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Chapter 3
Affected Environment

3.1 Introduction

This chapter describes the existing conditions of the physical, biological, cultural, and socioeconomic resources that have the potential to be affected by activities related to the Proposed Action and Action Alternative (including sub-alternatives) discussed in Chapter 2. These resources include those that occur within, are adjacent to, or associated with the project area (i.e., Proposed Action and Action Alternative footprints including areas for both short-term and long-term ROWs), as well as those identified during the scoping process (**Section 1.13**) and BLM Interdisciplinary Team review.

3.2 Water Resources

This section describes water resources that may be affected by project activities within the areas described in **Section 2.2.1**, generally ranging from White Pine County south through Nye and Lincoln counties, and terminating northeast of Las Vegas in Clark County. Water-related resources evaluated in this section include water quality and surface water features such as perennial, intermittent, and ephemeral streams; wetland areas; and floodplains. There are no springs within the project area and no project activities are proposed that would have direct or indirect effects on springs. Potential groundwater effects, such as aquifer contamination, would be mitigated through environmental protection measures as described in **Section 2.2.2** and impacts to water rights would similarly be mitigated or not affected by project activities; therefore, these resources are not discussed further in this section or in Chapter 4.

3.2.1 Area of Analysis

The area of analysis (i.e., project area) for the Proposed Action and Action Alternative transmission line alignments and ancillary facilities extends from Robinson Summit (west of Ely and near the northern end of Jakes Valley) to the existing Harry Allen Substation in Clark County (northeast of Las Vegas). A small area associated with the expansion of the existing Falcon Substation (located in Boulder Valley, Eureka County) is also included in the area of analysis.

The project area from Robinson Summit to Las Vegas is located within the Central and Colorado River Basin Hydrographic Regions, according to the Nevada Division of Water Resources (NDWR), Department of Conservation and Natural Resources (NDWR 2006). Robinson Summit Substation and the RSS-Site B sub-alternative are located within the Jakes Valley watershed in the Central Region. Segment 6C begins in the Jakes Valley watershed in the Central Region, crosses into the White River Valley in the Colorado River Basin Region, and then returns to the Central Region just east of Silver King Pass. Segment 8 is wholly located within the Central Region, within the Dry Lake and Delamar Valleys, and Segment 9B is also located within the Central Region in Delamar Valley. Segments 9A and 9C are split between the Delamar Valley side of the Central Region (to the northeast) and the Pahranagat Valley side of the Colorado River Basin Region (to the southwest), across the foothills of the Delamar Mountains, while Segment 9D occurs within the Colorado River Basin Region, within Coyote Spring Valley. The northernmost one-third of sub-alternative Segment 10 occurs within the Central Region, transitioning to the Colorado River Basin Region after crossing the Delamar

Mountains for the southern two-thirds. Segment 11 is wholly located within the Colorado River Basin Region. The Falcon Substation is located within the Humboldt River Basin Region.

3.2.2 Data Sources and Methodology

Existing conditions were evaluated for the areas of analysis described in **Section 3.2.1** through a combination of literature research and field data collection.

3.2.3 Existing Conditions

Baseline water resources field data collection included wetlands and waters of the United States surveys for the northern parts of the analysis area, while existing data was reviewed for other drainages, floodplain/special flood hazard areas, and water rights for the southern parts of the analysis area. Field data was collected in spring and early summer 2007.

3.2.3.1 Precipitation

Precipitation in the area of analysis falls in the form of rain and snow, with the majority occurring near the northern end and steadily decreasing toward the southern end. According to the Western Regional Climate Center (WRCC 2009), average annual rainfall near the northern terminus of the area of analysis (at the Kimberly monitoring station) is 13.15 inches and average annual snowfall is 91.5 inches, while the southern end averages 5.55 inches of rain and 1.0 inches of snow annually (at the Boulder City monitoring station). **Section 3.6.3.1** contains additional climate information.

3.2.3.2 Surface Water

Surface water features, including streams, other drainages, and wetlands are shown in **Figures 3.2-1a** through **3.2-1d**. Streams and other drainages are discussed here, while wetlands and floodplains are discussed in additional detail in **Sections 3.2.3.3** and **3.2.3.4**, respectively.

Streams and Other Drainages

Stream systems within the area of analysis range from the large, perennial White River to both large and small intermittent/ephemeral drainages spread throughout the project area from Robinson Summit south to the Harry Allen Substation (**Figures 3.2-1a-d**). Segment 6C crosses the White River twice—once near its headwaters, and then again to the south of the Kirch Wildlife Management Area (WMA). The White River is discussed in additional detail in **Section 3.2.3.3** below.

According to the BLM Nevada State Office of Mapping Sciences, there are no perennial streams within the area of analysis in Nye, Lincoln, or Clark counties. The transmission line alignment crosses several large, named ephemeral drainages, including Jakes Wash in White Pine County (Segment 6C); Big Spring Wash in Nye County (Segment 6C); and Bailey, Silverhorn, Fairview, Porphyry, Red Rock, Cottonwood, Monkeywrench, Helen, Cedar, Kane Springs, and Pahranagat washes in Lincoln County (Segments 8, 9D, 10, and 11). Many of these washes discharge to the closed-basin valleys, except for Kane Springs and Pahranagat washes. Kane Springs Wash discharges to Pahranagat Wash, which in turn discharges to the Muddy River approximately 25 miles southeast of the SWIP Utility Corridor crossing location.

Additionally, a number of smaller, unnamed intermittent/ephemeral drainages are present throughout the project area.

Figure 3.2-1a Water Resources

Figure 3.2-1b Water Resources

Figure 3.2-1c Water Resources

Figure 3.2-1d Water Resources

Surface Water Quality

The Robinson Summit Substation and the RSS-Site B sub-alternative are not near any 303(d) listed waterbodies (impaired waters not meeting state water quality standards as defined by Section 303(d) of the federal Clean Water Act). The transmission line encounters no 303(d) listed waterbodies in White Pine, Nye, or Lincoln counties. The closest 303(d) listed waterbody is the source of the Muddy River, in Clark County. Segment 11 runs within eleven miles of the Muddy River (NDEP 2006). Pollutants or stressors of concern for the reach of the Muddy River from its source to Glendale are listed as total iron, temperature, total phosphorous, and dissolved oxygen (NDEP 2006). No source for these impairments has been designated by NDEP, which has contested the phosphorous standard applied by EPA, due to naturally occurring phosphorous in the local geology, such as carbonate rocks (NDEP 1998). The Pahranagat Wash, which is crossed by the transmission line alignment, is a tributary to this reach of the Muddy River, and the crossing location is upstream of the Muddy River.

3.2.3.3 Wetlands and Waters of the U.S.

The transmission line alignments, the Robinson Summit Substation, the RSS-Site B sub-alternative, and the Falcon Substation expansion area were evaluated for the presence of wetlands and waters of the U.S. by JBR (2007a, 2009, 2010). A detailed delineation of the extent of washes south of the White River was not conducted for the SWIP Utility Corridor or the Segment 10 sub-alternative route, as no permanent disturbance of these features is anticipated. The transmission line would be designed to span any drainage areas, and structures would not be placed in any wash. To the greatest extent possible, existing roads and crossing locations would be used during the construction phase and for periodic maintenance. Proposed access roads and potential drainage crossings for construction activities would be evaluated and finalized in the COM plan. The Pahranagat Wash and connected features may be considered waters of the U.S. by virtue of their downstream connection with the Muddy River, a traditionally navigable waterway; however, a significant nexus test was not conducted due to the project design for avoidance of impacts to any of these drainages. It is unlikely that any of the ephemeral features draining to closed-basin valley bottoms would be considered jurisdictional.

Regulatory Framework

Waters of the U.S. are defined as all waters which are used in interstate or foreign commerce, including wetlands, as well as intrastate lakes, rivers, streams, wetlands, etc., whose degradation or destruction could affect interstate or foreign commerce (33 CFR 328.3). Wetlands, as defined in 40 CFR 230.3 and 33 CFR 328.3, may be jurisdictional if they are adjacent to waters of the U.S. The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are "adjacent wetlands." In the absence of adjacent wetlands, the limits of federal jurisdiction extend to the ordinary high water mark (OHWM) (Corps 2005). The US EPA and United States Army Corps of Engineers (Corps) are tasked with regulating waters of the U.S., including wetlands.

Waters of the U.S.

The presence and extent of waters of the U.S. within the survey area was determined by assessing channels in the area for the presence of a defined bed and bank channel, and, particularly, the presence of an OHWM. The presence of an OHWM provides an indication that a channel conveys water on a regular basis. Regulatory Guidance Letter (RGL) 05-05 provides additional guidance to Corps districts in making OHWM determinations.

Wetlands

The location and extent of wetlands in the survey area was determined following the procedures outlined in the Corps' Technical Report Y-87-1, *Corps of Engineers Wetland Delineation Manual* (Corps 1987), referred to as "the Manual". Representative locations in potential wetland vegetation types present in the survey area were examined for wetland characteristics in accordance with the criteria contained in the Manual. Sample sites were established in each hydrophytic plant community in the area. Sites in adjacent vegetation communities or at boundaries of community types were also examined. At each site, the vegetation, soils, and hydrology were examined for wetland characteristics.

Findings

Prior to the field investigation, the National Wetlands Inventory (NWI) mapping compiled for the entire project area was reviewed. Areas of interest identified in the pre-field review were then visited and were surveyed for potential wetlands and waters of the U.S.

Waters of the U.S.

White River

Segment 6C would cross the White River channel near the river's headwaters and again below the Kirch WMA. Because water diverted from the White River is used to support agriculture, and flows through the Kirch WMA (a site that may support interstate recreational use), the White River and its adjacent wetlands and defined channel tributaries may also be subject to jurisdiction under the CWA.

In addition to the White River itself, Segment 6C would also cross two defined tributary channels, Jakes Wash and Ellison Creek. The transmission line would cross Jakes Wash in Section 4, T14N, R61E. Jakes Wash at this location is deeply incised, and includes a 5-foot wide defined channel. The channel is bordered by big sagebrush (*Artemisia tridentata*), rubber and green rabbitbrush (*Ericameria nauseosa* and *E. viscidiflora*, respectively), greasewood (*Sarcobatus vermiculatus*), and some wild rose (*Rosa woodsii*).

To the south, Segment 6C would cross Ellison Creek in Section 22, T13N, R60E. The drainage includes a poorly defined 3-foot-wide north branch and a more deeply incised 4-foot wide south branch. The two branches join above a road located within the Segment 6C study area. To the south, the transmission line would cross a channel that conveys flows to the Ellison Creek channel from the southwest. This channel, which would be crossed in Sections 27 and 28, T13N, R60E, supports a well-developed stringer of wetland vegetation, and is described under Wetlands, below.

Segment 6C would cross the upper reaches of the White River in Sections 9 and 10, T12N, R60E. The approximately 8-foot-wide flowing channel supports a limited fringe of hydrophytic vegetation, but is bordered by a 20- to 40-foot-wide riparian community that includes sandbar willow (*Salix exigua*) and skunkbush sumac (*Rhus trilobata*) above a road crossing.

Other Areas

No drainages meeting the criteria described above were observed in the vicinity of the Falcon Substation expansion, and only drainages connected to Pahranagat Wash system are likely to be potentially jurisdictional. Drainages in the southern portion of the study area were not delineated in detail due to project avoidance.

Wetlands

White River

As noted above, a tributary to Ellison Creek that would be crossed by Segment 6C, and located in Sections 27 and 28, T13N, R60E, supports a long stringer of hydrophytic vegetation. The flow that supports this community issues from Warm Spring west of the segment. This flow supports a community of Baltic rush and spikerush (*Eleocharis spp.*). The channel becomes incised within the alignment, but continues to support a 2.5-acre well-developed hydrophytic vegetation community.

A wide wetland community was also found bordering the White River channel below the Kirch WMA. The river was dry at this location at the time of the June survey, but soils were damp and included evidence of iron oxides or hydroxides (redox features). The vegetation community below a break in slope included hard- and/or soft-stem bulrush and northwest cinquefoil. The community above the break in slope included Baltic rush and inland saltgrass, with some iodine bush (*Allenrolfea occidentalis*, a FACW species) present in an alkali-encrusted area in the southeastern portion of the crossing site. A total of 74.6 acres of wetland, including the White River channel, was present within the project area at this location.

Summary

A wetlands and waters of the U.S. delineation conducted for the project area identified potential waters of the U.S. that would also be crossed by Segment 6C at Jakes Wash, Ellison Creek, and the upper White River. Detailed delineation of dry washes south of the White River was not conducted due to project avoidance and it is anticipated that only features connected to (and including) the Pahranagat Wash would be potentially jurisdictional.

Wetland areas were identified in the project area within Segment 6C on a tributary to Ellison Creek and on the White River below the Kirch WMA.

3.2.3.4 Floodplains

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) shows the majority of project elements are located in Zone C, defined by FEMA as areas of minimal flooding, or Zone D, defined as an area of undetermined, but possible, flood hazard. The following project elements have potential involvement with areas mapped as Zone A, which is defined as areas of 100-year flood potential, where base flood elevations and flood hazard factors have not been identified:

- Segment 6C (Proposed Action) crosses a section of the White River south of the Kirch WMA in Nye County;
- Segment 11 (Proposed Action) lies west of, and crosses, a section of the Pahranagat Wash in Coyote Springs Valley in Clark County;
- Segment 11 (Proposed Action) passes through an unnamed dry lake area within Hidden Valley in Clark County;
- Segment 11 (Proposed Action) lies immediately west of Dry Lake near the Harry Allen Substation site.

FEMA defines special flood hazard areas (SFHAs) as the area where the National Flood Insurance Program's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. SFHAs include Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-30, VE, and V. In addition to

those areas located in Zone A as described above, SFHAs exist to the west (near Hiko Wash, Ash Springs, and Alamo, NV) and the east (near Dry Canyon Wash, Cathedral Gorge Wash, and Caliente, NV) of the project area in Lincoln County; however, the project area itself in Lincoln County only occurs within Zone D.

3.3 Geology and Minerals

The project area, shown in **Figure 1.1-1**, is located within the Basin and Range Physiographic Province, which encompasses the state of Nevada (Eaton 1979). This province owes its name to the general geologic history common to this part of the country that has given rise to the present-day landscape of altering generally north-south trending mountains separated by intervening valleys or basins.

The geologic units in the vicinity of the project area range from Precambrian in age to recent Quaternary deposits. **Figure 3.3-1** is a generalized stratigraphic nomenclature of the project area (BLM 2003a). While the current landscape formed during the past 10 to 20 million years, the geologic history of the region contains important features dating to the Precambrian era (more than 550 million years before present). The metamorphic rocks (quartzites and schist) of the Precambrian age are the oldest and lowest units in the regional stratigraphic column and therefore are commonly referred to as "basement rocks." Early Cambrian age formations (approximately 500 million years before present) consist principally of quartzite and shale. Typically, they are also considered basement rocks largely because of their relatively impermeable nature with respect to ground water flow (Peterson and Grow 1995).

The thickness and composition of the Paleozoic carbonate rocks are notable in their homogeneity over large areas in the province (Peterson and Grow 1995). Rocks of middle Triassic to early Jurassic age in eastern Nevada, therefore, largely consist of sandstone, shale, and freshwater limestone (Tschanz and Pampeyan 1970; Hose and Blake 1976). During the late Mesozoic Era, the Sevier Orogeny (a period of mountain building) occurred due to extensive regional compression of the earth's crust, by and large, along the same belt that formed the ancient continental shelf (during Paleozoic time) that runs from southern Idaho through western Utah and southeastern California (Rowley and Dixon 2001).

The geologic structure of the region became more complex in the middle and late Tertiary period (starting around 20 million years ago) when the tectonic forces reversed, resulting in crustal extension. The resulting parallel sequence of mountain ranges and intervening basins, interspersed with mountains of volcanic origin, combine to give the region its characteristic basin-range topography seen today (Rowley and Dixon 2001).

3.3.1 Area of Analysis

The proposed project disturbance areas, including the Robinson Summit Substation, the RSS-Site B sub-alternative, the Falcon Substation expansion area, and the proposed and alternative transmission routes are included in the area of analysis. Construction and excavation associated with the substations and transmission structures has the potential to impact localized geology.

3.3.2 Data Sources and Methods

This section discusses the geological and mineral resources within the project area. Although specific aspects of the geology of White Pine County are described in several reports and publications, the principal source of geological information for this FEIS is Hose and Blake

(1976). Additional data on mining claims, oil and gas leases, and geothermal leases were obtained from the BLM LR 2000 database.

3.3.3 Existing Conditions

3.3.3.1 Local Geology

All of the components of the Proposed Action and Action Alternative are located in White Pine, Lincoln, Nye, Eureka, and Clark counties. A geologic map of the project area is shown in **Figures 3.3-2a** and **3.3-2b** with the explanation on **Figure 3.3-3**.

The valleys of the project area consist of tectonic basins created by vertical offset along the principal north-south trending range-front geologic faults at the base of the various mountain ranges to the east and to the west.

The valley-fill deposits generally include the entire spectrum of unconsolidated sediment textures from clay and silt to sand and gravel, deposited in interbedded layers of various mixtures. The valley-fill material is produced by erosion of the surrounding mountains. The resulting sediment is transported into the valleys by the various streams and creeks that drain the mountain slopes and subsequently deposit the material in alluvial fans that eventually coalesce and fill the valleys to their present elevations. Some valleys also contain fine-grained deposits laid down in localized rivers and/or lakes that occupied the low areas of the valleys.

3.3.3.2 Geologic Faults and Seismicity

There are faults and fault zones (**Table 3.3-1**, and **Figures 3.3-2a** and **3.3-2b**) that occur within the project area, all of which are normal faults with the exception of the Kane Spring Wash fault, which is a sinistral, left lateral fault (USGS 2007a).

These generally north-south trending fault systems are mapped over lengths up to 100 miles, and are included in the USGS Quaternary Fault Database indicating that some movement has occurred along these fault systems within the last 1.6 million years. Active faults are typically considered to have had movement within the last 10,000 years (USGS 2006).

No major earthquakes (greater than magnitude of 5.0) have been recorded within the immediate project area since at least 1852 (Yeats et al. 1997). **Figures 3.3-2a** and **3.3-2b** show the most recent earthquake locations in the project area and readings dating back to 2000.

The historic level of earthquake potential in eastern central Nevada is relatively low (USGS 2007b). According to the USGS peak acceleration return frequency maps (USGS 2007b), all of the components of the Proposed Action and Action Alternative are located within an area where the probability is 10 percent that, within the next 50 years, an earthquake capable of generating a ground acceleration of 0.15 g (g is the force of gravity) or less will occur.

Figure 3.3-1 Stratigraphic Column

Figure 3.3-2a Geological Resources

Figure 3.3-2b Geological Resources

Figure 3.3-3 Explanation of Geologic Map Units

TABLE 3.3-1 FAULTS AND FAULT ZONES WITHIN STUDY AREA

FAULTS	USGS FAULT NUMBER	COUNTY	TRANSMISSION LINE SEGMENT	FAULT TYPE	FAULT AVERAGE STRIKE	FAULT DIP	LAST TIME OF DEFORMATION	FAULT SLIP-RATE
UNNAMED FAULT NORTHEAST OF KIMBERLY	1237	WHITE PINE	SEGMENT 6C	NORMAL	N24°W	NE	Q (<1.6 MA)	< 0.2 MM/YR
UNNAMED FAULT SOUTH OF RIPETOWN	1236	WHITE PINE	SEGMENT 6C	NORMAL	N16°W	W	Q (<1.6 MA)	< 0.2 MM/YR
UNNAMED FAULTS IN NORTHERN JAKES VALLEY	1224	WHITE PINE	SEGMENT 6C	NORMAL	N41°E	NW	LATEST Q (<15 KA)	< 0.2 MM/YR
EAST JAKES VALLEY FAULT ZONE	1225	WHITE PINE	SEGMENT 6C	NORMAL	N1°W	W	LATE Q (<130 KA)	< 0.2 MM/YR
PRESTON FAULT	1389	WHITE PINE	SEGMENT 6C	NORMAL	N15°E	E, SE, NW	LATE Q (<130 KA)	< 0.2 MM/YR
WHITE RIVER VALLEY FAULT ZONE	1398	LINCOLN/ WHITE PINE/ NYE	SEGMENT 6C	NORMAL	N7°E	W	LATE Q(<130 KA)	< 0.2 MM/YR
UNNAMED FAULT NEAR CURRANT CREEK SUMMIT	1386	WHITE PINE/ NYE	SEGMENT 6C	NORMAL	N2°E	E	Q (<1.6 MA)	< 0.2 MM/YR
UNNAMED FAULT NORTHEAST OF CURRENT CREEK SUMMIT	1387	WHITE PINE	SEGMENT 6C	NORMAL	N47°E	NW	Q (<1.6 MA)	< 0.2 MM/YR
PRESTON FAULT	1389	WHITE PINE	SEGMENT 6C	NORMAL	N15°E	E, SE, NW	LATE Q (<130 KA)	< 0.2 MM/YR
THE COVE FAULT	1390	WHITE PINE/ NYE	SEGMENT 6C	NORMAL	N31°E	E, SE	LATE Q (<130 KA)	< 0.2 MM/YR
UNNAMED FAULTS IN WHITE RIVER VALLEY	1397	NYE	SEGMENT 6C	NORMAL	N35°E	NW, SW	LATE Q (<130 KA)	< 0.2 MM/YR
MURPHY MEADOWS FAULT	1396	NYE	SEGMENT 6C	NORMAL	N54°E	NW	LATE Q (<130 KA)	< 0.2 MM/YR

FAULTS	USGS FAULT NUMBER	COUNTY	TRANSMISSION LINE SEGMENT	FAULT TYPE	FAULT AVERAGE STRIKE	FAULT DIP	LAST TIME OF DEFORMATION	FAULT SLIP-RATE
UNNAMED FAULT NEAR FOX MOUNTAIN	1401	NYE	SEGMENT 6C	NORMAL	N69°W	NW, N	Q (<1.6 MA)	< 0.2 MM/YR
WHITE RIVER FAULT	1403	LINCOLN	SEGMENTS 6C AND 8	NORMAL	N5°W	W	Q (<1.6 MA)	< 0.2 MM/YR
DRY LAKE FAULT	1124	LINCOLN	SEGMENTS 6C AND 8	NORMAL	N8°E	W, E	LATE Q (<130 KA)	< 0.2 MM/YR
DELAMAR VALLEY FAULT	1127	LINCOLN	SEGMENT 8	NORMAL	N12°E	W	Q (<1.6 MA)	< 0.2 MM/YR
DELAMAR MOUNTAINS FAULT	1126	LINCOLN	SEGMENTS 8, 9B, AND 10	NORMAL	N7°E	W	MID AND LAKE Q (<750 KA)	< 0.2 MM/YR
KANE SPRING WASH FAULT	1123	LINCOLN	SEGMENTS 9D, 10, AND 11	SINISTRAL	N37°E	NW	MID AND LAKE Q (<750 KA)	< 0.2 MM/YR
MAYNARD LAKE FAULT	1122	LINCOLN	SEGMENTS 9B, 9A, 9C, AND 9D	NORMAL	N35°E	NW, V	LATE Q (<130 KA)	< 0.2 MM/YR
COYOTE SPRINGS FAULT	1121	LINCOLN	SEGMENTS 9B, 9A, 9C, AND 9D	NORMAL	N1°W	W	LATE Q (<130 KA)	< 0.2 MM/YR
SHEEP RANGE FAULT	1164	LINCOLN/ CLARK	SEGMENTS 9B, 9A, 9C, 9D, AND 11	NORMAL	N0°E	E, W	LATE Q (<130 KA)	< 0.2 MM/YR
WILDCAT WASH FAULT	1062	LINCOLN/ CLARK	SEGMENT 11	NORMAL	N4°E	W	MID AND LAKE Q (<750 KA)	< 0.2 MM/YR
ARROW CANYON RANGE FAULT	1061	CLARK	SEGMENT 11	NORMAL	N9°E	W	Q (<1.6 MA)	< 0.2 MM/YR

MA – million years
KA – thousand years
MM - millimeter

3.3.3.3 Mineral and Energy Resources

Authorizations, ROW, and/or Leases Occurring in Project Area
The following lists the energy resources that could be impacted by the project because they occur within or near the project area:

- Active[1] mining claims
- Oil and gas leases

The area of analysis includes the individual mining claims and oil and gas leases located within the same Township, Range, and Section that a component of the Proposed Action or Action Alternative occur and are listed in **Tables 3.3-2** and **3.3-3**. Numerous other types of ROWs occur throughout the project area, such as utility and road ROWs.

Authorizations, ROW, and Leases Not Occurring in Project Area
The following lists the energy resources that would not be impacted by the project because they do not occur within or near the project area and thus are not discussed further in this FEIS:

- Coal authorizations
- Solar energy ROWs
- Wind energy ROWs
- Oil shale leases
- Geothermal leases

Mining Districts
Table 3.3-2 lists the Nevada mining districts that are adjacent to and/or would be crossed by the Proposed Action or Action Alternative. The locations of the active mining districts are presented on **Figure 3.3-4**.

[1] "Active" means the claim is in good standing administratively. It does not imply the claim is valid or that there is current mining activity taking place on the claim.

TABLE 3.3-2 MINING DISTRICTS ADJACENT TO OR WITHIN THE PROJECT ROWS

COUNTY / DISTRICT NAME	TRANSMISSION LINE SEGMENT	ACTIVE MINING CLAIMS LEAD FILE NUMBER	PRIMARY COMMODITIES OF MINING DISTRICTS
White Pine County			
Robinson	Segment 6C	NMC77369	Copper, gold, silver, zinc, lead, iron, manganese, tungsten, molybdenum, rhenium, platinum, palladium, nickel
Currant	Segment 6C		Gold, lead, copper, tungsten, magnesite, uranium, fluorspar
Nye County			
Currant	Segment 6C	NMC1006781 NMC969216 NMC960343 NMC753739	Gold, lead, copper, tungsten, magnesite, uranium, fluorspar
Lincoln County			
Silver King	Segment 6C		Silver, lead, gold, copper
Bristol	Segment 8		Silver, copper, lead, zinc, gold, manganese, montmorillonite
Highland	Segment 8		Lead, silver, gold, copper, tungsten, manganese, iron
Ely Springs	Segment 8		Silver, zinc, lead, gold
Comet	Segment 8		Lead, silver, zinc, gold, copper, tungsten
Chief	Segment 8		Gold, silver, lead, copper, vanadium
South Pahroc Range	Segment 8		
Delamar	Segment 8, 9B, and 10 (sub-alt)		Gold, silver, copper, lead, perelite
Pennsylvania	Segment 10 (sub-alt)		Gold, silver, copper
Meadow Valley Mountains	Segments 9D, 10 (sub-alt), and 11		Gold, silver, uranium
Clark County			
Arrow Canyon	Segment 11	NMC908337	Silica, building stone

Source: http://www.blm.gov/landandresourcesreports/rptapp/menu.cfm?appCd=2

Figure 3.3-4 Mining Districts and Leases

Active Oil and Gas Leases

Table 3.3-3 lists the active oil and gas leases that occur within or near the project area. Locations of the oil and gas leases can be found on **Figure 3.3-4** and in **Table 3.3-3**.

TABLE 3.3-3 ACTIVE OIL AND GAS LEASES WITHIN OR ADJACENT TO THE PROJECT AREA

COUNTY	PROJECT SEGMENT	LOCATION	SECTIONS AFFECTED	SERIAL NUMBER	CASE TYPE
White Pine	Segment 6C	T18N R61E	18, 19	NVN082543	311121
White Pine	Segment 6C	T18N R61E	31, 32	NVN082544	311121
White Pine	Segment 6C	T18N R61E	29, 30	NVN082562	311121
White Pine	Segment 6C	T18N R61E	29, 30	NVN082563	311121
White Pine	Robinson Summit Substation	T18N R61E	19	NVN083586	315100
White Pine	Segment 6C	T18N R60E	13	NVN082117	312021
White Pine	Segment 6C	T17N R61E	6, 7	NVN082242	311121
White Pine	Segment 6C	T17N R61E	29	NVN082512	311121
White Pine	Segment 6C	T17N R61E	5, 8	NVN082537	311121
White Pine	Segment 6C	T17N R61E	17, 20	NVN082538	311121
White Pine	Segment 6C	T17N R61E	18, 19	NVN082539	311121
White Pine	Segment 6C	T17N R61E	30	NVN082540	311121
White Pine	Segment 6C	T17N R61E	30	NVN083648	311121
White Pine	Segment 6C	T17N R61E	31, 32	NVN082541	311121
White Pine	RSS-Site B Sub-Alt	T17N R60E	12	NVN082222	311121
White Pine	Segment 6C	T16N R61E	20, 29	NVN082090	311121
White Pine	Segment 6C	T16N R61E	5, 8	NVN082205	311121
White Pine	Segment 6C	T16N R61E	6, 7	NVN082206	311121
White Pine	Segment 6C	T16N R61E	17, 18	NVN082207	311121
White Pine	Segment 6C	T16N R61E	19, 30, 31	NVN082208	311121
White Pine	Segment 6C	T16N R61E	32	NVN082536	311121
White Pine	Segment 6C	T15N R61E	4	NVN085336	311121
White Pine	Segment 6C	T15N R61E	5, 7, 17	NVN082089	311121
White Pine	Segment 6C	T15N R61E	9, 16, 21	NVN085319	311121
White Pine	Segment 6C	T15N R61E	22	NVN085387	311121
White Pine	Segment 6C	T15N R61E	27, 28, 33, 34	NVN085318	311121
White Pine	Segment 6C	T14N R61E	3	NVN085324	311121
White Pine	Segment 6C	T14N R61E	4, 9	NVN085322	311121
White Pine	Segment 6C	T14N R61E	8, 17	NVN085323	311121
White Pine	Segment 6C	T14N R61E	16	NVN085326	311121
White Pine	Segment 6C	T14N R61E	8, 19, 16, 17, 20, 29	NVN061766	312021
White Pine	Segment 6C	T14N R61E	21	NVN085429	311121
White Pine	Segment 6C	T14N R61E	30, 31	NVN085320	311121
White Pine	Segment 6C	T14N R61E	31, 32	NVN061767	312021
White Pine	Segment 6C	T13N R60E	1	NVN085498	311121
White Pine	Segment 6C	T13N R60E	11	NVN086395	312021
White Pine	Segment 6C	T13N R60E	12, 13, 23	NVN086396	312021
White Pine	Segment 6C	T13N R60E	14, 15, 22	NVN086397	312021
White Pine	Segment 6C	T13N R60E	27, 34	NVN086398	312021
White Pine	Segment 6C	T12N R60E	15, 16, 21, 22	NVN086392	312021
White Pine	Segment 6C	T12N R60E	27, 28, 33, 34	NVN086393	312021

COUNTY	PROJECT SEGMENT	LOCATION	SECTIONS AFFECTED	SERIAL NUMBER	CASE TYPE
White Pine, Nye	Segment 6C	T11N R60E	24, 25, 36	NVN086339	311121
Nye	Segment 6C	T10N R60E	1, 12	NVN084386	312021
Nye	Segment 6C	T5N R62E	27-35	NVN058049	311121
Nye	Segment 6C	T5N R61E	18, 19, 20	NVN086802	312021
Nye	Segment 6C	T5N R61E	21	NVN086801	312021
Nye	Segment 6C	T5N R61E	23, 24	NVN080576	311121
Nye	Segment 6C	T5N R61E	22	NVN080583	311121
Nye	Segment 6C	T5N R61E	27	NVN086803	312021

Source: http://www.geocommunicator.gov/NILS-PARCEL2/map.jsp?MAP=ENERGY

Authorized Geothermal Leases

There are no active authorized geothermal leases within the project area.

3.3.4 Specific Project Area Conditions

From and including the Robinson Summit Substation area, the Proposed Action transmission line or the Action Alternative line route (including the RSS-Site B sub-alternative) would head south through Cenozoic Tertiary rhyolitic flows and shallow intrusive volcanics and more Paleozoic Pennsylvanian Ely limestone, Permian Reipe Springs limestone, Ribhill sandstone, and Arcturus Formation. From here, the transmission line route enters the Quaternary basin-fill deposits of eastern Jakes Valley.

The transmission line route then skirts the western edge of the Egan Range and crosses Triassic volcanics and Pennsylvanian sediments before it heads back up into the Egan Range through Paleozoic Pennsylvanian Ely limestone, Permian Reipe Springs limestone, Ribhill sandstone, and Arcturus Formation.

Briefly, the transmission line route crosses Quaternary basin-fill deposits of northern White River Valley before heading up into the flanks of the Egan Mountains. Here the transmission line route crosses Cenozoic Tertiary volcanic deposits and Mississippian Pilot shale, Joana limestone, Chainman shale, and a smaller outcrop of Devonian Guilmette limestone before heading down into the White River Valley.

The transmission line route crosses into Nye County through Quaternary basin-fill deposits in the 70-mile long and 4- to 18-mile wide White River Valley. Here, the transmission line route climbs the eastern flanks of the Grant Range for approximately 10 miles where Ordovician Lehman Formation limestone and Eureka quartzite, the Devonian Guilmette limestone, Mississippian Pilot shale, Joana limestone, Chainman shale, and minor Cenozoic Tertiary welded and non-welded silica ash-flow tuff volcanics are encountered. The route then drops back down into the Quaternary basin-fill of the White Pine Valley.

The transmission line route then turns to the east, entering Lincoln County, where it climbs into the Schell Creek Range through Silver Creek Pass. Here, Cenozoic Tertiary volcanics consisting of andesites, basalts, and welded and non-welded silica ash-flow tuffs are crossed in addition to the Ordovician Lehman Formation limestone and Eureka quartzite, undifferentiated Ordovician dolomites and limestones, Silurian Laketown dolomite, Devonian Guilmette limestone, Mississippian Pilot shale, Joana limestone, and Chainman shale.

The transmission line route then traverses Quaternary basin-fill deposits and Cenozoic Tertiary welded and non-welded silica ash-flow tuffs of the Dry Lake Valley. This valley is 40 miles long

and 4 to 12 miles wide, and is bordered by the Schell Creek and North Pahroc Ranges to the west and the Schell Creek, West, Bristol, Highland, Chief Ranges, and Delamar Mountains to the east. It then passes into the Delamar Valley, which is 45 miles long and 4 to 11 miles wide, where Quaternary basin-fill deposits are crossed.

The transmission line route then rises out of the Quaternary basin-fill deposits of Delamar Valley and crosses the southern portion of the Delamar Mountains where Cenozoic Tertiary welded and non-welded ash-flow tuffs and andesites are crossed.

Where the transmission line route descends the southern flanks of the Delamar Mountains, Cenozoic Tertiary volcanics, consisting of andesites and welded and non-welded silica ash-flow tuffs, are encountered including a small deposit of Quaternary basin-fill deposits before the route heads into Coyote Springs Valley.

Coyote Springs Valley, in the vicinity of the transmission line route, contains Cenozoic Quaternary valley-fill alluvium and Tertiary tuffaceous sedimentary deposits. The transmission line continues south through the Quaternary basin-fill deposits until it starts up the western flanks of the Arrow Canyon Range where the Paleozoic Devonian Guilmette limestone and Mississippian Monte Cristo limestone are crossed. The transmission line route then abruptly turns to the east and crosses the Arrow Springs Range encountering Mississippian Monte Cristo limestone, and Pennsylvanian Bird Spring Formation before heading south down the eastern flank of the range, and entering the Quaternary valley-fill deposits in Dry Lake Valley to its southern terminus at the Harry Allen substation.

Segment 10 (sub-alternative)

The Action Alternative Segment 10 (sub-alternative) heads southeast through southern Dry Lake Valley, crossing Quaternary alluvium before the route heads up into the Delamar Mountains consisting of Cenozoic Tertiary welded and non-welded silica ash-flow tuffs. Segment 10 (sub-alternative) then heads south down through Boulder Canyon, crossing Cenozoic Tertiary rhyolitic intrusives and basaltic flows, and Quaternary alluvial valley deposits. The route then heads southwest into Kane Springs Wash where Quaternary alluvial valley deposits and a minor outcrop of Ordovician Lehman Formation limestone, Kanosh shale, and Eureka quartzite are crossed.

Falcon Substation

The Falcon Substation is located in Boulder Valley. The substrate is comprised of deep Quaternary valley-fill alluvium on almost flat topography (BLM 2001a). A major fault zone is located near Dunphy. No mines are located in the immediate vicinity, although the Mule Canyon and Argenta Mines are within 10 miles and the Carlin Trend mines are located within 20 miles. There are scattered geothermal wells in Boulder Valley.

3.4 Paleontological Resources

Paleontological resources are fossilized remains of past life including invertebrate and vertebrate animals and multi-cellular plants, including imprints. These resources are non-renewable and therefore are considered sensitive. Due to their paucity, fossils are important records of ancient life, particularly vertebrate fossils. Federal requirements for protection of paleontological resources include the 1906 Federal Antiquities Act, Historical Sites Act of 1935, the Federal Land Policy and Management Act of 1976, and BLM Paleontology Resources Management Manual and Handbook H-8270-1 (revised 1998). Unauthorized collection or removal of vertebrate, rare invertebrate, and rare plant fossils from federal land is illegal.

3.4.1 Area of Analysis

A project-specific paleontological resources assessment was conducted (Reynolds 2007) for some of the project components (i.e. Robinson Summit Substation, Segment 9A, Segment 10 sub-alternative). The transmission line segments that were covered in the SWIP Corridor EIS (BLM 1993) were assessed in a previous report (SBCM 2006). Construction excavation associated with the Robinson Summit Substation, Falcon Substation expansion area, and transmission line alignment has the potential to disturb subsurface sediments that have the potential of containing significant, nonrenewable paleontological resources.

3.4.2 Data Sources and Methods

Paleontological resource data was collected through literature searches and field inspection (Reynolds 2007 and SBCM 2006).

For the purposes of the paleontological study, sediments are characterized by their potential to contain significant paleontological resources. Sedimentary units that are characterized as sensitive are those with a high potential for containing significant paleontologic resources, in other words, geologic units within which vertebrate fossils or significant invertebrate fossils have been determined by previous studies to be present or likely to be present.

These characterizations can extend anywhere within the sedimentary unit's geographical extent and to units that are suitable for preservation of fossils. The following designations were used (Reynolds 2007 and SBCM 2006):

- High paleontological sensitivity at surface exposures (High at Surface)
- High paleontological sensitivity 5 feet below surface (High below Surface)
- Low paleontological sensitivity at surface exposures (Low at Surface)
- Low paleontological sensitivity 5 feet below surface (Low below Surface)
- Undetermined paleontological sensitivity

3.4.3 Existing Conditions

Fossils are abundant in the Basin and Range geologic province. The Paleozoic Era, ranging from 235 to 550 million years ago, includes seven periods beginning with the Cambrian Period (480 to 550 million years ago) with abundant fossil olenelloid trilobites. Fish, the earliest fossil vertebrates, are known to occur in Nevada in sedimentary rocks of Silurian Age from about 390 to 415 million years ago (Carroll 1987). Many later Paleozoic limestones and shales have produced diverse invertebrate faunas containing sponges, corals, stromatoporid structures, brachiopods, gastropods, pelecypods, cephalopods, crinoids, and echinoderm spines. The Permian Kaibab limestone, dating from about 235 to 275 million years ago, is easily recognized by the large, dome-shaped, productid brachiopod fossils that it contains.

Mesozoic Era (about 60 to 235 million years ago) deposits began with Triassic limestones and siltstones. Marine limestones often contain fossil pelecypods, gastropods, and corals. Late Triassic sediments at Ichthyosaur State Park (Austin, Nevada) contain dolphin-shaped marine reptiles. Jurassic sandstones in southern Nevada contain tracks of bipedal dinosaurs, mammal-like reptiles, and flying reptiles—the pterosaurs (Reynolds and Weasma 2002; Reynolds 2006a; Reynolds and Mickelson 2006). Dinosaurs have recently been discovered in Cretaceous sediments in Clark County (Bonde et al. 2006).

The Cenozoic Era (present to about 60 million years ago) is the age of mammals, and Nevada contains a long record of unusual fossil mammals. The Elderberry Creek Fauna south of Ely is a very diverse Eocene fauna containing 30 species of mammals and 10 species of lower vertebrates (Emry and Korth 1989; Emry 1990). Middle Miocene deposits of volcaniclastic sediments containing Barstovian and Clarendonian Land Mammal Age faunas are recognized from White Pine County. Late Miocene and early Pliocene Hemphillian and Blancan Land Mammal Age sediments with abundant vertebrate fossils are known from the Caliente area of Lincoln County. Late Miocene Hemphillian Land Mammal Age trackways are known from the Muddy Creek Formation in eastern Clark County (Reynolds 2006b). These red sandstones are overlain by early Pliocene Blancan Land Mammal Age sediments with abundant vertebrate fossils (Reynolds and Lindsay 1999).

Pleistocene fossils from the late Cenozoic Era are found in valley bottoms and in caves developed in limestones on high mountains (Austin et al. 2005; Bell 1990, 1993, 1995; Emslie and Czaplewski 1985; Mead 1988; Mead and Bell 1996; Palevich 2002; Wormington and Ellis 1967). The White Pine Public Museum contains a fossil horse tibia from the Pleistocene deposits in Spring Valley located east of Steptoe Valley.

3.4.4 Specific Project Area Conditions

Information regarding paleontological sensitivities along the applicable segments of the SWIP Utility Corridor (BLM 1993; SBCM 2006), from approximately the east side of Egan Range to Delamar Valley (Segments 6C and 8), is minimal and general as it was assessed from a literature review without field inspection. These were not included in the project specific assessment (Reynolds 2007) since they were included in analysis of the SWIP Corridor EIS (BLM 1993, SBCM 2006). The valley floors and bases of the mountain ranges are composed of Quaternary alluvial deposits that generally have a low potential for paleontological resources (Stewart 1980). Small areas with lacustrine (lakebed) sediments are also located in valley bottoms; these have high paleontological potential (Dames & Moore 1983). Invertebrate fossils—including brachiopods, corals, and mollusks—are found in Nye County along the SWIP Utility Corridor (BLM 1993). Tertiary sedimentary rock with a high paleontological sensitivity is present north of Robinson Summit. Further, younger tertiary sedimentary rocks are present in a few small areas south of Robinson Summit and near Ellison Creek west of Preston, which are of high paleontological sensitivity.

Reynolds (2007) conducted a paleontological study of the transmission line segments outside the SWIP Utility Corridor. According to the SBCM report (2006) for the SWIP Utility Corridor, no significant paleontologic resource localities are recorded within the SWIP Utility Corridor. The findings are presented in **Table 3.4-1**.

TABLE 3.4-1 PALEONTOLOGICAL SENSITIVITIES IN THE ON LINE PROJECT AREA

PROJECT COMPONENT	PALEO SENSITIVITY
Segment 6C*	Low paleo sensitivity for majority of the segment with areas of undetermined sensitivity in the central portion and areas of high paleo sensitivity in middle and southern portion.
Segment 8*	The northern third of this segment has high paleontological sensitivity with areas of undetermined sensitivity in the middle and the southern end.
Segment 9A**	Part of Segment 9A crosses playa silts and sandy siltstones of Delamar Playa. The perimeter of the playa has a "High at Surface" designation. Southwest of Delamar Valley, Segments 9A crosses non-fossiliferous Miocene volcanic flows and ignimbrites and non-fossiliferous alluvium in drainages.
Segment 9B**	Segment 9B crosses playa silts and sandy siltstones of Delamar Playa. The perimeter of the playa has a "High at Surface" designation Southwest of Delamar Valley.
Segment 9C (Action Alternative)**	Segment 9C crosses non-fossiliferous Miocene volcanic flows and ignimbrites and non-fossiliferous alluvium in drainages.
Segment 9D**	Segment 9D crosses non-fossiliferous Miocene volcanic flows and ignimbrites and non-fossiliferous alluvium in drainages.
Segment 10 (Action Alternative sub-alternative)**	Segment 10 (sub-alternative) contacts the Pliocene sediments north and south of US-93 at the junction with Kane Spring Valley Road, and for approximately 3 miles east of US-93. This section of the segment has a paleontological sensitivity designation of "High below Surface."
Segment 11	Segment 11 has undetermined paleontological sensitivity on the north half and low paleontological sensitivity on the south half.
Robinson Summit Substation**	The Robinson Summit Substation is located near the crest of Egan Range. This location is characterized by a thin veneer of late Tertiary gravels that overlies middle Miocene volcaniclastic sediments. Such sediments are reported to contain middle Miocene Barstovian North American Land Mammal Age mammals at Ellison Creek to the west, Butte Range to the north, and southern Schell Creek Range to the southeast. These Miocene sandstones have been designated with "High at Surface" paleontological sensitivity.
RSS-Site B Sub-Alternative*	The RSS-Site B sub-alternative is located on the east edge of Jakes Valley, on the western fan of the Egan Range. This area has low paleontological sensitivity.
Falcon Substation Expansion Area	The Falcon Substation is located in Boulder Valley. The substrate is comprised of deep Quaternary alluvium that has low paleontological sensitivity (BLM 2001a).

