverhawk to Newport transmission line segment, 26 miles would occur on BLM-managed lands, 4.5 miles on Bureau of Reclamation-managed lands, and 2.5 miles on private lands. This line segment would occur partially in the BLM-designated Sunrise Corridor east of Las Vegas. Approximately 4 miles would run adjacent to the Mormon Mesa Critical Habitat Unit along its eastern and southern boundary, but none of the line segment would occur within designated critical habitat for the desert tortoise.

3. Project-specific effects of proposed action

Potential effects of the proposed action are described in Sections 7.1.1 through 7.1.4; 7.1.6; 7.1.7; and 7.1.13 of the PBO. Additional effects not identified in the PBO include:

a. Tortoise effects: All desert tortoises with home ranges that overlap the action area will be affected by the proposed project. Additional effects will result if tortoises are captured and relocated, or penned. Effects include alteration of movements and behavior, and injury or mortality. Desert tortoise burrows in areas disturbed during construction will be destroyed and no longer available to tortoises.

b. Non-critical habitat effects – new disturbance: 219.4 acres of Federal land and 18.0 acres of non-Federal land (covered under section 10 of the Endangered Species Act).

c. Critical habitat effects – new disturbance: 58.4 acres all on federally managed land. This acreage represents less than 0.01 percent of the Mormon Mesa Critical Habitat

Unit (CHU) and is a statistically insignificant amount of habitat disturbance within this CHU. In addition, project equipment may compact soils and transport weeds into the project area where they may become established, thus reducing the capability of critical habitat to serve its role for recovery of the tortoise. The introduction of noxious weeds may lead to increased wildfire risk (Brooks et al. 2003). Measures proposed by BLM to implement and monitor habitat restoration and to require weed prevention actions should minimize or eliminate these potential effects.

4. Conclusion

In the PBO, we determined the following programmatic levels of take from linear ROWs would not result in jeopardy to the desert tortoise: non-injury or non-mortality take of 63 adults or sub-adults and 31 juveniles; and injury or mortality take of 4 tortoises of all size classes. In addition, we analyzed programmatic-level effects of linear ROWs up to 1,000 acres in critical habitat and 4,000 acres in non-critical habitat within the Southern Nevada District Office's planning area. These thresholds have not been reached; therefore, the proposed action is within the scope of effects analyzed in the PBO for linear ROWs. After reviewing the rangewide status of the desert tortoise and its critical habitat; the environmental baseline for the action area; the effects of the proposed action to the desert tortoise, designated critical habitat, and non-critical habitat; and the cumulative effects, it is our biological opinion that the proposed appended action is not likely to jeopardize the continued existence of the Mojave desert tortoise or result in adverse modification of critical habitat.

5. Incidental Take Statement

a. Amount or Extent of Take Exempted:

Based on the analysis of effects provided above, proposed action, status of the desert tortoise in the action area, minimization measures, and anticipated project duration, implementation of the proposed project may result in the following incidental take. Adult and subadult tortoises are 160 millimeter mid-carapace length and greater. Because many variables determine the number of desert tortoise that may occur in harm's way and require capture and relocation, we are not establishing a numeric limit for the number of tortoises captured and moved up to 500 meters but do provide an anticipated estimate.

Incidental Take during Construction

Age Class	Killed or injured	Captured - estimate	Temporarily penned
Adult or subadult	1	-	-
Juvenile	1	-	-
Any	-	25	5

If construction occurs May through September, an unknown number of desert tortoise nests with eggs may be destroyed.

Project construction would result in 237.4 acres of desert tortoise habitat disturbance, including 18.0 acres of disturbance on non-Federal land and 58.39 acres of desert tortoise critical habitat disturbance on Federal lands which may result in harm to desert tortoises.

Incidental Take during Operation and Maintenance

Age Class	Killed or injured	Captured - estimate	Temporarily penned
Any	1	5 per year	1 per year

b. Project-Specific Reasonable and Prudent Measures and Terms and Conditions are provided in Attachment A.

Signature: _____ 06/11/15

Field Supervisor
Southern Nevada Fish and Wildlife Office
Las Vegas, Nevada

Date

ATTACHMENT A. REASONABLE AND PRUDENT MEASURES (RPM) AND TERMS AND CONDITIONS FOR EASTERN NEVADA TRANSMISSION PROJECT

In addition to the generic measures proposed in the BA, the RPMs and terms and conditions from the PBO that apply towards construction, operation, and maintenance of the project are stated below.