*source SBCM 2006
**source Reynolds 2007

3.5 Soils

3.5.1 Area of Analysis

The proposed general project area is shown in **Figure 2.2-1**. The area of analysis was defined as the potential disturbance footprint of the components of the Proposed Action or Action Alternative.

3.5.2 Data Sources and Methods

As described in **Section 1.13.2**, issues and indicators were developed by resource to assist in focusing the data collection on existing conditions in the area of analysis and to aide in the impact analysis for Chapter 4. Indicators for soils focused on acreage of soil disturbance, acres to be reclaimed, and suitability of potentially disturbed soils for reclamation purposes.

Available data from the Natural Resource Conservation Service (NRCS) and other scientific or governmental sources were utilized to obtain information for this section. The Official Soil Series Descriptions website (USDA 2007a) is the main reference for determining soil characteristics. Procedures and interpretations were adapted primarily from revised Internet versions of the *Soil Survey Manual* (USDA 2003) and the *National Soil Survey Handbook* (USDA 2005).

3.5.3 Existing Conditions

Soil Map Unit Descriptions

Soils are shown at a 3rd Order level throughout the majority of the project area (see soils maps in **Appendix 3A**); although, some areas of Nevada have not been surveyed and do not have soil mapping information. Soil map units consist of associations and consociations of individual soil series. Hundreds of individual soil map units have been identified within the project area.

Map units are identified by land types and cover a wide range of topography within the project area—from valley and drainage bottoms to canyon slopes, sideslopes, and ridgetops. Soils found on basin floors typically range from fine-grained to moderately coarse textures, and show little profile development. Accumulations of soluble salts or silica may occur at depth. Fan piedmonts can be shallow to very deep and range from moderately fine to moderately coarse or gravelly texture. Silica and lime cementation may be present in some of these soils. Soils found on mountain slopes contain gravel and coarse-textured material and are typically underlain by bedrock at shallow depths. Soils on hills and mountains may be at risk for erosion, especially on steeper slopes. Fine to coarse textured soils are found on the moderate slopes of alluvial fans and stream terraces. Soils in these settings are associated with high water tables and occasionally can be flooded (BLM 2008a).

Soils are strongly influenced by the type of bedrock geology (BLM 2008a). Parent materials for soils within the project area consist of mixed rock materials, including sandstone, dolomite, limestone, chert, volcanic rocks, and lacustrine deposits, formed from loess, colluvium, alluvium and residuum (USDA 2007a). Soil in drainages and swales developed primarily from alluvial materials, loess is derived from windblown soil. Colluvium is the parent material for development of soil on most slopes.

The majority of soil resources in the project area are classified as very deep, well-drained soils. Soil textures are generally loamy with a high percentage of coarse fragments. Representative slope steepness ranges from 1 to 53 percent, and varies depending on the profile location. Soil depths in the project area range from rock outcrop areas with no measurable soil to profiles greater than 5 feet thick. Deeper portions of the soil profile generally contain a high percentage of coarse fragments, with the high average ranging from 35 to 65 percent pebbles and cobbles (USDA 2007a).

3.5.3.1 Prime Farmland

Prime farmland is classified as available land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops (USDA 2003). Prime soils have the quality, growing season, and moisture supply needed to produce economical crops, including few or no rocks. No soils in the project area are classified as prime farmland.

3.5.3.2 Growth Medium

An evaluation of the soils in the project area for use in growth medium was conducted. **Table 3.5-1** identifies the criteria used to determine suitability of soils for use as growth medium during reclamation.

Typical texture of map units within the project area consists of loamy soils, often with coarse fragment modifiers. Map units in the project area have been identified as having from 0 to more than 35 percent surface coarse fragments with some profile layers containing as much as 80 percent coarse fragments (USDA 2007a). Few map units in the project area have been identified as being hydric (USDA 2007b, NRCS 2006), and rare isolated soils in this area have a shallow depth to the high water table (USDA 2007a). Soil reaction indicates the potential for excessive acidity or alkalinity in the soil. The soils within the project area are generally neutral to alkaline with pH values ranging from 6.8 to 9.4 (USDA 2007a). The majority of map units have pH values of 7.8 to 8.4.

NRCS data describes the possible range of slope steepness of the mapped soils from 0 percent to over 50 percent (USDA 2007b). Maps of the project area show that the actual locations of most of the transmission line route would occur in areas that are considerably flatter than the extremely steep slopes within the range of general characteristics of some mapped soils.

The presence of fine-textured loams, in addition to consideration of other criteria used to determine the growth medium suitability, indicates that soils within the project area would generally have a good to fair rating for use as growth medium during reclamation.

TABLE 3.5-1 CRITERIA USED TO DETERMINE GROWTH MEDIUM SUITABILITY

PROPERTY	TOPSOIL/GROWTH MEDIUM SUITABILITY				RESTRICTIVE FEATURE[1]
	GOOD	FAIR	POOR	UNSUITABLE	
Texture	textures finer than sands and coarser than sandy clay and silty clay, with less than 35% clay	loamy textures	sand textures and clayey textures with <60% clay	>60% clay content	excessive sands or clays
Organic Matter Content	>3%	<3% but greater than 1%[1]	0.5 to 1.0%[1]	<0.5%[1]	low fertility
Coarse Fragments (0-40 inches)	<15% by volume	15-25% by volume	25-35% by volume	>35% by volume	equipment restrictions and low fertility
Depth to High Water Table	--	--	<1 foot to high water	perennial wetness	equipment restrictions
Soil Reaction – pH[2] (0-40 inches)	6.0 to 8.0	5.0 to 6.0 8.0 to 8.5	4.5 to 5.0 8.5 to 9.0	<4.5 or >9.0	excessive acidity or alkalinity
Slope Steepness	<8% slope	8 to 25% slope	25 to 40% slope	>40% slope	equipment restrictions

Source: (USDA 2003, USDA 2005)
[1] As defined in the Soil Survey Manual (USDA 2003) and National Soil Survey Handbook (USDA 2005).
[2] pH in standard units.

The depth of growth medium needed for reclamation is dependent on the characteristics of the material to be covered and the effectiveness of the bond between the base material and the applied growth medium. A 6-inch depth of loose topsoil will settle an inch or two; therefore, 3 to 6 inches after settling is sufficient with adequate irrigation to establish grasses and legumes (State of Nevada 1994). **Table 3.5-2** shows the volume of material required to obtain various depths of growth medium applied during reclamation activities.

Rock outcrops are not suitable for recovery and use as growth medium. Based on review of available soil data, most recovered soil material would be classified as good, fair, or poor for use as growth medium during reclamation activities. Mixing of soil map units during salvage operations would dilute excessive coarse fragment content and distribute organic matter throughout the recovered material, resulting in maximum recovery volumes.

TABLE 3.5-2 MATERIAL VOLUME FOR APPLICATION OF GROWTH MEDIUM TO VARIOUS DEPTHS

DESIRED DEPTH OF GROWTH MEDIUM APPLICATION (INCHES)	CUBIC YARDS PER 1,000 SQUARE FEET REQUIRED	CUBIC YARDS PER ACRE REQUIRED
1	3.1	134.4
2	6.2	268.9
3	9.3	403.3
4	12.4	537.8
5	15.5	672.2
6	18.6	806.7

Source: State of Nevada 1994

3.5.3.3 Erosion Potential

The overall hazard of erosion for soils has previously been determined by soil surveys conducted within the project area (USDA 2007a). In general, upland areas are more susceptible to erosion than lowland sites, and areas with higher coarse fragment content and lower slope angle have lower potential for water erosion hazard. Areas where herbaceous vegetation is sparse or absent are most susceptible to wind and water erosion, and to drying and crusting (BLM 2008a, USDA 2007c).

Living organisms and their byproducts form biological crusts at the surface of the soil by binding soil particles together with organic materials (BLM 2008a). The ecological function of these crusts is to stabilize the soil, increase water infiltration, and enhance plant establishment. Biological crusts, although they tolerate harsh growing conditions, are not well adapted to physical disturbances (BLM 2008a). The potential for soil erosion increases when the crusts are diminished (BLM 2008a).

General review of soil textures within the project area shows a predominance of silt loam and loamy soils, many with coarse fragment modifiers, indicating a range of moderate to high erosion potential ratings utilizing this method of erosion determination. A high percentage of coarse fragments and/or dense vegetation on the soil surface would further reduce the erosion potential by wind and water.

Studies conducted in the BLM Ely District indicate that sediment yields from juniper and pinyon-juniper woodlands yielded 0.003 to 0.42 ton per acre of sediment, and sagebrush communities yielded 0.01 to 0.64 ton per acre (BLM 2008a). The highest infiltration rates and lowest sediment production were observed in the Steptoe watershed southeast of Ely, and the lowest infiltration rates and highest sediment production were found in the Duckwater watershed

southeast of Eureka (BLM 2008a). The least sediment yield numbers were found in big sagebrush and crested wheatgrass vegetation communities. Erosion and sediment yields within a watershed vary according to precipitation, soils, topography, and vegetation characteristics.

3.5.4 Specific Project Area Conditions

The transmission line alignments would travel through areas of multiple soil map units (see Figures in **Appendix 3A**). **Table 3.5-3** identifies soil map units that typify soils within the proposed boundaries of the ON Line Project.

TABLE 3.5-3 SELECTED MAP UNITS THAT TYPIFY SOILS WITHIN THE PROJECT AREA

PROJECT ELEMENT	MAP UNIT NUMBER / MAP UNIT NAME
Segment 6C	286 - Palinor-Shabliss association
Segment 6C	124 - Tecomar-Pookaloo association
Segment 6C	1240 - Biken association
Segment 6C	3091 - Univega-Clowfin-Molion association
Segment 6C	3972 - Linoyer very fine sandy loam, 0 to 4 percent slopes
Segment 6C	3970 - Linoyer-Rebel association
Segment 6C	3334 - Handpah-Palinor-Parisa association
Segment 6C	3974 - Linoyer-Kunzler association
Segment 6C	3212 - Kunzler-Candlaria association
Segment 6C	3220 - Stewval-Beelem association
Segment 6C	3311 - Ursine-Cliffdown association
Segment 6C & 8	1032 - Ursine-Mezzer-Armspan association
Segment 8	1151 - Watoopah-Zoda-Sevenmile association
Segment 8	1022 - Cliffdown-Geer association
Segment 8 & 9B	1473 - Tybo-Leo association
Segment 9B	1534 - Delamar-Koyen association
Segment 9B	1510 - Koyen gravely sandy loam, 2 to 4 percent slopes
Segment 9B & 10 (sub-alt)	1520 - Fax-Yody-Broland association
Segment 10 (sub-alt)	1100 - Geta-Arizo association
Segment 10 (sub-alt)	1010 - Tencee-Weiser association
Segment 11	1000 - Weiser-Tencee-Arizo association
Segment 11	CTC - Colorock-Tonopah association, moderately sloping
Segment 11	BRB - Bard-Tonopah association, gently sloping

The Palinor-Shabliss association soils are shallow, well-drained soils. Soil depth is typically less than 20 inches, underlain by duripan. The Palinor texture is gravelly loam to extremely gravelly fine sandy loam. These soils are fan remnants on 2 to 8 percent slopes. The Shabliss soil texture is a gravely loam which is a fan remnant on 2 to 8 percent slopes (USDA 2007a).

Soils in the Tecomar-Pookaloo association are shallow, well-drained soils that formed in residuum and colluvium derived from limestone and dolomite. Soil depth is typically less than 20 inches, underlain by fractured limestone. Tecomar texture is extremely stony silt loam with very high surface runoff and moderate permeability. The soil surface is partially covered with 25 percent pebbles and 15 percent cobbles and stones and these soils are found on mountains and hills with slopes of 8 to 50 percent. Pookaloo soil texture is very gravelly loam and the soil surface contains approximately 60 percent pebbles and 5 percent cobbles, yielding very high runoff and moderate permeability (USDA 2007a).

The Biken association consists of well-drained shallow soils. The soil depth is usually 18 to 20 inches deep and is on top of paralithic bedrock. These soils are found on hills with slopes typically ranging from 4 to 15 percent (USDA 2007a).

Soils in the Univega-Clowfin-Molion association are shallow to deep, well-drained soils that are located on fans. These soils are underlain by duripan. Univega texture is gravelly fine sand to sandy loam and is found on fan remnants on 2 to 8 percent slopes. The Clowfin texture is a deep sandy loam to a stratified very gravelly sandy loam to very gravelly loam. It is found on 2 to 8 percent slopes on inset fans. Molion texture is a loam to very gravelly sandy loam located on fan remnants on slopes of 2 to 8 percent (USDA 2007a).

The Linoyer very fine sandy loam, 0 to 4 percent, consist of well drained, more than 80-inch deep soils, that are located on inset fans. They are made up of very fine sandy loam, to silty loam, to extremely gravely loamy sand (USDA 2007a).

Soils in the Linoyer-Rebel association are deep and well drained. These soils are more than 80 inches deep and are located on inset fans on slopes of 0 to 2 percent. The Linoyer texture is made up of very fine sandy loam, to silty loam, to extremely gravelly loamy sand on inset fans with slopes of 0 to 2 percent. The parent material is of mixed colluvium. Rebel texture consists of sandy loam to loam on inset fans with slopes of 0 to 2 percent (USDA 2007a).

Soils in the Handpah-Palinor-Parisa association are comprised of shallow to medium soils that are formed on fan remnants. These soils are up to 40 inches deep on slopes 2 to 8 percent and are underlain by duripan. The Handpah texture, derived from mixed colluvium, is composed of shallow gravelly fine sandy loam, gravelly clay loam, and very gravelly sandy loam. It is formed on fan remnants on slopes of 2 to 8 percent. The Palinor texture is gravelly loam to extremely gravelly fine sandy loam. These soils are found on fan remnants on 2 to 8 percent slopes and are a product of weathered limestone alluvium. Parisa texture is comprised of gravelly loam to very gravelly loam. The parent materials are alluvium derived from limestone. These are well-drained medium depth soils located on fan remnants on slopes of 2 to 8 percent (USDA 2007a).

The Linoyer-Kunzler association soils are composed of well-drained deep soils, more than 80 inches deep, and are formed on inset fans and stream terraces of 0 to 4 percent slopes. The Linoyer texture is made up of very fine sandy loam, to silty loam, to extremely gravelly loamy sand on inset fans with slopes of 0 to 4 percent. The parent material is of mixed colluvium. The Kunzler texture, which forms on river terraces, is a deep well drained soil on slopes of 0 to 4 percent. It consists of loam to a very gravelly loam that is derived from mixed alluvium (USDA 2007a).

The Kunzler-Candelaria association, which forms on river terraces and fan remnants, consists of deep well drained soils on slopes of 0 to 4 percent. The Kunzler texture, which forms on river terraces, is a deep, 80 inches and deeper, well-drained soil on slopes of 0 to 4 percent. It consists of loam to a very gravelly loam that is derived from mixed alluvium. The Candelaria texture is a very gravelly sandy loam, gravelly fine sandy loam, extremely gravelly sandy loam, and stratified extremely gravelly sand to very gravelly loamy coarse sand. The surface area is covered with 2 percent cobbles, stones, and boulders. The texture is more than 80 inches deep and well drained and forms on fan remnants from eroded mixed alluvium on 0 to 4 percent slopes (USDA 2007a).

Soils in the Stewval-Beelem association are well drained and shallow. Lithic bedrock underlies the association at depths of 9 to 14 inches. These soils are formed on hills on slopes ranging from 8 to 50 percent. The Stewval texture with a 6 percent surface cover of cobbles, stones, and

boulders is well drained and ranges in a thickness of 4 to 14 inches. It is comprised of very stony fine sandy loam, very gravelly clay loam, and unweathered bedrock. It forms on hills with slopes ranging from 8-30 percent. The Beelem texture consists of cobbly sandy loam, gravelly sandy loam, and unweathered bedrock. It is well drained and develops in thicknesses of 4 to 9 inches on hills with slopes of 15 to 50 percent (USDA 2007a).

The Ursine-Cliffdown association soils consist of well to somewhat excessively drained shallow to deep soils. The soils are formed on fan remnants and inset fans with slopes ranging from 0 to 15 percent. The Ursine texture is well drained, 14 to 20 inches thick, and is underlain by duripan. It consists of very gravelly loam and gravelly loam on 4 to 15 percent slope fan remnants. The Cliffdown texture, which forms on inset fans, is somewhat excessively drained and deep. It is over 80 inches deep and consists of very gravelly sandy loam and stratified gravelly sandy loam to very fine sandy loam (USDA 2007a).

Soils in the Ursine-Mezzer-Armspan association are well drained and shallow to deep. The Ursine texture is well drained, 14 to 20 inches thick, and is underlain by duripan. It consists of very gravelly loam and gravelly loam on 2 to 8 percent slope fan remnants. The Mezzer texture forms on inset fans on slopes from 2 to 8 percent. The texture is deep and well drained and consists of very gravelly sandy loam, gravelly fine sandy loam, extremely gravelly sandy loam, extremely gravelly fine sandy loam, very gravelly loamy coarse sand, and extremely gravelly sandy loam (USDA 2007a).

Soils in the Watoopah-Zoda-Sevenmile association are shallow to deep, well-drained soils that are located on fan remnants and inset fans. The Watoopah texture is a fan remnant on slopes from 0 to 4 percent. It is well drained, more than 80 inches deep and is derived from alluvium from volcanic ash, welded tuff, and rhyolite. It is comprised of gravelly sandy loam, sandy loam, gravelly sandy loam, and stratified very gravelly coarse sand to coarse sandy loam. The Zoda texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, 20 to 40 inches deep, underlain by duripan, and is derived from welded tuff. The texture consists of gravelly ashy sandy loam and gravelly ashy sandy clay loam. The Sevenmile texture is well drained, more than 80 inches deep, and forms inset fans with slopes 0 to 2 percent. It consists of Ashy sandy loam, ashy loam, and stratified extremely gravelly ashy loamy coarse sand to ashy silt loam that is derived from alluvium of welded tuff and some limestone and quartzite (USDA 2007a).

The Cliffdown-Geer association, which forms fan remnants and fan terraces, consists of deep well drained soils on slopes of 0 to 8 percent. The Cliffdown texture, which forms fan remnants, is somewhat excessively drained and deep. It is over 80 inches deep and consists of very gravelly sandy loam and stratified gravelly sandy loam to very fine sandy loam and is derived from alluvium of mixed rock sources. The Geer texture is a fan skirt on slopes from 2 to 4 percent. It is well drained, more than 80 inches deep, and is derived from welded tuff and limestone with a minor component of volcanic ash. The texture consists of fine sandy loam (USDA 2007a).

Soils in the Tybo-Leo association are shallow to deep and well drained to excessively drained on fan remnants and inset fans. The Tybo texture is a fan remnant on slopes from 2 to 4 percent. It is well drained, 8 to 20 inches deep, underlain by duripan, and is derived from quartzite, limestone, and welded tuff. It is composed of gravelly coarse sandy loam and gravelly sandy loam. The Leo texture is excessively drained and is more than 80 inches thick. It is comprised of very gravelly sandy and stratified extremely gravelly coarse sand to fine sandy loam. It forms on inset fans with slopes ranging from 2 to 4 percent from alluvium derived from mixed rock sources (USDA 2007a).

Soils in the Delamar-Koyen association are shallow to deep and well drained on fan remnants and inset fans. The Delamar texture is a fan remnant on slopes from 0 to 2 percent. It is well drained, 20 to 40 inches deep, underlain by duripan, and is derived from alluvium. It is composed of gravelly sandy loam and gravelly clay loam. The Koyen texture is a fan inset on slopes from 0 to 2 percent. It is well drained, more than 80 inches deep, and is derived from volcanic rock. It is composed of gravelly sandy loam, stratified gravelly loamy sand to loam and very gravelly loamy sand (USDA 2007a).

The Koyen gravely sandy loam, 2 to 4 percent slopes, is a fan skirt on slopes from 2 to 4 percent. It is well drained, more than 80 inches deep, and is derived from volcanic rock. It is composed of gravelly sandy loam stratified gravelly loamy sand to loam and very gravelly loamy sand (USDA 2007a).

The Fax-Yody-Broland association consists of well-drained soils that were formed in alluvium from dominantly volcanic rock sources. Typical soil texture ranges from gravelly sandy loam, very gravelly loam to very gravelly coarse sandy loam. Yody and Fax soils are moderately deep, well-drained soils and typically have a duripan layer located below 22 inches. Permeability is moderate to moderately slow with medium to high runoff. Broland soils range from shallow to a strongly cemented duripan layer located between 19 to 40 inches below the soil surface. Runoff is medium to very high with moderately slow permeability (USDA 2007a).

Soils in the Geta-Arizo association are deep well drained to excessively drained on fan skirts and drainageways. The Geta texture is a fan remnant on slopes from 0 to 2 percent. It is well drained, more than 80 inches deep, and is derived from mixed alluvium. It is composed of very fine sandy loam and gravelly sandy loam. The Arizo texture forms in drainageways on slopes from 0 to 2 percent. It is excessively drained, more than 80 inches deep, and is derived from alluvium. It is composed of very gravelly loamy sand, stratified cobbly coarse sand to extremely gravely sand (USDA 2007a).

The Tencee-Weiser association consists of well-drained shallow to deep soils. The soils are formed on fan remnants with slopes ranging from 2 to 8 percent. The Tencee texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, 7 to 20 inches deep, underlain by petroclastic, and is derived from alluvium. It is composed of very cobbly sandy loam and very gravelly sandy loam. The Weiser texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, more than 80 inches deep, and is derived from limestone and dolomite. It is composed of very cobbly sandy loam, stratified extremely gravelly sandy loam to very gravely fine sandy loam (USDA 2007a).

Soils in the Weiser-Tencee-Arizo association are shallow to deep, well drained to excessively drained on fan remnants and drainageways. The Weiser texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, more than 80 inches deep, and is derived from limestone and dolomite. It is composed of very cobbly sandy loam, stratified extremely gravelly sandy loam, to very gravely fine sandy loam. The Tencee texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, 7 to 20 inches deep, underlain by petroclastic, and is derived from alluvium. It is composed of very cobbly sandy loam and very gravelly sandy loam. The Arizo texture forms in drainageways on slopes from 0 to 2 percent. It is excessively drained, more than 80 inches deep, and is derived from alluvium. It is composed of very gravelly loamy sand, stratified cobbly coarse sand, to extremely gravely sand (USDA 2007a).

The Colorock-Tonopah association consists of alluvial soils that are deep and characteristically well drained with low to medium runoff and moderate to moderately rapid permeability. Colorock soils have a very gravelly clay loam texture with a hardpan at approximately 15 inches. Typical

vegetation on these soils is stunted. Tonopah soils are very gravelly sandy loam with an average rock fragment content consisting of 40 to 65 percent pebbles and up to 25 percent cobbles (USDA 2007a).

The Bard-Tonopah association soils are gently sloping, shallow to deep, and well drained on fan remnants. The Bard texture is a fan remnant on slopes from 2 to 4 percent. It is well drained, 14 to 20 inches deep, underlain by petroclastic, and is derived from limestone and dolomite. It is composed of very stony loam and fine sandy loam. The Tonopah soils are very gravelly sandy loam with an average rock fragment content consisting of 40 to 65 percent pebbles and up to 25 percent cobbles (USDA 2007a).

The Robinson Summit Substation area consists of the Segura-Upatad-Cropper and Fax-Yody-Broland associations (**Appendix 3A, Figure 1**). These soils are shallow, well-drained soils formed in residuum and colluvium from welded tuff, andesite, quartzite, conglomerate and rhyolite on mountains. Segura texture is very stony sandy clay loam on slopes of 4 to 50 percent with medium to very high runoff and moderate permeability. Typical soil profile is approximately 10 inches deep with rock fragment content of 10 to 35 percent. Upatad soils are very gravelly silt loams with 40 percent pebbles and 10 percent cobbles on the soil surface. Runoff is medium with moderately slow permeability. The Cropper soil has a very cobbly loam, extremely stony texture, and the soil surface is covered with 20 percent pebbles, 15 percent cobbles, and 5 percent stones. Cropper soils have very high surface runoff and moderately slow permeability (USDA 2007a).

The RSS-Site B sub-alternative area consists almost entirely of the Palinor-Shabliss association (**Appendix 3A Figure 1**; NRCS 2010). These soils are well-drained gravelly loam fan remnants on 2 to 8 percent slopes. They are non-saline to very slightly saline. There are also small areas of Heist silt loam (0 to 4 percent slopes), the Duffer-Uwell association, the Tecomar-Pookaloo association, and Upatad-Atlow-Pioche association.

The Falcon Substation area consists of the Cluro association. These silt loam soils are slightly saline, somewhat poorly drained, with a moderately slow permeability. Saltation has occurred in low-lying areas. Cryptogamic (biotic) soil crusts are present in undisturbed soils surrounding the site (JBR 2009).

3.6 Air Resources

3.6.1 Area of Analysis

For background, an analysis of the local and regional climate is documented. Climatic trends are discussed on that scale and in a broad sense on a larger regional and national scale.

The area of analysis includes the proposed and alternative transmission line alignments from Robinson Summit in White Pine County south to the Harry Allen substation in northeastern Clark County, and a comparable radius around the Falcon substation. The direct impact area for this analysis includes everywhere within 5 miles of proposed project activities, capturing the areas impacted by the dust and equipment exhaust that represent the primary air emissions for the Proposed Action.

3.6.2 Data Sources and Methodology

The primary direct indicators of climate are the mean temperature, precipitation, and moisture levels. Indirect climatic indicators include the flora, fauna, and vegetation patterns that are naturally supported.

The regulatory framework for air quality includes national rules, regulations, and standards promulgated by the Environmental Protection Agency (EPA), and programs, rules, and regulations implemented by the Nevada Department of Environmental Quality, Bureau of Air Pollution Control (NDEQ BAPC) and local air quality regulatory agencies including the Clark County. The guiding national rules follow from the Clean Air Act, defining ambient air quality standards, requirements for local air quality programs and for operations capable of emitting air pollutants to protect the public, including sensitive individuals.

The primary indicator of air quality impacts from the Proposed Action will be compliance with the EPA National Ambient Air Quality Standards (NAAQS), and the Nevada Ambient Air Quality Standards (AAQS). Prevention of Significant Deterioration (PSD) Significant Contribution Levels (SILs) and Air Quality Related Values (AQRV) impact limits would not be applicable because the Proposed Action is expected to have minimal air quality emissions, and result in minimal operational impacts. These ambient air quality standards are set for criteria air pollutants: nitrogen dioxide, sulfur dioxide, particulate matter, carbon monoxide, ozone, and lead, and enforced through air permitting requirements to protect public health. The primary regulated particulate has been PM_{10}, particulate matter 10 microns or less in diameter. Materials in this size range are considered inhalable because they generally pass into the human respiratory system. Standards for $PM_{2.5}$, a subset of PM_{10} including the finer size particles, are being phased in by EPA. For this analysis, PM_{10} impacts will be used as an indicator of $PM_{2.5}$ impacts. That assumption is quite conservative for fugitive dust impacts, which are primarily made up of larger particle sizes. Combustion exhaust, though, tends to include a larger percentage of particulates in the $PM_{2.5}$ range.

Table 3.6-1 summarizes the SILs, NAAQS, Nevada AAQS, and PSD increments for all EPA defined criteria air pollutants.

TABLE 3.6-1 AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING PERIOD	NATIONAL AAQS ($\mu G/M^3$)	NEVADA AAQS ($\mu G/M^3$)
NO_2	Annual	100	100
SO_2	Annual	80	80
	24 hours	365[b]	365
	3 hours	1,300[b]	1,300
CO	8 hours	10,000[b]	10,000[c]
	1 hour	40,000[b]	40,000
PM_{10}	Annual	Revoked[d]	50
	24 hours	150[e]	150
$PM_{2.5}$	Annual	15[f]	15[e]
	24 hours	35[g]	35[f]
Lead	Quarterly	1.5	1.5
O_3	1 hour [j]	235[h] (0.12 ppm)	235[h] (0.12 ppm)
	8 hour	147[i] (0.075 ppm)	147[i] (0.075 ppm)

$\mu g/m^3$ - Microgram per cubic meter NA - Not applicable

a Source: EPA 1990

b Not to be exceeded more than once per calendar year

c 6,670 $\mu g/m^3$ at areas equal to or greater than 5,000 feet above mean sea level

d EPA revoked this standard effective December 17, 2006

e Not to be exceeded more than once per calendar year on average over three years

f the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors

g the 3-year average of the 98th percentile at each population-oriented monitor within an area

h The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is $\leq$ 1. This standard is revoked as of June 15, 2005 in all areas except 8-hour ozone non-attainment areas

i The 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year

j Ozone 1-hour NAAQS applies only in ozone 8-hour non-attainment areas

3.6.3 Existing Conditions

3.6.3.1 Climate

The project area includes a dry four-season environment with cold winters near the existing Falcon and proposed Robinson Summit Substations and in the higher northerly reaches of the transmission line segments, with the lower southerly end featuring a dry, desert climate. Mild winters occur only on the southerly reaches of the transmission line segments well to the south of the Robinson Summit Substation terminus in the north. Precipitation levels are light in the valleys, and slightly higher in the surrounding mountains. **Table 3.6-2** summarizes meteorological conditions within and near the project area.

TABLE 3.6-2 METEOROLOGICAL CONDITIONS WITHIN AND NEAR THE PROJECT AREA

MONITOR	ELEV (FT)	WINTER AVERAGE	SPRING AVERAGE	SUMMER AVERAGE	FALL AVERAGE	ANNUAL AVERAGE
Mean Seasonal Temperature Average (°F)[1]						
Beowawe	4,700	33.3	55.1	66.3	37.9	48.2
Ruth	6,830	26.8	47.8	60.6	32.5	42.0
Lund	5,570	33.7	54.0	65.9	39.1	48.2
Sunnyside	5.310	35.1	56.6	68.1	40.1	50.0
Alamo	3,450	41.4	63.3	74.3	47.6	56.7
Valley of Fire SP	2,000	52.9	76.8	88.9	58.3	69.2
Mean Seasonal Precipitation Average (inches)[1]						
Beowawe	4,700	2.04	2.50	1.03	2.20	7.57
Ruth	6,830	3.33	3.19	2.62	2.68	11.92
Lund	5,570	2.66	2.77	2.35	2.27	10.07
Sunnyside	5.310	2.55	2.12	2.45	2.16	9.27
Alamo	3,450	1.98	1.21	1.55	1.53	6.27
Valley of Fire SP	2,000	1.97	2.79	2.16	1.90	8.81
Mean Seasonal Snowfall / Snow Cover (inches)[1]						
Beowawe	4,700	10.7 / 1.0	1.1 / 0	0 / 0	5.3 / 0.3	17.0 / 0
Ruth	6,830	28.3 / 2.7	8.8 / 0	0.1 / 0	17.8 / 1.0	50.4 / 1
Lund	5,570	10.5 / 0	2.5 / 0	0 / 0	5.2 / 0	18.2/ 0
Sunnyside	5.310	9.6 / 0.3	1.3 / 0	0 / 0	4.7 / 0	15.5 / 0
Alamo	3,450	5.6 / 0.3	0.4 / 0	0 / 0	1.5 / 0	7.4 / 0
Valley of Fire SP	2,000	0.2 / 0	0 / 0	0 / 0	0.2 / 0	0.4 / 0

Source: Western Regional Climate Center (WRCC) 2009
°F = degrees Fahrenheit

The dry climate leads to a large diurnal temperature range, with daytime high temperatures averaging about 30 degrees higher than daily minimum temperatures. The large elevation differences between the valley floors and the surrounding ridge tops result in moderate and steady winds, with evening inversions in the valley bottoms. Ground level wind patterns in the region are channeled by the valleys and mountain ranges in this basin and range country. Mean wind speeds are 9.5 miles per hour in Ely and 10.1 miles per hour in Las Vegas. Climatic conditions have historically fluctuated, evolving into the current conditions as described above. Evidence of historic variations includes multiple ice ages in the recent geologic past and those fluctuations continue. Current evidence seems to indicate an increase in mean global temperature over the last century which might be accelerating in pace. Seven of the ten hottest years on record occurred in the last decade. Temperature changes can affect the quantity and distribution of precipitation because of associated weather pattern changes. At the same time, mean ambient concentrations of greenhouse gases, which let in short wave radiation from the sun, but block outgoing long wave radiation, have been documented to be increasing.

Figure 3.6-1 documents national trends in temperatures measured at National Weather Station (NWS) sites since the early 20th century. Mean temperature rises are seen across the country, with some of the most significant changes since the 1940s, averaging about a 1-degree increase per decade, in eastern and central Nevada. Similar NWS data since the 1930s shows mean precipitation increases have been noted since the 1930s across most of the eastern and central U.S. While much of the western U.S. has experienced flat or downward trending precipitation levels, northeastern Nevada has seen a mean precipitation increase of less than one inch per decade (NOAA 2008).

3.6.3.2 Air Quality

Current Local and Regional Air Quality

Ambient air quality monitors in the Steptoe Valley in White Pine County, measuring SO_2, NO_2, PM_{10}, CO, and ozone were installed to assess background air quality close to each of the EEC plant site alternative locations, which are situated northeast of the ON Line Project's northern terminus. These monitors indicate air quality is minimally affected by all but one criteria air pollutant. For all of the averaging periods, the only pollutant measured at or above half the NAAQS was 1-hour average ozone. No other measured pollutant value reached 25 percent of the NAAQS. Those air quality levels should be representative of conditions along the northern two thirds of the proposed transmission line, which feature a comparable level or less development and are comparably distant from major sources of air pollutants including regional power plants, large industry, or large urban areas.

Clark County is currently in attainment or unclassified for all air pollutants. Few, if any, measured values of volatile organic compounds (VOCs), hazardous air pollutant levels, or greenhouse gas concentrations representative of the project area are available.

One Federal Land Manager-identified sensitive Class II area, Great Basin National Park, exists 20 kilometers or more east of the general project area. Data from the Integrated Monitoring of Protected Visual Environments (IMPROVE) monitoring site at Great Basin National Park indicates good air quality with concentrations well below NAAQS standards, comparable to background values measured at the previously proposed EEC plant sites. However, measurements indicate at least slight visibility and acid deposition impacts have occurred as a result of regional industrial development including energy generation facilities. IMPROVE monitoring indicates ozone levels region-wide have the potential to approach or reach NAAQS standards.

Existing Air Pollutant Emission Sources

The only industrial sources near or within the ON Line Project would be the industrial activity in Ely and its vicinity at the northern terminus, and the energy and industrial facilities near the Harry Allen Substation in Clark County. Regional activity potentially affecting the project area include energy facilities, industrial and urban activity in Clark County, Las Vegas, St. George, Utah, and surrounding areas mostly affecting the southern end of the line; and regional energy facilities and possibly other large industrial activities having insignificant impacts along the rest of the impact area. Land use or development choices including grazing or development potentially affecting dust generation have localized effect in the project area, concentrated around the few isolated areas where such activities occur or have impacted soil stabilizing vegetation or cryptogrammic soils.

Figure 3.6-1 National Weather Service Long Term Temperature Trend Data

The Falcon Substation, in rural Boulder Valley, features a few acres of cleared ground. That substation is approximately 5 miles northeast of the coal-fired Newmont power plant, and approximately 10 miles southwest of active Carlin Trend mines including Goldstrike, Leeville, and Gold Quarry.

3.6.3.3 Climate Change

Ongoing scientific research has identified the potential impacts of anthropogenic (man-made) greenhouse gas (GHG) emissions and changes in biological carbon sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO_2(e) (carbon dioxide equivalent) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC 2007) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.5 to 10.4°F above 1990 levels (IPCC 2001). The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures. Increases in temperatures would increase water vapor in the atmosphere, and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict.

Although there are uncertainties associated with the science of climate change, this does not imply that scientists do not have confidence in many aspects of climate change science. Some aspects of the science are known with virtual certainty, because they are based on well-known physical laws and documented trends.

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires, and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over differing temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years.

3.7 Vegetation, Including Noxious and Non-Native, Invasive Weeds, and Special Status Plants

3.7.1 Area of Analysis

The area of analysis for vegetative communities, noxious and non-native, invasive weeds, and special status plants was defined as the project area, which is the potential disturbance footprint of any of the components of the Proposed Action or Action Alternative (see **Section 2.2.1** for detailed descriptions of project elements).

3.7.2 Data Sources and Methodology

The areas of analysis were evaluated through a combination of existing data review, including Southwest Regional GAP data (USGS 2004), soil surveys, previous biological surveys, recent aerial photointerpretation, and extensive biological field surveys conducted in fall 2006 and spring/summer 2007. Prior to conducting the vegetation surveys, soil maps and soil descriptions from *Soil Survey of Western White Pine County Area* (NRCS 1988) and *Soil Survey of Lincoln County, South Part* (NRCS 2000) were reviewed to familiarize survey crew members with the important vegetation, soil types, and landscape features contained in the survey area. The survey crew also reviewed the list of target noxious and non-native, invasive weeds, and target sensitive plant species and their habitat requirements. Pedestrian surveys were used when nearby access roads were unavailable, or when vegetation communities appeared highly variable, thus requiring detailed inspection to interpret tonal patterns from aerial photographs. Windshield surveys were used where vegetation communities appeared to be consistent and uniform across large expanses, and required only brief visual inspections to confirm aerial signatures. Community composition, ecological conditions, locations of noxious and non-native, invasive weeds, and the presence of wildlife were recorded during field surveys. Field-collected vegetative community data was combined with high-resolution National Agriculture Imagery Program (NAIP) aerial imagery dated April 2006 in order to photointerpret any non-field survey areas, or those areas where access was limited.

Vegetative community map units were based on Shiflet (1994) vegetation types, using dominant species to delineate discrete communities. The vegetative communities contained within the survey area are described in **Section 3.7.3.1** in order of prevalence within the project area.

The presence of noxious and non-native, invasive weeds (as defined by the State of Nevada in NAC 555.010) was identified within the areas of analysis by utilizing a number of methods and sources. Noxious and non-native, invasive weeds were recorded during biological field surveys for vegetative communities and special status plants, as well as by the Tri-County Weed Program, Ely office and by existing BLM mapping programs. Tri-County Weed Program surveys were based on the assumption that the most likely places that weeds might become established are near transportation systems, in disturbed areas, and areas near water; therefore, survey efforts were focused in these areas. Tri-County used the following criteria to determine the geographical extent of their surveys:

- Scout all roads, trails, by-ways, railways, utility corridors, or other transportation systems.
- Scout all known seeps, springs, streams, dry streambeds, riparian systems, irrigation canals, stock ponds, or any wetlands.

- Scout any additional man-made or natural disturbed areas including, but not limited to, campgrounds, corral systems, mining disturbances, chainings, seismic exploration sites, material stockpiles, and any other disturbances.
- Identify all paths, routes, or ways traveled by inclusion within the GPS database library. These document places that were surveyed where no invasive plant populations were found.
- Additional areas may be specifically selected to survey based upon such issues as likely rare or endangered species presence, or for other management considerations.

Existing data from each of these sources was reviewed for occurrences within the project area, as well as a 1,000-foot buffer surrounding these areas, and then combined with project-specific biological field survey data to determine the number and location of noxious and non-native, invasive weeds within the project area. Noxious and non-native, invasive weed species locations were recorded during baseline data surveys for vegetative communities and wildlife, via pedestrian and windshield surveys. Noxious and non-native, invasive weed occurrences were recorded with a Trimble GeoXT global positioning system, and data was collected for each observation, including species type, location, approximate area/density of infestation, date and time of observation, and name of observer.

Special status plant species (i.e., species with special status - listed as Threatened (T), Endangered (E), Proposed (P), and Candidate (C), or Sensitive (S) by government agencies), including those listed on the Nevada BLM sensitive species list and in the NAC 527.010 list of fully protected species of native flora, were identified through field surveys within known habitat types in the areas of analysis. Vegetative communities were used to identify potential suitable habitat for special status plant species within the areas of analysis described above, and field surveys conducted in spring and early summer 2007 focused on these areas.

3.7.3 Existing Conditions

3.7.3.1 Vegetation Communities/Cover Types

The following vegetative communities/cover types were mapped within the survey area, and they are described in detail below:

Wyoming Sagebrush	*Burn/Fire-Affected*
Creosote Bush	*Blackbrush*
Pinyon Juniper Woodland	*Rubber Rabbitbrush*
Greasewood	*Desert Playa*
Douglas Rabbitbrush	*Disturbed*
Joshua Tree	*Riparian*
Black Sagebrush	*Basin Big Sagebrush*
Winterfat	

Portions of the wetland and riparian communities may meet the criteria of jurisdictional waters of the U.S., including wetlands, subject to final verification by the Corps. Wetlands and Waters of the U.S. within the project area are discussed in detail in **Section 3.2**.

The following communities occur within the area of analysis, in order of prevalence within the project area. The locations of mapped vegetative communities within the project area are provided in the figures in **Appendix 3B**. The vegetation baseline report (JBR 2008) provides representative photographs of the most common vegetative communities found within the project area.

Wyoming Sagebrush Community

The Wyoming sagebrush (*Artemisia tridentata* var. *wyomingensis*) community is the most abundant vegetation community found within the project area. It occurs on shallow, stony soils of alluvial fan skirts and piedmonts, and concave side slopes of mountains. It is found throughout the northern project area through parts of the Egan and Grant Ranges, with the southernmost occurrence in Dry Lake Valley, in northern Lincoln County. Variations of this community type include both a low species diversity, monoculture aspect with a sparse to nonexistent herbaceous understory cover, and a Wyoming sagebrush dominated shrub community that includes Douglas rabbitbrush (*Ericameria viscidiflora*), black sagebrush (*Artemisia nova*), and Nevada ephedra (*Ephedra nevadensis*) as common associates. Dominant grass species include Indian ricegrass (*Achnatherum hymenoides*), Thurber's needlegrass (*Achnatherum thurberianum*), Sandberg's bluegrass (*Poa secunda*), and bottlebrush squirreltail (*Elymus elemoides*). Two cactus species are fairly common and include Simpson's hedgehog cactus (*Pediocactus simpsonii*) at higher elevations in the Egan Range, and a pricklypear (*Opuntia* spp.) found throughout the project area. Matted buckwheat (*Eriogonum cespitosum*) is also a common groundcover at higher elevations. Forbs include Douglas' pincushion (*Chaenactis douglasii*), phlox (*Phlox* spp.), and globemallow (*Sphaeralcea* spp.). Within the Egan Range, this community type is characterized by encroaching pinyon-juniper, with the Utah juniper (*Juniperus osteosperma*) more prevalent than the singleleaf pinyon (*Pinus monophylla*). Other variations of this community type include those with codominants in the shrub layer: Wyoming sagebrush-Douglas rabbitbrush, Wyoming sagebrush-black sagebrush, and Wyoming sagebrush-big sagebrush (*Artemisia tridentata* var. *tridentata*) community types.

Creosote Bush Community

The creosote bush (*Larrea tridentata*) community is the next most abundant vegetation community within the area of analysis. It was mapped in the southern extent of the project area within portions of the SWIP Utility Corridor and alternative transmission line corridors, in southern Lincoln and northern Clark counties, within Delamar, Kane Springs, and Coyote Spring valleys. This community is typically open and sparse, with an abundance of dry, gravelly, bare soil between plants. Occasional spring ephemeral herbaceous growth may occur, including forbs and graminoids.

Pinyon-Juniper Woodland Community

The singleleaf pinyon–Utah juniper community occurs primarily in mountainous regions, at elevations higher than 6,500 feet amsl (1,970 m). It was observed in the Egan, Grant, and Delamar Ranges. Upper mountain slopes and ridgelines generally support older, denser stands of pinyon-juniper, while mid and lower slopes represent more recent incursions into the adjacent sagebrush dominated community types. The shrub understory is composed variously of mountain sagebrush (*Artemisia tridentata* var. *vaseyana*) present on the deeper soils of concave slopes, with black and Wyoming sagebrush occurring on shallower, stony soils. Other common shrubs include Douglas rabbitbrush, bitterbrush (*Purshia tridentata*), Utah serviceberry (*Amelanchier utahensis*), and Mormon tea (*Ephedra viridis*). The understory is sparse compared to the adjacent sagebrush dominated community types. Common grasses include bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg's bluegrass, and Thurber's needlegrass.

Characteristic forbs include crag aster (*Aster scopularum*), cushion daisy (*Erigeron compactus*), basin butterweed (*Senecio multilobatus*), white stoneseed (*Lithospermum ruderale*), rockcress species (*Arabis* spp.), thickstem wild cabbage (*Caulanthus crassicaulis*), and *Phlox* species.

Douglas Rabbitbrush Community

The Douglas rabbitbrush community is found primarily occurring within Dry Lake Valley. This community is characterized by the presence of cryptogrammic crust with gravel and cobble ground cover, and a sparse herbaceous layer. Common to occasional shrub associates include winterfat (*Krascheninnikovia lanata*) and bud sagebrush (*Artemisia spinescens*). The herbaceous understory is variously dominated by several grasses including bottlebrush squirreltail and Indian ricegrass, with Sandberg bluegrass and needle and thread grass (*Achnatherum comata*) present. Additional common herbaceous species include herb Sophia.

Joshua Tree Community

The Joshua tree (*Yucca brevifolia*) community was observed in Delamar Valley, in the central portion of Lincoln County. This community possesses the Joshua tree as its highest stratum, although individuals are typically sparsely spread across the landscape. Common shrub associates included bursage (*Ambrosia dumosa*), broom snakeweed (*Gutierrezia sarothrae*), and horsebrush, with limited herbaceous growth.

Greasewood Community

The greasewood (*Sarcobatus vermiculatus*) community occurs mostly on alluvial flats exhibiting poorly drained soils. Greasewood tolerates the high salt and sodic attributes of these seasonally ponded soils. It was observed in portions of the White River Valley. On the lowest portion of the alluvial fan, low species diversity characterizes this community type with shadscale (*Atriplex confertifolia*), spiny horsebrush (*Tetradymia spinosa*) and herb Sophia (*Descurainia ophia*) as common associates. Descending to the valley floor, the greasewood community is characterized by the presence of a mixed greasewood-rabbitbrush (*Ericameria teretifolia* and *E. nauseosa* ssp. *consimilis*) dominated plant community. Soils exhibit a salty crust and inland saltgrass (*Distichlis spicata*) is common in the herbaceous layer along with other members of the goosefoot (*Chenopodiaceae*) family. On the valley floor, this community is characterized by flocculated soils and large, mostly bare soil interspaces, the mounds vegetated with greasewood and few herbaceous species.

Winterfat Community

The winterfat community is found on alluvial flats and lake plains that are fairly well drained. Winterfat was widely spread throughout the project area, from Jakes Valley in White Pine County south to southern Lincoln County, within the valley flats. This community type is characterized by a mound-intermound micro topography with mounds hosting both the shrub and herbaceous cover, and the intermound areas exhibiting mostly bare soil with some gravel present. It also occurs as small inclusions within the Wyoming sagebrush, black sagebrush, and Douglas rabbitbrush communities. Winterfat provides the bulk of the shrub cover, with Indian ricegrass as the dominant in the herbaceous understory. Additional common herbaceous species include herb Sophia and bottlebrush squirreltail. Winterfat and bud sagebrush provide codominant shrub cover with shadscale occasionally present as well.

Blackbrush Community

The blackbrush (*Coleogyne ramosissima*) community is found exclusively in southern Lincoln County, on the slopes of the Delamar Range. This community typically occurs upslope, or in more hilly conditions, than the creosote bush community, although not as high as the pinyon-juniper woodland community. Shrub coverage can be as much as 90-95 percent (Shreve 1942),

and only sparse brome (*Bromus* spp.) herbaceous cover was observed in this community within the area of analysis.

Black Sagebrush Community
The black sagebrush community was mapped from the northern terminus to northern Lincoln County, on the White River and Dry Lake valley margins. In addition, black sagebrush was commonly found intermixed with Wyoming sagebrush communities, especially on alluvial fan areas (i.e. the RSS-Site B sub-alternative study area). Black sagebrush is generally found in areas with shallow, rocky soils on alluvial fans and piedmonts, often derived from limestone. Characteristic shrub associates include bud sagebrush, Douglas rabbitbrush, winterfat, broom snakeweed, and green molly. Grasses found with black sagebrush included Sandberg's bluegrass, Indian ricegrass, Thurber's needlegrass, and bottlebrush squirreltail. Forbs include wild buckwheat (*Eriogonum* spp.) species, pincushion (*Chaenactis* spp.), rockcress, herb Sophia, and milkvetch (*Astragalus* spp.) species.

Burn/Fire-Affected Community
The burn/fire-affected community was observed in small areas within the Delamar Range, Kane Springs Valley, and Delamar Lake areas of southern Lincoln County, and within Hidden Valley in Clark County. The burn areas in Lincoln and Clark counties are recent, with little more than the charred remains of a former pinyon-juniper community, as well as a creosote bush community. Primary succession in the form of small forbs and herbaceous growth was observed in the early summer 2007 field surveys.

Desert Playa
The desert playa land type is an unvegetated expanse occurring at two locations within the southern extent of the SWIP Utility Corridor. Desert playa is the lowest part of an intermountain basin or bolson, which is frequently flooded by run-off from the adjacent highlands or by local rainfall. The surface is generally flat, with mud flats and locally small dunes (Allaby 1994). It was found on 0.4 percent of the land within the area of analysis and was mapped at Delamar Lake in Lincoln County and Dry Lake in Clark County.

Rubber Rabbitbrush Community
The rubber rabbitbrush community was observed at the White River crossing location in White River Valley. This community tended to be a monotypic shrub community, with occasional pockets of greasewood and Wyoming sagebrush interspersed. Soils are alkaline and soft, with moderate to poor drainage. Varying densities of graminoids were present in the herbaceous stratum, from less than 5 percent to nearly 100 percent coverage. Species include inland saltgrass, sedges (*Carex* spp.), arrowgrass (*Triglochin maritima*), alkali grass (*Puccinelia* sp.), and alkali cordgrass (*Spartina gracilis*).

Riparian Community
The riparian community was found on very limited areas within the area of analysis and may or may not be jurisdictional wetlands. It was mapped along larger drainages associated with the White River in White Pine and Nye counties.

Disturbed Lands
Disturbed lands are found in and around developed areas in Lincoln and Clark counties. This classification includes roads, gravel pits, buildings, parking lots, and similar human-caused disturbances. The burn/fire-affected and disturbed categories may include some vegetation component that is considered ruderal (e.g. herb Sophia, tumble mustard).

The potential for noxious and non-native, invasive weeds occurs along the unpaved roads present within the project area, and the areas disturbed as a result of utility installations, staging

areas, excavations, and grazing allotments. Invasive species including cheatgrass and halogeton (*Halogeton glomeratus*) are present providing sparse to dense cover within all community types, probably reflecting past livestock grazing history. Both paved and dirt road shoulders support Russian thistle (*Salsola kali*) and cheatgrass, with curlycup gumweed (*Grindelia squarrosa*) a common ruderal species. The occurrence of noxious and non-native invasive weeds in the project area is discussed below in **Section 3.7.3.2**.

While not mapped as a separate community type, utility easements and reclaimed roads have been revegetated with crested wheat grass (*Agropyron cristatum*) and common yarrow (*Achillea millefolium*). Native plant species colonizing these easements include Wyoming and mountain sagebrush, Douglas rabbitbrush, and bottlebrush squirreltail.

Basin Big Sagebrush Community

The basin big sagebrush community is found within the area of analysis where deep, well-drained soils are present. This community type occurs as a stringer community type adjacent to both perennial streams and adjacent to and within ephemeral drainages in valleys, fans, and lower mountain slopes. Characteristic species include greasewood and rubber rabbitbrush as common shrub associates, with bitterbrush occasionally present at higher elevation valley bottoms. Common grass associates include Great Basin wildrye (*Leymus cinereus*), Sandberg's bluegrass, and Indian ricegrass. Forbs include ragwort species (*Senecio* spp.), pincushion, milkvetch species, herb Sophia, and roughseed cryptantha (*Cryptantha flavoculata*).

3.7.3.2 Noxious and Non-Native, Invasive Weeds

The BLM defines an invasive weed as "a non-native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition and diversity of the site it occupies. Its presence deteriorates the health of the site, it makes efficient use of natural resources difficult and it may interfere with management objectives for that site. It is an invasive species that requires a concerted effort (manpower and resources) to remove from its current location, if it can be removed at all" (BLM National List of Invasive Weed Species of Concern). They have the ability to readily establish and spread rapidly, particularly in disturbed areas, and may cause damage to agriculture, range resources, and forestry, as well as increase fire susceptibility. Nevada BLM defines "noxious" weeds as those plant species "that interfere with management objectives for a given area of land at a given point in time" (http://www.nv.blm.gov/Resources/noxious_weeds.htm). Noxious and non-native, invasive weeds considered for effect under this study include:

- Plant species listed or considered as federal noxious weeds by the United States Department of Agriculture
- Plant species listed as noxious by the State of Nevada per NAC 555.010
- Plant species considered invasive weed species of concern to the BLM

Regulatory Framework

Federal Executive Order 13112, *Prevention and Control of Invasive Species* (3 February 1999), defines invasive species as "alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health." This order 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.

A number of additional federal laws address identification, treatment, and monitoring of invasive species, including the following:

- Lacey Act as amended (18 U.S.C. 42)
- Nuisance Prevention and Control Act of 1990 as amended (16 U.S.C. 4701 et. seq.)
- Federal Noxious Weed Act of 1974 as amended by the Food, Agriculture, Conservation and Trade Act of 1990 (Section 1453 "Management of Undesirable Plants on Federal Lands" U.S.C. 2801 et. seq.)
- Federal Plant Pest Act (7 U.S.C. 150aa et. seq.)
- Carlson-Fogey Act of 1968 (Public Law 90-583)
- Salt Cedar and Russian Olive Control Demonstration Act (Public Law 109-320)
- Safe, Accountable, Flexible, Efficient Transportation Equity Act (Public Law 109-59)
- Noxious Weed Control and Eradication Act (Public Law 108-412)

In addition to federal regulations, the State of Nevada Department of Agriculture serves to regulate 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. The U.S. Department of Agriculture's *Federal Noxious Weed List, State Noxious Weed List*, and the BLM *Invasive Weed Species of Concern List* are provided in **Appendix 3C**.

Noxious and Non-Native, Invasive Weed Occurrence

Noxious and non-native, invasive weeds were observed throughout the area of analysis. **Table 3.7-1** shows the noxious and non-native, invasive weed species, which were identified through existing data and field observations within the area of analysis. The vegetation baseline report (JBR 2008) provides maps of known noxious and non-native, invasive weed occurrences and observations for the entire project area.

TABLE 3.7-1 NOXIOUS AND NON-NATIVE, INVASIVE WEEDS OBSERVED WITHIN THE PROJECT AREA

COMMON NAME	SCIENTIFIC NAME	NUMBER OF OBSERVATONS	OBSERVATION LOCATION
Canada Thistle	*Cirsium arvense*	60	White Pine, Lincoln
Red Brome	*Bromus rubens*	N/A*	Lincoln, Clark
Cheatgrass	*Bromus tectorum*	N/A*	White Pine, Lincoln, Clark
Halogeton	*Halogeton glomeratus*	N/A*	White Pine, Lincoln, Clark
Musk Thistle	*Carduus nutans*	66	White Pine, Lincoln
Russian Thistle	*Salsola iberica*	10	White Pine
Sahara Mustard	*Brassica tournefortii*	9	Clark
Salt Cedar (Tamarisk)	*Tamarisk* spp.	43	White Pine, Lincoln
Scotch Thistle	*Onopordum acanthium*	2	White Pine
Spotted Knapweed	*Centaurea stoebe*	20	White Pine, Lincoln
Whitetop	*Lepidium draba*	208	White Pine, Nye, Lincoln, Clark

*Due to the frequency of these species, they were not mapped in detail

Whitetop

The most common noxious and non-native, invasive weed known and/or observed within the area of analysis was whitetop (*Lepidium draba*). Whitetop was observed in White Pine, Nye, Lincoln, and Clark counties within or immediately adjacent to (within 1,000 feet), the following project elements:

- Segment 6C
- Segment 9D
- Segment 11

Canada Thistle, Musk Thistle

Also widely spread was Canada thistle (*Cirsium arvense*) and musk thistle (*Carduus nutans*). Thistles were observed in White Pine and Lincoln counties.

Canada thistle was observed in the following project elements:

- Robinson Summit Substation
- Segment 6C
- Segment 11

Musk thistle was observed along the following project segment:

- Segment 8

Salt Cedar

Salt cedar (*Tamarisk* spp.) was observed in and around drainages throughout White Pine County and in southern Lincoln County within the following project elements:

- Segment 6C
- Segment 9D
- Segment 10 (sub-alternative)

Salt cedar has infested the desert southwest, mostly along waterways and in arroyos with ephemeral flows, interrupting natural habitats. It is well adapted to alkaline and salty soils, heat and cold, and windy sites. Its aggressive, deep root system uses much ground water, often to the detriment of other species. In many sites, it forms a pure stand that is almost impenetrable. Few to no plants grow under its canopy because of the high concentrations of salt that builds up in the soil from its accumulated leaf litter and the excretion of salt from glands on the leaves.

Other Noxious and Non-Native, Invasive Weeds

Eight other noxious and non-native, invasive weeds were observed with occurrences totaling 20 or less per species.

Spotted knapweed (*Centaurea stoebe*) and Scotch thistle (*Onopordum acanthium*) were both observed within Segment 6C. Additionally, spotted knapweed was observed within Segments 8, 9D, and 10 (sub-alternative). Sahara mustard (*Brassica tournefortii*) was observed in Segment 11.

While not occurring on the Nevada Department of Agriculture Noxious Weed List, the U. S. Department of Agriculture now considers cheatgrass (a.k.a. downy brome [*Bromus tectorum*]) a

severe weed in several agricultural systems in North America, particularly pastureland, western rangeland, and winter wheat fields (Young and Clements 2007). Cheatgrass is also listed by the BLM as an Invasive Weed Species of Concern (**Appendix 3C**). This species is an aggressive invader of sagebrush, pinyon-juniper, and other shrub communities, where it can out-compete native grasses and shrubs (Young and Clements 2007). Cheatgrass depletes soil moisture and is highly flammable in late spring and early summer (Young and Clements 2007). While not mapped in detail, cheatgrass was observed in small (less than 0.5 acre.) inclusions throughout the areas of analysis in natural communities, as well as in larger (greater than 0.5 acre.) pockets of disturbed areas. Cheatgrass was most commonly observed within or nearby agricultural areas and pastureland (current or former) and disturbed land.

Halogeton is also not present on the Nevada list, but is listed by the BLM as an Invasive Weed Species of Concern (**Appendix 3C**). Halogeton is a common invasive in upland shadscale and saltbush communities throughout the Great Basin, introduced to Nevada in the 1930s (Nachlinger et al. 2001). Halogeton, like cheatgrass, was not mapped in detail, but was observed in small patches throughout the area of analysis, most commonly associated with areas of prior disturbance such as agricultural land, road banks, existing transmission lines, and range watering stations.

3.7.3.3 Special Status Plant Species

Specific field surveys (JBR 2008) for special status plant species were conducted on May 21 through May 29, 2007—the ideal time period within the growing season to observe and correctly identify most sensitive plants. The Robinson Summit Substation area was surveyed in detail. All other areas south of Robinson Summit were surveyed at a reconnaissance level (i.e., surveys focused on areas of high probability according to existing habitat conditions).

Prior to the survey, a list of target species was developed from the Nevada BLM Sensitive Species list and from NAC 527.010 – List of fully protected species of native flora. **Table 3.7-2** lists target species selected because their potential habitat occurs within the area of analysis. Target species, their habitats, and findings of the field survey are described below.

TABLE 3.7-2 TARGET SPECIES WITHIN THE AREA OF ANALYSIS

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS
White bear poppy	*Arctomecon merriamii*	BLM Sensitive	
Eastwood milkweed	*Asclepias eastwoodiana*	BLM Sensitive	
Threecorner milkvetch	*Astragalus geyeri var. triquetrus*		NAC 527.010
White River catseye	*Cryptantha welshii*	BLM Sensitive	
Las Vegas buckwheat	*Eriogonum corymbosum var. nilesii*	Candidate, BLM Sensitive	
Sunnyside green gentian	*Frasera gypsicola*		NAC 527.010
Tiehm's blazing star	*Mentzelia tiehmii*	BLM Sensitive	
Lahontan beardtongue	*Penstemon palmeri* var. *micranthus*	BLM Sensitive	
Parish phacelia	*Phacelia parishii*	BLM Sensitive	
Ute ladies-tresses orchid	*Spiranthes diluvialus*	Threatened	NAC 527.010

Source: Nevada BLM Sensitive Species List: NAC 527.010

Target Species and Habitats

The following species were identified as potentially occurring in habitats found within the area of analysis:

- White bearpoppy (*Arctomecon merriamii*) is known in Clark, Lincoln, and Nye counties, Nevada, as well as in California. An evergreen perennial herb, it occurs on alkaline clay and sand, gypsum, calcareous alluvial gravels, and carbonate rock outcrops.
- Eastwood milkweed (*Asclepias eastwoodiana*) is endemic to Esmeralda, Lander, Lincoln, and Nye counties, Nevada. A late-spring flowering perennial herb, it occurs in open areas on basic (pH 8 or higher) soils, frequently in small washes or other moisture-accumulating microsites.
- Threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*) is known in Clark and Lincoln counties, Nevada, as well as in Arizona. It occurs on open, deep sandy soil or dunes, generally stabilized by vegetation and or a gravel veneer. It is dependent on sand dunes or deep sand in Nevada.
- White River catseye (*Cryptantha welshii*) is endemic to Nevada known from Nye, Lincoln, and White Pine counties. It occurs on calcareous soils in barren areas and open desert pavement within the black sagebrush community. The nearest occurrence to the project area is at Jakes Wash located approximately 15 miles south of Ely.
- Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*) is a recently identified, genetically unique subspecies of buckwheat endemic to southern Nevada. Growing from 1,900 to 3,900 feet amsl, it occurs on and near sparsely vegetated gypsum soil outcroppings, often forming low mounds or outcrops in washes and drainages, or in areas of generally low relief. The species is primarily found in the Las Vegas Valley (Clark County). Currently, only nine populations of Las Vegas buckwheat at 15 sites covering approximately 1,145 acres are known to exist.
- Sunnyside green gentian (*Frasera gypsicola*) is known from Nye and White Pine counties in Nevada, and possibly in Utah. It occurs on spongy silty clay soils of calcareous flats and barrens with low to no gypsum content.
- Tiehm's blazing star (*Mentzelia tiehmii*) is endemic to the White River Valley, in northeastern Nye and Lincoln counties, Nevada near Sunnyside Reservoir. It occurs primarily on hilltops of white soil and rock outcrops, with sparsely vegetated black sagebrush, Parry's rabbitbrush, and/or shadscale saltbush communities.
- Lahontan beardtongue (*Penstemon palmeri* var. *macranthus*) is a robust perennial herb found in the west central part of Nevada. It grows along washes, roadsides, and canyon floors, particularly on carbonate-containing substrates, usually where subsurface moisture is available throughout most of the year.
- Parish phacelia (*Phacelia parishii*) is known from White Pine and Nye counties, Nevada; and from San Bernardino County, California. The closest known location is in Spring Valley between the Schell Creek and Snake Ranges. It occurs on playas and in moist alkali meadows on the valley floor.
- Ute ladies tresses (*Spiranthes diluvialus*), a federally threatened species, is known to occur in Lincoln and possibly White Pine counties in Nevada. It also occurs in Colorado, Idaho, Montana, Nebraska, Utah, and Wyoming. It is found in moist, to very wet,

somewhat alkaline or calcareous native meadows near streams, springs, seeps, lake shores, or in abandoned stream meanders that still retain ample groundwater.

Special Status Species Existing Conditions
All potential habitats within the project area were inspected using NAIP color aerial imagery flown in 2006, and vegetation mapping field surveys to identify potential habitat areas. Locations of special status plants encountered during the survey were recorded with a Trimble GeoXT GPS receiver (see figures in **Appendix 3B**).

No special status plant species were found in the Robinson Summit Substation area nor are they expected to occur within the RSS-Site B sub-alternative area based upon the common habitat types observed and delineated in these areas.

The SWIP Utility Corridor and transmission line segments outside the SWIP Utility Corridor south of the Robinson Summit Substation were evaluated at a reconnaissance level. Habitat areas known to support sensitive plants were inspected, and areas with reasonable vehicle access were inspected for the presence or absence of habitat. White River catseye, a BLM sensitive species, was observed at the Jake's Wash area in White Pine County within Segment 6C. Tiehm's blazing star and White River catseye, BLM sensitive plants, were observed in the White River Valley area in White Pine and Nye counties, and also within Segment 6C. White bear poppy, a BLM sensitive species, was observed just west of Coyote Spring within Segment 9D.

Las Vegas buckwheat

Las Vegas buckwheat is not present within the project area; however, it occurs in close proximity to Segment 11, near the junction of US Highway 93 and State Route 168. Based on GIS data provided by the BLM, there are 36 known occurrences of Las Vegas buckwheat between 3,150 and 9,300 feet from the eastern edge of the Proposed Action ROW alignment and approximately 1,600 feet closer to the eastern edge of the Action Alternative transmission line alignment. These occurrences are within unique badland formations; therefore, unknown occurrences within the project area are not expected to occur.

3.7.4 Specific Project Area Conditions

Robinson Summit Substation
Within the Robinson Summit Substation survey area, four vegetation communities were observed. Wyoming sagebrush comprised the majority of the area and pinyon-juniper woodland occupied most of the remaining area. Small areas of black sagebrush and basin big sagebrush were also observed.

Transmission Line Alignments
The transmission line alignments have a northern terminus near Robinson Summit west of Ely and a southern terminus at the Harry Allen Substation in Clark County. Within the transmission line segments, 15 vegetative and/or land type communities were observed (see figures in **Appendix 3B**). Wyoming sagebrush, Douglas rabbitbrush, greasewood, and pinyon-juniper were the most prevalent in the northern portion of the project at Robinson Summit and in Segment 6C; Douglas rabbitbrush and Joshua tree were dominant in Segment 8; and creosote bush was dominant in Segments 9D and 11. The majority of Segment 9A is blackbrush with a burn area. A large burn area was observed in Segment 10 (sub-alternative); however, the northern area was dominated by Joshua tree and the southern area by creosote. Significant patches of winterfat were encountered in Segments 6C and 9B. Other communities observed

within the transmission segments included basin big sagebrush, black sagebrush, desert playa, disturbed land, riparian, and rubber rabbitbrush.

RSS-Site B Sub-Alternative
Within the RSS-Site B sub-alternative study area, four main vegetation communities were observed. Wyoming and black sagebrush were the dominant communities with areas of winterfat situated in drainages and pinyon-juniper woodlands on the higher slopes being observed.

Falcon Substation
Within the Falcon Substation expansion area, the greasewood community was observed.

3.8 Wildlife Resources, Including Special Status Wildlife, Migratory Birds, Fisheries, and Aquatic Species

As described in **Section 3.7**, 15 vegetation communities/cover types were mapped within the approximately 236 mile-long survey area. Elevations range from approximately 2,350 feet amsl at the southern-most portion of the Project at the Harry Allen Substation to about 7,850 feet near Silver King Pass. The project area terrain is highly diverse and includes high desert valleys, low alkali playas, steep rocky cliffs, and high mountain passes. The varying combinations of vegetation types, elevation, and terrain provide a wide variety of habitat for wildlife in the region.

The Nevada Department of Wildlife (NDOW) lists 161 species of mammals, 173 species of fish, 24 species of amphibians, 78 species of reptiles, and 456 species of bird within the state (NDOW 2007a). This section addresses wildlife species that occur, or have the potential to occur, in the project area. Wildlife species with special status (listed as Threatened (T), Endangered (E), Proposed (P), and Candidate (C), or Sensitive (S) by government agencies) are also addressed in this section. These species are referred to as special status species. Special status plants are discussed in **Section 3.7**.

It is important to note that the transmission line alignments occur predominantly within federally designated utility corridors. The ON Line Project occurs within these corridors for most of its length. Hence, the majority of sensitive habitat areas crossed by the transmission line alignment have been reviewed by federal agencies in these NEPA documents that direct project applicants to route projects in designated utility corridors.

3.8.1 Area of Analysis

The area of analysis for wildlife resources was defined as the project area (i.e., the footprint of the Proposed Action and Action Alternative components). Further, a 0.5-mile area on each side of the proposed transmission line was considered for greater sage-grouse, bats, and raptor species (including golden eagles).

A larger area, adjacent to the area of analysis identified above, was also generally considered in terms of existing habitats, known occurrences of sensitive wildlife species, etc. so that potential direct and indirect effects to wildlife resources could be analyzed in **Section 4.8**.

3.8.2 Data Sources and Methods

The areas of analysis were evaluated through a combination of existing data review, including information provided by the BLM, USFWS, NDOW, Nevada Natural Heritage Program (NNHP), and previous biological surveys; and extensive biological field surveys conducted in fall 2006 and spring/summer 2007. Prior to conducting wildlife surveys, various data from these sources

were reviewed to familiarize survey crew members with the habitat types and wildlife species that were likely to be encountered in the survey area. The survey crew familiarized themselves with special status wildlife species and their habitat types. Appropriate buffer zones surrounding the project features to be surveyed were plotted on maps, aerial photos, and GPS units.

Pedestrian surveys were used when nearby access roads were unavailable, when wildlife habitat communities appeared highly variable, or in the presence of existing or potential special status wildlife habitat. Windshield surveys were used where habitat communities appeared to be consistent and uniform across large expanses, and required only brief visual inspection. Vegetation species composition, ecological conditions, and the presence of wildlife were recorded during field surveys.

Special status wildlife species were identified through field surveys within known habitat types in the areas of analysis. Vegetative communities were used to identify potential suitable habitat for special status species within the areas of analysis described above. Specific ground-based field surveys within potentially suitable habitat were conducted for special status species and raptors. Surveys designed to identify active greater sage-grouse (*Centrocercus urophasianus*) leks within the project area were conducted during the 2007 breeding season.

Extensive raptor surveys were conducted primarily during the nesting season of 2007. Surveyors were provided the locations of known raptor habitat and nesting areas, and aerial photographs were analyzed in order to locate any additional potential raptor habitat. This information was then used in the field to locate and record raptor habitat that could be affected by the development of the ON Line Project.

3.8.3 Existing Conditions

3.8.3.1 Threatened, Endangered, Proposed, and Candidate Species

The USFWS identified four threatened, endangered, proposed, and candidate (TEPC) species that are known or expected to occur within the project area (USFWS 2007a. File No.1-5-07-SP-282). In addition, on March 5, 2010, the greater sage-grouse was listed as a candidate species. These species are listed in **Table 3.8-1**; background information on each species follows the table. **Appendix 3D** lists the TEPC Species that are known to occur within the two BLM Districts the project area occurs within, the general habitat types the species are generally found in, and whether any of these species were observed during field baseline surveys.

TABLE 3.8-1 TEPC WILDLIFE SPECIES LISTED AS OCCURRING WITHIN THE COUNTIES CROSSED BY THE ON LINE PROJECT

COMMON NAME	SCIENTIFIC NAME	USFWS STATUS
Greater sage-grouse	*Centrocercus urophasianus*	Candidate
Western yellow-billed cuckoo	*Coccyzus americanus*	Candidate
Southwestern willow flycatcher	*Epidonax tralii extimus*	Endangered
Yuma clapper rail	*Rallus longirostris yumanensis*	Endangered
Desert tortoise	*Gopherus agassizii* (Mojave Population)	Threatened
Desert tortoise	*Gopherus agassizii* (Mojave Population)	Critical Habitat

Source – USFWS 2007a

Greater Sage-grouse

The greater sage-grouse (*Centrocercus urophasianus*) once inhabited sagebrush habitats throughout the West; they currently occupy about 56 percent of their former range (Connelly et al. 2004). Besides recently being listed as a Candidate species, currently, in Nevada, the greater sage-grouse is a BLM Sensitive species and a State of Nevada Protected game bird

managed in accordance with the *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California* (NDOW 2004). Between July 2002 and December 2003, the USFWS received several petitions requesting that the greater sage-grouse be listed as threatened or endangered rangewide. On April 21, 2004, the USFWS announced a 90-day petition finding in the Federal Register (69 FR 21484) that these petitions taken collectively, as well as information in their files, presented substantial information indicating that the petitioned actions may be warranted. On January 12, 2005, the USFWS announced that the 12-month finding (70 FR 2244), after reviewing the best available scientific and commercial information, found that listing the greater sage-grouse was not warranted. Western Watersheds Project filed a complaint on July 14, 2006, alleging that this finding was arbitrary and capricious under the Administrative Procedure Act (5 U.S.C. 701 *et seq.*). On December 4, 2007, the U.S. District Court, District of Idaho, ruled that the 12-month petition finding was in error and remanded the case to the USFWS for further consideration. Legal action is still pending and the Court has not yet set a date for completion of the remand.

In February 2008 (73 FR 10218), the USFWS determined that it is appropriate to initiate a new status review to address information that has become available since the 2005 petition finding. That finding relied, in part, on information in the ''Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats'' published in 2004 by the Western Association of Fish and Wildlife Agencies. Since the publication in 2004 of the Conservation Assessment, a significant amount of new research has been completed and new information has become available regarding threats, conservation measures, and population and habitat status of the greater sage-grouse. Unless the court requires an earlier completion date for a remanded 12-month finding, it is the intention of the USFWS to complete this new status review and make a new determination at that time as to whether listing is warranted. At this time, the USFWS is soliciting new information on the status of and potential threats to the greater sage-grouse. Information submitted prior to January 12, 2005, will be considered and need not be resubmitted. The USFWS will base a new determination as to whether listing is warranted on a review of the best scientific and commercial information available, including all such information received as a result of a notice published in the Federal Register on February 26, 2008. (73 FR 10218). In April 2008 (73 FR 23172), USFWS extended the period for submitting pertinent information on the species to June 27, 2008. On March 5, 2010, the greater sage-grouse became an ESA candidate species and on the same day the BLM released IM-2010-071 to supplement the existing conservation strategy. IM-2010-071 instructs the BLM to "to work with the state fish and wildlife agencies, using a consistent protocol, to delineate and map areas of high priority habitat across the ranges of Gunnison sage-grouse and greater sage-grouse." It also instructs BLM to "Re-route proposed transmission projects to avoid priority habitat."

Sage-grouse are closely associated with sagebrush habitats, specifically big sagebrush (*Artemisia tridentata*) and silver sagebrush (*A. cana*) for food and cover. Sage-grouse breeding habitats are defined as those where lek attendance, nesting, and early brood-rearing occur. Breeding occurs on leks, or relatively open areas with less herbaceous shrub cover than surrounding areas. Leks are typically surrounded by potential nesting habitat and are adjacent to relatively dense sagebrush stands used for escape, thermal, and feeding cover. Sage-grouse females nest in many different sagebrush-dominated cover types and most nests are located under sagebrush plants. An understory of native grasses and forbs provides productive nesting habitat. Early brood-rearing habitat is defined as sagebrush habitat within the vicinity of the nest used by hens with chicks up to 3 weeks following hatch. The availability of forb-rich habitats in close proximity to protective cover appears to be an important consideration for early brood-rearing. Late brood-rearing habitats are those used by sage-grouse starting later in the summer,

following desiccation of herbaceous vegetation in sagebrush uplands. Sage-grouse usually select late-summer habitats based on the availability of forbs; these areas are often wet meadows or irrigated pastures adjacent to sagebrush. Winter habitats of greater sage-grouse are dominated by sagebrush that can provide shelter and food. Habitat selection during winter is influenced by snow depth and hardness, topography, and vegetation height and cover. Sagebrush plants must be exposed above the snow to provide forage (modified from Connelly et al. 2004).

Numerous greater sage-grouse studies and surveys by NDOW, the BLM, and other entities have been conducted and are ongoing within and adjacent to the project area. Due to the current wealth of information that exists concerning greater sage-grouse habitat, aerial surveys to identify new lek areas were not conducted. Instead, NDOW and BLM biologists were consulted and suggestions were made that identified areas where focused greater sage-grouse surveys (specifically for this project) were needed. Once suitable greater sage-grouse habitat was identified in these areas, JBR conducted ground-based pre-sunrise/early morning surveys during the greater sage-grouse mating season, April 2007. Although suitable habitat was identified and surveyed, no active leks were discovered in addition to what had been previously known and identified. The RSS-Site B Sub-Alternative area was surveyed in April 2010 for general biological resources; no sign (i.e. pellets) of greater sage-grouse using the area was observed.

As shown on **Figure 3.8-1**, suitable greater sage-grouse habitat (identified as nesting, summer, and/or winter ranges) exists within the project area. In addition, **Table 3.8-2** displays the greater sage-grouse leks that occur within or near the project area. **Figure 3.8-1** displays the locations of these leks.

TABLE 3.8-2 GREATER SAGE-GROUSE LEKS IN OR NEAR THE ON LINE PROJECT AREA

LEK NAME	ACTIVE/ NOT ACTIVE/ HISTORIC	APPROXIMATE DISTANCE FROM CLOSEST FEATURE'S - OUTER PROJECT AREA BOUNDARY
Blackjack W	Unknown	1.8 miles from Segment 6C (Action Alternative)
Gardner Ranch N	Unknown	1.8 miles from Segment 6C (Action Alternative)
Ellison Creek N	Active	0.5 miles from Segment 6C (Proposed Action)
Ellison Creek N N	Inactive	Within Segment 6C (Action Alternative)
Runway	Unknown	0.3 miles from Segment 6C (Action Alternative)
Ellison Creek	Inactive	1.0 miles from Segment 6C (Action Alternative)
Ellison Knobs	Unknown	1.7 miles from Segment 6C (Action Alternative)
White River	Active	0.2 miles from Segment 6C (Action Alternative)

Source – NDOW
Active: Occupied in 2006
Inactive: No birds or sign for two years

Western Yellow-billed Cuckoo

The western yellow-billed cuckoo (*Coccyzus americanus)* has been identified as a Candidate species for listing as Threatened or Endangered in its range west of the Rocky Mountains (66 FR 38611). The State of Nevada has ranked the western yellow-billed cuckoo as an S1 protected species.

Yellow-billed cuckoos breed in large blocks of riparian habitats (particularly woodlands with cottonwoods and willows). They are low/shrub nesting birds that primarily feed on large insects such as caterpillars and grasshoppers, but have also been known to eat small frogs and

arboreal lizards. Nesting peaks (mid-June through August) may be influenced by an abundance of caterpillars and other prey.

Historically, the yellow-billed cuckoo was widespread and common in California and Arizona, locally common in a few river reaches in New Mexico, common very locally in Oregon and Washington, and generally scattered in drainages of the arid and semiarid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah (USFWS 2002).

This species has been known to occur in Lincoln and Nye counties. However, no suitable yellow-billed cuckoo habitat is known or was observed within the project area during baseline surveys conducted in 2006 and 2007, thus this species will not be discussed further in this FEIS.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Epidonax tralii extimus*) was listed as Endangered on February 27, 1995, with Critical Habitat designated in 2005. The critical habitat that the USFWS designated is an 18.6-mile-long stretch along the Virgin River from the Arizona border to the Overton Wildlife Management Area in Nevada.

The breeding range of the southwestern willow flycatcher includes southern California, Arizona, New Mexico, extreme southern portions of Nevada and Utah, far western Texas, perhaps southwestern Colorado, and extreme northwestern Mexico. In Nevada, this subspecies can be found along the Virgin River, lower Muddy River, Colorado River, and Pahranagat Valley. The southwestern willow flycatcher breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands including lakes and reservoirs.

This species has declined because of removing, thinning, or destroying riparian vegetation; water diversions and groundwater pumping which alter riparian vegetation; overstocking or other mismanagement of livestock; and recreational development. In addition to the above threats, the southwestern willow flycatcher is also subject to cowbird parasitism (USFWS 2007b).

The southwestern willow flycatcher has been known to occur in Lincoln, Nye, and Clark counties. Segment 9D of the Proposed Action passes less than 1,000 feet within the extreme southeastern portion of the Pahranagat National Wildlife Refuge (NWR). The Pahranagat NWR is not designated as critical habitat for the southwestern willow flycatcher. No suitable southwestern willow flycatcher habitat is known to exist or was observed within the project area during baseline surveys conducted in 2006 and 2007, thus this species will not be discussed further in this FEIS.

Yuma Clapper Rail

The Yuma clapper rail (*Rallus longirostris yumanensis*) was listed as federally Endangered in 1967, although no critical habitat has been designated for this species. The Yuma clapper rail is a marsh bird found in dense cattail or cattail-bulrush marshes along the lower Colorado River in Mexico north to the lower Muddy River and Virgin River in Utah above those rivers' confluence with Lake Mead. In Nevada, this subspecies can be found along the Virgin River and lower Muddy River, along the Colorado River around Lake Mohave, and in the Las Vegas Wash.

Threats include habitat destruction, primarily due to stream channelization and drying and flooding of marshes, resulting from water flow management on the lower Colorado River. Most U.S. habitat is in national wildlife refuges and state wildlife management areas that are subject to water management practices of the U.S. Bureau of Reclamation. Additional threats include contaminants from agricultural tailwaters and exotic vegetation (USFWS 2007a).

No suitable Yuma clapper rail habitat is known or was observed within the project area during baseline surveys conducted in 2006 and 2007, thus this species will not be discussed further in this FEIS.

Desert Tortoise

The desert tortoise (*Gopherus agassizii*) can occupy habitats that range from sandy flats to rocky foothills. They have a strong proclivity in the Mojave Desert for alluvial fans, washes, and canyons where more suitable soils for den construction might be found. They range from near sea level to around 7,300 feet, but the most favorable habitat occurs between approximately 1,000 to 3,500 feet in elevation. It is believed that, in their entire lives, these tortoises rarely move more than 2 miles from their natal nest. They also live to be 80-100 years old.

The Mormon Mesa desert tortoise critical habitat lies within the southern portion of the project area (Segments 9D, 10 (sub-alternative), and 11), along with portions of potentially suitable tortoise habitat bordering this critical habitat in all directions (**Figure 3.8-2**). A portion of Segment 11 also runs along the eastern border of the Desert National Wildlife Refuge. Desert tortoises are known to occur within these areas.

In May 2007, triangle protocol surveys (0.5-mile long triangle surveys every 3 miles) for the desert tortoise within the southern portion of the transmission line alignment (Segments 9A, 9C, 9D, 10 (sub-alternative), and 11) were conducted. **Figure 3.8-2** displays desert tortoise habitat and the location and type of desert tortoise sign observed during the surveys. Based on the data gathered, it appears that overall desert tortoise use for the northern most area surveyed is low (not surprising as this area is at the northern extent of the desert tortoise's range). Highest use occurred along the middle and southern half of the project area surveyed. Only one live tortoise was encountered. Twenty-three tortoise burrows were found. Eight carcasses in various stages of decay were discovered but none were determined to have been recent deaths. All carcasses were those of adult tortoises. Eggshell remains were observed in one burrow. Scat, not associated with a nearby burrow, was observed six times. In addition, a 500-foot survey area surrounding the existing Harry Allen Substation was conducted in fall 2006. This survey documented numerous desert tortoise sign, scat, burrows, and carcasses (JBR 2007b).

3.8.3.2 BLM Sensitive and State of Nevada Special Status Species

In addition to Federally Listed TEPC species in Nevada, sensitive species are defined as those plant and animal species identified by the BLM as species for which population viability is a concern, as evidenced by: (1) a significant current or predicted downward trend in population numbers or density; or (2) a significant current or predicted downward trend in habitat capability that would reduce the species' existing distribution (BLM 2001b). The state of Nevada and the BLM provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C, that is to "ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed." The Sensitive Species designation is normally used for species that occur on BLM administered lands for which BLM has the capability to significantly affect the conservation status of the species through management. **Appendix 3D** lists the numerous Sensitive species that are known to occur within the two BLM district offices that the project area occurs within, the general habitat types the species are generally found in, and whether any of these species were observed during field baseline surveys. Sensitive fish species are discussed in **Section 3.8.3.5**. Background information on several of the "higher profile" Sensitive species that occur or have the potential to occur within the project area that are not discussed in other general wildlife sections are provided below.

Figure 3.8-1 Greater Sage-Grouse Range and Lek Sites

Figure 3.8-2 Desert Tortoise Habitat and Observations

Bald Eagle

Formerly a Federally Listed species up until its recent delisting, the bald eagle (*Haliaeetus leucocephalus*) is still protected under the Bald and Golden Eagle Protection Act. During the breeding season, bald eagles are closely associated with water and occur along coasts, lakeshores, or riverbanks, where they feed primarily on fish. Bald eagles typically nest in large trees, primarily cottonwoods (*Populus* sp.) and conifers, although they have also been known to nest on projections or ledges of cliff faces. During winter, bald eagles concentrate wherever food is available. Areas of open water, where fish and waterfowl can be taken, are common wintering sites. Wintering bald eagles have been observed on the Kirch and Pahranagat Wildlife Management Areas.

No bald eagle nest sites are known to occur in or within close proximity to the project area, and occurrence of this species would be limited to migrating and wintering individuals using the area for hunting and feeding opportunities.

Pygmy Rabbit

The pygmy rabbit (*Brachylagus idahoensis*) occurs throughout most of the Great Basin. However, the distribution and population trends of this species are largely unknown (BLM 2008a). Currently, in Nevada, the pygmy rabbit is a BLM Sensitive species and a State of Nevada Species of Special Concern. It was also a former Category 2 Candidate Species. A formal listing petition was received from environmental groups in April 2003 that required the USFWS to make a determination on whether there was substantial information to initiate a status review of the pygmy rabbit. The USFWS concluded that more research was needed to better determine the distribution and abundance of the species throughout its range (USFWS 2005).

On January 8, 2008 (73 FR 1312) the USFWS announced a 90-day finding on a petition to list the pygmy rabbit as threatened or endangered under the Endangered Species Act of 1973, as amended. The USFWS then initiated a status review to determine if listing the species was warranted. On September 30, 2010 (75 FR 189) the USFWS announced that listing the pygmy rabbit is not warranted at this time; however, the pygmy rabbit still remains a BLM Sensitive species.

During baseline vegetation and general wildlife surveys conducted between the fall of 2006 and summer of 2007, pygmy rabbits and suitable habitat were observed within transmission line Segment 6C (**Figure 3.8-3a**, and **Appendix 3D**). In addition, pygmy rabbit sign (i.e. burrows and pellets) was observed during surveys in the spring of 2010 near the RSS-Site B sub-alternative area, the 345kV loop-ins, and at the US-50/Jakes Valley Road intersection.

Raptors (including Golden Eagles)

The project area is home to many types of raptors including hawks, owls, golden eagles, accipiters, and falcons. Population information for many of the resident species in Nevada is not available, and where there is species-specific information, general trends in raptor populations are not consistent. Densities of some raptors, such as the short-eared owl (*Asio flammeus*), fluctuate based on prey availability, but are considered to be adequate for healthy populations. Populations of some species such as the Swainson's hawk (*Buteo swainsoni*) have been increasing in Nevada, although surveys indicate they have not reached historic densities. Surveys also indicate populations of other species such as the prairie falcon (*Falco mexicanus*) have continued to decline (Nevada Partners in Flight 2002). The planning area offers significant habitat (i.e., foraging and suitable nesting areas) for species dependent on sagebrush, salt desert scrub, and pinyon-juniper habitats. The highest densities of ferruginous hawks (*Buteo*

regalis) in Nevada occur within the planning area. Nevada represents a large portion of the basin and range province, which supports 28 percent of the world population of prairie falcons (Nevada Partners in Flight 2002). Prairie falcons nest in cliffs and rock outcrops; other raptors within the planning area may use rock outcrops, trees, or burrows as nesting sites. Golden eagles nest on cliffs, in the upper one-third of deciduous and coniferous trees, or on artificial structures (windmills, electricity transmission towers, artificial nesting platforms, etc.) and most golden eagle territories have up to six nests (Pagel et al. 2010). The golden eagle is protected under the Bald and Golden Eagle Protection Act. Additional technical and management guidance for golden eagles that provides direction for avoiding and minimizing disturbance and other kinds of take was issued by the USFWS in February 2010 (Pagel et al. 2010).

The habitat types in the project area provide numerous nesting, perching, and foraging opportunities for a variety of raptor species from early spring (February/March) to late summer (August). Surveys for raptor nests in high potential habitats occurring within portions of the project area were conducted for this project. Twelve species of raptors were observed during baseline surveys. These species include: sharp-shinned hawk (*Accipiter striatus*), red-tailed hawk (*Buteo jamaicensis*), cooper's hawk (*Accipiter cooperii*), American kestrel (*Falco sparverius*), peregrine falcon (*Falco peregrinus*), ferruginous hawk, Swainson's hawk, great horned owl (*Bubo virginianus*), Long-eared owl (*Asio otus*), Northern harrier (*Circus cyaneus*), golden eagle (*Aquila chrysaetos*), and turkey vulture (*Cathartes aura*). **Figures 3.8-3a** and **3.8-3b** shows raptor nest locations identified by JBR (within 0.5 miles), and known "raptor nesting areas," or areas of suitable habitat that certain species return to every nesting season, provided by NDOW (within 2 miles of the project area).