RPM 1. Minimize injury and mortality of tortoises

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

The FCR, authorized desert tortoise biologist, and monitors (see Term and Condition 1.c.) shall have a copy of all stipulations when work is being conducted on the site and will be responsible for overseeing compliance with terms and conditions of the ROW grant, including those for listed species. BLM shall ensure the FCR and authorized desert tortoise biologists have authority to halt any activity that is in violation of the stipulations. The FCR shall be onsite year-round during all project activities.

Within 3 days of employment or assignment, the project proponent and BLM shall provide the Service with the names of the FCR. An FCR is not typically required for operation and maintenance activities.

1.b. *Authorized desert tortoise biologist*—All authorized desert tortoise biologists (and monitors) are agents of BLM and the Service and shall report directed to BLM and the proponent concurrently regarding all compliance issues and take of desert tortoises; this includes all draft and final reports of non-compliance or take. The initial draft report shall be provided to BLM and Service within 24 hours of the observation of take or non-compliance.

An authorized desert tortoise biologist will be assigned to each piece or group of large equipment engaged in activities that may result in take of desert tortoise. (for example, clearing, blasting, grading, lowering in pipe, hydrostatic testing, backfilling, recontouring, and reclamation activities) and other work areas that pose a risk to tortoises. BLM has discretion on whether to require a monitor instead of an authorized desert tortoise biologist to monitor equipment that is low risk to tortoises.

Authorized desert tortoise biologists, monitors, and the FCR (see Term and Condition 1.a.) shall be responsible for ensuring compliance with all conservation measures for the project. This responsibility includes: (1) enforcing the litter-control program; (2) ensuring that desert tortoise habitat disturbance is restricted to authorized areas; (3) ensuring that all equipment and materials are stored within the boundaries of the construction zone or within the boundaries of previously-disturbed areas or designated areas; (4) ensuring that all vehicles associated with construction activities remain within the proposed construction zones; (5) ensuring that no tortoises are underneath project vehicles and equipment prior to use or movement; (6) ensuring that all monitors (including the authorized desert tortoise biologist) have a copy of the required measures in their possession, have read them, and they are readily available to the monitor when on the project site.

An authorized desert tortoise biologist will serve as a mentor to train desert tortoise monitors and will approve monitors if required. An authorized desert tortoise biologist is responsible for errors committed by desert tortoise monitors.

An authorized desert tortoise biologist is responsible for recording and reporting each desert tortoise handled. Information will include the following: location (GPS), date and time of observation, whether the desert tortoise was handled, general health and whether it voided its bladder, location desert tortoise was moved from and location moved to, unique physical characteristics of each tortoise, and effectiveness and compliance with the desert tortoise protection measures. This information will be provided **directly** to BLM and the Service.

Potential authorized desert tortoise biologists must submit their statement of qualifications to the Service's Southern Nevada Fish and Wildlife Office in Las Vegas for approval, allowing a minimum of 30 days for Service response. The statement form is available on the internet at: *http://www.fws.gov/nevada/desert_tortoise/auth_dt_form.htm*.

Prior to final approval to begin work on the project, the authorized desert tortoise biologists will have read the required measures (terms and conditions and other stipulations) and have a copy of the measures available at all times while on the project site. BLM shall provide the appropriate agency contact for the project to the Service and the Service will include the forms with approval letters. Biologists and monitors should be visibly identifiable on the project site, which may include use of a uniquely designated hardhat or safety vest color.

1.d. *Desert tortoise monitor*—Desert tortoise monitors assist an authorized desert tortoise biologist during surveys and serve as apprentices to acquire experience. Desert tortoise monitors ensure proper implementation of protective measures, and record and report desert tortoises and sign observations in accordance with Term and Condition 1.c. They will report incidents of noncompliance to the authorized desert tortoise biologist or FCR. No monitors shall be on the project

site unless supervised by an authorized desert tortoise biologist or approved by the BLM.

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

Desert tortoise monitors may not conduct field or clearance surveys or other specialized duties of an authorized desert tortoise biologist unless directly supervised by an authorized desert tortoise biologist or approved to do so by the Service; "directly supervised" means an authorized desert tortoise biologist has direct sight and voice contact with the desert tortoise monitor (i.e., within approximately 200 feet of each other).