Western Burrowing Owl

The western burrowing owl *(Athene cunicularia hypugaea)* is a grassland specialist distributed throughout western North America. The western burrowing owl is protected by the Migratory Bird Treaty Act and is protected under Nevada Revised Statues 501 and the Nevada Administrative Code 503. The Nevada Natural Heritage Program ranks the species as an S3B, meaning that it has rare and uncommon breeding populations in the state (BLM 2008a). Burrowing owls were discovered within the project area and suitable habitat for this species occurs throughout various portions of the project area (**Figure 3.8-3b**).

Bats

Bat breeding and roosting habitat occurs within or adjacent to many portions of the project area, generally in the higher elevation areas where there are areas of cliffs, rock outcroppings, and pinyon-juniper vegetation communities. Foraging habitat for bats within or adjacent to the project area are most likely associated with the wetland/riparian areas.

Various rock outcroppings, cliff areas, and pinyon-juniper habitats were observed within the project area for the transmission line alignments that provide suitable habitats for bats. No specific bat surveys were conducted.

The majority of the 23 bat species in Nevada could occur throughout the project area; 15 of these species currently are identified as BLM Sensitive species. Of these, the spotted bat (*Euderma maculatum*) is the only state-protected bat species known to occur within the planning area. This species is ranked as S2/S1 within the planning area, indicating continued presence in the state is imperiled. The spotted bat is designated as BLM and U.S. Forest Service sensitive, and is protected by Nevada State Law (BLM 2008a).

Banded Gila Monster

The banded Gila monster (*Heloderma suspectum cinctum*) is a BLM Sensitive species and is currently ranked as a State of Nevada S2 species. Gila monsters range from the eastern Mojave to the northern Sonora desert. County status of this species is unknown due to the elusive nature of this reptile that is believed to spend approximately 95 percent of its life underground. Species distribution is inferred from habitat preferences and has been collected historically in both Clark and Lincoln counties. It frequents Mojave desert scrub, mesquite/catclaw, blackbrush, pinyon-juniper, and desert riparian habitats. Gila monsters are typically found on the lower slopes of rocky canyons, mesic areas, and flats with grassland or succulents. It uses rocks and burrows of other animals for cover and it searches for prey items, such as eggs of ground-nesting birds, reptiles, lizards, and insects, primarily at night, although it may be active during the day. Gila monsters may also focus feeding efforts on locating desert tortoise eggs (Clark County MSHCP and EIS 2000).

Potential banded Gila monster habitat exists within the vicinity of the southernmost portions of the transmission line alignments in Lincoln and Clark counties. Its geographic range approximates that of the desert tortoise and is coincident to the Colorado River drainage (**Figure 3.8-1**). No incidental occurrences of this species were observed within the project area during desert tortoise triangle surveys conducted in 2007 (see **Section 3.8.3.1**).

Kangaroo Mouse

The NDOW has indicated both the dark and pale kangaroo mouse may occur in project area.

Pale Kangaroo Mouse (Microdipodops pallidus)

The pale kangaroo mouse is a state protected species, considered vulnerable due to its rarity and restricted range (NNHP 2009). Pale kangaroo mice are restricted to valley bottoms containing stabilized dunes with fine, wind-blown sand (Wilson and Ruff 1999). O'Farrell and Blaustein (1974) state that pale kangaroo mice have also been reported in gravelly soil, where they were sympatric with dark kangaroo mice (*M. megacephalus*). Wilson and Ruff (1999) note the species always occurs below the zone dominated by big sagebrush. Preferred habitat is instead characterized by saltbush and greasewood.

Burrows are constructed in or near wind-blown sand, often near shrubs. Burrows are relatively simple and lacking chambers (O'Farrell and Blaustein 1974). The species is nocturnal and generally solitary, but is reported to be less aggressive toward congeners than other heteromyid rodents. Diet is grains (seeds) supplemented by insects. Water requirements are met by diet and morphological and behavioral adaptations. The species can live without free water. Activity is reported to be highest shortly after sunset. Winter activity has been reported (O'Farrell and Blaustein 1974), but Wilson and Ruff (1999) state the species is a hibernator.

The range of the pale kangaroo mouse is described as Upper Sonoran sagebrush desert in central Nevada and a small portion of eastern California (O'Farrell and Blaustein 1974).

Dark Kangaroo Mouse (Microdipodops megacephalus), including Desert Valley Kangaroo Mouse (M. megacephalus albiventer)

The dark kangaroo mouse is a BLM and state protected species considered imperiled due to its rarity. The Desert Valley subspecies is endemic to Nevada (NNHP 2009). Dark kangaroo mice usually occur on stabilized dunes and in fine gravelly soils (O'Farrell and Blaustein 1974; Wilson and Ruff 1999). Hall and Linsdale (1929), writing before the two species (dark and pale) of kangaroo mouse were differentiated, note a preference for sandy soils. Another work (Ghiselin 1970) suggests dark kangaroo mice show a preference for gravelly soils. Wilson and Ruff

(1999) state that valley bottoms and alluvial fans dominated by sagebrush, rabbitbrush, and horsebrush represent the preferred habitat of dark kangaroo mice. Additionally, a recent small mammal study found that 85 percent of the dark kangaroo mice captured were found on sand substrate (Ambos et al. 2007, p.33).

Dark kangaroo mice construct burrows that may include a nest chamber and seed storage chambers (O'Farrell and Blaustein 1974). Diet is grains (seeds) supplemented by insects, particularly in summer. Water requirements are met largely by diet and morphological and behavioral adaptations. Activity is reported to be highest shortly after sunset. Winter activity has been not reported (O'Farrell and Blaustein 1974). Wilson and Ruff (1999) state the species hibernates, emerging from hibernation in March and entering hibernation by November.

The dark kangaroo mouse is more widely distributed than the pale kangaroo mouse, occurring in Upper Sonoran sagebrush habitat in much of Nevada, as well as southeastern Oregon and small portions of eastern California (O'Farrell and Blaustein 1974) and Utah (Wilson and Ruff 1999).

Figures 3.8-3c and **3.8-3d** show potential dark kangaroo mouse habitat in relation to the project area based upon models developed by the Southwest Regional Gap Analysis Project. The models are based on the concept of Wildlife Habitat Relationships that consider the resources and conditions that must be present in areas where species live and reproduce. The model is based on known site distributions and a variety of resource and landscape variables known to influence site density such as land cover, elevation, slope, aspect, distance to perennial water, landform, soils, hydrologic units, mountain ranges, precipitation, and temperature (JBR 2010a).

Montane Vole

The montane vole (*Microtus montanus*) occupies wet meadows, cropland (especially fields and pastures of grass and legumes), and grassy areas by streams and lakes. The montane vole utilizes shallow burrows and surface runways. Its diet includes grasses and sedges, as well as leaves, stems, and roots of a wide variety of forbs. Within Nevada, there are two subspecies of montane vole on the At-Risk Tracking List (NNHP 2009): the Pahranagat Valley montane vole (*Microtus montanus fucosus)* and the Ash Meadows montane vole (*Microtus motanus nevadensis*). The Pahranagat Valley subspecies is found in desert riparian areas; the habitat type is listed as riparian-wetland within the Mojave Desert vegetation zone (BLM 2008a), such as the springs in the Pahranagat Valley of southern Nevada (Linzey and Hammerson 2008). Predators include hawks, owls, foxes, badgers, and coyotes.

The Pahranagat Valley subspecies is listed as a BLM Sensitive species and State of Nevada Special Status species (NNHP 2009), considered imperiled due to rarity or other demonstrable factors. The Ash Springs subspecies is considered historical with potential to be rediscovered (NNHP 2009). Both of these montane vole subspecies are endemic to Nevada.

Desert Bighorn Sheep

Desert bighorn sheep (*Ovis canadensis nelsoni*) is a BLM Sensitive species (BLM 2008a). This species is discussed under Big Game in **Section 3.8.3.3**.

Figure 3.8-3a BLM Sensitive and State of Nevada Special Status Species

Figure 3.8-3b BLM Sensitive and State of Nevada Special Status Species

Figure 3.8-3c Potential Suitable Kangaroo Mouse Habitat

Figure 3.8-3d Potential Suitable Kangaroo Mouse Habitat

3.8.3.3 General Wildlife

Big Game

Big game species within the project area consist primarily of pronghorn antelope, mule deer, Rocky Mountain elk, and two subspecies of bighorn sheep (**Figures 3.8-4a** - **3.8-4d**). Big game species utilize a variety of habitats, depending on the season. Mule deer and pronghorn antelope move between seasonal ranges more than other big game species, and are generally found at higher elevations in summer (i.e., "summer range") and lower elevations in winter (i.e., "winter range"). Seasonal movements for these species are affected by weather conditions, specifically the snow line, which determines the availability of food. Some low-elevation habitats are suitable for mule deer and pronghorn all year ("year-round range"). Elk are better adapted to snow conditions and many herds stay in the same habitat all year, although high-quality summer ranges such as aspen habitats that contain grasses and forbs are important to the species in general. Bighorn sheep also do not migrate in the winter, as they are adapted to cold, high-elevation conditions. Some habitat in the project area has been designated as suitable for this species ("potential habitat") and some areas contain known populations ("occupied habitat"). "Crucial" ranges for big game are habitats containing resources that are necessary to prevent unacceptable population declines. For example, crucial winter range for mule deer contains sufficient cover, food, and water to sustain individuals during this vulnerable period, which if not present, may result in high rates of mortality and possibly unacceptable population declines.

Pronghorn Antelope: With the exception of some higher elevation areas, pronghorn antelope (*Antilocapra americana)* year-round range exists within all of the project features that are north of Segments 9C and 9A (**Figure 3.8-4a**). There is no crucial winter range associated with this species in or near the project area. For details regarding which transmission line segments pass through pronghorn antelope year-round range see **Section 3.8.4.2**.

Mule Deer: Mule deer (*Odocoileus hemionus*) range is also mainly adjacent to portions of the project area. Within the project area, mule deer range is generally associated with the middle to upper elevations (**Figure 3.8-4b**). Habitat for mule deer includes big sagebrush, low sagebrush, shadscale, grasslands, and agricultural fields. Mountain mahogany and pinyon-juniper woodlands are important for thermal and escape cover during winter. Riparian areas and sagebrush communities are commonly occupied by mule deer during the summer. For details regarding which transmission line segments pass through crucial mule deer year-round range see **Section 3.8.4.2**. No major migration corridors have been identified in the project area.

Rocky Mountain Elk: Several portions of the project area are located within Rocky Mountain elk (*Cervus canadensis nelsoni*) year-round range (**Figure 3.8-4c**). The largest herds occur in the Egan and Schell Creek Ranges. Since the late 1990s, elk populations in Lincoln and White Pine counties have been managed under the guidance of the Lincoln and White Pine Elk Management Sub-plans to the Statewide Elk Species Management Plan. These management sub-plans established population objectives by management unit (BLM 2008a). Elk sign was frequently encountered in the mid to upper elevations crossed by portions of the transmission line and elk were observed at the RSS-Site B sub-alternative location. For details regarding which transmission line segments pass through Rocky Mountain elk year-round range see **Section 3.8.4.2**.

Desert Bighorn Sheep: As noted in **Section 3.8.3.2**, desert bighorn sheep *(Ovis canadensis nelsoni)* are a Nevada BLM Sensitive species (**Appendix 3D**). **Figure 3.8-4d** identifies both occupied and potential desert bighorn sheep range occurs within and adjacent to portions of

the project area. In 1936, 1.5 million contiguous acres were established in Clark and Lincoln counties as the Desert National Wildlife Range to primarily benefit desert bighorn conservation. From the late-1980s to present, NDOW has been reintroducing desert bighorn sheep into a number of mountain ranges within the project area (BLM 2008a). For details regarding which transmission line segments pass through occupied desert bighorn sheep range see **Section 3.8.4.2**.

Rocky Mountain Bighorn Sheep: As displayed on **Figure 3.8-4d,** potential Rocky Mountain bighorn sheep *(Ovis canadensis canadensis)* range is not located within or near the project area. Twelve Rocky Mountain bighorn sheep were reintroduced to Mount Grafton in the late 1980s. To date, limited populations of Rocky Mountain bighorn sheep occur on Mount Moriah and Mt. Wheeler in White Pine County, and on Mount Grafton in Lincoln County (BLM 2008a). For details regarding which transmission line segments pass through occupied Rocky Mountain bighorn sheep range see **Section 3.8.4.2**.

Small Mammals

Black-tailed jackrabbits (*Lepus californicus*) were the most common small mammal observed within the project area during baseline surveys. Mountain cottontails (*Sylvilagus nuttallii*) and pygmy rabbits were also commonly observed. Pygmy rabbits are discussed in **Section 3.8.3.2**. Packrat *(Neotoma cinerea)*, rock squirrel (*Spermophilus variegates*), least chipmunk (*Tamias minimus*), Richardson's ground squirrel *(Spermophilus elegans nevadensis)*, white-tailed antelope squirrel *(Ammospermophilus leucurus)*, golden-mantled ground squirrel *(Spermophilus lateralis)*, Piute (Great Basin) ground squirrel *(Spermophilus mollis)*, Townsend's ground squirrel *(Spermophilus townsendii)*, and pygmy shrews *(Sorex minutus)* are other small mammals that were either observed during baseline surveys (**Appendix 3D**) or are known to occur within the project area.

Predatory Mammals

The project area provides a diversity of habitat types for a variety of predators. Predators that were either observed directly or their presence inferred by sign (i.e., tracks, dens, scat) during baseline surveys include: coyote (*Canis latrans),* kit fox (*Vulpes macrotis*), badger (*Taxidea taxus*), and mountain lion *(Felis concolor)*. Other predators that likely occur within or near the project area include gray fox (*Urocyon cinereoargenteus*) and bobcat *(Lynx rufus)*.

Reptiles

Several species of reptiles were observed within the project area (**Appendix 3D**). Side-blotched lizards (*Uta stansburiana*), western fence lizards (*Sceloporus occidentalis*), and sagebrush lizards (Sceloporus graciosus) were the most abundant species of reptile encountered. Desert horned lizards (*Phrynosoma platyrhinos*) were observed in southern Lincoln and Clark counties. One Mojave Desert Sidewinder (*Crotalus cerastes cerastes*) was observed near the south end of Kane Springs Valley. One live desert tortoise and multiple tortoise sign were also observed as discussed in **Section 3.8.3.1**.

Upland Game Birds

The following species of game birds were observed in the project area during baseline surveys: chukar (*Alectoris chukar*), mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), and greater sage-grouse (discussed in **Section 3.8.3.1**). In addition, blue grouse (*Dendragapus obscurus*), Hungarian partridge (*Perdix perdix*), Gambel's quail (*Callipepla gambelii*), and Rio Grande turkey (*Meleagris gallapavo intermedia*) can also occur within or near the project area.

Figure 3.8-4a Pronghorn Antelope – Big Game Resources

Figure 3.8-4b Mule Deer – Big Game Resources

Figure 3.8-4c Elk – Big Game Resources

Figure 3.8-4d Bighorn Sheep – Big Game Resources

Appendix 3D lists the bird species observed during the baseline surveys, although numerous other species not observed are known to occur across the habitats found within the project area.

Waterfowl

The project area crosses over or is adjacent to several riparian areas that support a variety of waterfowl species. Transmission Line Segment 6C crosses the southern end of the Kirch Wildlife Management Area and Segment 9D is located less than 1,000 feet from the southeastern boundary of the Pahranagat National Wildlife Refuge.

3.8.3.4 Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act (16 U.S. Code 703-711). Executive Order 13186 (66 FR 3853), signed by President Clinton in January 2001, required federal agencies taking actions that may negatively impact migratory birds to develop a MOU with the USFWS to promote various migratory bird programs and conservation considerations.

A list of Birds of Conservation Concern was developed as a result of a 1988 amendment to the Fish and Wildlife Conservation Act. This Act mandates that the USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." The goal of the Birds of Conservation Concern species list is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. Therefore, on any actions that could negatively impact migratory birds, the species listed as Birds of Conservation Concern would be reviewed in accordance with Executive Order 13186 (BLM 2008a).

The project area provides a diversity of habitats for many species of migratory birds. Sagebrush vegetation communities, comprising nearly 25 percent of the project area, have been identified as Priority A habitat under the *Coordinated Implementation Plan for Bird Conservation in Nevada*. Priority A habitat is defined as habitat being under high threat, having high opportunity, and high value to birds statewide (Nevada Steering Committee Intermountain Joint Venture 2005).

Appendix 3D lists the bird species observed during the baseline surveys, although numerous other bird species not observed are known to occur across the habitats found within the project area. Additional information on migratory birds in the area, including status and trend information and distribution and trend maps is available in Sauer et al. (2008).

3.8.3.5 Fisheries

Perennial water sources are very limited within the project area and thus fishery resources are not expected to be impacted by the ON Line Project. Therefore, fishery resources will not be discussed further in this FEIS.

3.8.4 Specific Project Area Conditions

Appendix 3D displays the wildlife species observed in the project area during baseline surveys conducted in 2006, 2007, 2009, and 2010 (JBR 2007b, 2009, 2010b).

The following categories of wildlife inhabit and/or forage within the majority of the project area. Unless otherwise noted, they will not be discussed below under each specific Project feature.

Bats
Small Mammals
Predatory Mammals
Reptiles
Migratory Birds
Upland Game Birds

Threatened, Endangered, Proposed, and Candidate Species

Greater Sage-grouse: Greater sage-grouse habitat occurs throughout the White River Valley. There are eight leks (2 active) within 2 miles of the project area. **Figure 3.8-1** illustrates the type and location of these leks, and **Table 3.8-2** above shows the status and proximity of these leks to the nearest transmission line segment.

Desert Tortoise: The desert tortoise is known to occur within the project area. Specifically, tortoise habitat only occurs in Segments 9C, 9D, the southern portion of Segment 10 (sub-alternative), and Segment 11 of the project area (**Figure 3.8-2**). Suitable desert tortoise habitat does not occur north of these segments.

BLM Sensitive and State of Nevada Special Status Species

Pygmy Rabbit: Pygmy rabbits or their sign (i.e. pellets and burrows) were recorded in the RSS-Site B sub-alternative area, including the 345 kV transmission loop-ins and access roads, plus Segment 6C (**Figure 3.8-3a**).

Raptors, includes Bald and Golden Eagles: Many species of raptors utilize the diversity of habitats that exist throughout all of the transmission line segments (**Figures 3.8-3a and 3.8-3b**). Two separate sections of Segment 6C are situated within known ferruginous hawk nesting habitat areas that span the entire 2,640' width of the SWIP Utility Corridor. During baseline surveys, unidentified cliff nests were discovered south of Segment 6C (Proposed Action) in the Gap Mountain area. Two inactive ferruginous hawk nests were noted in the RSS-Site B sub-alternative survey area. The Robber's Roost Hills in Segment 8 is a particularly active raptor nesting area; in addition to several stick nests, two fledgling peregrine falcons were observed there. A golden eagle fledgling was observed sitting on a nest within the northwestern portion of Segment 10 (sub-alternative) and an active golden eagle nest was observed in Segment 8.

Western Burrowing Owl: A burrowing owl was observed in the northern portion of Kane Spring Valley, near Segment 10 (sub-alternative). Burrowing owls likely forage within the diversity of habitats that exist throughout much of the transmission line segments.

Banded Gila Monster: This species is known to occur in Clark and Lincoln counties and occupies the same general habitat as the desert tortoise (**Figure 3.8-2**). However, due to the elusive nature of the Gila monster very few historical sitings have been recorded. Baseline surveys for desert tortoise conducted in Segments 9D, 10 (sub-alternative), and 11 yielded no observations or signs of Gila monster individuals.

Kangaroo Mouse: The dark kangaroo mouse has been documented in Dry Lake Valley (Ambos et al. 2007). **Figures 3.8-3c** and **3.8-3d** show potential dark kangaroo mouse habitat in relation to the project area. The Robinson Summit Substation sites, the 345 kV transmission loop-ins, and Segments 6C, 8, and 9B would be situated within or immediately adjacent to modeled, potentially suitable dark kangaroo mouse habitat.

General Wildlife

Pronghorn Antelope: With the exception of some higher elevation areas, the RSS-Site B sub-alternative area, along with transmission line Segments 6C, 8, 9B, and 10 (sub-alternative), all pass through pronghorn year-round range (**Figure 3.8-4a**).

Mule Deer: Several transmission line segments pass through mule deer year-round, agricultural, winter range, summer range, and crucial winter range (**Figure 3.8-4b**). **Table 3.8-3** below indicates which transmission line segments are within and/or adjacent to mule deer crucial winter range. No crucial summer range occurs within the project area.

TABLE 3.8-3 MULE DEER CRUCIAL WINTER RANGE PROXIMITY TO ON LINE PROJECT COMPONENTS

PROJECT COMPONENT	PROXIMITY TO PROJECT COMPONENT
Segment 6C	Adjacent to crucial winter range where Segment 6C intersects Highway 6
Segment 6C	Portions within crucial winter range near Wells Station in the Grant Range
Segment 6C	Adjacent to crucial winter range near the northern toe of the Golden Gate Range
Segment 6C	Portions within crucial winter range of Silver King Pass on the Schell Creek Range
Segment 8	Portions within crucial range surrounding the Bristol Wells area
Segment 8	Adjacent to crucial range along the western slope of the Highland Range

Rocky Mountain Elk: There is no elk crucial winter or crucial summer range within the project area. Several transmission line segments pass through elk year-round range and the RSS-Site B sub-alternative area is situated in elk year-round range (**Figure 3.8-4c**). **Table 3.8-4** below indicates which transmission line segments are within and/or adjacent to elk year-round range. Elk sign was numerous in the vicinity of the Robinson Summit Substation and the Silver King Pass portion of Segment 6C. Elk were observed within the RSS-Site B sub-alternative study area (JBR 2010b).

TABLE 3.8-4 ELK YEAR-ROUND RANGE PROXIMITY TO ON LINE PROJECT COMPONENTS

PROJECT COMPONENT	PROXIMITY TO PROJECT COMPONENT
Segment 6C	Portions within year-round range between Robinson Summit and Wells Station in the Grant range
Segment 6C	Portions within year-round range of Silver King Pass on the Schell Creek Range
Segment 10 (sub-alt)	Portions within year-round range in the Meadow Valley Mountains
RSS-Site B (sub-alt)	Within year-round range in foothills of Egan Range, east side of Jakes Valley

Bighorn Sheep: No occupied Rocky Mountain bighorn sheep range is located near any of the transmission line segments. Several transmission line segments pass through occupied and potential desert bighorn sheep range (**Figure 3.8-4d**). **Table 3.8-5** indicates which transmission line segments are within and/or adjacent to occupied desert bighorn sheep range.

TABLE 3.8-5 OCCUPIED DESERT BIGHORN RANGE PROXIMITY TO ON LINE PROJECT COMPONENTS

PROJECT COMPONENT	PROXIMITY TO PROJECT COMPONENT
Segment 6C	Portions within occupied range surrounding Silver King Pass of the Schell Creek Range
Segment 9A	Within occupied range
Segment 9C	Within occupied range
Segment 10 (sub-alt)	Portions within occupied range of the Delamar Mountains
Segment 10 (sub-alt)	Adjacent to occupied range along the western foothills of the Meadow Valley mountains
Segment 11	Portions within occupied range of the Arrow Canyon Range

Waterfowl: Two key waterfowl areas have been identified within proximity to but not within any of the transmission line segments. Segment 6C passes south of the southern boundary of the Kirch Wildlife Management Area and the northern portion of Segment 9D passes less than 1,000 feet from the east boundary of the Pahranagat National Wildlife Refuge.

Falcon Substation

Boulder Valley is known to be utilized by both mule deer (*Odocoileus hemionus*) and pronghorn antelope (*Antilocapra americana*). Antelope, coyote, and black-tailed jackrabbit sign were present in the area. Birds observed during the site visit include the common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), and Say's Phoebe (*Sayornis saya*). A pair of Say's Phoebes was observed nesting inside the substation fence on a steel I-beam structure.

3.9 Range Resources

There are 242 grazing allotments within the BLM's Ely District. The Southern Nevada District has approximately 63 allotments, although only 5 of these are available for grazing. Of these 305 allotments, 28 are within the ON Line project area, although not all of these would be affected (see **Figures 3.9-1a and 3.9-1b**). These 28 allotments are open rangelands that have the potential to be used periodically, at various intensities, for livestock grazing.

In addition, wild horses inhabit some of the rangeland within the project area. Wild horses are protected by the Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195, as amended). There is only one Herd Management Area (HMA) within the project area. Horses are actively managed in HMAs to maintain herd health and the health of rangelands (BLM 2007b; see **Figure 3.9-2**).

3.9.1 Area of Analysis

The area of analysis includes the components of the Proposed Action and Action Alternative and the entirety of any allotment or HMA directly affected by the project.

Figure 3.9-1a Allotment Resources

Figure 3.9-1b Allotment Resources

Figure 3.9-2 Herd Management Areas

3.9.2 Data Sources and Methods

The following indicators were considered when describing the affected environment for range resources:

- Number of livestock allotments or HMAs that have one or more elements of the ON Line Project situated within them, and the numbers of livestock or horses currently using, or approved to use, these areas
- Number of Animal Unit Months (AUM) within affected allotments
- Vegetation types found within the area of analysis and their overall value as livestock forage (high or low forage productivity)
- Locations of water sources, springs, and other range improvements in relation to ON Line project components

Each livestock allotment or HMA through which ON Line Project components pass is included in the descriptions below. The acreage of the allotment or HMA is provided, as well as the number of AUMs available for livestock grazing on these lands. An AUM is the amount of forage required to maintain a cow, cow and calf less than six months old, a bull, or five sheep, for one month (BLM 2009d), and in the arid west, it typically requires several acres to provide one AUM of forage (BLM 2007a). Forage is that portion of the vegetation supply that is eaten by animals. For cows and horses, this is generally grasses. The BLM determines the number of AUMs available on each allotment based on forage production studies and other evaluations of rangeland health.

Vegetation types and estimated forage productivity information in this chapter are based on Natural Resource Conservation Service (NRCS) (USDA 2007c), as well as original vegetation data presented in **Section 3.7**.

Additional information about the location of the allotment or HMA relative to roads, water sources, human settlements, or period of use is also included where information was available.

Information about water sources, springs, and other range improvements was gathered from existing BLM data regarding livestock watering facilities, the Nevada State Engineer's Office website (http://water.nv.gov) (NDWR 2006), and seep, spring, and stream survey data collected for this EIS. This information is presented in **Section 3.2.3.2**.

3.9.3 Existing Conditions

The proposed ON Line Project and its components would be constructed on a landscape dominated by grass and shrublands in an arid area receiving 5 to 14 inches of precipitation per year (see **Table 3.6-2**). Most of these lands are managed by the BLM and are divided into grazing allotments used principally for cattle grazing, some sheep grazing, and wildlife habitat.

A number of ranchers have grazing permits with grazing preference for one or several of the allotments within the project area depending upon the permit. In the project area, these allotments are generally grazed for a set period and may include year-round grazing, with livestock rotating use based on the terms and conditions of the permit. The BLM manages the number of livestock on the allotment by conducting forage inventories and tracking the number of AUMs used. To maintain plant health over the long term, roughly half of the forage available within an allotment is left standing each year. This allows plants to continue making and storing food for future years.

There are three designated sheep trails running from north to south that the transmission line alignments parallel and at three places intersect (**Figure 3.9-1a**). The trails are a mile wide and connect to each other. The Jakes Unit Trail is the northernmost unit. This trail leads into the middle trail, the Preston Lund Trail. The Preston Lund Trail leads into the southern trail, the White River Trail. Three ranchers are authorized by the BLM to use these trails for spring and fall sheep trailing. All three ranchers graze sheep on the northern (summer) and southern (winter) allotments within the Ely BLM District.

The project area also contains 1 HMA. HMAs are managed by determining Appropriate Management Levels (AMLs). AMLs are defined as the number of wild horses or burros that can be sustained within a designated HMA while maintaining a natural ecological balance, in keeping with the multiple-use management concept for the area (National Wild Horse Association 2007). The BLM determines the appropriate number of wild horses and burros that each herd management area can support through intensive land use management planning efforts, including range forage inventory and requests for input from the public (BLM 2007b).

Vegetation in the project area is generally dominated by shrubland species. The most common shrub species are big sagebrush, Douglas rabbitbrush, winterfat, and greasewood in the north and central portions of the project area. Blackbrush and creosote bush become more common as one moves southward. Two low tree communities also occur: pinyon-juniper woodlands occur at higher elevations in the north and Joshua tree forests occur at low to mid elevations in the south. Grasses are a minor or sub-dominant component of these communities, but become dominant in the uncommon hydrophyllic plant communities identified in the project area. Common grasses in the project area include Indian ricegrass, various needlegrasses, alkali sacaton, Sandberg bluegrass, bluebunch wheatgrass, basin wildrye, big Galleta, and alkali saltgrass, as well as sedges and rushes in seasonally wet areas. Shrub communities are often a complex of the species noted above, although areas with only one to a few species are relatively common. For example, islands of winterfat monocultures grow on silty soils on alluvial fans between Wyoming big sagebrush-dominated communities. Salt desert shrub communities consist of only salt-tolerant species and grow near valley bottoms. Grass-rich areas, plant communities located near water, and the areas of winterfat monocultures are important forage areas to livestock and horses as these species are palatable, productive, and nutritious. Sagebrush is also important to many wildlife species as browse and cover.

Although the landscape is arid, numerous springs outcrop at the base of nearby mountains to create isolated wet and sometimes saline meadows. Some of these springs are used as water sources for livestock.

Vegetation and forage availability varies significantly with proximity to water, soil depth, and texture; therefore, some portions of allotments or HMAs may have good forage while others have poor forage.

Water is also a variable resource. Some allotments and HMAs have several springs and/or developed water sources. Others may have only one water source. Cattle and horses move up to several miles a day to reach good forage and good water, and will often congregate around water sources or on high, breezy ground (Griffith 1999).

Natural mortality rate information for cattle is unavailable. Causes of mortality include disease, animal predation, weather-related stress, or collisions with vehicles. In a typical cow-calf operation, mother cows produce one calf per year. Cows that do not produce a calf are generally sold. Depending on the operation, mother cows are kept for 4 to 7 years, steers are

kept for 6 to 18 months, and female calves are either sold with the steers or kept to replace older mother cows. Very few male calves are kept as bulls.

Horses have an average mortality rate of about 5 percent per year and a herd growth rate of about 20 percent per year. Populations are kept in check by rounding up the horses and auctioning them off every few years. Any unadopted horses and/or foals are sent to holding facilities (Noyes 2007).

3.9.4 Specific Project Area Conditions

Grazing Allotments

Up to 28 grazing allotments would be crossed by one or more of the proposed transmission facilities. **Table 3.9-1** lists the allotments intersected by the transmission facilities, allotment acreage, the number of AUMs designated within the allotment, and the acres required to support an AUM of forage. Not all proposed segments of the transmission facilities would be developed, thus not all the allotments noted below would be affected. All allotments within the direct and indirect effects area in the Southern Nevada District have been relinquished. That is, there is no active grazing by livestock within these allotments, thus the AUMs are not used.

TABLE 3.9-1 ALLOTMENTS INTERSECTED BY THE ON LINE PROJECT

ALLOTMENT	TOTAL ACRES IN ALLOTMENT	AUMS IN ALLOTMENT*	ACRES PER AUM
Thirty Mile Spring	188,872	8,405**	22
Badger Springs	33,755	1,412***	24
Indian Jake	48,894	2,948	17
Giroux Wash	58,017	3,107	19
Tom Plain	81,080	4,439	18
McQueen Flat	11,694	496	24
Douglas Canyon	15,043	175	86
Douglas Point	13,889	368	38
North Cove	27,296	879	31
Cove	28,273	3,967	7
Wells Station	13,925	302	46
Hardy Springs	125,651	3,478	36
Forest Moon	117,532	2,263	52
Sunnyside	237,408	5,402	44
Fox Mountain	73,430	6,322	12
Wilson Creek	1,071,661	54,070	20
Simpson	8,088	747	11
Ely Springs Sheep	24,238	4,248	6
Ely Springs	57,850	4,248	14
Cliff Springs	37,019	2,043	18
Oak Springs	197,950	9,268	21
Buckhorn	80,664	3,370	24
Lower Lake East	52,550	640	82
Arrow Canyon	114,987	0	-
Pitman Well	43,210	0	-
Dry Lake	35,414	0	-
Delamar	203,000	5,558	37
Grapevine	22,000	560	39

*AUM Data from Wilson 2007, unless otherwise noted, cattle
**AUM Data from Seal 2010, cattle/sheep
***AUM Data from Seal 2010, sheep

The Robinson Summit Substation would be located in the Thirty Mile Spring allotment. The RSS-Site B sub-alternative would be located within the Badger Springs allotment within the Jakes Unit Sheep Trail. The Falcon Substation is on private lands. Remaining project facilities include transmission towers and temporary facilities such as access roads, staging, and wire pulling areas.

There are corrals located southwest of the Proposed Action Segment 6C alignment, about 3 miles south of the RSS-Site B sub-alternative, within the Jakes Unit Trail. They are used for sheep operations, mostly in the spring when the animals are moving north. The corrals are large enough to support lambing or shearing.

HMAs

The Silver King HMA is within the direct affects area of the transmission facilities (**Figure 3.9-2**).

Segment 6C enters the Silver King HMA from the west, crosses the southern third of the Schell Creek Range, then becomes Segment 8, as the transmission line turns south to run along the Dry Lake Valley through this HMA.

US-93 bisects the Silver King HMA to the east of the proposed alignment; the west boundary of the HMA is defined by SR-318 and the east edge of the South Egan Range. The HMA includes most of Cave Valley and Muleshoe Valley on the north. It cuts across the North Pahroc, Dry Lake Valley, and Highland Range on the south. It is 606,000 acres in size (947 square miles). The Silver King HMA surrounds the communities of Pioche and Casselton on three sides; the communities are located in a lobe of land not part of the HMA.

This HMA is managed for 60 to 128 horses (BLM 2008a), and there are currently an estimated 438 horses using the HMA (Noyes 2009). There are no wild burros in the project area.

Vegetation and Forage Production

As noted above, vegetation within the project area is made up mostly of grass and shrublands in the north and central portions of the project area, and sparsely vegetated shrublands in the south portion. Some areas support more vegetation than other areas, and are of higher value to grazing animals. While cows prefer to eat grass, sheep prefer a more mixed diet that includes forbs and shrubs. Thus, there can be a difference in the value of forage produced in an area in a given year depending on what kind of livestock are using the area.

Plant and forage production data were collected at the two proposed substation sites by BLM Range Scientists in June 2010. For the proposed Robinson Summit substation, located in the Thirty Mile Spring allotment, forage production for cattle was approximately 33 pounds per acre (30 acres per AUM). The proposed RSS-Site B sub-alternative, located in the Badger Springs allotment, produced about 22 pounds per acre of forage for cattle (45 acres per AUM). These areas are also grazed by sheep, which browse on the extensive black sagebrush growing in these areas. For sheep, the Robinson Summit Substation area would provide approximately 955 pounds of useable forage per acre (1 acre per AUM). The RSS-Site B sub-alternative area produced approximately 906 pounds per acre of sheep forage (1.1 acres per AUM).

When current, local data are not available, NRCS forage production records can be used. The NRCS maintains plant production records, by species, for virtually all rangelands in the U.S. These records, which are averaged over several years before being published, are used in Ecological Site Descriptions (ESDs), which are used to describe rangeland health and current and potential plant productivity. The ESDs are tied to the soil types identified as part of the national soil survey system (NRCS 2003, 2004). While NRCS data are somewhat generalized,

they still provide a reasonable estimate of vegetation and forage production. NRCS data are used below to illustrate the range of forage production on rangelands within the project area. The examples below assume forage production rates for cattle.

Vegetation and forage production on Segment 6C in the floodplain of the White River near Lund ranges from about 5,000 pounds total vegetation and 4,500 pounds forage per acre in a good year. However, some areas on Segment 11 near the south end of the transmission line, where temperatures are higher and the area is dominated by annual plants, produce roughly 90 pounds total vegetation and 23 pounds forage per acre in a poor year. There are occasional playas (dry lakebeds) along the transmission corridor that are barren of all vegetation and thus produce no forage. These three types of areas are extreme examples: a more typical vegetation/forage production rate in the project area would be about 200 to 400 pounds of vegetation and 100 to 200 pounds of forage per acre in an average year. Compared to irrigated pastureland these production rates are quite low. **Table 3.9-2** shows how different lands within the project area produce different amounts and types of vegetation.

TABLE 3.9-2 VEGETATION AND FORAGE PRODUCTION RATES FOR SELECTED AREAS WITHIN THE ON LINE PROJECT

ECOLOGICAL SITE / SOIL SERIES	TOTAL ANNUAL AIR-DRY PRODUCTION (LBS/ACRE): VEGETATION / FORAGE			DOMINANT SPECIES AND THEIR PERCENT COVER
	GOOD YEAR	FAIR YEAR	POOR YEAR	
SEGMENT 6C				
Soil Map Unit Number/Name: 951 – Nyak-Umwell-Pern association, <100 acres				
Loamy Bottom 10 – 14 P.z R028BY003NV) Pern	5,000 / 4,500	2,500 / 2,250	1,500 / 1,350	Basin wild rye 70%
Soil Map Unit Number/Name: 124 – Tecomar-Pookaloo association, 1476 acres				
Shallow Calcareous Hill 14+ P.z. (028BY090NV) Tecomar	400 / 140	250 / 88	125 / 44	Black sagebrush 35% Bluebunch wheatgrass 20% Scribner needlegrass 5% Stansbury cliffrose 5%
SEGMENT 8				
Soil Map Unit Number/Name: 1510 - Raph-Zimwala-Heist association, 1108.9 acres				
Shallow Silty 8-10 P.z. (028BY009NV) Raph	500 / 200	400 / 160	300 / 120	Shadscale 45% Indian ricegrass 25% Bottlebrush squirreltail 10%
SEGMENT 9A				
Soil Map Unit Number/Name: 1460 – Pintwater-Rochpah association				
Bouldery Slope 5-8 P.z. (R029XY085NV) Pintwater	700 / 280	500 / 200	300 / 120	Desert needlegrass 25% Green ephedra 20% Needleandthread 5%
SEGMENT 9B				
Soil Map Unit Number/Name: 1520 – Fax-Yody-Broland association, 1096.4 acres				
Shallow Clay Loam 10-12 P.z. (028BY089NV) Broland	450 / 248	300 / 193	150 / 83	Indian ricegrass 25% Black sagebrush 25% Thurber's needlegrass 20%
SEGMENT 9C				
Soil Map Unit Number/Name: 1041 – Akela-Rochpah-Rock Outcrop association				
Loamy Slope 5-7 P.z (R030XB0028NV) Akela	800 / 440	600 / 330	400 / 220	Desert needlegrass 40% Shadscale 10% Nevada ephedra 10%
SEGMENT 9D				
Soil Map Unit Number/Name: AB – Arizo-Bluepoint association, 622.0 acres				
Limy 3-5 P.z. (R030XB019NV) Arizo	200 / 10	125 / 6	75 / 4	White bursage 65% Creosote bush 10% Range ratany 5%

ECOLOGICAL SITE / SOIL SERIES	TOTAL ANNUAL AIR-DRY PRODUCTION (LBS/ACRE): VEGETATION / FORAGE			DOMINANT SPECIES AND THEIR PERCENT COVER
	GOOD YEAR	FAIR YEAR	POOR YEAR	
SEGMENT 10 SUB-ALT				
Soil Map Unit Number/Name: 1100 – Geta – Arizo association, 215 acres				
Dry Floodplain (RO28BY041NV) Geta	2,400	1,600	1,200	Big Galleta 65% Bush muhly 15% Indian ricegrass 10%
SEGMENT 11				
Soil Map Unit Number/Name: CTC – Colorock-Tonopah association, 7567.8 acres				
Limy 5-7 P.z. (R030XB005NV) Tonopah	325 / 81	240 / 60	90 / 23	Misc. shrubs 17% Misc. annual forbs 15% Big galleta 10% Misc. annual grasses 5%

Source: NRCS Undated; NRCS Soil surveys: Lincoln County, North Part (2000), Western White Pine County (1998), and Clark County (2006)

A few range improvements have been completed in the project area. These include seedings in the McQueen Flat and Douglas Canyon Allotments where Segment 6C would be located. Seedings are conducted after range fires kill native vegetation, or to improve rangeland forage production on rangelands. If successful, seedings increase vegetation and forage production substantially; however, because of the arid nature of the project area, seedings may produce less forage than the area did prior to treatment. Seedings conducted as range improvements generally increase forage volumes.

There are very few fences within the project area as the vast majority of the land is open range. There is one set of corrals, as discussed above, approximately 3 miles south of the proposed RSS-Site B sub-alternative.

Water Wells

There are several wells, springs, and stock-watering facilities located along the proposed transmission segments. Information about these facilities was collected from the Nevada State Engineer website (NDWR 2006), field surveys for this FEIS, and the BLM Ely and Southern Nevada District offices. However, not all developed stock watering locations have State Engineer records, nor have they all been mapped or recorded in BLM records. The information in **Table 3.9-3** is the most complete list of water wells, springs, and stock watering tanks available at this time.

TABLE 3.9-3 WELLS, SPRINGS, AND STOCK WATERING FACILITIES LOCATED WITHIN 1.5 MILES OF THE ON LINE PROJECT

ON LINE PROJECT ELEMENT	ALLOTMENT	HMA	TOWNSHIP & RANGE	SECTION	LOCATION	OWNER – TYPE	DISTANCE TO PROJECT ELEMENT
Robinson Summit Substation	Thirty Mile Spring	None	18N, 61E	19	NW ¼	BLM - Summit Spring	<1 miles
Segment 10 Sub-Alt	Grapevine	None	10S, 64E	9	NW ¼	Unknown – Reservoir	1.5 miles

3.10 Cultural Resources

The National Historic Preservation Act (NHPA) of 1966, as amended, the Archaeological Resources Protection Act of 1979 (ARPA), the American Indian Religious Freedom Act (AIRFA), and the Native American Graves Protection and Repatriation Act (NAGPRA) are the primary laws regulating preservation of cultural resources. Federal regulations obligate federal agencies to protect and manage cultural resource properties.

The NHPA sets forth procedures for considering effects to historic properties and supports and encourages the preservation of prehistoric and historic resources. It directs federal agencies to consider the impacts of their actions on historic properties. The NHPA established the Advisory Council on Historic Preservation (ACHP) and tasked the ACHP with administering and participating in the preservation review process established by Section 106. Section 106 of the NHPA, as amended, requires federal agencies to take into account any action that may adversely affect any structure or object that is, or can be, included in the National Register of Historic Places (NRHP). These regulations, codified at 36 CFR 60.4, provide criteria to determine if a site is eligible. Beyond that, the regulations define how those properties or sites are to be dealt with by federal agencies or other involved parties. These regulations apply to all federal undertakings and all cultural (archaeological, cultural, and historic) resources.

The purpose of ARPA is to secure the protection of archaeological resources and sites that are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources.

The AIRFA was passed in 1978 to "protect and preserve for American Indians their inherent right to freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites."

NAGPRA became law in 1990; the regulations implementing the statute were completed and went into effect in January 1996. This law formally affirms the rights of Indian tribes, Native Alaskan entities, and Native Hawaiian organizations to custody of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony with which they have a relationship of cultural affiliation. In addition, the law and regulations describe procedures designed to ensure that all Americans can derive educational, historical, and scientific value from the remains and objects covered by the statute through public interpretation, documentation, and study.

Cultural resources are defined as any definite location of past human activity identifiable through field survey, historical documentation, and/or oral evidence. Cultural resources have many values and provide data regarding past technologies, settlement patterns, subsistence strategies, and many other aspects of history. The term "Cultural Resources" can apply to "those parts of the physical environment – natural and built – that have cultural value of some kind to some sociocultural group." This can include spiritual places, historic resources, archaeological resources, Native American cultural items, historical objects, religious practices, cultural uses of the natural environment, community values, or historical documents (King 1998: 7,9).

A Traditional Cultural Property (TCP) is a property associated with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in

maintaining the continuing cultural identity of the community (Parker and King 1994)"; this property type may be determined eligible for the NRHP if it meets criteria found in 36 CFR 60.4.

3.10.1 Area of Analysis

A Programmatic Agreement establishing an Area of Potential Effect (APE) for cultural resources and outlining the methods of identification and treatment of cultural resources was completed for the ON Line Project and signed by the agencies (**Appendix 3E**). Under the Programmatic Agreement, the BLM has assumed responsibility for completing Section 106 compliance for cultural resources within the APE. The APE for assessment of direct and indirect effects includes all of the ON Line Project components associated with the Proposed Action and Action Alternative as described in **Chapter 2**.

Class III cultural resource inventories (systematic and detailed field inspections) were conducted for portions of the project area outside the SWIP Utility Corridor (Seymour et al. 2007, Young et al. 2007, and Gilreath et al. 2010). Archaeological sensitivity modeling was conducted for prehistoric and historic resources within the SWIP Utility Corridor (Carpenter et al. 2008), making use of the project-specific and comparable adjacent surveys. The archaeological sensitivity modeling utilizes existing NRHP-eligible site data, and provides levels of archaeological sensitivity through acreages of NRHP-eligible site area rather than number of NRHP-eligible sites.

3.10.2 Data Sources and Methods

Information regarding cultural resources in the project area was collected through literature searches and field inventory. Data for cultural resources includes record search information for an area 1-mile out from project components and field inventories of project components where comparable data does not exist, and results and/or extrapolation from previous applicable inventories (i.e., SWIP inventory).

3.10.3 Existing Conditions

3.10.3.1 Prehistory

The ON Line Project straddles two distinct areas—the Great Basin and eastern Mojave Desert. Boundary and transitional areas (peripheries) can be difficult to characterize. The period divisions for the Great Basin and the eastern Mojave regions are generally congruent. It appears that adaptive/technological/cultural changes occurred in the same general timeframes for both regions; this is likely even more true in transitional or boundary regions. Therefore, a simplified four-phase chronology, after Elston (1986) is presented here, summarized from Carpenter et al. (2008). The Late Archaic includes Formative and Post-formative cultural traits to acknowledge the agricultural influence towards the end of the sequence (Carpenter et al. 2008).

Pre-Archaic (12,000-7,000 Before Present (BP))

Throughout much of the Great Basin, this period is characterized by an emphasis on a relatively small set of highly ranked resources, which would have been abundant in wetland settings. During this time, hunting groups apparently made increasing use of small mammals, waterfowl and other birds, and fish (Jones et al. 2003). Within the Great Basin, sites that date to this period are rarely found (Elston 1986). Pre-Archaic complexes generally tend to be located along the bottomlands and playa margins of the ancient lakeshores of the Lahontan and Bonneville lake systems. The project area lies within a broad, elevated zone, which separates these two

paleo hydrological systems, and so may not have attracted early settlement for this reason (McGuire et al. 2004).

Early Archaic (7,000-4,000 BP)

Across the Great Basin, Early Archaic artifact assemblages are more diverse than in the previous period, with grinding tools and intensively used bifaces and scrapers common. These changes are thought to signal resource diversification, as a wider variety of resources including small game, seeds, and pinyon nuts became more important dietary constituents.

Middle Archaic (4,000-1,500 BP)

Across the Great Basin, the Middle Archaic is noted for the dramatic development of large semi-sedentary villages. Other distinctive traits include elaborations in material culture, house construction, obsidian tool production, and ceremonial activity directed particularly at the hunting of large game (Hildebrandt and McGuire 2002). At the same time, dietary faunal profiles reflect a comparatively sudden shift from large-game (bighorn) to small game, such as rabbits/hares, between 1,000 and 2,000 BP. Big-game hunting, particularly mountain sheep, remained an important subsistence activity, but sites containing seed processing tools and rabbit bones are fairly common. Quarry production and biface manufacturing associated with the major toolstone sources similarly developed to unprecedented levels (Gilreath and Hildebrandt 1997).

Late Archaic (1,500 BP to Euro-American Contact)

The Late Archaic in much of the Great Basin is marked by several technological changes. Around 1,500 years ago, the atlatl and dart were replaced by the bow and arrow, with a concurrent switch to smaller and lighter projectile points (e.g., Rose Spring and Desert series). Plant processing equipment becomes more elaborate and abundant, and ceramics appear in the archaeological record after about 900 BP.

There are indications that Fremont groups came into contact with eastern Nevada groups during this interval. The Fremont consisted of several groups of related semi-sedentary people centered in Utah who relied on a range of subsistence practices, from full-time foraging to full-time horticulture (Hockett and Morgenstein 2003; Madsen and Simms 1998).

The final group to enter this region, at about 700 BP, was Numic-speaking populations. This group, the Western Shoshone, may have replaced the Fremont and are thought by some researchers (Lamb 1958; Bettinger and Baumhoff 1982) to have expanded east and north from a homeland in southern California. Archaeological literature characterizes Numic groups as having practiced a broad-spectrum, foraging lifeway, concentrating on a greater range of resources that were costly to collect and process, thus out-competing and displacing pre-Numic inhabitants (Bettinger and Baumhoff 1982). The Numic groups who occupied the Great Basin at the time of Euro-American contact were mostly mobile hunters and gatherers who moved in a seasonal pattern. Their contemporary successors continue to occupy the Great Basin.

3.10.3.2 Ethnohistory

At the time of Anglo-American intrusions, most of the project area was occupied by the Southern Paiute and the Western Shoshone (which includes the Goshute and Shoshone). Traditional lands of the Goshute Shoshone extend west from Utah, with a few Goshute settlements occurring as far west as Egan Canyon. In southern Nevada, the traditional use areas for the Western Shoshone and Southern Paiute meet in the general vicinity of the Lincoln-Clark county line. The Western Shoshone and Southern Paiute interacted extensively along this territorial boundary.

Pre-contact Western Shoshone and Southern Paiute are described as fairly uniform cultures with only minor local variations, based entirely on hunting and gathering. The Western Shoshone hunted and gathered in family areas based on yearly cyclical migration patterns. The bands lived in widely scattered winter villages consisting of a few families, coming together for communal activities (Steward 1938). Native lifeways were initially disrupted in the 1820s with the appearance of trappers and explorers; and largely restructured with the development of local mining and ranching/farming operations.

3.10.3.3 History

Histories of the area have been written (James 1981; Angel 1958; Elliot 1987) and will not be reiterated here. Following is a brief summary of history pertinent to the resources in the project area.

Transportation and Communication

The early history of Nevada is tied to the major transportation corridors linked to substantial settlements outside of the state. Early Nevada settlements developed astride these transportation corridors. Trails, roads, and, later, railroad lines were the initial conduits for importing the foods and supplies necessary to survive in this harsh environment. Later, these same corridors carried food and mineral resources out of the area. Events and/or developments relating to transportation and communication include the California Gold Rush of 1849, overland mail service including the Pony Express/Egan Trail, the Nevada Northern Railway, and the Central Pacific Railroad.

Mining

Mining for gold, silver, and copper was probably the largest catalyst for settlement in this region. From Ely to the south, the following historic mining districts are in proximity to the project alignment: Cherry Creek Mining District, Robinson Mining District, Currant Mining District, the Silver King Mining District, Delamar District, and a cluster of mines in the general vicinity of Pioche, including, Ely Springs, Bristol, Highland, Pioche, and Comet districts.

Ranching and Farming

Ranching in the west was well-established in Nevada by the late 1870s. Cattlemen could obtain land through the 1862 Homestead Act, the Timber and Culture Act of 1873, and the Desert Land Act of 1877.

In response to overgrazing, the Taylor Grazing Act of 1934 was signed by President Roosevelt. This legislation was intended to “stop injury to the public lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvements, and development; and to stabilize the livestock industry dependent upon the public range” (Sayre 1999). Because it changed the way the government managed federal land, the Taylor Grazing Act of 1934 was probably the most significant federal legislation the West had seen to date.

3.10.3.4 Previous Research

Records searches of the project area, and areas surrounding it, were conducted at the Ely District Office of the Nevada BLM, the Harry Reid Center of Environmental Studies at the University of Nevada, Las Vegas (UNLV), and using data incorporated in the Nevada Cultural Resources Information System (NVCRIS). Results plotted on USGS topographic quadrangle base-maps covering the project area were reviewed to identify previously documented sites and cultural resource studies completed within 1 mile of project components. A supplemental review of the General Land Office (GLO) maps determined historical land ownership and locations of

potential historic-period sites within 3 miles of project components. This information is documented in the associated cultural resource reports (Young et al. 2007, Carpenter et al. 2008; Duke et al. 2009).

3.10.3.5 Cultural Resource Inventory Results

A Class III level inventory was conducted on certain components of the ON Line Project: Robinson Summit Substation, RSS-Site B sub-alternative, Falcon Substation Expansion area, Segment 9A, and sub-alternative Segment 10. The ON Line transmission line segments that are within the SWIP Utility Corridor were not inventoried since a 200-foot wide alignment within the SWIP Utility Corridor had recently been inventoried as part of a separate project (Crews et al. 2007) and provides information useful for assessing SWIP Utility Corridor-wide sensitivity. The findings from the project-specific inventories, combined with recent findings from the associated transmission line ROW in the SWIP Utility Corridor (Crews et al. 2007), provide sufficient information to analyze the ON Line Project's potential effect on cultural resources. Data from the project-specific and adjacent studies were incorporated into a sensitivity analysis as described below. As outlined in the Programmatic Agreement, all elements of the final design would be fully inventoried and Section 106 satisfied prior to any project related disturbance. Project components, or portions thereof, not included in field investigations, would be subject to a Class III inventory as project planning proceeds and prior to any ground disturbing activities in those locations.

No TCPs have been identified in the project area by previous studies.

Archaeological Sensitivity Analysis

An archaeological sensitivity assessment was derived from the current and relevant previous Class III level inventory results for the project area and adjacent lands (see keystone studies in Carpenter et al. 2008). Using site types and those sites determined or recommended eligible to the NRHP, density estimates for the number of acres of NRHP-eligible sites per square mile were made (Carpenter et al. 2008). Each of the various project components was then ranked according to its prehistoric and historic archaeological sensitivity. The sensitivity ranks are defined in **Table 3.10-1**. Overall, historic site counts and the number of NRHP-eligible historic period sites are low, precluding classification using the same methods developed for the prehistoric sites (Carpenter et al. 2008); therefore a simplified method was developed. Sensitivity rankings for historic sites takes into account both number of eligible sites and proximity to sensitive areas related to specific themes of transportation/communication, mining, and farming/ranching.

TABLE 3.10-1 ARCHAEOLOGICAL SENSITIVITY RANKING

SENSITIVITY RANK	DESCRIPTION
	PREHISTORIC ARCHAEOLOGY
Low	Less than 1 acre of NRHP-eligible sites per square mile
Moderate	1 to 7.5 acres of NRHP-eligible sites per square mile
High	7.5 to 15 acres of NRHP-eligible sites per square mile
Very High	15+ acres of NRHP-eligible sites per square mile
	HISTORIC ARCHAEOLOGY
Low	Few if any NRHP-eligible sites
High	Several NRHP-eligible sites and/or proximity to significant transportation corridors or historic mining districts

Nine general prehistoric site types were recognized based on artifact composition, site size, and the toolstone utilized. These include complex feature/artifact assemblage, simple/complex flaked stone, linear feature/assemblage, simple milling equipment, simple pottery assemblage, toolstone quarry, segregated reduction location, isolated thermal feature, and isolated artifact. Simple flaked stone scatters comprise 79 percent of prehistoric sites within the keystone studies (Carpenter et al. 2008).

The historic-period sites were generally classified into nine types and then associated with historical themes. The site types include charcoal feature/debris, residential features/debris, temporary occupation/debris, transportation feature/debris, trash scatter/debris, mining feature, ranching feature/debris, conservation feature, and isolated find. The historic themes include exploration, transportation, mining, farming/ranching and grazing, government and politics, and leisure and recreation. Most of the historic period sites (62 percent in keystone studies; Carpenter et al. 2008) are simple trash scatters that are difficult to link to any one historical theme. The next most common historic-period sites are transportation-related features.

Historic sensitivity determinations include proximity to significant transportation corridors or historic mining areas. There are a number of major travel corridors in the general area including the Lincoln Highway, the Midland Highway, and an old alignment of US-93.

3.10.4 Specific Project Area Conditions

The following descriptions of prehistoric and historic archaeological sites and sensitivities are taken from the project specific inventories and sensitivity modeling analysis discussed in **Section 3.10.3**. For areas not inventoried, sensitivity modeling was deemed appropriate at this stage of the planning process for providing the baseline data. See **Section 3.10.3** for information regarding the sensitivity analysis.

Proposed Action

The following table (**Table 3.10-2**) presents the sensitivity analysis data or the known site data by project component for the Proposed Action.

TABLE 3.10-2 POTENTIAL FOR CULTURAL RESOURCES FOR THE PROPOSED ACTION

PROJECT COMPONENT	PREHISTORIC ARCHAEOLOGICAL SENSITIVITY	HISTORIC ARCHAEOLOGICAL SENSITIVITY	KNOWN HISTORIC RESOURCES	INVENTORY RESULTS
Segment 6C	Very High	High	Midland Highway, the Currant Mining District, and ranching/farming	N/A
Segment 8	Low	Low		N/A
Segment 9A*	N/A	N/A		No sites
Segment 9B	Low	Low		N/A
Segment 9D	Very High	High	Historic Route of US-93	N/A
Segment 11	High	Low		N/A
Robinson Summit Substation* (including associated loop-in)	N/A	N/A		9 sites of which 2 recommended NRHP-eligible
Falcon Substation Expansion*	N/A	N/A		No sites

*This project component was inventoried (Young et al. 2007, Duke et al. 2009)

BLM review of the cultural resource inventory reports (Young et al. 2007, Carpenter et al. 2008, Duke et al. 2009, Gilreath et al. 2010) is on-going. Recommendations of eligibility will be reviewed by the BLM in each of the two field offices where the project is located. The BLM will make eligibility determinations, which will then be reviewed by the Nevada SHPO.

Action Alternative

The following table (**Table 3.10-3**) presents the sensitivity analysis data or the known site data by project component for the Action Alternative.

TABLE 3.10-3 POTENTIAL FOR CULTURAL RESOURCES FOR THE ACTION ALTERNATIVE

PROJECT COMPONENT	PREHISTORIC ARCHAEOLOGICAL SENSITIVITY	HISTORIC ARCHAEOLOGICAL SENSITIVITY	KNOWN HISTORIC RESOURCES	INVENTORY RESULTS
Segment 6C	Very High	High	Midland Highway, the Currant Mining District, and ranching/farming	N/A
Segment 8	Low	Low		N/A
Segment 9A* (sub-alternative)	N/A	N/A		No sites
Segment 9B	Low	Low		N/A
Segment 9C	Low	Low		N/A
Segment 9D	Very High	High	Historic Route of US-93	N/A
Segment 10* (sub-alternative)	N/A	N/A		35 sites of which 10 recommended NRHP-eligible
Segment 11	High	Low		N/A
Robinson Summit Substation*	N/A	N/A		9 sites of which 2 recommended NRHP-eligible
RSS-Site B, includes loop-ins and access roads (sub-alternative)*	N/A	N/A		11 sites of which 3 recommended NRHP-eligible
Falcon to Gonder Loop-in (sub-alternative)*	N/A	N/A		17 sites of which 0 recommended NRHP-eligible
Falcon Substation Expansion*	N/A	N/A		No sites

Sensitivity data source: Carpenter et al. 2008
*This project component was subject to inventory (Young et al. 2007, Duke et al. 2009, Gilreath et al. 2010)

3.11 Native American Concerns

Federal agencies are required by law (including the National Historic Preservation Act of 1966 and Archaeological Resources Protection Act of 1979) to consult with Native Americans on actions that may affect their traditions or uses of public lands. The agency must provide tribes a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects.

The goal is to “assure that tribal governments, Native American communities, and individuals whose interests might be affected have a sufficient opportunity for productive participation in BLM planning and resource management decision making.” To this end, the BLM has engaged in consultation with the Native Americans associated with the area.

3.11.1 Area of Analysis

For the purposes of this analysis, the project area includes an approximately 10-mile-wide area centered on the components of the ON Line Project facilities.

3.11.2 Data Sources and Methods

Data regarding Native American Concerns relied on the BLM tribal liaison’s knowledge of and familiarity with places and resources of Native American interest and concern within their district. Further, data was gathered and supplemented by reviewing available ethnographic and ethnohistoric reports produced for previous federal undertakings in the vicinity of the project area (Bengston 2007).

3.11.3 Existing Conditions

Data gathered during past consultation with tribal governments was summarized in a project specific report (Bengston 2007) which indicates there are at least 11 potential areas of cultural and/or geographical interest within the general vicinity of the proposed Robinson Summit Substation, RSS-Site B sub-alternative, and the transmission line alignments (Bengston 2007). Six of the areas involve subsistence activities. Four contain village or other habitation sites and one area has the potential for burial sites. There are two battle or massacre sites. Of particular importance are one place associated with traditional stories and five places associated with various ceremonial and ritual practices.

The Falcon Substation area was included in a previous study (BLM 2001a). No specific concerns are known for this area.

Indian trust resources are natural resources protected by a fiduciary obligation on the part of the United States. Indian trust resources located on Indian reservation lands are managed and protected by the tribes. Indian trust resources located on lands administered by the BLM are managed and protected by the BLM; no Indian trust resources have been identified on BLM-administered lands within the project area. However, four parcels of land were recently transferred to be held in trust for the Ely Shoshone Tribe for traditional, ceremonial, commercial, and residential purposes (BLM 2008c). These parcels are to the north and outside of the project area.

Cultural resource sites are manifestations of past human activities. Prehistoric and ethnographic overviews are provided in **Section 3.10** (Cultural Resources), as are the known cultural resource sites in the project area. The prehistoric and historic sites indicate continuous use of the area for thousands of years by various groups.

Table 3.11-1 summarizes the known places of potential cultural and/or geographic interest to the Tribes (Bengston 2007) located within or near the components of the project.

TABLE 3.11-1 KNOWN NATIVE AMERICAN PLACES OF INTEREST IN PROXIMITY TO THE ON LINE PROJECT

ELECTRICAL TRANSMISSION COMPONENT	KNOWN PLACES OF INTEREST*	OTHER DATA
Segment 6C	1	One place appears to be within alignment. An additional five known sites are located possibly near or adjacent to this segment
Segment 8	0	
Segment 9A	1	Black Canyon Petroglyphs (Rock Art) nearby
Segment 9B	1	One place appears to be located within alignment
Segment 9C (alternative)	0	
Segment 9D	2	One place adjacent or within alignment, another (Black Canyon Petroglyphs) to the west
Segment 10 sub-alternative	1	One place located near alignment to the east
Segment 11	1	One place to the west of alignment
Robinson Summit Substation	0	
RSS-Site B sub-Alternative	1	One place located about 5 miles to the west
Falcon Substation	0	

*Exact locations of places of interest may not be known, therefore this information is approximate.

3.12 Land Use and Realty

3.12.1 Area of Analysis

Land use issues and impacts are best understood when related to the larger sociopolitical setting that provides needed context to determine impact significance. Therefore, for purposes of analysis, land use, ownership, and access are examined at the county level and within BLM District Offices.

3.12.2 Data Sources and Methods

Land use information, policies, and current management practices were gleaned from public sources, specifically from BLM resource management plans (RMPs) for the Ely and Southern Nevada Districts and from county land use plans. Land use authorizations and land tenure information were gathered from BLM RMPs as well as current data contained within BLM's Legacy Rehost 2000 System (LR2000) that provides reports on BLM land and mineral use authorizations for oil, gas, and geothermal leasing, ROWs, mineral development, land and mineral title, mining claims, withdrawals, classifications, and federal mineral estate information. These data were used to characterize land use within and surrounding the project area for the purpose of determining potential changes in public and private land use and ownership, BLM land use authorizations, and land disposals.

3.12.3 Existing Conditions

The northern terminus of the proposed transmission line would be at the Robinson Summit Substation northwest of Ely in White Pine County, extending south through Nye, Lincoln, and Clark counties with a southern terminus at the Harry Allen Substation located northeast of Las Vegas. The Falcon Substation expansion would be in Eureka County on private land – approximately 4 acres on NV Energy-owned land and approximately 3 acres on adjacent private land. Therefore, project components would be subject to the various county land use plans and

ordinances. Further, project components cross private, state, and federal lands. The federal lands involved are almost entirely public lands administered by the BLM; project components would be subject to the appropriate district office RMP. This section will discuss four major components of land use:

- Current land use plans and policies
- Land use and ownership
- Land use authorizations
- Land tenure program

The first two will be discussed in general terms as they apply to the project area as a whole. The remaining two land use components will be discussed as they relate to specific project elements.

3.12.3.1 Land Use Plans and Policies

BLM Land Use Plans

Ely RMP

The Ely District Record of Decision and approved Resource Management Plan was signed August 20, 2008. The planning area encompasses a total of 13.9 million acres within the planning area boundary, of which the BLM administers approximately 11.5 million acres in Lincoln, White Pine, and portions of Nye counties in Nevada. The RMP provides programmatic and implementable direction for management of BLM administered public lands within the Ely RMP planning area. The RMP provides direction in resource management activities including leasing minerals such as oil and gas; construction of electrical transmission lines, pipelines, and roads; grazing management; recreation and outfitting; preserving and restoring wildlife habitat; selling or exchanging lands for the benefit of local communities; military use of the planning area; and conducting other activities that require land use planning decisions.

Las Vegas RMP

The Las Vegas RMP (BLM 1998a) establishes land use objectives and management actions for 3.3 million acres of BLM administered land in Clark and Nye counties, Nevada. The Southern Nevada District Office administers approximately 67 percent of Clark County and 6 percent of Nye County. The RMP acknowledges the interconnection of the Harry Allen Substation to a proposed 500 kV line within the SWIP Utility Corridor (BLM 1998a).

County Land Use Plans

Eureka County

The Eureka County Master Plan (Eureka County 2000) describes land use and planning for the County. The Land Use and Public Lands element of the General Plan was last updated in 1998, and formally adopted into the Eureka County Master Plan in June 2000 (Eureka County 2000). The General Plan recognizes six basic types of land use categories in Eureka County: Urbanized Areas; Permanent Open Space; Open Space and Appropriate Associated Uses; Agriculture Only, Associated Housing; Agriculture, Mining, Limited Housing; and Agriculture, Mining, Very Limited Housing. The proposed Falcon Substation expansion within Eureka County is located in the land use category Agriculture, Mining, Very Limited Housing. Eureka County has no adopted zoning ordinance.

Land use within Eureka County is comprised mainly of mining and agriculture. The greatest land use in the county is agricultural open space, comprised of designated grazing allotments.

Approximately 2.4 million acres (90 percent of lands) are used for cattle and sheep grazing and pasture, as well as for crops such as hay or barley. Mining districts represent the next largest land use designation in the county. The majority of Eureka County is sparsely populated, and most of the residential development is associated with agriculture and ranching. The majority of lands within the county boundary fall under the management authority of the BLM and the US Forest Service. The County of Eureka manages primarily privately owned land in and around the Town of Eureka, as well as a checkerboard pattern of private land in the northern portion of the county.

One of the largest tracts of privately owned land in the county is located in Boulder Valley (the location of the Falcon Substation), north of Interstate 80. Eureka County has four principal towns: Eureka, Diamond Valley, Crescent Valley, and Beowawe. The Town of Eureka is the largest; it has a population of approximately 1,800 and is the County Seat.

White Pine County

The White Pine County Land Use Plan describes land use issues in the County, as well as in the specific planning areas of Ely, Baker, Lund, McGill, Preston, Ruth, and the Ely-McGill corridor. The plan also provides a number of land use goals and implementation strategies; however, it contains no goals or strategies related specifically to utilities or utility corridors, other than a provision for the efficient use of community infrastructure. Further, the County established utility corridors for industrial development, transmission, and renewable energy development that encompass the SWIP Utility Corridor. White Pine County has 11 general land use designations. Most land outside of established communities is designated as open range or federal reserve. The proposed project area lies predominantly within these two land use designations (White Pine County 2008).

The White Pine County Public Land Use Plan provides a coordinated land use planning effort among the County, BLM, and Forest Service and is included as an appendix to the White Pine County Land Use Plan. In general, the public land policies encourage mineral exploration, opportunities for livestock grazing, and other agricultural uses; encourage dispersed recreational opportunities; and support a diversity of wildlife species and habitats. Related to access and transportation, the plan encourages route locations for transportation, utilities, and communication corridors to be planned in harmony with other resources on public lands (White Pine County 2008).

Nye County

The Nye County Comprehensive Plan (1994) acknowledges that it is the third largest county in the continental U.S. in terms of land area (approximately 11.5 million acres). Of this, 7 percent is private land. The County has adopted the Uniform Building Code, but does not have a zoning ordinance. The County's far-flung communities are very diverse and the County encourages them to develop specific area plans that suit their individual needs for growth and development. Outside of Pahrump, no regional land use plans were found (Nye County 1994).

Lincoln County

There are 11 land use designations shown on the land use map for Lincoln County. The residential land use designation is divided into rural, low, medium, and high-density developments. Rural and lower density development areas are those that should be located away from public utilities. The plan encourages new industrial development along the highway and railway corridors in the county where possible. The plan also favors the disposition of federal lands into private ownership (Lincoln County 2006).

Clark County

The land use component of the Clark County Comprehensive Plan breaks the county into planning areas. The Northeast Planning Area pertains directly to the project elements that would occur within the county. The Northeast Planning Area has the most acres within the county dedicated to office and industrial land uses (10,166 acres), and contains the most open space (7,284 acres) (Clark County 2007a).

3.12.3.2 Land Use and Ownership

Land Use

Within the project area there are agricultural and range lands, sage scrub and grasslands, forested mountains, and desert valleys. Existing land uses include farms and ranches, rural residences, grazing allotments, range improvements, mines/mining claims, energy and communication facilities, transportation systems, developed recreation areas, and dispersed recreation areas.

The dominant land use is livestock grazing/ranching. The majority of public lands in Nevada are managed by the BLM for range uses. Associated range improvements include fences, wells, water tanks, corrals, and windmills. The BLM has divided range lands in the region into grazing allotments to facilitate the management of the land for public livestock grazing (see **Section 3.10)**. Much of the private and state lands are also open range.

Agricultural lands in Nevada are sparse and dispersed, typically located near perennial streams and rivers. There are no prime farmlands within the project area (see **Section 3.5.3.2**).

Mining is an important land use in Nevada. There are numerous mining claims in the vicinity of the project (see **Section 3.3**). The Robinson Project, formerly the Kennecott copper mine, is a large, active mine west of Ely.

Land Ownership

White Pine County is bordered on the east by Utah and by Eureka and Nye counties on the west and southwest. Nye County is bordered by Lander, Eureka, White Pine, Lincoln, and Clark counties to the north and east; and bordered by Churchill, Mineral, and Esmeralda counties, and California to the west. Lincoln County is bordered on the east by Utah and Arizona, on the west by Nye County, and on the south by Clark County. Clark County is located in the southern portion of Nevada, and is bordered by Lincoln County to the north, Utah and Arizona on the east, and Nye County and California to the west. The federal government is a significant landowner in each of the counties (**Table 3.12-1**). Lincoln, Nye, and White Pine counties are over 90 percent federal land (see **Figures 3.12-1a** and **3.12-1b**).

TABLE 3.12-1 LANDOWNERS AND ACRES BY COUNTY

DESCRIPTION	EUREKA	WHITE PINE	NYE	LINCOLN	CLARK
Total Acres	2,676,480	5,699,000	11,560,960	6,816,000	5,173,760
Federal	79.5%	93.5%	92.7%	98.3%	89.1%
Tribal	0.0%	1.2%	0.1%	0.0%	1.5%
State	0.2%	0.2%	0.2%	0.3%	1.2%
Local/Private	20.3%	5.1%	7.1%	1.4%	8.1%

Source: University of Nevada Cooperative Extension, Public Lands in the State of Nevada: An Overview 2007

Figure 3.12-1a Land Ownership

Figure 3.12-1b Land Ownership

Eureka has the highest percentage of privately owned land of the five counties. White Pine County contains 17.9 percent of the area of the five counties, and 93.5 percent of the land in White Pine County is controlled by the federal government.

3.12.4 Specific Project Area Conditions

BLM Land Use Authorizations

The FAA manages the airspace in the vicinity of all registered air facilities (e.g., airports, registered air strips) to control potential obstructions to aircraft operations. The BLM provides FAA the opportunity to provide input on BLM authorizations on public lands in order to identify potential conflicts with airspace management (43 CFR 2804.25(d)(4)).

The Energy Policy Act of 2005 directed the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on Federal land in the 11 contiguous Western States, and perform necessary environmental reviews. The PEIS, Designation of Energy Corridors on Federal Land in 11 Western States (West-wide Energy Corridor or WWEC), was completed in November 2008, and the Interior Department issued a Record of Decision (ROD) in January 2009 that amended 92 BLM land use plans and established approximately 5,000 miles of energy corridors. The corridors assist in minimizing adverse impacts and the proliferation of separate ROWs (BLM 2009a).

There are several federally designated utility corridors (SWIP Utility Corridor, WWEC, Falcon-Gonder) within the project area with electric transmission lines specifically authorized including the GBT line and the Falcon-Gonder 345 kV transmission line.

The ROD for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (aka the WWEC) amends both the Ely and Las Vegas RMPs to incorporate the designated corridors (BLM 2009a).

The SWIP Utility Corridor varies in width from 2,640 to 3,500 feet wide, and runs from Idaho south to the Harry Allen Substation in Clark County, Nevada. Within the SWIP Utility Corridor, the 500 kV GBT Transmission line, was authorized by the BLM (BLM 1994, 2007d). The Falcon-Gonder transmission line is a 180-mile long 345 kV line connecting the Falcon Substation north of Dunphy, Nevada with the Gonder Substation north of Ely. This ROW is currently 160 feet wide. This is within the 2,640-foot wide Falcon-Gonder Corridor (BLM 2008a). There is also a parallel 230 kV line from the Gonder Substation 67 miles west to the Machacek Substation near Eureka, Nevada within this corridor. West of Eureka the 230 kV line continues another 184 miles separated from the 345 kV line to a NV Energy electric power plant located near Yerington, Nevada. Additional transmission lines include two 230 kV lines that extend east from the Gonder Substation towards Utah traversing the eastern edge of Steptoe Valley and the Schell Creek Range.

Land use authorizations in the vicinity of the proposed ON Line Project include various leases and ROWs in the Ely and Southern Nevada Districts.

Land Tenure

There are no public lands on the Ely District identified for current disposal that are in the vicinity of the ON Line Project. There are some lands that were transferred to the USFWS as a part of the Lincoln County Conservation, Recreation and Development Act of 2004. These lands were located just north of the Desert National Wildlife Refuge. In addition, USFWS land along the west side of US-93 at Coyote Springs was transferred to BLM and is part of the designated BLM West-wide Utility Corridor.

3.13 Special Designations

This section describes specially designated resources located within 50 miles of ON Line Project elements. These include Wilderness Areas, Wilderness Study Areas, Areas of Critical Environmental Concern, Research Natural Areas, various units of the National Park Service (NPS), Nevada Department of Wildlife (NDOW) Management Areas, and National Wildlife Refuges. Lands outside of BLM jurisdiction were identified and included in the analysis because recognized natural resources are present on these lands, and project elements in place during construction or operation of the ON Line Project could indirectly impact a variety of resources present in these Special Designation Areas (SDAs). Included are lands administered by the NPS, U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), and NDOW Conservation lands. Other Nevada state lands, such as state parks, were not included: these are covered under Recreation Resources.

Nationally, there are several federal designations that are used to protect wildlands, wildlife, and unique natural features. Those designations found within 50 miles of the ON Line project include the following:

Wilderness Areas *(WAs)* are designated by Congress under the authority of The Wilderness Act of 1964 (P.L. 88-577; 16 USC 1131-1136) and comprise the National Wilderness Preservation System. Wilderness is defined as an area where "….the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Wilderness designation is meant to ensure that the land is preserved and protected in its natural condition (BLM Undated. a). There are 21 WAs managed by either the Ely or Southern Nevada BLM District Offices, and 10 WAs managed by the Humboldt-Toiyabe National Forest within 50 miles of the proposed ON Line Project (BLM Undated. b).

Wilderness Study Areas (WSAs) are areas that have been inventoried for Wilderness designation as described in the Federal Land Policy and Management Act (FLPMA), but Congress has not yet considered them for designation. These areas are managed to retain their wilderness attributes until Congress determines whether or not they should be designated (BLM 2006; BLM Undated. a). There are 4 WSAs in the two BLM District Offices that are within 50 miles of the proposed ON Line Project (BLM Undated. c).

Areas of Critical Environmental Concern (ACECs) are the principal BLM designation for public lands where special management is required to protect important natural, cultural, and scenic resources, or to identify natural hazards (BLM 2007c p.G2, BLM Undated. a). There are 12 ACECs within 50 miles of the proposed ON Line Project. These are designated to protect fragile desert flora and fauna such as the desert tortoise, a federally listed threatened species.

Research Natural Areas (RNAs) are federal agency-designated areas protected and maintained in natural conditions for the purpose of conserving biological diversity, conducting environmental research, and fostering education. The system was established in 1927. Several federal land management agencies oversee RNAs. The USFS manages the 5 RNAs identified in this FEIS (BLM Undated. a).

National Parks, Monuments, and Recreation Areas are managed by the NPS, which was formed by President Woodrow Wilson with the 1916 National Park Service Organic Act. National Parks and other lands held by the NPS are managed to "preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations." The NPS cooperates with partners to

conduct research, support recreation and education, and extend the benefits of natural and cultural resources within NPS lands to people in the U.S. and the world.

Within 50 miles of the ON Line Project there is one National Park (Great Basin), one National Recreation Area (Lake Mead), and two National Historic Trails (Pony Express National Historic Trail and Old Spanish National Historic Trail, listed below) (NPS 2007a, b; NPS 2009a, b).

National Historic Trails commemorate historic routes, such as the Pony Express and California Trails, and promotes their preservation, interpretation, and appreciation. The National Trails System Act (Public Law 90-543) was passed by Congress in 1968. The Pony Express National Historic Trail was established in 1992 and follows the 1,622 mile Pony Express route, which passes through the Schell Creek and Cherry Creek Ranges and Steptoe Valley as it crosses Central Nevada, north of the ON Line Project (NPS 2007b; BLM 2007c; and BLM Undated. a). The Old Spanish National Historic Trail was established in 2002 and follows the historic trade route between Santa Fe and Los Angeles, which passes through the Las Vegas Valley, south of the Interstate 15 corridor, about 5 miles south of the ON Line Project.

National Wildlife Refuges (NWR) are lands owned by the federal government and managed by the USFWS to conserve, protect, and enhance the nation's fish and wildlife and their habitats for continuing benefit of people (USFWS 2007c). The Desert National Wildlife Refuge (DNWR), and Pahranagat NWR are adjacent to the proposed ON Line Project. The Moapa Valley NWR is within ten miles of the project alignments. These three refuges are near the south terminus of the ON Line Project.

Further, BLM manages lands identified as having wilderness characteristics to protect those characteristics through a variety of other land use plan decisions such as establishing visual resource management class objectives to preserve the existing landscape; attaching conditions to permits, leases, and other authorizations; and establishing limited or closed off-highway vehicle designations. Other special designations, as described above, are not a substitute for wilderness designation but provide specific management prescriptions to protect important resources. All lands in the Study Area with identified wilderness characteristics are designated wilderness or are managed under some other special designation that protects the wilderness characteristics (BLM 1998a, 2008a).

The State of Nevada also protects wildlife, wildlands, and plants. The NDOW maintains several *Wildlife Management Areas* (WMAs), which are State owned or leased lands that are managed to protect wetlands and waterfowl. The public can use these areas as public hunting grounds for migratory game birds, upland game birds, furbearers, and big game (NDOW 2005). The Kirch Wildlife Management Area is adjacent to the ON Line Project along Segment 6C, and Railroad Valley and Steptoe Valley WMAs are within 50 miles of the ON Line Project.

3.13.1 Area of Analysis

The area of analysis includes all special designation resources that would be directly affected by, or would be within, a 50-mile radius of the Proposed Action and Action Alternative discussed in Chapter 2. For each Special Designation Area (SDA), the approximate distance and general direction of the SDA from project elements is noted in **Table 3.13-1**.

3.13.2 Data Sources and Methods

The following indicators were considered when describing the affected environment for special designations:

- Acres of disturbance (temporary and permanent)
- Change in quality of primitive wilderness experience relative to outside influences

3.13.3 Existing Conditions

Seven SDAs are within or immediately adjacent to one or more of the components of the proposed ON Line Project. Many more are within 50 miles of either side of the proposed project alignment and/or the Robinson Summit Substation. SDAs surrounding the Falcon Substation were not evaluated because the proposed expansion would occur to an existing substation on private land. The area of analysis includes 31 WAs, 4 WSAs, 12 ACECs, 7 federal or state wildlife areas, 5 RNAs, 1 National Park, 1 National Recreation Area, and 1 National Historic Trail. These SDAs are listed in **Table 3.13-1** in alphabetical order. Each SDA is also discussed in the text below the table. The first group discusses the 7 SDAs that fall within or adjacent to the ON Line Project. The second group discusses SDAs that are within 50 miles of the ON Line Project. All are listed in alphabetical order. **Figure 3.13-1** shows the locations of these SDAs relative to project elements.

TABLE 3.13-1 SPECIAL DESIGNATIONS AREAS GROUPED ALPHABETICALLY

SPECIAL DESIGNATION AREA ^	SIZE OF AREA IN ACRES	GEOGRAPHIC LOCATION OF AREA	APPROXIMATE LINEAR DISTANCE FROM THE ON LINE PROJECT COMPONENT
Arrow Canyon ACEC	1,977	Due E of Desert NWR	Adjoins Segment 11 for 10 miles
Arrow Canyon WA	27,530	2 miles E of Desert NWR and surrounded on W, N, and E sides by Mormon Mesa/Arrow Canyon ACEC	2 miles E of Segment 11
Bald Mountain WA	22,366	E side of White Pine Mts.	5.5 miles W of Segment 6C
Beaver Dam Slope ACEC	36,900	E of Desert NWR: Runs E of Mormon Mesa ACEC to Utah border	40 miles E. of Segment 11
Big Rocks WA	12,997	North Pahroc Range, N of US-93 and Pahroc Summit	10 miles W of Segment 8
Blue Eagle WSA	14,300	N ½ Grant Range, W side, S of US Rte. 6	6 miles W of Segment 6C
Bristlecone WA	14,095	N end Egan Range, by Heusser Mt., just W of McGill	9.5 miles NE of Robinson Summit Substation and 13.5 miles NE of RSS-Site B sub-alt
Cleve Creek Baldy RNA	333	Within High Schells WA	25 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Clover Mountains WA	85,748	12 miles S of Caliente, NV	10 miles E of Segment 10 (sub-alt)
Coyote Springs ACEC	75,000	E of the SE corner of DNWR	Segment 11 passes through ACEC for 18 miles
Currant Mountain WA	47,357	SW side Currant, or White Pine, Mts.	8 miles W of Segment 6C
Delamar Mountains WA	11,328	E of the NE corner of DNWR	Segment 9C and 9D occur adjacent to this WA Segment 10 (sub-alt) passes to E of WA by 1 mile
Desert National Wildlife Refuge (DNWR)	1.6 million	N of Las Vegas, W of US-93	Segment 9D is immediately east of the DNWR boundary for approximately 20 miles Approximately 2/3 of eastern border of DNWR is adjacent to or within 5 miles of Segment 11

SPECIAL DESIGNATION AREA ^	SIZE OF AREA IN ACRES	GEOGRAPHIC LOCATION OF AREA	APPROXIMATE LINEAR DISTANCE FROM THE ON LINE PROJECT COMPONENT
Far South Egans WA	36,384	Southern tip Egan Range	10 miles N of Segment 8
Fortification Range WA	30,656	S of Gt. Basin NP, between US-93 and County Rd 47	45 miles east of Segment 6C
Gold Butte A & B ACECs (2 units)	1,480	On Utah border east of the S end of the ETF	35 miles E of Segment 11
Goshute Canyon WA	42,544	Cherry Creek Range	43 miles NNE of Robinson Summit Substation and 47 miles NNE of RSS-Site B sub-alt
Grant Range WA	52,600	S½ Grant Range, S of Riordan's Well WSA, S of US-6	10 miles WSW of Segment 6C
Great Basin National Park	77,100	W of Baker, NV, and S of Mt. Moriah WA	48 miles E of 6C
Hidden Valley ACEC	3,520	At N end of Muddy Mts. WA	11 miles SE of terminus at Harry Allen Substation
Highland Ridge WA	68,627	Adjacent to S end of Great Basin NP	43 miles E of Segment 6C
High Schells WA	121,497	E of McGill and Ely	25 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Kane Springs ACEC	65,900	E of DNWR, S of Delamar Mt. WA	Segment 9D passes through NW finger of ACEC for 7 miles Segment 10 sub-alt passes through main Kane Springs Valley for 13 miles US-93 and Segment 9D follow a similar alignment within NW finger of ACEC.
Kirch WMA	14,815	White River Valley, E of Grant Range	Segment 6C is adjacent to south end of WMA for approx. 1,320 feet Most of WMA is N of this contact point.
Lake Mead NRA	1.5 million	Lake Mead	50 miles from terminus at Harry Allen Substation
Lime Canyon WA	23,233	Adjoining Lake Mead NRA	50 miles from terminus at Harry Allen Substation
Little Humboldt River WSA	29,775	N of Midas	40 miles N of Falcon Substation
Meadow Valley Range WA	123,488	E of DNWR in Meadow Valley Mts.	0.5 miles SE of Segment 10 sub-alt; 6 miles E of Segment 11
Moapa Valley NWR	106	3 miles due N of Moapa Indian Reservation	10 miles E of Segment 11
Mormon Mesa ACEC	150,734	E of Desert NWR	1 mile E of Segment 11
Mormon Mts. WA	157,938	East of Meadow Valley Range WA	10 miles ESE of Segment 10 sub-alt
Mt. Moriah RNA	876 acres	In Moriah WA, N of Great Basin National Park	43 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Mt. Grafton WA	78,743	Schell Ck Range W of Geyser Ranch	40 miles E of Segment 6C
Mt Irish WA	28,334	S of Worthington	Approximately 10 miles west of Segment 9A
Mt. Moriah WA	89,790	N end of Snake Range that includes Great Basin NP	38 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Muddy Mountains WA	48,019	Muddy Mts. East of Las Vegas	10 miles SE of terminus at Harry Allen Substation, 10 miles E of Las Vegas
North-South Schells RNA	3,100	In Schell Creek Range, 19 miles NE of Ely	25 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Old Spanish NHT	1,200 miles	S of I-15 corridor in Las Vegas	Approximately 5 miles S of Harry Allen Substation
Pahranagat NWR	~ 5,380	About 22 miles S of Hiko, on N end of DNWR	Approximately 1,000 feet from Segment 9D at the S end of the refuge

SPECIAL DESIGNATION AREA ^	SIZE OF AREA IN ACRES	GEOGRAPHIC LOCATION OF AREA	APPROXIMATE LINEAR DISTANCE FROM THE ON LINE PROJECT COMPONENT
Palisade Mesa WSA	99,500	S end Pancake Range	48 miles W of Segment 6C
Parsnip Peak WA	43,693	Wilson Ck Mountains	25 miles E of Segment 8
Pony Express NHT	1,622 miles	E of Schellbourne Pass, 22 miles N of McGill	Approximately 30 miles N of Robinson Summit Substation and 34 miles N of RSS-Site B sub-alt
Quinn Canyon WA	26,310	SW side of Grant Mts.	4 miles SW of Segment 10 sub-alt
Railroad Valley WMA	14,720	W of Bald Eagle WSA, E of Rte 6	16 miles W of Segment 6C
Red Mountain WA	20,490	SE side of White Pine Mountains	2 miles W of Segment 6C
Red Rock Springs & Devil's Throat ACECs (2 units)	1,483	On Utah border east of the S end of the transmission facilities	45 miles E of Segment 11
Riordan's Well WSA	36,200	N ½ Grant Range, E. side, S. of US 6	1.5 miles W of Segment 6C
Ruby Lake NWR	39,926	Just E of Ruby Mts.	The southern tip is 45 miles NW of Robinson Summit Substation and 49 miles NW of RSS-Site B sub-alt
Shellback WA	36,143	NE side of White Pine Mts.	8 miles W of Segment 6C
South Egan Range WA	67,214	Mid-South portion Egan Range	8.5 miles E of Segment 6C
South Pahroc Range WA	25,800	South Pahroc Range S of US-93 and Pahroc Summit	4.5 miles W of Segment 9B and 5 miles N of Segment 9A
Steptoe Valley WMA	6,426	3 miles south of Ely	20 miles E of Segment 6C
The Wall WSA	38,000	S end Pancake Range & Railroad Valley	40 miles W of Segment 8
Troy Peak RNA	2500	In Grant Range WA about 30 miles S of the town of Currant.	12 miles W of Segment 6C
Tunnel Springs WA	5,371	On Utah-Nevada border south of RR	35 miles E of Segment 9B
Virgin Mts. ACEC	35,830	On Utah border east of the S end of the ETF	42 miles E of Segment 11, adjoining Gold Butte ACECs
Virgin River ACEC	7,413	S of I-15, W of Utah border, on Virgin River	45 miles E of Segment 11, N of Virgin Mts. ACEC
Weepah Spring WA	51,480	Seaman Range, Timber Mt. and surrounding area	11 miles S of Segment 6C and 14 miles W of Segment 8
White Pine Peak RNA	787	9 miles N of town of Currant, 41 miles SW of Ely. Within the Currant Mountain Wilderness	11 miles W of Segment 6C of near where Rte. 6 crosses the White Pine Mountains
White Pine Range WA	40,013	W side of Currant, or White Pine, Mts.	12 miles W of Segment 6C
White Rock Range WA	24,413	E of Wilson Ck Range on Utah border in NE Lincoln County	35 miles W of Segment 8
Worthington WA	30,664	S of Grant Mts., W of Garden Valley	48 miles W of Segment 9B

^ The following abbreviations are used:
ACEC – Area of Critical Environmental Concern
WSA = Wilderness Study Area
WA = Designated Wilderness Area
WMA = Wildlife Management Area
NHT = National Historic Trail
NRA = National Recreation Area
NWR = National Wildlife Refuge
RNA = Research Natural Area

Figure 3.13-1 ACEC, WA, WSA, and RNA Map

3.13.4 Specific Project Area Conditions

The Proposed Action or Action Alternative would pass through, or be located directly adjacent to, seven SDAs. These are listed below and summarized in **Table 3.13-1**.