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

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

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

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

During the more active season (generally March through October), and if temperatures are above 60 but below 95°F for more than 7 consecutive days, vehicle speed on project-related access roads and in the work area will not exceed 15 mph. All vehicles and construction equipment will operate in groups of no more than three vehicles. An authorized desert tortoise biologist and desert tortoise monitor will escort or clear ahead of vehicles and equipment for ROW travel. The escort will be on foot and clear the area of tortoises in front of each traveling construction equipment group (see *Desert tortoise clearance*). The escort will use a recreational vehicle with ground visibility (e.g., UTV); however, at least one authorized desert tortoise biologist and one desert tortoise monitor must ride together and survey both sides of the vehicle. The pace will be determined by an authorized desert tortoise biologist and shall be slow enough to ensure adequate inspection.

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

1.g. *Unauthorized access*—BLM shall ensure that unauthorized personnel, including the public and off-duty project personnel, do not travel on project-related temporary access roads, to the greatest extent practicable.

During the more-active season (generally March through October), and if temperatures are above 60 but below 95°F for more than 7 consecutive days, project- and non-project-related activities on all access roads that intersect the ROW will be monitored and logged. During construction, the ROW will be fenced at public roads that intersect the ROW. Signs will say that access on the ROW is strictly prohibited except by authorized personnel and that violators will be prosecuted.

1.h. *Desert tortoise clearance*—Prior to surface-disturbing activities, authorized desert tortoise biologists potentially assisted by desert tortoise monitors, shall conduct a clearance survey to locate and remove all desert tortoises from harm's way including areas to be disturbed using techniques that provide full coverage of all areas (Service 2009). During the more-active season, clearance surveys will be conducted either the day prior to, or the day of, any surface-disturbing activity. During the less-active season, clearance surveys will be conducted within 7 days prior to any surface-disturbing activity. No surface-disturbing activities shall begin until two consecutive surveys yield no individuals.

An authorized biologist shall excavate all burrows that have characteristics of potentially containing desert tortoises in the area to be disturbed with the goal of locating and removing all desert tortoises and tortoise eggs. During clearance surveys, all handling of desert tortoises and their eggs and excavation of burrows shall be conducted solely by an authorized desert tortoise biologist in accordance with the most current Service-approved guidance (currently Service 2009). If any active tortoise nests are encountered, the Service must be contacted immediately,

prior to removal of any tortoises or eggs from those burrows, to determine the most appropriate course of action. Unoccupied burrows shall be collapsed or blocked to prevent desert tortoise entry. Outside construction work areas, all potential tortoise burrows and pallets within 50 feet of the edge of the construction work area shall be flagged. If the burrow is occupied by a tortoise during the less active season, the tortoise shall be temporarily penned (see Term and Condition 1.k.). No stakes or flagging shall be placed on the berm or in the opening of a desert tortoise burrow. Desert tortoise burrows shall not be marked in a manner that facilitates poaching. Avoidance flagging shall be designed to be easily distinguished from access route or other flagging, and shall be designed in consultation with experienced construction personnel and authorized biologists. All flagging shall be removed following construction activities.

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

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

During the more-active season and if temperatures are above 60 but below 95°F for more than 7 consecutive days, at least 1 monitor shall be assigned to observe spoil piles prior to excavation and covering.

1.j. *Handling of desert tortoises*—Desert tortoises shall only be moved by an authorized desert tortoise biologist or desert tortoise monitor (see restrictions in Term and Condition 1.d.) solely for the purpose of moving the tortoises out of harm's way. During construction, operation, and maintenance, an authorized desert tortoise biologist shall pen, capture, handle, and relocate desert tortoises from harm's way as appropriate and in accordance with the most current Service-approved guidance. No tortoise shall be handled by more than one person. Each tortoise handled will be given a unique number, photographed, and the biologist will record all relevant data on the Desert Tortoise Handling and Take Report (Appendix E of PBO) to be provided to BLM in accordance with the project reporting requirements.

Desert tortoises that occur aboveground and need to be moved from harm's way shall be placed in the shade of a shrub, 150 to 1,640 feet from the point of encounter. In situations where desert tortoises must be moved more than 1,640 feet, translocation procedures may be required. Translocation would likely result in a level of effect to the desert tortoise that would require appending this BiOp.

If desert tortoises need to be moved at a time of day when ambient temperatures could harm them (less than 40°F or greater than 95°F), they shall be held

overnight in a clean cardboard box. These desert tortoises shall be kept in the care of an authorized biologist under appropriate controlled temperatures and released the following day when temperatures are favorable. All cardboard boxes shall be discarded after one use and never hold more than one tortoise. If any tortoise active nests are encountered, the Service must be contacted immediately, prior to removal of any tortoises or eggs from those burrows, to determine the most appropriate course of action.

Desert tortoises located in the project area sheltering in a burrow during the less-active season may be temporarily penned in accordance with Term and Condition 1.k. at the discretion of an authorized desert tortoise biologist. Desert tortoises should not be penned in areas of moderate to heavy public use, rather they should be moved from harm's way in accordance with the most current Service-approved guidance (currently Service 2009).

Desert tortoises shall be handled in accordance with the Desert Tortoise Field Manual (Service 2009). Equipment or materials that contact desert tortoises (including shirts and pants) shall be sterilized, disposed of, or changed before contacting another tortoise to prevent the spread of disease. All tortoises shall be handled using disposable surgical gloves and the gloves shall be disposed of after handling each tortoise. An authorized desert tortoise biologist shall document each tortoise handling by completing the Desert Tortoise Handling and Take Report (Appendix E of the PBO).

1.k. *Penning*—Penning shall be accomplished by installing a circular fence, approximately 20 feet in diameter to enclose and surround the tortoise burrow. The pen should be constructed with 1-inch horizontal by 2-inch vertical, galvanized welded wire. Steel T-posts or rebar should be placed every 5 to 6 feet to support the pen material. Pen material will extend 18 to 24 inches aboveground. The bottom of the enclosure will be buried 6 to 12 inch or bent towards the burrow, have soil mounded along the base, and other measures implemented to ensure zero ground clearance. Care shall be taken to minimize visibility of the pen by the public. An authorized desert tortoise biologist or desert tortoise monitor shall check the pen at a frequency to ensure that the desert tortoise is secure and not stressed. No desert tortoise shall be penned for more than 48 hours without written approval by the Service. Because this is a new technique, all instances of penning or issues associated with penning shall be reported to the Service within 3 days (see Appendix E of the PBO).

1.l. *Temporary tortoise-proof fencing*—All construction areas, including open pipeline trenches, hydrostatic testing locations, and tie-in work shall be fenced with temporary tortoise-proof fencing (e.g., silt fencing) or inspected by an authorized desert tortoise biologist periodically throughout and at the end of the day and immediately the next morning. BLM and the Service will determine the appropriate length of open trench that will be allowed on the project.

Fencing will be designed in a manner that reduces the potential for desert tortoises and hatchlings to access the construction areas. Thus, the lower 6 to 12 inches of fencing will be folded outward (i.e., away from the construction area and towards the direction a tortoise would approach the work area), and covered with sufficient amount of soil, rocks, and staking to maintain zero ground clearance and secure the bottom section of material. An authorized desert tortoise biologist will check the integrity of the fencing every 2 hours and ensure that there are no breaches in the fencing and no desert tortoises pacing the fence. After the fencing is erected and secure, the inside will be cleared by an authorized desert tortoise biologist. The fencing must remain closed during any construction activities.

1.m. *Permanent tortoise-proof fencing*—Tortoise-proof fencing shall be installed around the boundary of permanent aboveground facilities that require regular monitoring and maintenance and other areas as directed by the BLM or Service. Fence specifications will be consistent with those approved by the Service (Service 2009). Tortoise guards shall be placed at all road access points where desert tortoise-proof fencing is interrupted, to exclude desert tortoises from the facility. Gates shall provide minimal ground clearance and deter ingress by desert tortoises. Permanent tortoise-proof fencing along the project area shall be appropriately constructed, monitored, and maintained. Fencing shall be inspected in accordance with Table 1 and reports prepared in accordance with Term and Condition 7.c. unless modified by the Service. Monitoring and maintenance shall include regular removal of trash and sediment accumulation and restoration of zero ground clearance between the ground and the bottom of the fence, including re-covering the bent portion of the fence if not buried.

Table 1. Desert tortoise fence inspection requirements

Condition	**Minimum Requirements**
First week following fence installation; tortoises active	Inspect fence perimeter, tortoise guards, and gates twice per day, timed to occur when tortoises may be pacing the fenceline.
First week following fence installation; tortoises inactive	Inspect fence perimeter, tortoise guards, and gates once per day.
Beginning the second week following fence construction, tortoises active	Inspect fence perimeter, tortoise guards, and gates once per day.
Beginning the second week following fence construction, tortoises inactive	Inspect fence perimeter, tortoise guards, and gates once per month.
Following major storm event, tortoises active	Inspect fence perimeter, tortoise guards, and gates within 48 hours.
Following major storm event, tortoises inactive	Inspect fence perimeter, tortoise guards, and gates within 72 hours.
Breach in fence observed, tortoise guard or gate requires maintenance, tortoises active	Repair within 48 hours of breach occurrence.
Breach in fence observed, tortoise guard or gate requires maintenance, tortoises inactive	Repair within 1 week of breach occurrence.