Arrow Canyon ACEC: This BLM area protects desert tortoise habitat and abundant rock art. It is located east of Arrow Canyon wilderness area and west of the Desert NWR. It adjoins Mormon Mesa and Coyote Springs ACECs to create a complex of protected desert tortoise habitat areas (Ludington 2004). Segment 11 passes through the western edge of this ACEC for approximately 10 miles.

Coyote Springs ACEC: This 75,000-acre BLM managed ACEC is located adjacent to the southeast side of the Desert NWR. It is part of a series of land designated to protect desert tortoise (Ludington 2004). Segment 11 passes through this ACEC for approximately 18 miles.

Delamar Mountains WA: This BLM wilderness area was designated in 2004 and is 111,328 acres in size. It is located in the Delamar Mountains just northeast of the Desert National Wildlife Refuge. Approximately 1.75 miles of Segments 9B and 9C within the designated SWIP Utility Corridor are proposed to run along the western border of this wilderness area. The wilderness area provides habitat to desert bighorn sheep, raptors, and the threatened desert tortoise. Sensitive species such as the white bearpoppy and banded Gila monster, and cultural resources including rock art, milling sites, and an obsidian quarry, are found within this wilderness area (BLM 2004).

Desert National Wildlife Refuge: This refuge, created in 1936, is the largest wildlife refuge in the lower 48 states and encompasses 1.6 million acres of Mojave Desert in southern Nevada, just north of Las Vegas. This NWR is part of the larger Desert National Wildlife Refuge Complex, which includes the Ash Meadows, Moapa Valley, and Pahranagat National Wildlife Refuges, and the Amargosa Pupfish Station (USFWS 2007d). Segments 9D and 11 within the designated SWIP Utility Corridor are adjacent to the east edge of the NWR.

Kane Springs ACEC: This 65,900-acre BLM managed ACEC adjoins the northeast side of the Desert NWR and includes the lower portion of Kane Springs Wash. It was designated as part of a group of public land designed to protect desert tortoise habitat and other wildlife that are threatened by habitat fragmentation and increased recreational use, especially OHV use, due to increasing human populations in surrounding areas. Segments 9D and 10 pass through or adjoin this ACEC for approximately 22 miles (BLM 2008a).

Kirch WMA: This state-managed wildlife area is located east of the Grant Range in the White River Valley. The southern end of this riverine series of ponds and wetlands would adjoin Segment 6C for approximately 1/3 of a mile (NDOW 2005).

Pahranagat National Wildlife Refuge: This refuge adjoins the northeast corner of the Desert NWR. It protects fish and waterfowl resources that utilize the White River where the river passes through the Pahranagat Valley. It is 5,380 acres in size (USFWS 2007e). Segment 9D would pass adjacent to its southeast border.

There are numerous other SDAs within 50 miles of the proposed transmission facilities and/or the Robinson Summit Substation and RSS-Site B sub-alternative. These are described below and summarized in **Table 3.13-1** above.

Arrow Canyon WA: This 27,530 acre BLM wilderness was designated in 2002. It is located east of US-93, just north of the Moapa Indian Reservation and is dominated by Arrow Canyon (Wilderness.net 2007). Segment 11 passes approximately 2 miles west of this WA.

Bald Mountain WA: This 22,366-acre USFS wilderness was designated in 2006. It is located on the east side of the White Pine Range in the Humboldt National Forest and is part of a series of four wilderness areas in this range (Wilderness.net 2007). The transmission facilities would pass 5.5 miles to the east of this wilderness area.

Beaver Dam Slope ACEC adjoins Mormon Mesa, Mormon Mesa Ely, Arrow Canyon and Coyote Springs ACECs to provide a continuous area of valuable habitat for the desert tortoise. Beaver Dam Slope is on the east end of this set of ACECs, which stretches from the Desert NWR to the Utah border (BLM 2008a, Appendix D). Beaver Dam Slope is about 40 miles east of Segment 11.

Becky Peak WA: This 18,119-acre BLM wilderness was established in 2006 and is located in the northern portion of the Schell Range between Water Canyon and Cherry Spring. It is east of, and across the Goshute Valley from, Goshute Canyon Wilderness (BLM 2007e).

Big Rocks WA: This 12,997-acre BLM wilderness, designated in 2004, is located between Hiko and Caliente at the south end of the North Pahroc Range. Its volcanic boulders and low elevation make it unique (BLM 2004). It would be located approximately 10 miles east of Segment 8.

Blue Eagle WSA: This 14,300-acre WSA is located in the northern half of the Grant range and is adjacent to Riordan's Well WSA. Unlike the Grant Range WSA, Blue Eagle is on BLM land (BLM 2007e). It would be approximately 6 miles from Segment 6C.

Blue Eagle WSA: This 14,300-acre WSA is located in the northern half of the Grant range and is adjacent to Riordan's Well WSA. Unlike the Grant Range WSA, Blue Eagle is on BLM land (BLM 2007e). It would be approximately 6 miles from Segment 6C.

Bristlecone WA: This BLM wilderness area is in the Egan Range due west of McGill. It was established in 2006 and is 14,095 acres in size. It is bordered by Mellison Canyon to the north and Hercules Gap to the south (BLM 2007e). It is approximately 9.5 miles northeast of the Robinson Summit Substation and 13.5 miles northeast of the RSS-Site B sub-alternative.

Cleve Creek Baldy RNA: This RNA is located within the High Schells WA (USFS Undated. a), south of the North-South Schells RNA. It is approximately 30 miles east of Segment 6C.

Clover Mountains WA: This 85,748-acre wilderness managed by the BLM was designated in 2004. It is accessed from Caliente, located approximately 10 miles to the north. The range is an ancient rhyolitic caldera of medium altitude (BLM 2004). Segment 8 would be located approximately 16 miles to the west of this wilderness.

The Currant Mountain WA is south of the Bald Mountain and Shellback WA's, located in the Currant, or White Pine, range (USFS Undated. b). Two other designated Wilderness Areas, the White Pine Range and Red Mountain WA's adjoin the Currant Mountain WA. White Pine Peak Research Natural Area, set aside to protect nearly pristine shrublands dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and bluebunch wheatgrass (*Pseudoroegneria spicata*), is within the Currant Mountain WA, but is outside of the 10-mile buffer. Segment 6C would pass approximately 9 miles east of this designated wilderness.

Far South Egan Range WA: This 36,384-acre managed wilderness was designated in 2004 and would be approximately 10 miles north of Segment 8. It shares the Egan Range with the South Egan Wilderness and is bounded by the White River Valley on the west, through which the electric transmission facilities would pass, and Cave Valley on the east. It supports a unique mix of ponderosa and bristlecone pine (BLM 2004).

Fortification Range WA: This 30,656-acre BLM wilderness was designated in 2004. It is located in the Fortification Range across Lake Valley from the Mt. Grafton Wilderness (BLM 2004). It is about 50 miles south of Ely and would be about 45 miles east of Segment 6C.

Gold Butte Part A, Gold Butte Part B, and Virgin Mountains ACECs: These three ACECs are contiguous and protect scenic, historic, and prehistoric resources, as well as desert tortoise habitat. Gold Butte, Part A is about 185,329 acres in area; Gold Butte, Part B is about 121,082 acres and includes the Gold Butte Townsite ACEC, set aside specifically for historical preservation. The adjoining Virgin Mountains ACEC is about 35,830 acres (BLM 2007f). They are located approximately 35 miles east of Segment 11.

Goshute Canyon WA: Established in 2006, this BLM wilderness area is located in the Cherry Creek Range just south of the border between Elko and White Pine counties. It is 42,544 acres in size. Paris Creek drains the central portion of this wilderness area (BLM 2007e). It is approximately 43 miles north-northeast of the Robinson Summit Substation and 47 miles north-northeast of the RSS-Site B sub-alternative.

Grant Range WA: Designated in 1989, this USFS wilderness is 52,600 acres in size and is located west of the White River Valley and east of the Railroad Valley. It is accessed only by dirt roads west of SR-318, south of Lund. Adjoining this wilderness to the south is the Quinn Canyon Wilderness (USFS Undated. b). The Grant Range WA is approximately 10 miles west-southwest of Segment 6C.

Great Basin National Park: This 77,100-acre park is located west of Baker, Nevada, and includes Wheeler Peak, ancient Bristlecone pines, and extensive caves including Lehman Caves, tours of which are provided by the NPS. It is Nevada's only National Park, designated in 1986. The park is a FLM-identified sensitive Class II airshed (**Section 3.6.3.2**). It is about 48 miles east of Segment 6C (NPS 2009a).

Hidden Valley ACEC: This ACEC is at the north end of the Muddy Mountains just northeast of Las Vegas. It was designated for its petrified wood resources, petroglyphs, and desert tortoise habitat (BLM 2000). It is approximately 11 miles southeast of the Harry Allen Substation.

Highland Ridge WA: Designated in 2006, this BLM-managed wilderness is 68,627 acres in size. It is just south of Great Basin National Park, and sits just north of the border of Nevada's White Pine and Lincoln counties (Wilderness.net 2007). It is located approximately 43 miles east of Segment 6C.

High Schells WA: This USFS wilderness area in the central portion of the Schell Creek Range is 121,497 acres in size and was designated in 2006 (Wilderness.net 2007). It is approximately 20 miles east of the Robinson Summit Substation and the RSS-Site B sub-alternative, and within its boundaries is the North-South Schells Resource RNA (see below).

Lake Mead NRA: Lake Mead was created by damming the Colorado River and was the largest dam in the world when it was built. Work began in 1931 and the area was designated as Boulder Dam Recreation Area in 1936. It provides water and electricity for

millions of people and is an important source of irrigation water in the southwest. Lake Mead National Recreation Area was designated as the first National Recreation Area in 1964 (NPS 2009c). It is approximately 50 miles southwest of the Harry Allen Substation.

Lime Canyon WA: This 23,233-acre wilderness was designated in 2002 and is administered by the BLM. It is on the east side of the Colorado River on the north end of Lake Mead and adjoins this National Recreation Area (Wilderness.net 2007). It is approximately 50 miles east of the Harry Allen Substation.

Little Humboldt River WSA: This 29,775-acre wilderness study area was designated in 1987. It is located north of the town of Midas. It includes primarily the upper drainage basin of the South Fork Little Humboldt River, situated between the middle slopes of the Snowstorm Mountains on the west, Castle Ridge on the east, Owhyee Bluffs on the south, and the Owyhee Desert on the north. It is approximately 40 miles north of the Falcon Substation.

Meadow Valley Range WA: This 123,488-acre BLM wilderness was designated in 2004. It is 50 miles northeast of Las Vegas and is bordered on the northwest by Kane Springs Canyon and on the south by Route 168. It is made up largely of lower elevation bajada landforms (BLM 2004). This wilderness is approximately 0.5 miles southwest of Segment 10 (sub-alternative).

Moapa Valley NWR: This 106-acre refuge was established in 1979 to protect Moapa dace and their habitat (USFWS 2007f). It is approximately 10 miles east of Segment 11.

Mormon Mesa ACEC: This ACEC adjoins Arrow Canyon and Coyote Springs ACECs, which adjoin the ON Line Project transmission line alignments. Each ACEC provides valuable habitat for the desert tortoise. Directly to the east lies Beaver Dam Slope ACEC, and directly north of Mormon Mesa lies Mormon Mesa-Ely ACEC. These four ACEC create a continuous habitat area for tortoises that stretches from the Desert NWR on the west to the Utah border on the east (BLM 2000). The west side of Mormon Mesa ACEC is approximately 1.25 miles east of Segment 11.

Mormon Mountains WA: This 157,938-acre wilderness, designated in 2004, is located just east of the Meadow Valley Range, separated only by Meadow Valley Wash (BLM 2004). It lies directly north of the ACECs listed above. It is approximately 10 miles east-southeast of Segment 10 (sub-alternative).

Mt. Grafton WA: This wilderness area was designated in 2006 with 78,743 acres and is located in the Schell Creek Range (BLM 2007e). It parallels and is approximately 0.75 miles west of US-93 at Geyser Ranch in Lake Valley. A power line parallels US-93 to the east. Segment 6C is located approximately 20 miles to the west of this wilderness.

Mt. Irish WA: This wilderness area is 28,334 acres in size and was designated in 2004. It is located about 8 miles west of Hiko and about 2 miles north of US Route 275. A dirt road accesses the center of the wilderness at Reed Spring (BLM 2004). This wilderness is located approximately 30 miles from Segment 9B.

Mt. Moriah RNA: The 876 acres of this RNA were designated in 2000 to protect a unique, high elevation plateau that supports an extensive mosaic of subalpine steppe grassland, an uncommon community in the Humboldt-Toiyabe National Forest (USFS Undated. a). The RNA is within the Mt Moriah Wilderness, which is north of Great Basin National Park. It is located approximately 43 miles east of the Robinson Summit Substation and the RSS-Site B sub-alternative.

Mt. Moriah WA: This jointly managed BLM/USFS wilderness is 89,790 acres in size and was designated in 1989. It is in the northern end of the Snake Range, north of Great Basin National Park (Wilderness.net 2007). It is approximately 38 miles east of the Robinson Summit Substation and the RSS-Site B sub-alternative.

Muddy Mountains WA: This wilderness area is 48,019 acres in size and was designated in 2002. It is managed by the BLM, and by the NPS on its southwest corner, where the wilderness overlaps Lake Mead National Recreation Area (Wilderness.net 2007). It is approximately 9.5 miles southeast of the Harry Allen Substation.

The Old Spanish National Historic Trail passes between the Dry Lake Range and Arrow Canyon Range into the Las Vegas Valley (NPS 2009b). It traverses approximately 5 miles south of the Harry Allen Substation. Portions of the trail are in various states including single track and wagon track.

Palisade Mesa WSA: This 99,500 acre, BLM-administered WSA is toward the southern end of the Pancake Range adjacent to the Wall WSA. The area is very rugged and difficult to access. It is characterized by steep walled canyons, spires, and clefts used by technical climbers. Numerous ephemeral washes in solid rock cascade with water, but only after rainstorms. Peak ascents bring views of the nearby lunar crater volcanic field. The rugged terrain provides refuge for prairie falcons, other raptors, and desert bighorn sheep.

Parsnip Peak WA: This wilderness of 43,693 acres was designated in 2004 and is managed by the BLM (BLM 2004). It is located in the Wilson Creek Mountains about 15 miles north of Pioche. It is approximately 25 miles from Segment 8.

The Pony Express National Historic Trail (PET) passes through the Shell Creek Range at Shellbourne Canyon, crosses Steptoe Valley north of McGill, and then enters the Cherry Creek Range at Egan Canyon. It passes approximately 30 miles to the north of the Robinson Summit Substation and 34 miles north of the RSS-Site B sub-alternative. Portions of the trail are used as roads today. Other parts are two-tracks, or have faded into the prairie.

Quinn Canyon WA: This USFS-managed wilderness was designated in 1989 and is 26,310 acres in size. It is located just south of the Grant Range Wilderness, in the mountains of the same name. It contains year-round springs and streams, which is uncommon in Nevada Wilderness (USFS Undated. b). It is located approximately 14 miles west of the junction of Segments 6 and 8.

Railroad Valley WMA: This state WMA area is on BLM land and is managed in cooperation with the Duck Valley Tribe. It is in four parcels spread across the Railroad Valley west of Blue Eagle WSA and just south of U.S. Highway 6. It is 14,720 acres in size and provides wildlife viewing and bird watching opportunities (NDOW 2007b, 2007c). It is located about 16 miles west of Segment 6C.

Red Mountain WA: This USFS-managed wilderness was designated in 2006 and is 20,490 acres in size. It is located on the east side of the White Pine Mountains, just east of Currant Mountain WA and south of Bald Mountain WA (Wilderness.net 2007). It is approximately two miles west of proposed Segment 6C.

Red Rock Springs/Devils Throat ACECs: These two adjoining ACECs are each less than 741 acres and are surrounded by Gold Butte Parts A and B ACECs. They were preserved because of their scenic, archaeological, and geological resources (BLM 2000). They are approximately 45 miles east of Segment 11 and the Harry Allen Substation.

Riordan's Well WSA: This proposed 36,200-acre WSA is on BLM land to the north of the Grant Range. It abuts the Blue Eagle WSA, which is to the north and west (BLM 2007e). It is approximately 1.5 miles to the west of Segment 6C.

Ruby Lake NWR: This 39,926-acre refuge was designated in 1938. It is located on the largest flyway between the Pacific and Mississippi Flyways. It is directly to the southeast of the Ruby Mountains. Many tourists visit the mountains and the refuge due to the array of easily accessible habitats and scenic qualities of these areas (USFWS 2007g). It is located approximately 45 miles north-northwest of the Robinson Summit Substation and 49 miles north-northwest of the RSS-Site B sub-alternative.

Shellback WA: This USFS-managed wilderness is located north of the Bald Mountain WA on the east side of the White Pine Range. Its 36,143 acres were designated in 2006 (Wilderness.net 2007). It would be located approximately 8 miles west of Segment 6C.

South Egan Range WA: The BLM-managed South Egan wilderness is 67,214 acres and was designated in 2006. It shares the Egan Range with the Far South Egans WA. This range overlooks the White River Valley (BLM 2007e). The wilderness is 8.5 miles east of Segment 6C.

South Pahroc Range WA: This 25,800-acre wilderness managed by the BLM was designated in 2004 and supports a wide variety of large mammals, including re-introduced big horn sheep. It is located west of Caliente and is bordered by the 6-mile and 8-mile valleys to the west and the Pahroc Valley to the east. US-93 passes 4 miles to the north. Segment 9B would pass approximately 4.5 miles to the east of the south end of this wilderness area, and Segment 9A would pass 5 miles south of this wilderness area.

Steptoe Valley WMA: This state-run wildlife management area sits near the south end of Steptoe Valley. It is located about 3 miles due south of Ely. It is managed for waterfowl, fish, and hunting and provides a variety of habitats for game animals and small game as well (NDOW 2005). The WMA is approximately 20 miles east of Segment 6C.

The Wall WSA: This 38,000-acre WSA is located approximately 75 miles east of Tonopah on BLM land. "The Wall" was named for its sheer, black, vertical face. It is a volcanic formation of magma and ash. The back side of the wall is a labyrinth of gullies and washes. The vertical perspective created by the Wall, which has vertical relief between 600 and 2,000 feet in height, gives the impression of an impenetrable fortress looming over the flat sands and playas of the Railroad Valley. It is located approximately 45 miles west of Segment 8.

Troy Peak RNA: This 2,500-acre RNA covers the highest elevations of the Grant Range and is within the Grant Range Wilderness. The area was designated to protect unique rock barrens and three plant species: the Nevada primrose (*Primula nevadensis*), waxflower (*Jamesia tetrapetata*), and Nachlinger's catchfly (*Silene nachlingerae*) (USFS Undated. a). The RNA is approximately 12 miles west of Segment 6C.

Tunnel Springs WA: This 2004-designated wilderness covers 5,371 acres of BLM land. It is located on the Utah-Nevada border and adjoins the north border of Beaver Dam State Park. It is accessed from Caliente via the State Park or from the Dixie National Forest in Utah (BLM 2004). It is located approximately 40 miles east of Segment 9B.

Virgin Mountains ACEC: See Gold Butte Part A, Part B in this section, above.

Virgin River ACEC: This ACEC follows the riparian zone of the Virgin River as it flows from the Utah-Nevada border toward Las Vegas. It is south of I-15. It was designated to protect riparian species, such as the southwestern willow flycatcher, a designated threatened species. The ACEC also contains habitat for desert tortoise. It is approximately 7,413 acres.

Weepah Springs WA: This 51,480-acre BLM-managed wilderness was designated in 2004. It is located in the Seaman Range and Timber Mountain, about 20 miles north of Hiko (BLM 2004). It is approximately 16 miles southwest of Segment 8.

White Pine Peak RNA: This 797-acre RNA, located within the Currant Wilderness, supports nearly pristine shrublands dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and bluebunch wheatgrass (*Pseudoroegneria spicata*). Although typical vegetation of the Great Basin, the dominance of these species is being challenged by invasives at lower elevations (USFS Undated. a). This RNA is located approximately 11 miles from Segment 6C.

White Pine Range WA: This 40,013-acre wilderness is managed by the USFS and is on the west side of its namesake range. Other wilderness areas in this range include the Shellback, Bald Mountain, Currant Mountain, and Red Mountain wildernesses (USFS Undated. b). The White Pine WA is approximately 12 miles west of Segment 6C.

White Rock Range WA: This BLM wilderness area is 24,413 acres and was designated in 2004. It is located east of the Wilson Creek Range on the Utah border just north of the Beaver-Iron County (Utah) line (Wilderness.net 2007). It is approximately 35 miles east of Segment 8.

Worthington Mountains WA: This wilderness is 30,664 acres in size and was designated as wilderness in 2004. It is located south of the Grant Mountains and several miles north of US Route 375 (BLM 2004). Segment 9B is located approximately 48 miles east of this WA.

3.14 Recreation

3.14.1 Area of Analysis

The area of analysis for direct and indirect effects on recreation resources includes a 50-mile radius or buffer surrounding the project area.

3.14.2 Data Sources and Methods

The information used to characterize developed recreation resources in the project area was gathered from a variety of sources, predominately information from the Ely and Southern Nevada BLM District Offices, USFS, and NPS. State and local resources and their use were gleaned from other publicly available sources such as the Nevada Division of State Parks and NDOW.

3.14.3 Existing Conditions

As indicated in **Table 3.12-1** above, public lands (those managed by federal, state, or county entities) account for the vast majority of land in the counties affected by the proposed project. Recreational use on public lands is governed by management plans outlined in **Section 3.14.3.1**. Much of these public lands are managed to allow for dispersed recreation, as described in **Section 3.14.3.2**. A number of developed recreation areas are located within a 50-mile radius of the project components, as described in **Section 3.14.3.3**. In addition, a limited

number of private enterprises offer recreation opportunities, such as campgrounds and RV parks.

3.14.3.1 Existing Recreation Management Plans and Policies

A number of land management plans and policies apply to the project area. These include BLM RMPs, the Statewide Comprehensive Outdoor Recreation Plan (SCORP), and county land use regulations. These plans and policies as they relate to recreation opportunities are described further below.

3.14.3.2 Federal Recreation Management Plans, Policies, and Statutes

Federal lands that would be directly impacted by the ON Line Project are BLM lands. As described in **Section 3.12.3** above, two BLM district offices administer the federal lands affected by the proposed project (Ely and Southern Nevada). Within these BLM districts, two resource areas are identified and have management plans in place that govern use, including recreation.

BLM Ely RMP

The BLM Ely District Office RMP (BLM 2008a) is described in detail in **Section 3.12.3.1**. A majority of the planning area is available for dispersed, backcountry, and undeveloped recreational uses. These areas will be managed as extensive recreation management areas. These areas include trails, routes, trailheads, staging areas, and associated structures. The RMP provides for management of five Special Recreation Management Areas (SRMAs), including development of SRMA plans, and established areas and routes for permitted motorized competition events.

BLM Southern Nevada (Las Vegas) Resource Area RMP

Similar to the other resource area, the Las Vegas RMP (BLM 1998a) notes that the principal recreation opportunities are for casual or dispersed recreational activities, such as caving, photography, automobile touring, backpacking, birdwatching, hunting, hiking, and competitive and non-competitive off-highway vehicle (OHV) use. SRMAs in the Resource Area will be managed to provide recreation opportunities appropriate to the resource. Several SRMAs are managed, at least in part, for OHV use.

National Park Service Historic Trails Management Plan

The NPS completed a Comprehensive Management and Use Plan and Final EIS in 1999 for the Pony Express National Historic Trail along with three other historic trails. The document focuses on the Trail's purpose and significance, issues, and concerns related to current conditions along the trail, resource protection, visitor experience and use, and long-term administrative and management objectives. The plan identifies high-potential route segments and sites. High-potential segments are "those portions of trail which would afford a high quality recreation experience in a portion of the route having greater-than-average scenic values or affording an opportunity to vicariously share in the experience of the original users of the historic route." High-potential sites are "those historic sites related to the route which provide opportunity to interpret the historic significance of the trail during the period of its major use." The Pony Express National Historic Trail is north of the project area.

A Comprehensive Management Plan and Draft Environmental Impact Statement is underway for the Old Spanish National Historic Trail (NPS 2009b). The plan will provide general guidance for trail administration. The Old Spanish Trail is located south of the ON Line Project area. The NPS and BLM jointly administer the Old Spanish National Historic Trail.

Lake Mead National Recreation Area Lake Management Plan

In 1986, the *Lake Mead National Recreation Area General Management Plan (GMP) and Final Environmental Impact Statement* established land-based management zones and strategies for meeting the goals and general purposes of the recreation area. Since that time, management issues related to the increase in recreational use of the lakes, visitor conflicts and safety, potential impacts on park resources from water-related recreation, and personal watercraft use surfaced that have not been adequately addressed or resolved in previous planning efforts. In 1992 park managers determined that the development of a lake management plan was necessary to address issues surfacing from increased visitation to Lakes Mead and Mohave (NPS 2002).

The Lake Management Plan, finalized in 2003, tiers from the 1986 GMP. The plan addresses recreational use of approximately 160,000 acres of water contained within the 1.5 million acre National Recreation Area. The document addresses recreational issues including recreational carrying capacity and zoning, developed areas and facilities, sanitation and litter, recreational services, and visitor conflict affecting the recreational setting (NPS 2003).

Lincoln County Conservation, Recreation, and Development Act of 2004

The Lincoln County Conservation, Recreation, and Development Act (LCCRDA) was passed by Congress to establish wilderness areas, promote conservation, improve public land, and provide for high quality development in Lincoln County. It provides for the disposal of up to 90,000 acres of public land within Lincoln County. The LCCRDA directed BLM to convey to the State of Nevada the parcels of land identified as 'NV St. Park Expansion Proposal' and convey to Lincoln County up to 15,000 acres for open space. This effectively increased the size of state parks and county recreation areas. The LCCRDA directed transfer of BLM administered lands to the USFWS for inclusion in the Desert National Wildlife Range. In return, USFWS lands were transferred to BLM in order to relocate the alignment of the 2,640-foot wide WWEC from the east side of US-93 to the west side of US-93, between the highway and the Desert National Wildlife Range. Designation of the Silver State OHV Trail was also provided.

White Pine County Conservation, Recreation, and Development Act of 2006

The White Pine County Conservation, Recreation, and Development Act (WPCCRDA) expanded two existing wilderness areas (Mount Moriah and Currant Mountain) and designated 12 new wilderness areas. It directed the transfer of land from USFS to BLM around the Great Basin National Park to simplify land management in order to protect the park's unique natural resources. Further, it transferred jurisdiction of land from BLM to the USFWS for inclusion in the Ruby Lake National Wildlife Refuge. Under the WPCCRDA, four parcels of public land were transferred to the Ely Shoshone Tribe for traditional, ceremonial, commercial, and residential purposes. Two small parcels of public land were conveyed for the expansion of the airport and industrial park in White Pine County to support future economic development. The WPCCRDA set up an account to dispose of up to 45,000 acres of public lands out of BLM management into private ownership. The law also supports a three-year study for a potential extension of the Silver State OHV trail, promotes resource protection, and a county-wide recreation study.

State Comprehensive Outdoor Recreation Plan

The SCORP, prepared by the Nevada Division of State Parks (2004), provides an assessment of Nevada's characteristics, people, resources, and recreational activities and critical recreation issues facing the state. Nevada has a variety of natural resources available to the public for

participation in outdoor recreation activities. Nevada has more mountain ranges and public lands than any other state except Alaska (Nevada Division of State Parks 2004).

The SCORP reported that 84 percent of Nevadans 16 years of age and older participated in at least one outdoor recreational activity in the year 2000. In that same year, the percent of Nevadans 16 years of age and older participating in specific outdoor recreation activities was as follows: 44 percent pleasure driving, 37 percent picnicking, 32 percent swimming in a pool, 32 percent walking without a dog, 31 percent wildlife viewing, 30 percent swimming in a lake or stream, 28 percent hiking, 28 percent walking with a dog, 27 percent motorboating, and 26 percent lake fishing. In 2002, Nevadans participated in an estimated 235 million annual participation days of outdoor recreational activities in Nevada (Nevada Division of State Parks 2004).

Nevada has a high percentage (approximately 88 percent) of land administered by the federal government. The SCORP reported that 99 percent of the residents in Nevada living in rural areas said that the management of Nevada's public lands is either very important (98 percent) or important (1 percent) to them (Nevada Division of State Parks 2004).

The SCORP identified future recreation issues and actions for the state as a whole. The top five prioritized issues were:

- Public Access to Public Lands for Diverse Outdoor Recreation – There is a growing public desire to protect, maintain, and increase public access to public lands for the greatest diversity of outdoor recreational users.
- Funding Parks and Recreation – The maintenance of outdoor recreation areas and facilities at the federal, state, and local levels in Nevada has not kept pace with demands created by the rapid increases of population in Nevada and the increasing number of out-of-state visitors.
- Recreational Trails and Pathways – One of the greatest assets in Nevada to attract tourists to the state is the natural resource base found largely on public lands, and trails compliment this expansive natural resource base.
- Balancing the Protection of Nevada's Natural, Cultural, and Scenic Resources with Users – Find an appropriate balance between outdoor recreation activities (consumptive by definition) and preserving natural, cultural, and scenic resources.
- Protecting Water Resources as Vital Components of Nevada's Recreational Base – Because Nevada is the driest state in the U.S., it is critical that water resources be protected to maintain the needed quantity, quality, and accessibility for public recreation. Recreation and wildlife depend on the limited water resources in Nevada.

County Recreation Management Plans and Policies

Eureka County

The Eureka County Master Plan (Eureka County 2000) provides recommendations for and supports development of recreation areas in the county. It supports both active and passive recreation activities.

White Pine County

The White Pine County Public Land Use Plan (White Pine County 2008), a coordinated land use planning effort among the county, BLM, and USFS, supports activities by participating in county-wide youth programs and activities, enhancing and preserving existing recreational facilities,

and supporting new recreational facilities in the county. It also encourages dispersed recreational opportunities. The plan also states that federally managed lands with the value for concentrated recreation use (campgrounds, water recreation sites, etc.) should be identified, developed, and managed for recreational purposes.

The White Pine County Open Space plan provides recommendations regarding open space and recreation in the Urban Interface Area that consists of Steptoe Valley north of McGill to Mattier Creek, west into Smith Valley, east into Duck Creek Basin, and south through Steptoe Valley to Conners Pass, as well as areas around Preston and Lund. White Pine County created the Open Space Plan to protect and develop the many natural resources and amenities present, as open space is critical to the County's economic, historical, and cultural identity (White Pine County 2007).

Nye County

There is no comprehensive county-wide plan that addresses the management of recreation resources.

Lincoln County

The Lincoln County Master Plan (2006) describes a lightly populated county dominated by federal land ownership. Low population density creates financial constraints on development of county-level public and private recreation opportunities. Through the plan, the County seeks to work with federal land managers to plan for development and expansion of recreation opportunities; to develop a recreational opportunities inventory; to seek outside sources of funding for improvement of recreational facilities; and to expand its website to promote tourism opportunities in the county.

The Lincoln County Strategic Tourism Plan (Harris et al. 2004), prepared by the University of Nevada Center for Economic Development, notes that there are few developed recreation sites in the county. Most recreation in the county is resource-based and dispersed. The rural communities of Pioche, Caliente, and Alamo all offer cultural heritage sites, local parks, camping, hiking, and, hunting opportunities. Lincoln County is also home to "Area 51" and the Extraterrestrial Highway (U.S. Highway 375) that extends from Alamo to Rachel and draws visitors to the region (Harris et al. 2004).

Clark County

The Clark County Comprehensive Plan has elements that discuss land use and recreation policies and standards (Clark County 2007b). The proposed ON Line Project would terminate at the Harry Allen Substation in the northeast portion of Las Vegas Valley. This area is designated as heavy industrial land use. Lands north of this area to the county line are designated as open space.

3.14.3.3 Recreation Opportunities

Open space and wildlands are very important to Nevadans. According to the 2004 SCORP, 100 percent of Nevada residents living in urban areas and 99 percent of rural Nevada residents said that the management of Nevada's public lands was important or very important. In 2001, 67 percent of Nevada residents surveyed wanted to set aside more designated wilderness areas in the state, and over 90 percent said that maintaining unique or unusual natural and historical areas was important to them. In 2002, Nevada voters approved a measure to issue $200 million in bonds for conservation and resource protection. In the 2004 SCORP survey, public access to public lands was listed as the number one issue for people interested in outdoor recreation. The

expansive federal lands in Nevada are viewed as a valuable economic resource (Nevada Division of State Parks 2004).

Dispersed Recreation Areas

Popular dispersed recreation activities include OHV use (including 4-wheel drive vehicles, ATVs, and motorcycles), hiking, horseback riding, mountain biking, rock collecting, picnicking, primitive or backcountry camping, wildlife viewing, hunting, boating, and fishing. BLM public lands also accommodate permitted annual events including events such as truck, buggy, motorcycle, and bike races, Pony Express Trail endurance and reenactment rides, and club rocket launches (BLM 2008a). With regard to OHV use and motorized competitive events, The Ely RMP:

- Limits OHV use to designated roads and trails on approximately 10.3 million acres within the planning area boundary.
- Allows for a maximum of two competitive truck events per year.
- Closes all desert tortoise ACECs to all high-speed, competitive OHV use, and limits organized non-speed OHV events (BLM 2008a).

In order to manage recreation in conjunction with the other multiple uses on BLM lands, the BLM has established the following designations:

- BLM Ely District Extensive Recreation Management Areas (ERMA)

  Most public lands within and in the vicinity of the project area are open to dispersed recreation, and are managed as ERMAs, which are areas that include all BLM lands outside SRMAs. ERMAs typically do not contain organized or developed areas facilitating recreational activities, such as campgrounds. Rather, recreationists receive broad guidance on appropriate recreational uses that are consistent with multiple resource management.

- BLM Ely District SRMAs

  A SRMA is an area where more intensive recreation management is needed, where a commitment has been made to provide specific recreation activity and experience opportunities, and where recreation is a principal management objective (BLM 2008a).

- BLM Ely District Special Recreation Permit (SRP) Areas

  Four SRP areas totaling approximately 1.3 million acres will be managed to provide opportunities for competitive motorcycle special recreation permitted events, with competitive events managed on designated routes.

In addition to their value for their special designations, these areas are also valuable recreation areas. Hunting and wildlife viewing are important recreation activities in Nevada. Big game hunting in eastern and southern Nevada includes mule deer, Rocky Mountain elk, pronghorn antelope, bighorn sheep, and mountain goat. The hunt units along the proposed alignment contain all these big game species. Hunters often rely on maintained roads and smaller jeep trails to access areas for hunting. Some wilderness study areas and designated wilderness are located within various hunt units, so motorized equipment and mechanized transport are prohibited and access is on foot or horseback. Hunter success varies by unit and type of hunt and is high on average with most filling their tags.

Wilderness areas, wilderness study areas, wildlife refuges, and state wildlife management areas, in particular, are managed for values other than recreation; however, they are extremely

valuable for dispersed recreation. As it relates to recreation, wilderness, and wilderness study areas, the Ely RMP:

- Closes designated wilderness to motorized and mechanized travel according to policy and enabling legislation.
- Closes the Park Range, Blue Eagle, Antelope Range, and Riordan's Well WSAs to motorized and mechanized travel.

Developed Recreation Opportunities

More than 30 developed recreation areas and sites occur near the proposed locations of project elements. These sites, along with other recreation resources within 50 miles of major project elements are shown in **Figure 3.14-1** below. These are areas that have been developed or are maintained and regionally recognized as locations for specific recreational activities and opportunities. Most of the areas and sites listed below are associated with resource-based recreation activities.

3.14.4 Specific Project Area Conditions

Table 3.14-1 lists areas with specific designation for recreation management (BLM 2008a) within a 50-mile radius of the project components. Project components that would be located on public lands would be in areas of dispersed recreation. In addition to their value for their special designations, these areas are also valuable recreation areas. While WAs, WSAs, wildlife refuges, and most state wildlife management areas offer opportunities primarily for dispersed recreation, some limited developed recreation opportunities exist within a few of these special designations. Some wildlife refuges and state wildlife management areas provide interpretive facilities, boat launch ramps, and docks, for example. Upland game bird hunting areas are also dispersed throughout the project area.

There are more than 30 developed recreation areas within a 50-mile radius of the various project components (**Table 3.14-2**). None of the proposed project components would be located in developed recreation areas and sites.

The ON Line Project would be within 50 miles of 8 SRMAs and 3 SRPs (**Table 3.14-1**). Certain segments of the transmission line alignments are located within or adjacent to popular big game range and overlap hunting districts. The Proposed Action would occur immediately adjacent to the Desert NWR. The Kirch Wildlife Management Area and the Pahranagat National Wildlife Refuge are also located near the transmission line alignments.

The Proposed Action and Action Alternative would occur within or cross the Loneliest Highway, Chief Mountain, and North Delamar SRMAs. Transmission line facilities would also cross the Ely SRP Area.

TABLE 3.14-1 SPECIAL RECREATION MANAGEMENT AND SPECIAL RECREATION PERMIT AREAS WITHIN 50 MILES OF THE ON LINE PROJECT

NAME	LOCATION	DESCRIPTION
The Loneliest Highway SRMA[1]	Along and on either side of US-50 as it transects the Ely BLM District.	This SRMA contains some of the most popular destinations. The management objectives of the SRMA are to provide a broad recreation opportunity spectrum ensuring a balance of recreation experiences. Developed recreation opportunities found within the Loneliest Highway SRMA are described in **Table 3.14-2**.
Chief Mountain SRMA**	Northwest of Caliente, north of US-93, west of SR-317, and south of SR-320.	To be managed for a broad recreation opportunity spectrum ensuring a balance of recreation experiences on approximately 111,181 acres.
Egan Crest SRMA[1]	Approximately 15 miles directly south of Ely and approximately 5 miles northeast of Lund.	To be managed for a broad recreation opportunity spectrum ensuring a balance of recreation experiences on approximately 53,455 acres.
Pahranagat SRMA[1]	Either side of US-93 from just south of Alamo to the intersection of US-93 and SR-375; and northeast of Hiko north of US-93 and east of SR-318.	To be managed for a broad recreation opportunity spectrum ensuring a balance of recreation experiences on approximately 298,500 acres.
North Delamar SRMA[1]	Just south of Caliente, either side of SR-317.	To be managed for a broad recreation opportunity spectrum ensuring a balance of recreation experiences on approximately 202,890 acres.
Ely SRP Area[1]	A linear narrow strip of land stretching north from the intersection of SR-318 and US-6, ending southwest of Cherry Creek.	Dispersed recreation includes competitive motorcycle opportunities.
Pioche SRP Area[1]	Either side of US-93 North of Pioche, to just north of the intersection with SR-894. Roughly bounded on the south by SR-320.	Dispersed recreation includes competitive motorcycle opportunities.
Zunino/Jiggs Reservoir SRMA[2]	30 miles south of Elko via SR-227 and SR-228	Utilized primarily by local residents for year-round camping, picnicking, fishing, boating, wildlife observation, and water-based recreation.
Caliente SRP Area[1]	Northwest of Caliente, mostly north of US-93 and west of SR-317, and mostly southeast of Panaca, south of SR-319 and east of SR-317.	Dispersed recreation includes competitive motorcycle opportunities.
Muddy Mountains SRMA	East of Las Vegas.	This SRMA is managed for primitive and semi-primitive recreation opportunities including camping, hiking, and sightseeing. The Bitter Spring Back-country Byway bisects the SRMA. The SRMA is partially motorized and partially non-motorized. Some motorcycle racing occurs in the eastern portions of the SRMA, but most OHV opportunities are for trucks and SUVs (BLM 1998a).
Nellis Dunes SRMA	Approximately 15 miles northeast of Las Vegas	The Nellis Dunes SRMA is open to unrestricted OHV use. It is the closest resource to the Las Vegas metropolitan area for legal OHV use. The SRMA supports approximately eight OHV events annually, including large scale organized OHV races. There is growing popularity for commercial 4x4 tours, with two commercial tour guides operating almost exclusively at the SRMA. Several other commercial tours are also authorized for operation at the SRMA. The area receives a high volume of use during spring, fall, and winter, but use does occur year round. The SRMA is currently undeveloped, but BLM is working with Clark County to develop a plan. The area is closed to both camping and hunting (BLM 1998a).

[1]Source: BLM 2008a
[2]Source: BLM 1985

Figure 3.14-1 Existing Recreation Areas and Sites

TABLE 3.14-2 DEVELOPED RECREATION OPPORTUNITIES WITHIN 50 MILES OF THE ON LINE PROJECT

NAME	LOCATION	DESCRIPTION
FEDERAL		
Berry Creek Campground	Five miles north of McGill on US-93, then 10 miles east on SR-486, then 5 miles east on Forest Service Road 424.	The Berry Creek Campground is located in a white fir forest around the confluence of the North Fork and South Fork of Berry Creek. The campsite offers hunting, fishing, and hiking (USFS 2007a).
Bird Creek Campground	Located in the Duck Creek Basin approximately 14 miles northeast of McGill off of Forest Service Road 426.	The campground has eight group use sites for RVs and tents, concrete pads, fire pits and cooking grills, drinking water, and a vault toilet. Bird Creek, a perennial stream, runs through the middle of the picnic area. Hiking is the primary recreational activity (USFS 2007a).
Chief Mountain OHV Area	The south access point is located at Oak Springs Summit on the north side of US-93 about 5 miles west of Caliente(BLM 2008a).	The Chief Mountain area is frequently used for off-highway vehicles. There is a trailhead in conjunction with three designated OHV trails: the Red Rhyolyte Trail, Grey Dome Trail, and Silver State Trail (Lincoln County 2008). The area is scenic and has a good network of social trails.
Cleve Creek Campground	Approximately 43 miles from Ely traveling northbound on SR-893 from US-6/50.	Cleve Creek Campground is located in Spring Valley near the mouth of a major drainage on the east side of the Schell Creek Range. Cleve Creek is a year-round stream that supports abundant vegetation at the campground. Fishing, hiking, horseback riding, and OHV use are all available recreation activities. There are 12 tables and a group barbeque area available (BLM 2007g).
Desert National Wildlife Refuge	Located approximately 23 miles north of Las Vegas on US-93.	Desert NWR encompasses 1.5 million acres of Mojave Desert in southern Nevada. It is the largest National Wildlife Refuge in the lower 48 states. Recreation activities include birdwatching, camping, hiking, backpacking, and horseback riding. There is also limited hunting for bighorn sheep.
East Creek Campground	Approximately 12 miles northeast of McGill off of Forest Service Road 427.	The East Creek Campground is located in the Duck Creek Basin high on the slopes of the Schell Creek Range in the middle of an Alder, Pinyon, and Juniper forest. The campground has seven campsites for both recreational vehicles (RVs) and tents. Hiking is the primary recreational activity (USFS 2007a).
Egan Crest Trailhead	Eight miles west of Ely just off US-50 on the north side.	The Egan Crest Trail System provides recreationists with over 50 miles of trails with a variety of terrain from the rolling sagebrush flats to the higher elevations in pinyon and juniper forests. The trailhead has picnic tables, grills, a gravel parking lot, and an information kiosk (BLM 2007g).
Ely Elk Viewing Area	Along US-93 south of Ely and at the viewing area pull-out.	The largest herd of elk in Nevada can be observed feeding during the fall and spring seasons. Peak viewing times are October through November, and March through April, with elk sometimes also seen in mid-winter. Other watchable wildlife species in the area include golden eagles, ravens, black-tailed jackrabbits, and chipmunks (Leisure and Sport Review 2007).
Garnet Hill Recreation**Error! Bookmark not defined.** Area	Located 9.5 miles north of Ely via US-50.	This recreation area is an internationally known site for gem collectors looking for garnets. It also provides picnicking and camping opportunities (BLM 2007g).
Great Basin National Park	Approximately 50 miles east of Ely on US-6/50 to SR-487 and Baker.	This 77,000-acre National Park offers both developed and dispersed recreation opportunities. Developed recreation opportunities occur mainly on the east side of the Snake Range ridgeline and include the 12-mile Wheeler Peak Scenic Drive, four developed campgrounds, one of which is open year-round; eight wild caves accessible with a cave permit and guided tours of Lehman Caves. The park has two picnic areas, as well as the campground that has areas available for picnicking. Visitation of approximately 80,000 in recent years (Great Basin NP 2008).