1.n. *Wildlife escape ramps*—Earthen plugs, with wildlife escape ramps on either side of the plug, will be provided in open trench segments at no greater than every 0.25 mile. These distances will be reduced if the FCR and authorized desert tortoise biologist determine that the plug and escape ramp spacing is insufficient to facilitate animal escape from the trench. Any tortoise that is found in a trench or excavation shall be promptly removed by an authorized desert tortoise biologist in accordance with the most current Service-approved guidance. If the authorized desert tortoise biologist is not allowed to enter the trench for safety reasons, the alternative method of removal must have prior approval by the Service.

1.o. *Dust control*—Water applied to for dust control shall not be allowed to pool outside desert-tortoise fenced areas, as this can attract desert tortoises. Similarly, leaks on water trucks and water tanks will be repaired to prevent pooling water. An authorized desert tortoise biologist will be assigned to patrol each area being watered immediately after the water is applied and at approximate 60-minute intervals until the ground is no longer wet enough to attract tortoises if conditions favor tortoise activity.

1.p. *Blasting*—If blasting is required in desert tortoise habitat, detonation shall only occur after the area has been surveyed and cleared by an authorized desert tortoise biologist. A 200-foot radius area around the blasting site shall be surveyed and all desert tortoises aboveground within this 200-foot radius of the blasting site shall be moved 500 feet from the blasting site, placed in unoccupied burrow, and temporarily penned (see Term and Condition 1.k.) to prevent tortoises that have been temporarily relocated from returning to the site. Tortoises in burrows would be left in their burrows. All burrows, regardless of occupied status, will be stuffed with newspapers, flagged, and location recorded using a GPS unit. Immediately after blasting, newspaper and flagging will be removed. If a burrow or coversite has collapsed which could be occupied, it shall be excavated to ensure that no tortoises have been buried and are in danger of suffocation.

1.q. *Ravens and Raptors*— Transmission line support structures and other facility structures shall be designed to discourage their use by ravens and raptors for perching or nesting (e.g., by use of anti-perching devices) in accordance with the most current Avian Power Line Interaction Committee guidelines (see terms and conditions 2.b and 2.c.).

1.r. *Timing of construction*—The BLM shall ensure that when possible, the project proponent schedules and conducts construction, operation, and maintenance activities within desert tortoise habitat during the less-active season (generally October 31 to March 1) and during periods of reduced desert tortoise activity (typically when ambient temperatures are less than 60 or greater than 95°F). All vehicles and equipment that are not in areas enclosed by desert tortoise exclusion fencing will stop activities in desert tortoise habitat during rainfall events in the more-active season (generally March 1 to October 31), and if temperatures are above 60 but below 95°F for more than 7 consecutive days. The FCR or designee

will determine, in coordination with the BLM and Service, when it is appropriate for project activities to continue.

RPM 2. Predator control.

2.a. *Litter control*—A litter control program shall be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit foxes, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with predator-proof lids. Trash containers will be emptied and construction waste will be removed daily from the project area and disposed of in an approved landfill.

2.b. *Deterrence*—The project proponent will implement measures to discourage the presence of predators on site (coyotes, ravens, etc.), including elimination of available water sources, designing structures to discourage potential nest sites, and use of hazing to discourage raven presence.

2.c. *Monitoring and predator control*—Projects that may create nest sites for ravens: The project proponent will monitor for the increased presence of ravens and other potential human-subsidized predators in the vicinity of the project area. A qualified biologist (not necessarily an authorized desert tortoise biologist) shall conduct monthly nest surveys of potential nest sites (*e.g.,* power transmission towers/poles) during the raven breeding season (generally February 1 to April 30) and document the presence of all nests and the species using them. During these monthly surveys, an authorized biologist will also document any sign of predation of desert tortoises below the nest and in the vicinity of the transmission line. If sign of predation is found under a nest, control measures will be implemented in coordination with the Service. The frequency of these nest surveys may be modified as agreed upon by BLM and the Service.

RPM 3. Impacts to tortoise habitat.

3.a. *Habitat protection plans*—BLM shall ensure that the applicants develop and implement an approved fire prevention and response plan, erosion control plan, and a weed management plan approved by BLM prior to surface disturbance.

3.b. *Restoration plan*—BLM shall ensure that the applicant develop and implement a restoration/reclamation plan. The plan will describe objectives and methods to be used, species of native plants and seed mixture to be used, time of planting, success standards, actions to take if restoration efforts fail to achieve the success standards, and follow-up monitoring. The plan will be prepared and approved prior to the surface disturbance phase of the project.

3.c. *Minimizing new disturbance*—Cross-country travel outside designated areas shall be prohibited. Native vegetation will be left in place wherever possible. All equipment, vehicles, and construction materials shall be restricted to the areas

designated prior to project activities and new disturbance will be restricted to the minimum necessary to complete the task. All work area boundaries shall be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities. To the maximum extent possible, access to splicing and tensioning site will occur by overland travel (no blading). The FCR shall ensure that blading is conducted only when necessary.

3.d. *Weed prevention*—Vehicles and equipment shall be cleaned with a high pressure washer prior to arrival in desert tortoise habitat and prior to departure from areas of known invasive weed and nonnative grass infestations to prevent or at least minimize the introduction or spread these species.

3.e. *Chemical spills*—Hazardous and toxic materials such as fuels, solvents, lubricants, and acids used during construction will be controlled to prevent accidental spills. Any leak or accidental release of hazardous and toxic materials will be stopped immediately and cleaned up at the time of occurrence. Contaminated soils will be removed and disposed at an approved landfill site.

3.f. *Residual impacts from disturbance*—BLM shall collect remuneration fees to offset residual impacts to desert tortoises from project-related disturbance to desert tortoise habitat.

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

The current base rate is $836 per ac of disturbance, as indexed for inflation, effective March 1, 2014. The next adjustment will become effective March 1, 2015. The fee rate will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) on January 31st of each year, becoming effective March 1st. Fees assessed or collected for projects covered under this BiOp will be adjusted based on the current CPI-U for the year they are collected. Information on the CPI-U can be found on the internet at: *http://stats.bls.gov/news.release/cpi.nws.htm*.

RPM 7. Compliance and reporting.

7.a. *Desert tortoise deaths*—The deaths and injuries of desert tortoises shall be investigated as thoroughly as possible to determine the cause. The Service and appropriate state wildlife agency must be verbally informed immediately and within 5 business days in writing (electronic mail is sufficient). The Authorized Desert Tortoise Biologist shall complete the Desert Tortoise Handling and Take

Report (Appendix E of the PBO).

7.b. *Non-compliance*—Any incident occurring during project activities that was considered by the FCR, authorized desert tortoise biologist, or biological monitor to be in non-compliance with this BiOp shall be immediately documented by an authorized desert tortoise biologist. Documentation shall include photos, GPS coordinates, and details on the circumstances of the event. The incident will be included in the annual report and post-project report.

7.c. *Fence inspection*—Quarterly reports (January-March, April-June, July-September, and October –December) for monitoring and repair of tortoise-proof fencing as specified in Table 1, shall be submitted to the Service's Southern Nevada Fish and Wildlife Office in Las Vegas. Reports are due within the first 30 days following each quarter. For example, the report for quarter January-March is due April 30).

7.d. *Project reporting requirements*—Quarter (non-appended actions), annual, and comprehensive final project reports will be submitted to BLM and the Service's Nevada Fish and Wildlife Office in Las Vegas. Annual reports are required for all appended actions (except those completed and provided in a prior annual report). Annual reports will cover the calendar year and are due April 1st of the following year (*e.g.*, the annual report for calendar year 2013 is due April 1, 2014). Quarterly reports for non-appended actions are due 15 calendar days following the quarter. Final project reports are due within 60 days following completion of the project or each phase of the project.

The Programmatic Biological Opinion Report to the Fish and Wildlife Service provided in Appendix G of the PBO will be used for quarterly, annual, and final project reports, and shall include all Desert Tortoise Handling and Take Reports (Appendix E of the PBO). If available, GIS shape files will be included.

7.e. *Operation and maintenance*—A written assessment report shall be submitted annually to the Service outlining the operation and maintenance activities that occurred over the past year.

Report to include: It will include frequency of implementation of minimization measures, biological observations, general success of each of the minimization measures. All deaths, injuries, and illnesses of endangered or threatened species within the project area, whether associated with project activities or not, will be summarized in the annual report. The report is due April 1 of each year.

7.f. *Restoration monitoring*—Vegetation restoration success shall be monitored by project proponent and reported to BLM and the Service. Monitoring will include both qualitative and quantitative data collection and analysis. Monitoring frequency and parameters for restoration success will be described in the required restoration/reclamation plan.