NAME	LOCATION	DESCRIPTION
Illipah Reservoir	Just south of US-50 about 40 miles west of Ely. There is a sign marking the turnoff to Hamilton (ghost town) and Illipah Reservoir.	This recreation site is located at the base of the White Pine Range and has a small fishing reservoir. Illipah is a popular spot to fish for rainbow trout and brown trout throughout the year. Ice fishing is a popular activity during the winter. Mountain biking, hiking, horseback riding, and sightseeing are some of the additional activities available in the area. The campground has 14 sites with tent and RV sites available. The campground is approximately 1 mile off of the highway (BLM 2007g).
Lake Mead NRA	East and south of Las Vegas along the Nevada – Arizona state line, and extending north from the state line east of Valley of Fire SP.	Lake Mead NRA consists of 160,000 surface acres of Lake Mead and Lake Mohave surrounded by 1.5 million acres of land. Recreational activities include hiking, camping, fishing, biking, and boating (NPS 2008).
Meadow Valley	In Lincoln County east of Pioche SR-322 past Ursine.	The Meadow Valley Recreation Site main campground lies in a narrow side canyon called Nicanor Canyon in the Mt. Wilson Range, at approximately 5,800-foot elevation. There is a camping area available in the side canyon with approximately six sites. Fishing, hiking, and bird watching are popular in the area. This recreation site borders Spring Valley State Park, which provides additional fishing and hiking opportunities (BLM 2007g).
Pony Express National Historic Trail	The Trail enters Steptoe Valley through Egan Canyon and runs approximately east-west across the BLM Ely District in the project area.	The Pony Express National Historic Trail was established as a National Historic Trail by Congress in 1992. The Trail is administered by the National Trails System, Salt Lake City, Utah office, but responsibility for management of the Trail lays in the hands of current trail managers at the federal, state, local, and private levels. Recreational uses of the Trail include hiking, biking, horseback riding, and historic reenactments of the trail experience. Use of the Trail is increasing because of heritage tourism (people rediscovering their past), commemorative activities, and media interest (NPS 2007a).
Success Summit Loop	Links US-50 and US-93 north of Ely and McGill.	The graded loop road runs through the Schell Creek Range of the Humboldt-Toiyabe National Forest. Along most of its length the road is at aspen level, providing for scenic views, especially during the fall season.
Timber Creek Campground	Approximately 16 miles northeast of McGill off of Forest Service Road 425.	The Timber Creek Campground is in a spruce, fir, and aspen forest setting. It has six single sites and six group sites for both RVs and tents. The campground offers concrete pads, fire pits and cooking grills, drinking water, vault toilets, and a playground with a sandbox. Timber Creek is a perennial stream and runs through the middle of the campground. Hiking, nature/wildlife viewing, and horseback riding are the primary recreational activities in this area (USFS 2007a).
Ward Mountain Recreation**Error! Bookmark not defined.** Area	Approximately 6 miles south of Ely via US-6.	There are 20 miles of trails that meander through the sagebrush and pinyon-juniper forests of Ward Mountain. These trails are available for hikers, bikers, skiers, horses, motorcycles, and snowmobiles. This site is jointly administered by the BLM and the USFS (BLM 2007g).
White River Campground	At the base of Currant Mountain near the Currant Mountain Wilderness in the White Pine Mountain Range.	The White River Campground straddles the White River. The campground is approximately 34 miles southeast of Ely off of Forest Service Road 1163. It has ten sites with fire pits, camping grills, and vault toilets. The primary recreational activities are hiking, sightseeing, wildlife/nature viewing, backpacking, hunting, and all-terrain vehicle/OHV riding (USFS 2007a).

NAME	LOCATION	DESCRIPTION
STATE		
South Fork State Recreation Area	16 miles south of Elko on SR-228	This recreation is popular for popular for hunting, camping, boating, picnicking, winter sports, and wildlife viewing. It includes a 1,650-acre reservoir and 2,200 acres of meadow area.
Cave Lake State Park	Approximately 15 miles southeast of Ely via SR-486.	Cave Lake State Park is open year round. The 32-acre reservoir at Cave Lake State Park is popular for trout fishing, crawdadding, boating, picnicking, and camping. The park is located in the Schell Creek Range at an elevation of 7,300 feet, offering scenic views and opportunities for nature study and photography. Facilities include campgrounds, picnic areas, hiking trails, and a boat launch. Winter sports such as ice fishing, cross-country skiing, and ice-skating also are available. Snow sculpting is becoming a popular activity, and the White Pine Fire & Ice Show is the premier winter event in the area (Nevada Division of State Parks 2007a). Total visitation at Cave Lake State Park for 2000 was 76,105. In 2006, the total visitation was 56,322. This represents a general decrease in visitation at the park of 26 percent over the last 7 years. By comparison, the decreased visitation trend across all Region V parks was 13 percent (Nevada Division of State Parks 2007b).
Comins Lake	Approximately 10 miles southeast of Ely via US-50/6/93.	Originally established by the realignment of US-93 that created a dam, it is fed by both Steptoe and Cave Creeks from the east, and Willow Creek from the south. At capacity, the lake covers 410 surface acres and has a maximum depth of 15 feet. In 1999, the lake and the adjacent 3-C Ranch were purchased by the NDOW. The lake is now managed to maximize fisheries resources and contains rainbow trout, brown trout, largemouth bass, and northern pike (NDOW 2007d).
Ward Charcoal Ovens State Historic Park	Seven miles south of Ely via US-50/6/93, then 11 miles southwest on Cave Valley Road in the Egan Mountain Range.	Ward Charcoal Ovens State Historic Park is mostly known for its six beehive-shaped historic charcoal ovens used in the late 19th century to generate charcoal for use in the mines of nearby Ward. The park also offers an array of recreational opportunities including hiking, mountain biking, and ATV riding. Other features include forested woodlands, riparian areas, and views of Steptoe Valley and views of Wheeler Peak, located in the Great Basin National Park (Nevada Division of State Parks 2007a). Total visitation at Ward Charcoal Ovens State Historic Park for 2000 was 11,977. In 2006, the total visitation was 4,390. This represents a general decrease in visitation at the park of 37 percent over the last 7 years. By comparison, the visitation trend across all Region V parks was down by 13 percent (Nevada Division of State Parks 2007b).
Beaver Dam	Approximately 34 miles east of Caliente adjacent to the Utah border. Motorists can reach the park by driving 6 miles north of Caliente on US-93, then 28 miles east on a graded gravel road that leads to the park entrance.	Beaver Dam State Park is Eastern Nevada's most remote park. Deep canyons, pinion and juniper forests, a flowing stream and numerous beaver dams are the primary features, offering fishing, camping, picnicking, hiking, photography, and nature study. Facilities include campgrounds, a group use area, a day-use picnic area, and hiking and interpretive trails. Beaver Dam is open year-round weather permitting (Nevada Division of State Parks 2007a). Total visitation at Beaver Dam for 2000 was 8,393. In 2006, the total visitation was 5,939. This represents a general decrease in visitation at the park of 29 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).

NAME	LOCATION	DESCRIPTION
Cathedral Gorge	Just west of US-93, 2 miles north of Panaca.	Cathedral Gorge is located in a long, narrow valley where erosion has carved dramatic and unique patterns in the soft bentonite clay. Trails abound for exploring the cave-like formations and cathedral-like spires. Miller Point, a scenic overlook just north of the park entrance on US-93, offers excellent views of the scenic canyon. Shaded picnic areas and a tree-shaded campground area are open all year. Hiking, picnicking, camping, nature study, photography and ranger programs are the most common activities at the park (Nevada Division of State Parks 2007a). Total visitation at Cathedral Gorge for 2000 was 57,167. In 2006, the total visitation was 59,705. This represents a general increase in visitation at the park of 4 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).
Echo Canyon State Park	Twelve miles east of Pioche via SR-322 and SR-323.	Echo Canyon State Park offers a 65-acre reservoir with a campground, picnic area, group use facilities, and boat launch. The park is popular for camping, fishing, and hiking (Nevada Division of State Parks 2007a). Total visitation at Echo Canyon Reservoir for 2000 was 49,762. In 2006, the total visitation was 38,118. This represents a general decrease in visitation at the park of 23 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).
Kershaw-Ryan State Park	Two miles south of Caliente via US-93 and SR-317.	Kershaw-Ryan State Park is situated in a colorful, scenic canyon at the northern limit of Rainbow Canyon. Steep canyon walls tower over a long, narrow valley. Early settlers here cultivated a garden of grape vines, trees, and grassy lawn surrounding a spring-fed pond, providing a sharp contrast to the rugged landscape. In 1984, flash floods destroyed most of the park, requiring its closure. It re-opened again in 1997. A picnic area, restrooms, and trails offer visitors nature study, photography, picnicking, and hiking (Nevada Division of State Parks 2007a). Total visitation at Kershaw-Ryan State Park for 2000 was 20,689. In 2006, the total visitation was 28,254. This represents a general increase in visitation at the park of 27 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).
Spring Valley State Park	Twenty miles east of Pioche via SR-322.	Spring Valley State Park offers water oriented recreation at the 65 acre Eagle Valley Reservoir. Boat launching, picnicking, and camping facilities are available. Other opportunities include hiking, exploring, and touring the historic Ranch House Museum (Nevada Division of State Parks 2007a). Total visitation at Spring Valley for 2000 was 119,959. In 2006, the total visitation was 107,047. This represents a general decrease in visitation at the park of 11 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).
Valley of Fire State Park	In Clark County approximately 6 miles from Lake Mead and 55 miles northeast of Las Vegas via I-15 and on exit 75.	Valley of Fire is Nevada's oldest and largest state park, dedicated in 1935. The valley derives its name from the red sandstone formations and the stark beauty of the Mojave Desert. Ancient trees and early man are represented throughout the park by areas of petrified wood and 3,000 year-old Indian petroglyphs. Popular activities include camping, hiking, picnicking, and photography. The park offers a full-scale visitor center with extensive interpretive displays. The park is open all year (Nevada Division of State Parks 2007a).

NAME	LOCATION	DESCRIPTION
COUNTY		
White Pine County	Various	Recreational facilities owned and operated by White Pine County include a golf course, tennis courts, numerous ball parks, six town parks, neighborhood parks, a shooting range, a summer swimming hole, and playgrounds. These facilities are located in the city of Ely and the community of McGill. The County also operates the White Pine County Rodeo Grounds and Fairgrounds north of Ely. Additionally, the city of Ely owns and operates the Ghost Train, which is a tourist train operation along the portion of the Nevada Northern Railway from Keystone to McGill Junction.
MULTI-AGENCY		
Camp Success	The Camp is situated at the south end of Duck Creek Valley and lies at an elevation of nearly 9,000 feet.	Camp Success is a facility that is maintained through the joint efforts of White Pine County, the USFS, the Nevada Division of Forestry Honor Camp Program, and volunteers. During the summer, the Camp hosts a variety of events including weddings, reunions, youth groups, outdoor recreation groups, family gatherings, and retreats (White Pine County 2009a).
PRIVATE		
Bassett Lake	Approximately 4 miles northwest of McGill off of US-93.	Originally established in 1942 as a settling pond for mill tailings from local copper mines, it is now owned by the Kennecott Copper Corporation. At capacity, Bassett Lake covers 77 surface acres and has an average depth of 5 feet. Its primary water source is Tailings Creek. It contains northern pike, largemouth bass, and carp. There is a primitive boat ramp; however, no restrooms or overnight camping facilities exist at the lake (NDOW 2007d).
Various	Various	Several private campgrounds and RV parks exist near the project area.

SR – State Route; CR- County Road

3.15 Visual Resources

This section describes visual resources in the project area and the BLM's Visual Resource Management (VRM) System, which is used both to describe existing conditions and to assess potential impacts presented in **Chapter 4**. The section also describes the Key Observation Points (KOPs) that were used to describe existing conditions and assess potential impacts of the Proposed Action and Action Alternative on visual resources.

3.15.1 Area of Analysis

The visual resource project area for the proposed ON Line Project consists of the viewsheds of proposed project facilities, including the Action Alternative. Elements of the project extend from Robinson Summit in the north to the Harry Allen Substation on the south end, a total distance of approximately 236 miles. Also included in the visual project area are locations where the ON Line Project crosses major highways.

3.15.2 Data Sources and Methods

The BLM VRM classifications for the Southern Nevada and Ely Districts were overlain on project maps. Descriptions of existing visual resources were based on field visits.

The levels of visual contrast (related to form, line, color, and texture) between proposed project elements and VRM classes within the project area were considered when describing the affected environment for visual resources.

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3.15.3 Existing Conditions

3.15.3.1 VRM Classes

The BLM's VRM system provides a means to evaluate the scenic value of an area's visual resources so that the area can be appropriately managed (BLM 1986a; BLM 1986b; BLM 1998b; BLM 1998c). The VRM system can also be used to analyze potential visual impacts and apply visual design techniques to minimize impacts on the landscape. The VRM system consists of an inventory stage and an analysis stage. The inventory stage involves identifying and inventorying visual resources using BLM's visual resource inventory process. The analysis stage involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from representative or selected key travel routes and/or observation points.

A BLM RMP establishes how public lands will be used and managed for different purposes. Visual resources are considered in development of the RMP, and visual resources are assigned one of four VRM classes. Management objectives of the VRM classes are as follows:

- *Class I Objective*. The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- *Class II Objective*. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- *Class III Objective*. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- *Class IV Objective*. The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Most of the project elements on federal lands fall within the boundaries of the BLM's Ely District. Project elements within the Ely District include those within White Pine, Nye, and Lincoln counties. Project elements south of the Lincoln-Clark County line are within the Southern Nevada District.

Within the Southern Nevada District the VRM classifications surrounding the SWIP Utility Corridor include Class III and Class IV. Within the Ely District, the SWIP Utility Corridor mostly traverses through areas with VRM Class III and Class IV designations. **Figures 3.15-1a – 3.15-1b** depict VRM classes for BLM lands in the project area. The entire SWIP Utility Corridor has been designated VRM Class IV.

Figure 3.15-1a KOPs and VRM Classes

Figure 3.15-1b KOPs and VRM Classes

3.15.3.2 Key Observation Points

Portions of the ON Line Project may be visible from a large area and it is impractical to describe the existing visual conditions and potential project impacts from all important viewing areas. To assist in the description of the existing visual environment and in the assessment of potential project impacts, representative viewing areas called KOPs are selected. KOPs are points on a public travel route or from a public use area where the view of the proposed activity would be most revealing. For this analysis, 9 KOPs were selected throughout the project area. (**Figures 3.15-1a – 3.15-1b**). The KOPs and existing visual condition of the landscape seen from each KOP are described below.

KOP 1A and 1B
KOP 1 is on US-6 about 4 miles northeast of the Nye-White Pine county line where Segment 6C of the Proposed Action and Action Alternative crosses the highway. An angle point just north of the highway allows the crossing to be nearly perpendicular to the highway (**Figure 3.15-1a**). The view to the northwest (KOP 1A) is an expanse of sagebrush-covered valley floor with juniper forest visible at slightly higher elevations behind (**Figure 3.15-2**). Distant mountains mark the limit of visible features. The view to the southeast (KOP 1B) is similar, but the juniper forest cover on the hillside about 2 miles distant is more pronounced (**Figure 3.15-3**). The transmission line would follow the SWIP Utility Corridor, which is designated VRM Class IV.

KOP 2A and 2B
KOP 2 is in east Dry Lake Valley on US-93 at the point where Segment 8 of the Proposed Action and Action Alternative cross the highway. The foreground of the view to the northeast (KOP 2A) is comprised of the highway, a small utility building, and the valley floor (**Figure 3.15-4**). An existing transmission line, which crosses the highway at this location, recedes into the distance. The view to the distant southwest (KOP 2B) is blocked by a hillside, except for a portion of the Burnt Springs Range approximately 1 mile distant (**Figure 3.15-5**). The transmission line alignments would follow the SWIP Utility Corridor, which is designated VRM Class IV.

KOP 3
KOP 3 is on US-93 just south of the Pahranagat National Wildlife Refuge at the point where Segment 9D of the Proposed Action and Action Alternative cross the highway. In the foreground of the view to the north is the highway, with rocky, sparsely vegetated hills behind (**Figure 3.15-6**). The portion of the transmission line that would be visible from KOP 3 is within the SWIP Utility Corridor and designated VRM Class IV. The Refuge is not visible from KOP 3.

Figure 3.15-2 View to the northwest from KOP 1A

Figure 3.15-3 View to the southeast from KOP 1B

Figure 3.15-4 View to the northeast from KOP 2A

Figure 3.15-5 View to the southeast from KOP 2B

Figure 3.15-6 View to the north from KOP 3

KOP 4

KOP 4 is located on US-93 near Kane Springs Valley Road where Segment 10, a sub-alternative of the Action Alternative, approaches the highway corridor from the east. The view from KOP 4 to the north-northeast is dominated by the highway and an existing H-frame transmission line support structures on the west side of the highway. The valley floor consists of bare ground and shrubs with mountains visible in the distant background (**Figure 3.15-7**). BLM land along the Segment 10 sub-alternative in the valley is designated a mix of VRM Class III and Class IV. The Delamar and Meadow Valley mountains, which are located on the north and south sides of Kane Springs Valley, respectively, are designated VRM Class I and Class II.

KOP 5

KOP 5 is located on US-93 west of the Meadow Valley Mountains where Segment 11 of the Proposed Action and Action Alternative follow the highway corridor. The view from KOP 5 to the north-northwest is dominated by the highway and an existing H-frame transmission line on the west side of the highway (**Figure 3.15-8**). The valley floor is shrub-covered and relatively featureless; mountains are visible in the far distance. The transmission line alignments follow the SWIP Utility Corridor, which is designated VRM Class IV.

Figure 3.15-7 View to the north from KOP 4

Figure 3.15-8 View to the north from KOP 5

KOP 6

KOP 6, which is located at the junction of US-93 and I-15, is the only KOP within the BLM Southern Nevada District boundary. Segment 11 of the Proposed Action and Action Alternative would enter the Harry Allen Substation on the far side from the northeast. A large number of observers pass this KOP because it is a major intersection on the Interstate Highway just outside Las Vegas. The view from KOP 6 to the north-northwest is dominated in the foreground by the highway and transmission line support structures (**Figure 3.15-9**). Dozens of other support structures are visible in the distance and the mountains of the Arrow Canyon Range form a backdrop. The existing substation appears to be hidden from view by a slight rise in the valley floor. The substation and approximately 8 miles of the transmission line are in BLM land designated VRM Class IV. The transmission line alignment then enters Class III designated land as it continues to the north.

Figure 3.15-9 View to the northwest from KOP 6

KOP 7

KOP 7 is located at the west end of Jakes Valley along US-50, looking east across the valley. The RSS-Site B sub-alternative would be located directly east of KOP 7, approximately 8 miles across Jakes Valley. The RSS-Site B sub-alternative location would not be visible to westbound travelers on US-50 at KOP 7. Eastbound vehicles traveling on US-50 would be traveling at lower rates of speed (45 to 50 mph) approaching KOP 7 because the road is winding as it emerges west from the canyon into Jakes Valley. Travelers would be accelerating as they enter the flat, open area of Jakes Valley where the speed limit is 65 mph. Entering Jakes Valley from the west, the view changes from a relatively narrow winding canyon-like setting to an open, spacious valley with views for miles (**Figure 3.15-10**). Viewers at KOP 7 take in the sweeping

views of Jakes Valley, which appears relatively flat in the middle ground and gently rises to the mountain range in the distance. Views from KOP 7 are of VRM Class III areas.

Figure 3.15-10 View to the east from KOP 7

KOP 8

KOP 8 is located on the western side of Jakes Valley, Along US-50, at the intersection with Ruby Lake Road traveling roughly north. The RSS-Site B sub-alternative would be located east-southeast, approximately 7 miles across Jakes Valley. The RSS-Site B sub-alternative location would not be visible to westbound travelers on US-50 at KOP 8. Eastbound travelers on US-50 bound for Ruby Lake would slow or come to a stop before turning onto Ruby Lake Road. Travelers on Ruby Lake Road would come to a stop before turning onto US-50. KOP 8 is located on the valley floor, with views of the proposed alternative substation site at a slightly higher elevation in the distance. The foreground view from KOP 8 is dominated by short grasses and shrubs that become indistinct in the middle ground, with a backdrop of forested mountains in the distance (**Figure 3.15-11**). Views from KOP 8 are of VRM Class III areas.

Figure 3.15-11 View to the southeast from KOP 8

KOP 9

KOP 9 is located along Jakes Valley Road, approximately 4.5 miles south of US-50 and approximately 2 miles directly west of the proposed RSS-Site B sub-alternative. The RSS-Site B sub-alternative location would be visible to both northbound and southbound travelers on Jakes Valley Road at KOP 9. Vehicles traveling on Jakes Valley Road would be traveling at lower rates of speed (up to 40 mph) approaching this KOP because the road is gravel. The view from KOP 9 is of medium sized shrubs and sparse grasses in the foreground (**Figure 3.15-12**). Mottled green colors in the middle ground indicate areas of sage shrub contrasted with areas of winterfat. The valley floor gently rises to forested mountains in the distance. KOP 9 is at a slightly lower elevation than the proposed RSS-Site B sub-alternative location. Views from KOP 9 are of VRM Class III areas.

Figure 3.15-12 View to the east from KOP 9

3.15.4 Specific Project Area Conditions

The Robinson Summit Substation would be located just south of US-50 on undeveloped land. The RSS-Site B sub-alternative is approximately 4 miles south of US-50 on undeveloped lands. The transmission line alignments traverse generally undeveloped and sparsely populated land. The greatest effect on visual resources would occur where the transmission line facilities cross major highways, where they would be viewed by the greatest number of people. The alignments generally are routed around steep terrain and follow valleys typical of the Basin and Range Province. Major highway crossings include US-6 near the White Pine County line, US-93 near the Burnt Springs Range, US-93 south of the Pahranagat National Wildlife Refuge, and US-93 near Kane Springs Wash. Transmission facilities are within the viewshed of KOPs 1 through 6, as described in **Section 3.15.3.2**.

The few portions of segments that are located outside the SWIP Utility Corridor occur within VRM Classes III and IV. One portion of Segment 6C within the SWIP Utility Corridor crosses VRM Class II; however, the SWIP Utility Corridor is designated VRM IV. One portion of the Action Alternative Segment 10 (sub-alternative) occurs within VRM Class II. The proposed Robinson Summit Substation occurs partially within VRM Class III and Class IV. The RSS-Site B sub-alternative would be located within VRM Class III. The Falcon Substation expansion area is on private lands and not subject to VRM classification.

3.16 Noise

Noise is an unwanted sound occurrence. A noise's attributes (pitch, loudness, repetitiveness, vibration, variation, duration, and the inability to control the source) determine how it affects a receptor. The study of noise involves three important characterizing parameters: pressure, power, and intensity. The power of an oscillating sound wave is composed of kinetic and potential energies. The intensity of a sound wave is defined as the average rate at which power is transmitted per cross-sectional area in the direction of travel. Noise versus sound is a subjective measurement, thus a receptor's reaction to sound is a poor measurement of noise.

The Federal Noise Control Act of 1972 established a requirement that all federal agencies administer their programs to promote an environment free of noise that jeopardizes public health or welfare. The U.S. Environmental Protection Agency (EPA) was given responsibility for implementing programs to assess noise and identify acceptable noise impacts.

EPA identifies outdoor noise limits to protect against effects on public health and welfare by an equivalent sound level (L_{eq}), which is an A-weighted average measure over a given time. Outdoor limits of 55 dBA L_{eq} have been identified as desirable to protect against speech interference and sleep disturbance for residential areas and areas with educational and healthcare facilities. Sites are generally acceptable to most people if they are exposed to outdoor noise levels of 65 dBA L_{eq} or less, potentially unacceptable if they are exposed to levels of 65 – 75 dBA L_{eq}, and unacceptable if exposed to levels of 75 dBA L_{eq} or greater (EPA 1981).

The day-night sound level, L_{dn}, (the A-weighted equivalent sound level for a 24 hour period with an additional 10 dB imposed on the equivalent sound levels for night time hours of 10 p.m. to 7 am) in residential areas should not exceed 55 dBA to protect against activity interference and annoyance (EPA 1981). **Table 3.16-1** presents typical sound levels in dBA and subjective descriptions associated with various noise sources.

TABLE 3.16-1 SOUND LEVELS ASSOCIATED WITH ORDINARY NOISE SOURCES

NOISE SOURCE	NOISE LEVEL	SUBJECTIVE DESCRIPTION
Commercial Jet Take-Off	120 dBA	Deafening
Road Construction Jackhammer	100 dBA	Deafening
Busy Urban Street	90 dBA	Very loud
Standard For Hearing Protection 8-Hour Exposure Permissible Exposure Limit (PEL) (MSHA) Action Level within Active Mining Facilities	90 dBA 85 dBA	Very loud Loud - to very loud
Construction Equipment at 50 feet	80-75 dBA	Loud
Freeway Traffic at 50 feet	70 dBA	Loud
Noise Mitigation Level for Residential Areas Federal Housing Administration (FHA)	67 dBA	Loud
Normal Conversation at 6 feet	60 dBA	Moderate
Noise Mitigation Level for Undisturbed Lands (FHA)	57 dBA	Moderate
Typical Office (interior)	50 dBA	Moderate
Typical Residential (interior)	30 dBA	Faint

Source: Federal Highway Administration Highway Construction Noise Handbook 2006

There are no State of Nevada noise standards directly applicable to this project. State code gives county and city governments the right to implement noise impact restrictions.

3.16.1 Area of Analysis

To properly assess the sound levels affecting any area, an explanation of sound effects, consideration of the topography, climate, flora, and current ambient sound is required. The dry climate and low, desert vegetation dominating the majority of the project area are generally favorable to noise propagation. Wind, and where present traffic, typically dominate the sound profile in all areas except those in close proximity to the few man-made noise source in the project area. Noise propagation is enhanced in the direction of the wind, which is typically channeled by the surrounding terrain. Nearby terrain could cause reflection or echoing of sound. For wildlife, the affected environment for noise impacts is usually limited to a distance of 880 yards (2,640 feet) from the source based on current wildlife studies (Fletcher 1980). However, if residential housing has the potential to be impacted, the affected environment includes the distance from the source of the noise to the residence.

3.16.2 Data Sources and Methods

Background (ambient) sound levels recorded in May 2007 at receptor sites in locations potentially impacted by noise from the then proposed EEC Project were used to document the expected range of existing noise levels in the project vicinity. Sound measurements were taken using the EXTECH 407780 Integrating Sound Level Meter. This meter meets the ANSI Standard S1.4 for sound level measurements. Measurements were recorded at each site using an A-weighted average measure in decibels (dBA) with a slow time weighting of 1 second. The duration of the measurements was 15 minutes. Measurements were taken for the equivalent sound level (L_{eq}). Maximum (L_{max}) and minimum (L_{min}) sound levels were also recorded.

3.16.3 Existing Conditions

The primary sources of noise currently observed in the project area are typically associated with natural conditions, especially wind. Existing noise levels are generally low intensity away from traffic corridors, estimated to average between 30 and 35 dBA based upon the measurements taken in the Steptoe Valley. Noise associated with vehicle traffic currently occurs along US-50, US-93, US-6, and SR-318 within some areas near or along the ON Line Project. Traffic impacts contribute to only slightly higher background noise levels along smaller or less traveled roadways, but are believed to bring average noise levels to the 40 to 50 dBA range along US-93 based upon Steptoe Valley readings that were in that range for open areas with comparable traffic volumes and higher in urban areas or areas with more highway traffic.

Noise generally propagates by line of sight, more strongly with the wind than across or against the wind flow, though strong wind can produce enough noise to drown out other sounds. The thin, dry air associated with higher elevation dry climate areas such as the project area, especially on the northern end, results in effective noise transmission, whereas humidity or higher air pressure associated with lower elevation would dampen sound transmission. Physical impediments including structures, terrain features, or mountains tend to block or attenuate sound transmission.

Generally, existing sound levels are estimated to be 35 dBA or less in rural areas away from communities and roads with any significant traffic volume, which dominate the proposed project area. Within a rural community, the man-made noise level range from 45 dBA to 52 dBA (EPA 1981). Steptoe Valley measurements in 2007 confirm maximum background sound levels in that range, primarily in areas considerably more developed than anywhere in the proposed project area. Those levels would be expected to represent the maximum background sound levels in the most densely developed areas across the project area.

The ON Line Project is mainly within the SWIP Utility Corridor, which is at least 1 mile from any occupied residence or area of regular human activity.

Noise levels were measured along US-50 west of Robinson Summit, where it enters the basin providing an estimate of background noise levels at the northern terminus of the proposed transmission line and the proposed Robinson Summit Substation. Noise levels (L_{eq}) measured there mid-day in May 2007 were 31 dBA. That site is a local high point that features some localized noise reflection or retention from surrounding terrain, but generally would disperse noise above and away from populated areas. That same sound dispersion profile would prevail at the limited areas along the proposed transmission line, which are along ridges, going over local passes, or in other ways not bounded by surrounding valley walls. In the valley bottoms that dominate the transmission line alignment, and at the Falcon Substation, sound transmission would be bounded by the surrounding terrain, and favored in the downwind direction. At the RSS-Site B sub-alternative, the Egan Range is on the east and north with Jakes Valley opening up to the west.

3.17 Socioeconomics

3.17.1 Area of Analysis

The area that would be affected by the ON Line Project lies in eastern Nevada and includes White Pine, Nye, Lincoln, and Clark counties, Nevada (as shown on **Figure 2.2-1**). The southern terminus of the transmission line would be located at the existing Harry Allen Substation in Clark County. The site for the Falcon Substation expansion is in Eureka County located about mid-way between Carlin and Battle Mountain, Nevada, north of I-80.

The area of analysis is the primary area of socioeconomic effect, which would be in White Pine and Lincoln counties. Effects in Eureka, Nye, and Clark counties would be negligible due to the relatively limited construction that would occur in those counties. In addition, the economy of Clark County is so much larger than that of the other counties that adding it to the detailed discussion would risk understating the potential effects to White Pine and Lincoln counties.

3.17.2 Data Sources and Methods

The social and economic factors associated with the project are described below. Factors examined include economic setting, population and demographics, employment and income, land ownership, agriculture, housing, community services (education, law enforcement, fire protection, health care, water supply), local government finances, housing, agriculture, and the electric power industry.

Primary published data sources used to characterize this region included the United States Bureau of the Census (2000 a, b, c, and d), the Bureau of Economic Analysis (2007a), state employment agencies, the Western Electricity Coordinating Council (WECC 2006), and the Energy Information Administration (EIA 2006a and b).

3.17.3 Existing Conditions

3.17.3.1 Economic Setting

White Pine County

White Pine County has historically been dependent on mining, with ranching playing a secondary role in the area's economy. Several different pioneer trails and the Pony Express traversed the area before permanent settlement occurred. A group of prospectors from Austin, Nevada founded the White Pine Mining District in 1865. Numerous mining camps were established, but most quickly played out. Mining in Ely initially focused on gold and silver, while later investments developed around copper mining. The White Pine Copper Company was capitalized with $500,000 in 1902 and consolidated a group of claims. The Guggenheim family took over the White Pine Copper Company with the Nevada Consolidated Copper Company in 1906. In 1933, Kennecott Copper Company took over the mining operations at Ruth and the concentrator and smelter complex at McGill. The Nevada Northern Railway was built in 1906 as a means to move ore from the mines in Ruth through Ely to the smelter in McGill. The concentrator and smelter products were then transported north from McGill to the Transcontinental Railroad.

While mining has been the backbone of the White Pine County economy, agriculture developed to supply the mining camps and sustained the area during downturns in mining. The primary agricultural activity has been grazing, although at various times hay, potatoes, and grain have been grown. The relatively high elevation of east-central Nevada (Ely is at an elevation of 6,435 feet) precluded growing fruit and tender vegetables. With large amounts of open land, ranching continues to be part of the White Pine County economy (Ellen and Glass 1983; Castleman 1995).

In 1978, falling copper prices coupled with overseas copper production and tighter environmental regulations lead to Kennecott closing the copper mine and significantly cutting employment at the smelter. Layoffs continued until the smelter closed in 1982, and freight service on the Nevada Northern Railway was curtailed in 1983. The closure of the Kennecott copper operations resulted in decreasing population, high unemployment, closure of businesses, and loss of tax revenues. Prior to 1978, the Kennecott operations in White Pine County were responsible for 20 percent of Nevada's total net proceeds of mines tax. After the closure of the copper operations, White Pine County generated only 2 percent of the net proceeds of mines tax in Nevada. The area's economy continued to decline during the mid 1980s although there was a slight upturn in tourism and a small amount of oil and gas exploration.

Rising metal prices during the late 1980s resulted in an upturn in the White Pine County economy. Mining employment reached almost 1,100 with 13 active mines in the area. Alta Gold employed over 600 persons at its East Robinson project. During this time, the state constructed a prison near Ely and hired 370 persons. The mining boom resulted in high wages in the area and made it difficult for other businesses to attract workers. In the early 1990s, the mining industry experienced another downturn and White Pine County lost 700 mining jobs between 1989 and 1992. Local businesses experienced a 10 to 20 percent decline in taxable sales. By 1994, the unemployment rate in White Pine County reached 12.8 percent as unemployed miners remained in the area while waiting for Magma Nevada Mining Company to receive permits to reopen the Robinson operation. Magma commenced construction at the Robinson operation in 1995 and employed a temporary workforce of 750. As a result, housing was in short supply in Ely and workers stayed in local hotels and motels. The mine started production in

1996, and Magma was subsequently purchased by BHP Minerals of Australia (BHP). The reopening of the Robinson project and several other mines in the area resulted in a labor shortage; the state prison near Ely continually reported 50 to 70 job openings.

World copper prices declined in 1998, and on June 28, 1999, BHP announced that the Robinson operation was being placed in "Care and Maintenance" status and laid-off 433 of the mine's 450 workers. Simultaneously, Alta Gold declared bankruptcy and closed two mines in White Pine County. The mine closures represented 13 percent of the labor force in White Pine County and 24 percent of the annual payroll. School enrollments dropped by 12 percent, and taxable sales in White Pine County declined by 37 percent. The value of new homes constructed for the BHP workforce also dropped by 27 percent. Declining tax revenues severely impacted government services, forcing layoffs of government employees and curtailment of nonessential services such as recreation and libraries.

As housing prices in White Pine County declined, the housing market became more active. Homes were purchased for retirement and as second homes, primarily by residents of Clark County, Nevada.

The energy crisis in California during 2000 drew interest to White Pine County as the possible site of electric generating stations. The County entered discussions with both Pacific Gas and Electric and Duke Energy. Although both companies dropped development plans by 2002, the area's economy started to rebound with small manufacturing plants moving to White Pine County. Housing prices doubled over their 1999-2000 values, and real estate agents noted a lack of housing stock. At the end of 2003, LS Power Development of St. Louis, Missouri expressed interest in White Pine County as the site of a coal-fired power plant. White Pine County entered into a development agreement with LS Power in February 2004 and the company commenced with permitting of the plant. In early 2006, NV Energy announced plans to construct the EEC in White Pine County.

Mining continues to be important to the local economy. Quadra Mining of Vancouver, British Columbia purchased the Robinson Pit from BHP in April 2004 and within a year was at full production with 500 employees (White Pine County 2006).

Lincoln County

Lincoln County was settled by the incongruous mix of miners and settlers from Utah who were members of the Church of Jesus Christ of Latter-day Saints (LDS). With the exception of the 1849 Death Valley Jayhawkers, few persons of European ancestry visited the area until a group of LDS missionaries visited in 1857. They engaged in farming in Meadow Valley until called back to present-day Utah the next year. In 1864, mining commenced for silver in the Meadow Valley Mining District. During the same year, members of the LDS church settled Panaca and Eagle Valley. Ore was discovered at Pioche during the 1860s and Pioche was declared the county seat. The county issued $25,000 worth of bonds to construct a courthouse, but county revenues sufficient to service the debt did not develop. The county was forced to issue scrip in lieu of cash for salaries and other expenses to service the courthouse debt. During the 1880s and 1890s, the county was forced to suspend public schools due to lack of funds. The original bonds for $25,000 were eventually paid off in 1938 at a total cost of $800,000.

Pioche suffered the boom-bust cycles typical to mining towns. Electric power from Hoover Dam arrived during the 1930s. Low-cost power coupled with demand for minerals developed by World War II resulted in the area's mines reopening during the war. There was a similar mining boom during the Korean War. Caliente, the only incorporated city in the county, originated as a division point on the Union Pacific Railroad on the line from Salt Lake City to Las Vegas and Los

Angeles. In contrast to the often haphazard development of mining towns, Caliente was planned and has always had an orderly atmosphere (Ellen and Glass 1983; Castleman 1995). While Lincoln County has had a stable economy for the past several decades, the recent development of Coyote Springs may drastically alter the county's future. Coyote Springs is a 65-square-mile, unincorporated master-planned community being developed on the Clark County-Lincoln County line. About two-thirds of the development is in Lincoln County and one-third in Clark County, although the initial development is occurring in Clark County. The project was announced in 1998, and construction of the first golf course commenced in 2005. An official groundbreaking was held in July of 2006. The plans call for an eventual population of 150,000 persons after a 25 to 50 year build out (Reid 2006).

3.17.3.2 Population and Demographics

White Pine and Lincoln counties are rural and sparsely populated. White Pine County is the most populous of the two, containing roughly 65 percent of the combined estimated population in 2006. (**Table 3.17-1**). Together the populations of White Pine and Lincoln counties accounted for just 0.54 percent of the estimated population of Nevada in 2008.

TABLE 3.17-1 POPULATION IN THE TWO-COUNTY AREA

	2000	2002	2004	2006	2008
State of Nevada	2,018,244	2,164,518	2,323,875	2,484,196	2,600,167
Lincoln County	4,172	4,193	4,199	4,525	4,898
White Pine County	9,028	8,553	8,429	9,063	9,199
Total Lincoln and White Pine	13,200	12,746	12,628	13,588	14,097

Source: U.S. Bureau of the Census 2000a, b, c, and 2008
Note: Mid-year estimates are made as of July 1 and vary from the decennial census counts that are as of April 1.

According to 2000 Census data, all of Lincoln County and 53.2 percent of White Pine County is considered rural (**Table 3.17-2**). The urbanized population in White Pine County is largely due to population concentrations in the city of Ely (Bureau of the Census 2000b).

TABLE 3.17-2 GENERAL URBAN AND RURAL POPULATION

	STATE OF NEVADA	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV
Population	1,998,257	4,165	9,181
Urban	91.5%	0.0%	46.8%
Rural	8.5%	100.0%	53.2%

Note: Data are Census 2000 enumerated population.
Source: Bureau of the Census 2000d

The Nevada State Demographer's Office also prepares annual population estimates for counties, cities, and selected unincorporated areas in Nevada, as listed in **Table 3.17.3**.

TABLE 3.17-3 DETAILED URBAN AND RURAL POPULATIONS CERTIFIED 2008 ESTIMATES

COUNTY	INCORPORATED CITIES	POPULATION
Lincoln County	**Population 4,352**	
Incorporated City		
	Caliente	1,077
Unincorporated Areas		
	Alamo	464
	Panaca	645
	Pioche	785
White Pine County	**Population 9,694**	
Incorporated City		
	Ely	4,352
Unincorporated Areas		
	Lund	157
	McGill	1,128
	Ruth	407

Source: Nevada State Demographer's Office 2009

Population projections by the Nevada State Demographer's Office show modest increases in the population of both White Pine and Lincoln counties over the next 17 years (**Table 3.17-4**). These are recent projections and take into account current economic conditions in the state. (Nevada State Demographers Office 2009).

TABLE 3.17-4 POPULATION PROJECTIONS TO 2025

DESCRIPTION	2010	2015	2020	2025
State of Nevada	2,963,812	3,321,189	3,619,563	3,872,937
Lincoln County	4,499	4,988	5,308	5,449
White Pine County	10,457	10,990	11,081	11,265

Source: Nevada State Demographer's Office 2009

The two counties are relatively uniform demographically (**Table 3.17-5**). White Pine County is 86.3 percent white and the second largest racial group is black accounting for 4.1 percent of the population. Lincoln County is over 90 percent white with the second most commonly cited category being "two or more races". Hispanics, who may be of any race, comprise 11 percent of White Pine County and 5.3 percent of Lincoln County. As is common in western mining areas, a variety of ethnic groups immigrated to White Pine County during the late 1800s and early 1900s. Primary ethnic groups were Basque, Slavic, Greek, Italian, Japanese, and Chinese. Language barriers separated groups, and neighborhoods in McGill received names such as Greek Town and Slav Town.

TABLE 3.17-5 RACE AND ETHNICITY IN NEVADA AND THE TWO-COUNTY AREA, 2000

	STATE OF NEVADA	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV
Population	1,998,257	4,165	9,181
White	75.2 %	91.3%	86.3%
Black	6.8%	1.8%	4.1%
Native American	1.3%	1.8%	3.3%
Asian	4.5%	0.3%	0.8%
Pacific Islander	0.4%	0.0%	0.2%
Some Other Race	8.0%	2.7%	3.1%
Two of More Races	3.8%	1.9%	2.1%
Hispanic, Origin of Any Race	19.8%	5.3%	11.0%

Source: Bureau of Census 2000e. Note: The Bureau of Census reports Hispanic as an ethnicity, not a race. The percentages reported here are relative to the total population numbers for the seven census groups, and should not be added to the total.

The majority of the households in both counties are family households (**Table 3.17-6**). The Bureau of the Census defines a family as consisting of a householder and one or more other people living in the same household who are related to the householder by birth, marriage, or adoption. Households that consist of a group of unrelated people or one person living alone are considered non-family households. Lincoln and White Pine counties each have slightly less than the state average of 66.3 percent family households. Similarly, in both Lincoln and White Pine counties, the average household size is less than the state average of 2.62 persons per household (Bureau of Census 2000l). These differences may be attributed to people living in institutions (e.g., correctional institutions, nursing homes, or dormitories); variation in age distribution (e.g., widows or widowers among older populations); or other factors (Simmons and O'Neill 2001).

TABLE 3.17-6 HOUSEHOLD TYPE, 2000

	STATE OF NEVADA	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV
Households	751,165	1,540	3,282
Family Households	66.3%	65.6%	65.8%
Non-family Households	33.7%	34.4%	34.2%
Persons/Household	2.62	2.48	2.42

Source: Bureau of the Census 2000f

3.17.3.3 Employment and Income

The civilian labor force in both counties has been increasing slightly since 2000 (**Table 3.17-7**). In Lincoln County, the civilian labor force increased from 1,655 in 2000 to 1,830 in 2008; however, the unemployment rate increased as well from 5.0 percent to 5.4 percent during the same period. The civilian labor force in White Pine County increased from 3,769 in 2000 to 4,801 in 2008. Unemployment also increased from 4.2 percent in 2000 to 4.7 percent in 2008.

TABLE 3.17-7 LABOR FORCE AND UNEMPLOYMENT SELECTED YEARS

DESCRIPTION	2000	2005	2006	2007	2008
STATE OF NEVADA					
Civilian Labor Force	1,062,845	1,225,144	1,277,197	1,322,643	1,373,462
Employment	1,015,221	1,170,367	1,222,183	1,260,276	1,282,012
Unemployment	45,624	54,777	55,014	62,367	91,450
Unemployment Rate	4.5%	4.5%	4.3%	4.7%	6.7%
LINCOLN COUNTY, NEVADA					
Civilian Labor Force	1,655	1,566	1,601	1,713	1,830
Employment	1,573	1,481	1,523	1,637	1,731
Unemployment	82	85	78	76	99
Unemployment Rate	5.0%	5.4%	4.9%	4.4%	5.4%
WHITE PINE COUNTY, NEVADA					
Civilian Labor Force	3,769	4,309	4,444	4,719	4,801
Employment	3,611	4,126	4,270	4,539	4,576
Unemployment	158	183	174	180	225
Unemployment Rate	4.2%	4.2%	3.9%	3.8%	4.7%

Source: Bureau of Labor Statistics 2008

Changes in employment by industry for Lincoln and White Pine counties over the past several decades indicate that the economic structure of the area is changing (**Table 3.17-8**). Employment growth has been slow, rising by just 9.6 percent from 5,495 in 1970 to 6,020 in 2000. The largest employment shift has been in the mining sector. In 1970, mining accounted for 23.7 percent of all full-time and part-time employment. By 2000, mining's share had dropped to just 4.3 percent, representing an absolute loss of 1,045 jobs. Other sectors that lost jobs and share include manufacturing (-334 jobs) and transportation and public utilities (-112 jobs). The sector posting the largest gain was government, which increased from 1,048 jobs in 1970 to 1,991 jobs in 2000. Services also grew from 683 jobs in 1970 to 920 jobs in 2000.

TABLE 3.17-8 EMPLOYMENT BY INDUSTRIAL SECTOR IN THE TWO-COUNTY AREA, 1970, 1980, 1990, 2000

EMPLOYMENT BY INDUSTRY				
	1970	**1980**	**1990**	**2000**
Total Full-time and Part-time Employment	5,495	5,875	7,397	6,020
Wage and Salary Employment	4,640	4,936	6,219	4,737
Proprietor's Employment	855	939	1,178	1,283
Farm Employment	341	394	389	339
Mining	1,302	650	968	257
Construction	163	386	322	245
Manufacturing	409	358	48	75
Transportation and Public Utilities	275	299	252	163
Wholesale Trade	125	79	190	ND
Retail Trade	944	1,065	1,188	1,048
Finance, Insurance and Real Estate	181	206	198	268
Services	683	1,231	874	920
Government	1,048	1,193	1,709	1,991
EMPLOYMENT BY INDUSTRY, PERCENT				
	1970	**1980**	**1990**	**2000**
Total Full-time and Part-time Employment	100.0	100.0	100.0	100.0
Wage and Salary Employment	84.4	84.0	84.1	78.7
Proprietor's Employment	15.6	16.0	15.9	21.3
Farm Employment	6.2	6.7	5.3	5.6
Mining	23.7	11.1	13.1	4.3
Construction	3.0	6.6	4.4	4.1
Manufacturing	7.4	6.1	0.6	1.2
Transportation and Public Utilities	5.0	5.1	3.4	2.7
Wholesale Trade	2.3	1.3	2.6	--
Retail Trade	17.2	18.1	16.1	17.4
Finance, Insurance and Real Estate	3.3	3.5	2.7	4.5
Services	12.4	21.0	11.8	15.3
Government	19.1	20.3	23.1	33.1

ND: Not Disclosed
Notes: May not sum to the total due to exclusion of several minor categories. Industry aggregations are based on the Standard Industrial Classification System (SICS).
Source: Bureau of Economic Analysis, Regional Economic Information System 2007a

Employment by industry as of 2007 is shown in **Table 3.17-9**. As shown there, government is still a major employer in both counties. Government accounts for roughly 30 percent of employment in Lincoln County and 28 percent of employment in White Pine County.

Much of the employment by industry data is suppressed in Lincoln County to prevent disclosure of individual company data. Available data show that, after government, the largest industrial sector is retail trade with 13.0 percent of total employment, followed by professional/scientific/technical services, which account for 11.9 percent of all jobs in the county.

The largest industrial sector in White Pine County (apart from the government sector), as measured by employment is accommodations/food service which employs 10.7 percent of the county's workers. Retail trade is responsible for 10.1 percent of all jobs in White Pine County.

TABLE 3.17-9 EMPLOYMENT BY INDUSTRIAL SECTOR IN THE TWO-COUNTY AREA, 2007

INDUSTRY	LINCOLN COUNTY	WHITE PINE COUNTY
Total employment	2,182	5,233
Wage and Salary Employment	1,479	4,170
Proprietor's Employment	703	1,063
Farm Employment	144	170
Forestry, fishing, and other	D	D
Mining	28	D
Utilities	D	D
Construction	D	272
Manufacturing	D	64
Wholesale Trade	D	77
Retail Trade	284	528
Transportation and Warehousing	64	D
Information	30	48
Finance and Insurance	57	105
Real Estate and Rental and Leasing	103	139
Professional and Technical Services	260	D
Management of Companies and Enterprises	18	D
Administrative and Waste Services	57	215
Educational Services	L	D
Health Care and Social Assistance	60	D
Arts, Entertainment, and Recreation	D	61
Accommodation and Food Services	D	560
Other Service, Except Public Administration	D	202
Government	656	1,480

D: Not disclosed to avoid revealing individual company data. L: Less than 10 jobs, but the estimates for this item are included in the totals.
Notes: May not necessarily agree with data reported by state employment agencies. Industry aggregations are based on the North American Industry Classification System (NAICS).
Source: Bureau of Economic Analysis, Regional Economic Information System 2007a

Major employers in Lincoln County are Computer Sciences Corp., Lincoln County School District, Lincoln County Government, Nevada Division of Child and Family Services, and Grover C. Dils Medical Center (Nevada Department of Employment, Training, and Rehabilitation 2007).

Major employers in White Pine County are Robinson Nevada Mining Company, Nevada Department of Corrections, White Pine County School District, William Bee Ririe Hospital, Bald Mountain Mine, Nevada Hotel and Gambling Hall, White Pine County Government, and the Bureau of Land Management (Nevada Department of Employment, Training, and Rehabilitation 2007).

White Pine County has the highest average annual wage of the subject counties (**Table 3.17-10**). From 2000 to 2007, White Pine County's average annual nonagricultural wage increased 40 percent from $29,133 to $40,962. During the same period, the average annual wage in Lincoln County increased 9.1 percent from $31,192 to $34,033.

TABLE 3.17-10 TWO-COUNTY AREA PERSONAL INCOME, SELECTED YEARS

DESCRIPTION	2000	2002	2003	2005	2007
Average Annual Wage ($)					
State of Nevada	32,276	33,993	35,329	38,763	42,149
Lincoln County, NV	31,192	35,329	31,616	32,242	34,010
White Pine County, NV	29,133	30,522	30,837	34,583	40,951
Nonagricultural Payroll ($ 1,000)					
State of Nevada	32,853,744	35,523,581	38,144,531	47,127,201	54,140,309
Lincoln County, NV	42,382	49,167	38,969	40,856	47,195
White Pine County, NV	91,587	95,339	93,699	131,106	166,231
Total Personal Income ($ 1,000)					
State of Nevada	61,427,864	66,632,084	71,183,270	90,018,074	101,798,979
Lincoln County, NV	77,548	83,314	86,753	96,430	103,850
White Pine County, NV	219,655	220,126	226,586	290,894	338,748
Per Capita Personal Income ($)					
State of Nevada	30,436	30,84	31,866	37,481	39,853
Lincoln County, NV	18,588	19,870	20,597	22,198	21,988
White Pine County, NV	24,330	25,737	26,847	33,067	37,176

Source: Average Annual Wage and Nonagricultural payroll: Bureau of Labor Statistics 2007; Average Total Personal Income and Per Capita Personal Income: Bureau of Economic Analysis, Regional Economic Information System 2007a

Based on 2000 Census data, White Pine County has the higher median household income, followed by Lincoln County (**Table 3.17-11**). Similarly, Lincoln County has the fewest number of households in the higher income brackets, and the highest number in the lower income brackets. Both counties have median household incomes that are lower than the state average of $44,581.

In White Pine County, Ely has a median household income of $36,408 and the McGill CDP has a median household income of $32,039. The City of Caliente, in Lincoln County, has a median household income of $25,833 (Bureau of the Census 2000g).

TABLE 3.17-11 DISTRIBUTION OF HOUSEHOLD INCOME, 1999

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Households	751,977	1,556	3,285
Less than $10,000	7.2%	17.6%	12.2%
$10,000 - $14,999	5.2%	7.7%	6.0%
$15,000 - $24,999	12.3%	16.1%	14.6%
$25,000 - $34,999	13.1%	10.1%	13.5%
$35,000 - $49,999	18.1%	15.1%	18.3%
$50,000 - $74,999	21.7%	22.4%	22.9%
Greater than $75,000	22.4%	11.0%	12.5%
Median Household Income	$44,581	$31,979	$36,688

Source: U.S. Bureau of the Census 2000g

Since 1999, the median household income in White Pine County has increased from $36,688 to an estimated $39,420 in 2004, an increase of 7.4 percent (**Table 3.17-12**). Median household income in Lincoln County rose by 19.5 percent to $38,226 (Bureau of the Census 2007a).

TABLE 3.17-12 MEDIAN HOUSEHOLD INCOME ESTIMATES, 2000-2007

YEAR	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
2000	$44,698	$34,456	$37,038
2001	$44,325	$33,387	$36,651
2002	$44,560	$34,758	$36,793
2003	$45,249	$36,160	$36,765
2004	$47,231	$38,226	$39,420
2005	$49,288	$37,291	$40,050
2006	$52,800	$42,022	$44,790
2007	$54,996	$44,450	$50,934

Source: Bureau of the Census 2007b

Personal income in the two-county area is concentrated in White Pine County, with 76.5 percent of the personal income, a moderately larger share than the population distribution between the two counties (**Table 3.17-13**).

TABLE 3.17-13 PERSONAL INCOME BY SOURCE ($1,000), 2007

INDUSTRY	LINCOLN COUNTY	WHITE PINE COUNTY
Total Personal Income	103,850	338,748
Dividends, interest and rent	14,945	38,297
Transfer Payments	26,937	51,020
Proprietors income	7,338	11,517
Farm Earnings	2,039	202
Forestry, fishing, and other	D	D
Mining	D	D
Utilities	D	D
Construction	D	8,551
Manufacturing	D	1,690
Wholesale Trade	D	2,885
Retail Trade	4,607	11,127
Transportation and Warehousing	2,858	D
Information	1,337	1,600
Finance and Insurance	1,586	3,333
Real Estate and Rental and Leasing	412	1,782
Professional and Technical Services	14,700	D
Management of Companies and Enterprises	0	D
Administrative and Waste Services	643	4,601
Educational Services	L	D
Health Care and Social Assistance	1,210	D
Arts, Entertainment, and Recreation	D	2,052
Accommodation and Food Services	D	11,233
Other Service, Except Public Administration	D	4,292
Government	32,892	91,116

D: Data suppressed to avoid revealing individual company data. L: Less than $50,000, but the estimates for this item are included in the totals.
Source: Bureau of Economic Analysis, Regional Economic Information System 2007a

Lincoln County's sources of personal income are highly concentrated, indicating a less diversified economy. Government accounts for 31.7 percent of all personal income in the county, followed by transfer payments (25.9 percent), dividends, interest and rent (14.4 percent), and retail trade (14.1 percent).

In White Pine County, the largest source of personal income in White Pine County is government (26.9 percent) followed by transfer payments (15.1 percent) and dividends, interest, and rent (11.3 percent).

3.17.3.4 Land Ownership

The two counties are contiguous. White Pine County borders Lincoln County on its southern end. White Pine County is bordered on the east by the State of Utah and by Eureka and Nye counties on the west and southwest. Lincoln County is bordered on the east by the states of Utah and Arizona, on the west by Nye County, and on the south by Clark County. The federal government is a significant landowner in each of the counties (**Table 3.17-14**). Federal entities administer more than 90 percent of the land in both Lincoln and White Pine counties.

Lincoln County contains 54 percent of the area of the two counties. More than 98 percent of the land in Lincoln County is administered by federal agencies, and 93.5 percent of the land in White Pine County is controlled by the federal government.

Also see **Section 3.12,** for additional descriptions of land use in the project area.

TABLE 3.17-14 LAND OWNERSHIP

DESCRIPTION	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV
Acres	6,816,000	5,699,200
Federal	98.29%	93.53%
Indian Reservation	0.0%	1.24%
State Government	0.28%	0.16%
Local Government and Private	1.43%	5.07%

Source: Harris et al. 2001

3.17.3.5 Agriculture

The area is known for its ranching heritage and ranching influenced lifestyles in the two-county region. In 2007, the value of agricultural production in Lincoln County totaled $15.3 million. The value of agriculture production in White Pine County totaled $15.1 million (**Table 3.17-15**).

TABLE 3.17-15 VALUE OF AGRICULTURAL PRODUCTION, 2007

DESCRIPTION	LINCOLN COUNTY	WHITE PINE COUNTY
Value of Production ($1,000)	15,339	15,172
Crops	7,690	4,336
Livestock	7,649	10,836

Source: National Agricultural Statistics Service 2007

The average farm in Lincoln County had net cash income of $21,063 in 2007 (**Table 3.17-16**). Average farm income for White Pine County was $32,131. Collectively, the counties contained 195 farms in 2007 (defined as those with sales of agricultural products of $1,000 or more during 2007). In Lincoln County, 37.8 percent of those engaged in farming had a principal occupation

other than farming while 67.4 percent worked at least one day off the farm and 32.7 percent worked more than 200 days off the farm. In White Pine County, 49.5 percent of those engaged in farming had a principal occupation other than farming, 60.0 percent worked at least one day off the farm, and 40.0 percent worked more than 200 days off the farm. (National Agricultural Statistics Service 2007). While ranching plays a large role in the identity and lifestyle of the area, outside employment off the farm is usually necessary to augment farm income.

TABLE 3.17-16 AGRICULTURAL ECONOMICS, 2007

	LINCOLN COUNTY	WHITE PINE COUNTY
Number of Farms	98	97
Average Size (acres)	472	D
Average Cash Income (net)	$21,063	$32,131
Sales less than $10,000	45%	38%
Operators Principal Occupation is other than Farming (%)	37.8%	49.5%
% of Operators Who Work off the Farm	67.4%	60.0%
% of Operators Who Work more than 200 days off the Farm	32.7%	40.0%

Source: National Agricultural Statistics Service 2007
D: not disclosed

3.17.3.6 Housing

The housing occupancy rate in White Pine County was 73.9 percent according to the 2000 Census, slightly higher than the 70.7 percent for Lincoln County. (**Table 3.17-17**). In both White Pine County and Lincoln County, a significant percentage of the housing units are for seasonal, recreational, or occasional use. Housing occupancy for White Pine County will not be measured again until the 2010 Census. The White Pine County Board of Commissioners believe the occupancy rate has increased substantially since the 2000 Census (White Pine County 2009b), however the Nevada State Demographer believes that population data and school enrollment data give conflicting indications for housing occupancy (personal communication, Nevada State Demographer Jeff Hardcastle, February 2, 2010).

TABLE 3.17-17 HOUSING OCCUPANCY, 2000

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Housing Units	827,457	2,178	4,439
Occupied	90.8%	70.7%	73.9%
Vacant	9.2%	29.3%	26.1%
For Seasonal, Recreational, or Occasional Use	2.0%	14.0%	17.3%

Source: Bureau of the Census 2000h

The median age of available housing is highest in White Pine County (**Table 3.17-18**). Housing in White Pine County tends to be about 10 to 20 years older than Lincoln County. The value of owner occupied housing is highest in Lincoln County (Bureau of the Census 2000i). White Pine County has a high number of residents living in institutional settings due to the Ely State Prison and Ely Conservation Camp inmate populations (White Pine County 2006).

TABLE 3.17-18 AGE AND VALUE OF HOUSING, 2000

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Median Year Built	1986	1974	1962
Median Value ($), Owner Occupied	132,500	74,300	65,600

Source: Bureau of the Census 2000i

White Pine County has the higher rate of owner-occupied housing units of the two counties. (**Table 3.17-19**). The higher percentage of owner occupied housing may be due to company housing provided by Kennecott. The company housing was sold to residents in the 1950's and represents the majority of the County's older housing stock.

TABLE 3.17-19 OCCUPIED HOUSING, 2000

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Occupied Housing Units	751,165	1,450	3,282
Owner Occupied	60.9%	74.7%	76.5%
Renter Occupied	39.1%	25.3%	23.5%

Source: Bureau of the Census 2000j

Both Lincoln and White Pine counties have a higher rate of single family units than does the state of Nevada, as a whole. Both counties also have a comparatively large number of mobile homes, a common occurrence in rural and agricultural areas. The percentage of housing structures that are mobile homes is greater than the state average in each of the subject counties (**Table 3.17-20**).

TABLE 3.17-20 HOUSING UNITS IN STRUCTURE, 2000

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Housing Units	827,457	2,178	4,439
1 Unit	57.7%	62.7%	72.5%
2-4 Units	8.8%	7.1%	5.2%
5-9 Units	8.0%	0.0%	1.3%
+10 Units	15.4%	1.9%	2.1%
Mobile Home/Other	10.1%	28.3%	18.8%

Source: Bureau of the Census 2000k

The White Pine County Assessor showed 4,381 housing units in the county as of July 2006. Of these, 2,177 were in Ely, 609 in McGill, 212 in Ruth, 85 in Lund, with the remainder scattered throughout the rest of the county (White Pine County 2006).

There are two USDA Rural Development public multi-family housing projects in Ely, and one sponsored by the Nevada Housing Division. A third USDA project, the Bristlecone Apartments, has been purchased by the Rural Nevada Development Corporation and is being managed as low-income housing.

Housing costs are currently rising in White Pine County. In 2005, the White Pine County Assessor reported that the median price of a house in Ely was $152,500, $55,000 in Ruth, $72,800 in McGill, and in the area surrounding Ely, $189,000 (White Pine County 2006).

The 2000 Decennial Census indicated that the median year-of-construction for housing in White Pine County was 1962 (**Table 3.17-18**). Many of the older homes contain lead paint. Other housing concerns in the county include lack of affordable single family homes, deterioration of

manufactured and mobile homes, and lack of special needs housing such as that for senior citizens and persons with disabilities (Crispin and Isaacson 2008).

3.17.3.7 Community Services

Social services in White Pine County are provided by a variety of government agencies and private groups. The County Social Services Department and Salvation Army provide emergency financial assistance in the form of emergency food and shelter, transportation, rent deposit assistance, and medical and burial assistance. The Food Stamps and Welfare Division of the Nevada Department of Human Resources provides food stamps. Nutritional education and assistance in purchasing food for low-income families is provided through the Women and Infant Children Supplemental Foods Program. Victims of domestic abuse can receive support and assistance through Support, Inc., a private non-profit organization. The White Pine Nutrition Programs in Ely and McGill provide meals, transportation, and recreation to senior citizens in the county. Adults with developmental disabilities in the county are served by the White Pine Rehabilitation and Training Center (Crispin and Isaacson 2008).

There is a need in White Pine County for increased child care at night and on weekends, primarily to serve family members employed at the local state prison who work rotating shifts. There is also a need for increased services for low-income elderly persons (White Pine County 2006).

Education

School districts in Nevada are defined along county lines. Enrollments in the two districts have declined slightly over the past several years (**Table 3.17-21**).

TABLE 3.17-21 SCHOOL ENROLLMENTS SELECTED YEARS

SCHOOL YEAR	LINCOLN COUNTY SCHOOL DISTRICT	WHITE PINE COUNTY SCHOOL DISTRICT
2007-2008	991	1,432
2006-2007	982	1,420
2005-2006	992	1,504
2004-2005	1,006	1,446
2003-2004	1,012	1,380
2002-2003	992	1,435
2001-2002	1,014	1,464
2000-2001	1,018	1,554

Source: Nevada Department of Education 2008

The Lincoln County School District operates nine schools with an enrollment of 991 students (**Table 3.17-22**). The smallest school is Pahranagat Valley Middle School with 45 students. The largest is Lincoln County Senior High School, which accommodates 187 students (Nevada Department of Education 2008).

TABLE 3.17-22 LINCOLN COUNTY SCHOOL DISTRICT PUBLIC SCHOOLS, 2007-08

SCHOOL	ENROLLMENT	SCHOOL	ENROLLMENT
Pahranagat Valley	135	Pahranagat Valley Middle	45
Caliente	127	Lincoln County Senior High	187
Panaca	112	Pahranagat Valley High	80
Pioche	81	C.O. Bastian High	132
Meadow Valley Middle	92		

Source: Nevada Department of Education 2008

The White Pine County School District operates eight schools with a total enrollment of 1,432 students for the 2008-09 school year (**Table 3.17-23**). The schools range in size from Steptoe Valley High with 17 students to David E. Norman Elementary with 442.

TABLE 3.17-23 WHITE PINE COUNTY SCHOOL DISTRICT PUBLIC SCHOOLS, 2007-08

SCHOOL	ENROLLMENT	SCHOOL	ENROLLMENT
Lund Elementary	34	White Pine Middle	318
Baker Elementary	10	White Pine High	407
David E. Norman	442	Lund High	46
McGill Elementary	143	Steptoe Valley High	17

Source: Nevada Department of Education 2008

School buildings are in constant need of maintenance and renovation within the White Pine School District. Many of the district's facilities are over 50 years old. The David E. Norman Elementary School was constructed in 1909, the White Pine Middle School in 1912, and McGill Elementary in 1962. All three facilities have problems associated with ADA (Americans with Disabilities Act) compliance, asbestos, and lead-based paint, and are in need of repairs and renovations to meet safety standards (White Pine County 2006).

The Community College of Southern Nevada, headquartered in Las Vegas, operates a satellite center in Caliente in Lincoln County.

Law Enforcement

The Nevada Highway Patrol provides law enforcement on the interstate highways and state highways. The Nevada Highway Patrol has substations in Ely, Elko, Jackpot, Wells, and Wendover.

County sheriffs are responsible for the unincorporated portions of the counties, and contract with some of the municipalities for law enforcement services. The White Pine County Sheriff's Department is staffed with an elected sheriff, 15 patrol officers, 5 dispatchers, 5 jailers, and part-time deputies in Baker and Lund. Under a cooperative agreement between White Pine County and the City of Ely, the County Sheriff also serves as the Ely Police Chief, and the county sheriff's office provides law enforcement for Ely. The White Pine County sheriff's department also has responsibility for the jail, civil processes, and county-wide emergency communications, and shares ambulance service with the Emergency Management Services office. The county jail has a capacity for 32 male and 8 female inmates. During 2005, the average inmate population was 17.4. The Ely Shoshone Tribal Council provides law enforcement and judicial services on tribal lands (White Pine County 2006).

Both Lincoln and White Pine counties have a "serious crime" rate that is lower than the state and national averages. Serious crimes are defined as murder and negligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft. These crimes were selected as an index because of their severity, frequency of occurrence, and likelihood of being reported to the police. In 2002, the two counties, individually, had serious

crime rates of, 1,038, and 1,923 per 100,000 persons for Lincoln, and White Pine counties, respectively. The comparable rate for the State of Nevada was 4,903 serious crimes per 100,000 persons. The nationwide rate was 4,063 serious crimes per 100,000 persons (Crispin and Isaacson 2008).

Fire Protection

Fire protection in the two counties is provided by various municipal fire departments. The Ely Fire Department has 5 full-time fire fighters and 28 volunteers. There are volunteer fire departments in McGill, Ruth, Lund, Baker, Cherry Creek, Cross Timbers, and Cold Creek (White Pine County 2006).

Health Care Services

There are two hospitals in the two-county area, one in each county. The William Bee Ririe Hospital in Ely is operated by White Pine County and has 40 beds. The Grover C. Dils Medical Center, operated by Lincoln County, is located in Caliente and has 20 beds. (Directory of America's Hospitals 2007; White Pine County 2006).

Six physicians practice in White Pine County: three general practitioners, one general surgeon, and two family practitioners supplemented by visiting specialists. There are also two dentists and one optometrist practicing in White Pine County. Nevada Home Health, a private non-profit corporation, provides in-home nursing care, and the area is served by one public health nurse. The White Pine Care Center is a 98-bed skilled nursing facility (White Pine County 2006).

The Ely Mental Health Center provides individual and family counseling, psychiatric evaluation, family and group therapy, and substance abuse counseling. Emergency services are available 24 hours a day. The facility serves White Pine, Lincoln, and Eureka counties, and is part of the state's rural clinic program. Staff for the center consists of two counselors, four support personnel, and nursing staff every other week, and monthly visits by a psychiatrist (White Pine County 2006).

Emergency medical services in White Pine County are provided by volunteer Emergency Medical Technicians. Dispatching is handled by the county sheriff's office (White Pine County 2006).

Water Supply

The majority of the public water supply systems in the two-county area rely on ground water supplied by wells (**Table 3.17-24**). The city of Ely's municipal water supply draws primarily on surface water rights for over 7,600 acre-feet per year with supplemental groundwater rights of over 3,000 acre-feet per year (NDWR 2007), which should be adequate, based on a state-wide average of 320 gallons per day (0.358 acre-feet per year) per residential user (NDWR 2010). However, in 2009 the City experienced a water shortage as outflow from Murry Springs dropped to 900 gallons per minute (down from 1,200 gallons per minute) and groundwater pumps were unable to keep up with demand (The Ely Times 2009; White Pine County 2009b).

TABLE 3.17-24 COMMUNITY WATER SYSTEMS IN THE TWO-COUNTY AREA

WATER SYSTEM NAME	PRINCIPAL COUNTY SERVED	POPULATION SERVED	PRIMARY WATER SOURCE TYPE
Ely Municipal Water Department	White Pine	5,400	Groundwater
Caliente Public Utilities	Lincoln	1,500	Groundwater
McGill Water and Sewer District	White Pine	1,200	Groundwater
Ely Maximum Security Prison	White Pine	1,030	Groundwater
Alamo Water and Sewer GID	Lincoln	900	Groundwater
Panaca Farmstead Water Association	Lincoln	800	Groundwater
Pioche Public Utilities	Lincoln	781	Groundwater
Ruth Water District	White Pine	700	Groundwater
Baker Water and Sewer GID	White Pine	85	Groundwater
Pioche Public Utilities Castleton	Lincoln	60	Groundwater
Valley View Trailer Park	White Pine	52	Groundwater
Cold Creek MHP	White Pine	35	Groundwater

Source: EPA 2007a

Solid Waste

White Pine County is served by a regional landfill operated by the Ely Municipal Utilities Board. The landfill is located on the northwestern boundary of Ely. Outlying communities are served by a private waste-collection company that provides pick-up service throughout the county. The landfill is licensed with a Class I permit through the Nevada Division of Environmental Protection and has applied for a Class III permit to accept construction waste. Available capacity in the landfill is being used more rapidly than was initially anticipated.

Additionally, solvents have been detected in the groundwater in the vicinity of the landfill. There is a long-term need to identify and develop an alternative landfill site.

3.17.3.8 Local Government Finances

Local government finances for the two counties are summarized in **Table 3.17-25**. These data include all local units of governments, including county governments, municipalities, school districts, and special districts. Lincoln County had the higher per capita taxes while White Pine County had the lowest. Each county spent the largest percentage of its budget on education with police and highways following. White Pine County had the highest outstanding debt per capita of $1,871, followed by Lincoln County at $1,435.

TABLE 3.17-25 LOCAL GOVERNMENT FINANCES, 2002

DESCRIPTION	LINCOLN COUNTY	WHITE PINE COUNTY
General Revenue (million $)	22.5	28.9
Intergovernmental Transfers (million $)	15.6	19.1
Total Taxes (million $)	4.2	5.2
Per Capita Taxes ($)	980	596
Per Capita Property Taxes ($)	916	478
Direct General Expenditures (million $)	19.8	28.2
Per Capita Direct General Expenditures ($)	4,659	3,242
Education (%)	53.0%	49.9%
Health and Hospitals (%)	0.7%	0.9%
Police (%)	5.8%	10.7%
Public Welfare (%)	1.5%	1.0%
Highways (%)	10.4%	7.4%
Total Outstanding Debt (million $)	6.1	16.3
Per Capita Outstanding Debt ($)	1,435	1,871

Source: Bureau of the Census, 2002 Census of Government, as cited in Crispin and Isaacson 2008

There are two units of local government in White Pine County—the county and the City of Ely. White Pine County and the City of Ely negotiate an annual cooperative agreement to share costs and responsibilities for fire protection, law enforcement, and animal control. Additional governing authority lies with the Ely Shoshone Tribal Government, the White Pine School Board, and general improvement districts. The White Pine School Board, William Bee Ririe Hospital Board, Baker and McGill Ruth Water and Sewer General Improvement Districts, and the White Pine and Baker TV Districts are elected boards that operate independently of city and county governments (White Pine County 2006).

The communities of Ruth, McGill, Lund, Preston, Cherry Creek, and Baker are unincorporated, and have budgets administered through the county government. Each of these communities has a community board that reports to the county commission (White Pine County 2006).

The White Pine County government was nearly insolvent at the end of 2005 and was placed under the supervision of the Nevada Department of Taxation; this status was rescinded by the 2009 State Legislature (White Pine County 2009b). Insolvency was averted through a combination of tax increases, imposition of a franchise fee, and budget reductions. Although some county personnel were laid-off, no county services or facilities were closed.

Taxable sales in Lincoln County rose markedly from $15.4 million in FY 2006-07 to almost $27 million in FY 2007-08, an increase of more than 75%. In comparison, taxable sales in White Pine County were relatively flat, increasing from $192.9 million in FY 2006-07 to $197.8 million in 2007-08 (**Table 3.17-26**).

TABLE 3.17-26 TAXABLE SALES IN LINCOLN AND WHITE PINE COUNTIES, FY 2006-2007 AND FY 2007-2008

AREA	FISCAL YEAR, 2006-07	FISCAL YEAR, 2007-08	PERCENT CHANGE
Lincoln County	$15,397,747	$26,967,548	75.1%
White Pine County	192,877,042	197,817,869	2.6%
State of Nevada	49,427,707,108	48,196,848,945	-2.5%

Source: Nevada Department of Taxation 2007 and 2008

In Nevada, there is a minimum 6.5 percent statewide sales tax and various county-option sales taxes. The total sales tax rate in White Pine County is 7.125 percent, while the rate is 6.75 percent in Lincoln County. The 6.5 percent statewide sales tax is comprised of a 2 percent state tax, a 2.25 percent Local Schools Support Tax, a 0.50 percent Basic City-County Relief Tax, and a 1.75 percent Supplemental City-County Relief Tax. All of the state tax is placed in the states' general fund. The other three taxes are distributed between the counties of origin and the state according to established guidelines (Nevada Department of Taxation 2006a).

In addition to the state minimum 6.5 percent sales tax, White Pine County also levies a 0.125 percent Extraordinary Maintenance, Repair or Improvement of School Facilities Tax (White Pine County 2009b). Lincoln County imposes a 0.25 percent Infrastructure Tax (Nevada Department of Taxation 2006a).

Portions of various excise taxes levied in Nevada are also returned to county governments. These include the Cigarette Tax, the Liquor Tax, Real Property Transfer Tax, and a Motor Vehicle Privilege Tax. The amounts of the various sales and excise taxes returned to the county governments for the 2007-2008 fiscal year are listed in **Table 3.17-27** (Nevada Department of Taxation 2008).

TABLE 3.17-27 STATE SALES AND EXCISE TAX COLLECTIONS DISTRIBUTED TO LINCOLN AND WHITE PINE COUNTIES, FY 2007-2008

TAX	LINCOLN COUNTY	WHITE PINE COUNTY
Local School Support Tax	$325,375	$2,216.422
Basic City/County Relief Tax	$143,828	$819,972
Supplemental City/County Relief Tax	$1,389,091	$3,171,543
Local Option Sales and Use Tax	$68,858	$1,582,331
Cigarette Tax	$23,296	$55,564
Liquor Tax	$4,906	$11,643
Real Property Transfer Tax	$27,980	$62,478
Motor Vehicle Privilege Tax	$432,934	$822,679

Note: The data presented here are based on figures provided on the Sales and Use tax returns by registered permit holders in and out of the state of Nevada. Large increases or decreases may be due to audits or deficiency determinations performed on taxpayers doing business in a county.

Source: Nevada Department of Taxation 2008

Property taxes are also levied in Nevada at the appropriate rate on the assessed value, which is defined as 35 percent of the taxable value. The taxable value for land is considered the cash value the property would bring in a competitive and open market. For improvements, the taxable value is considered the replacement cost minus depreciation. There is also a tax on the net proceeds of minerals in lieu of property tax on mining and natural resource extraction operations. Mining companies are allowed to deduct from the gross proceeds expenses directly

tied to the production of minerals. This tax is levied at property tax rates (Nevada Department of Taxation 2008).

The total assessed valuation for White Pine County went down by 1.5 percent from the 2006-2007 fiscal year to the 2007-2008 fiscal year (**Table 3.17-28**). The assessed value increased by 10.7 percent in Lincoln County. Unlike the decrease in White Pine County, the rise in assessed value in Lincoln County was due to a rise in the value of real and personal property, and not to an increase in the net proceeds from minerals (Nevada Department of Taxation 2007, 2008).

TABLE 3.17-28 TOTAL ASSESSED VALUATION, FY 2006-07 AND FY 2007-08

AREA	FY 2006-07	FY 2007-08	PERCENT CHANGE
Lincoln County	$163,827,835	$181,285,830	10.66%
White Pine County	$410,137,833	$403,878,274	-1.53%
State of Nevada	$120,714,693,368	$140,146,163,395	16.10%

Source: Nevada Department of Taxation 2007 and 2008

Nevada has a statutory property tax rate cap of $3.64 per $100 of assessed value. In 2005, the State Legislature approved an additional $0.02 per $100 of assessed value. This amount is in addition to the $3.64 per $100 rate cap. Of the additional $0.02, $0.0085 is slated for statewide capital improvements and the remaining $0.015 will go to the conservation of natural resources in Nevada. The average countywide property tax for White Pine County is 3.66 percent for the 2006-2007 fiscal year. The property tax rate for White Pine County is the maximum allowed by Nevada State law. The property tax rate for Lincoln County is 3.0766 percent for the 2006-2007 fiscal year.

Property taxes are levied by various government entities and distributed to these various entities upon collection by either the county or state governments. Of a total of $8,445,110 projected to be distributed in White Pine County for the 2006-2007 fiscal year, the largest recipient is the county government (**Table 3.17-29**). In both White Pine and Lincoln counties, the largest recipient of property tax revenue is the county government. Statewide in Nevada the school districts are the largest recipients (Nevada Department of Taxation 2006b).

TABLE 3.17-29 PROPERTY TAX REVENUE, 2006-2007 FY

TAX	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV	STATE OF NEVADA
Schools	$1,515,214	$2,424,854	$1,448,580,988
Counties	$2,082,622	$4,381,997	$910,456,361
Cities	$94,083	0	$446,067,770
Towns	$79,601	0	$95,223,982
Combined Special Districts	$754,394	$1,246,000	$508,388,611
State	$264,707	$392,259	$194,648,581
Total	$4,790,621	$8,445,110	$3,603,366,293

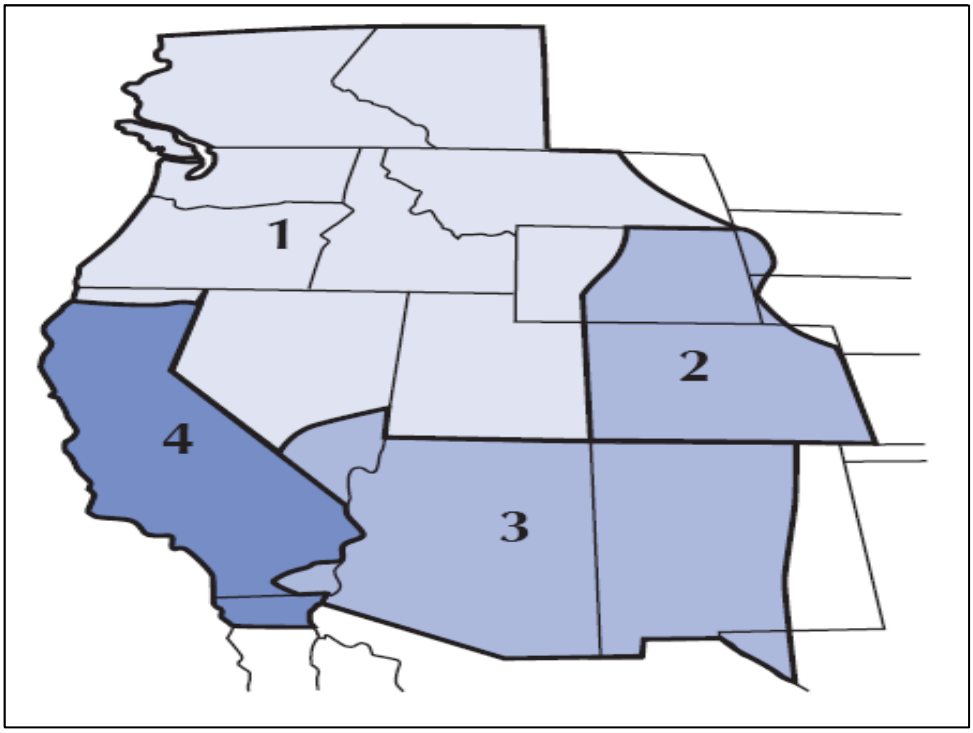
Source: Nevada Department of Taxation Fiscal Year 2006b

3.17.3.9 Electric Power Industry

The market for electric energy is regional with eight electric reliability councils across the country coordinating the delivery system. In the western United States, the Western Electricity Coordinating Council (WECC) coordinates the system in all or part of 14 states, the Canadian

provinces of Alberta and British Columbia, and a portion of northern Baja California (**Figure 3.17-1**). Within the WECC, southern Nevada, which is primarily served by NV Energy (formerly Nevada Power Company), is included in the Arizona/New Mexico/Southern Nevada Power Area (AZ/NM/SNV); and the remainder of Nevada, which is primarily served by NV Energy (formerly Sierra Pacific Power Company), is in the Northwest Power Pool Area (NWPP). The Rocky Mountain Power Area (RMPA) and the California/Mexico Power Area (CA/MX) are the remaining reporting areas in the WECC (WECC 2006). These reporting areas are generally defined by the location of generating and transmission facilities and ability to transmit electric energy. Currently, there is no existing transmission connection between the Northwest Power Pool Area and the Arizona/New Mexico/Southern Nevada Power Area. The transmission facilities associated with the ON Line Project would provide transmission connection between these two areas.

Figure 3.17-1 Western Electricity Coordinating Council Reporting Areas



(1) Northwest Power Pool Area (2) Rocky Mountain Power Area (3) Arizona/New Mexico/Southern Nevada Power Area (4) California Mexico Power Area Source: Western Electricity Coordinating Council, 2006

Projections by the WECC indicate that summer peak electric energy demand in the WECC service area will increase by 22.8 percent between 2005 and 2015 (**Table 3.17-30**). Peak summer demand in the Arizona/New Mexico/Southern Nevada Power Area is expected to increase by 30.6 percent over the same time period.

TABLE 3.17-30 SUMMER PEAK ELECTRIC ENERGY DEMAND IN WECC REPORTING AREAS (MW)

AREA	2004	2005	2015
Northwest Power Pool Area	51,069	52,698	63,129
Rocky Mountain Power Area	10,400	11,086	14,029
Arizona/New Mexico/Southern Nevada Power Area	25,634	27,974	36,526
California Mexico Power Area	55,920	57,389	70,321
Western Electricity Coordinating Council	141,100	149,147	183,148

Source: Western Electricity Coordinating Council 2006

3.17.4 Specific Project Area Conditions

The Robinson Summit Substation, or the RSS-Site B sub-alternative, would be constructed on land administered by the BLM and is approximately 20 miles northwest of Ely. There are no communities in close proximity to the proposed Robinson Summit Substation. The transmission line alignment generally passes through public lands or rural areas with dispersed populations. Segment 6C passes within about 10 miles to the west of Ruth, Nevada (located about 10 miles northwest of Ely). The estimated population of Ruth in 2005 was 394. Segments 8 and 9B, lie entirely on land administered by the BLM and are not close to cities or towns. Segments 9A and 9D are primarily on BLM land and run parallel to the Desert National Wildlife Refuge. Segments 9C and 10 also occur entirely on BLM land and are not close to cities or towns. A portion of Segment 11 also runs adjacent to the Desert National Wildlife Refuge, and terminates at the existing Harry Allen Substation.

3.18 Environmental Justice

Environmental justice is the fair treatment of all people so that no one group of people bears a disproportionate share of the negative consequences of industrial or municipal development, or the implementation of federal, state, local, or tribal policies or programs. Executive Order 12898, *Environmental Justice*, requires federal agencies to analyze the effects of major actions to determine if their implementation will result in disproportionate effects to minority or low-income populations.

3.18.1 Area of Analysis

The area of analysis for environmental justice includes Clark, Lincoln, Nye, Eureka, and White Pine counties.

3.18.2 Data Sources and Methods

The indicators are minority and/or low-income populations in the area of analysis that have the potential to be affected by high, adverse human health or environmental effects during construction or operations phases of the Proposed Action or Action Alternative. Minority population and income data was taken from the Bureau of the Census 2000 Decennial data noted above in **Section 3.17** and the EPA Environmental Justice Geographic Assessment Tool (EPA 2008a). Also reviewed were the White Pine County, Nevada 2006 Comprehensive Economic Strategy, and the White Pine Energy Station Project Draft EIS (BLM 2007c).

3.18.3 Existing Conditions

As noted in **Section 3.17**, the project area is primarily rural.

Table 3.18-1 shows racial and ethnic populations of the project area and the State of Nevada as a percentage of the overall population in 2000. As per CEQ guidance (CEQ 1997), minority populations of the five counties have been compared to that of the same minority for the larger population (the State of Nevada); where the county minority population is "meaningfully greater" than the parallel state population, it is considered a significant minority population (CEQ 1997; EPA 1998). As noted in the table by asterisks, the percentage of Native Americans in Nye and White Pine counties exceeds the statewide percentage by more than 50 percent. This finding is not unexpected given the several reservations and colonies in those counties.

TABLE 3.18-1 ENVIRONMENTAL JUSTICE STATISTICS FOR AFFECTED COUNTIES (BY RACE AND ETHNICITY)

State/County	Racial/Ethnic Groups, 2000 Census (%)					Hispanic or Latino Origin	Population
	White	African American	Asian/ Pacific Islander	Native American/ Alaskan	Other Race		
Nevada	75.2	6.6	4.5	1.3	7.9	19.7	1,998,257
Clark	71.7	8.9	5.2	0.8	8.6	21.9	1,375,765
Eureka	89.3	0.4	0.9	1.6	4.4	9.6	1,651
Lincoln	92.1	1.8	0.8	0.7	2.5	5.0	4,165
Nye	89.7	1.0	0.7	2.3*	2.9	8.3	32,485
White Pine	86.6	4.6	0.7	3.4*	3.0	10.7	9,181
Nevada x 1.5		9.9	6.75	1.95	11.85	29.55	

Source: EPA 2008a. Environmental Justice Geographic Assessment Tool, accessed on line at http://www.epa.gov/Compliance/whereyoulive/ejtool.html on May 28, 2008
*Exceeds the threshold value of 1.5 times the state population percentage for the group, thereby constituting a minority population

Table 3.18-2 shows personal and household income statistics for the project area and the State of Nevada in 2000. From the table it is evident that a substantially higher percentage of Lincoln County residents fall into the low income brackets. Lincoln County residents are twice more likely to be in households on public assistance and earning less than $15,000 per year than the state average.

TABLE 3.18-2 ENVIRONMENTAL JUSTICE STATISTICS FOR AFFECTED COMMUNITIES (FOR INCOME GROUPS)

State/ County	Population	Persons Below Poverty Level (%)	Households on Public Assistance (%)	Household Income (%)			
				<$15,000	$15,000-$25,000	$25,000-$50,000	$50,000-$75,000
Nevada	1,998,257	10.3	2.3	12.4	12.3	31.2	21.8
Clark	1,375,765	10.6	2.4	12.2	12.4	31.3	21.5
Eureka	1,651	12.5	2.4	20.7	12.9	26.1	24.0
Lincoln	4,165	15	5.1	25.6	16.2	25.5	22.7
Nye	32,485	10.6	3.5	18.8	14.6	34.9	17.0
White Pine	9,181	9.4	2.7	18.3	14.6	31.8	22.9

Source: EPA 2008a. Environmental Justice Geographic Assessment Tool, accessed on line at http://www.epa.gov/Compliance/whereyoulive/ejtool.html on May 28, 2008

3.18.4 Specific Project Area Conditions

3.18.4.1 Minority Communities

A minority population may be present if the minority population percentage of the affected area is meaningfully greater than the minority population in the general area. According to demographic data provided above in **Section 3.17** and in **Tables 3.18-1** and **3.18-2**, Eureka, Lincoln, Nye, and White Pine counties are relatively uniform demographically. White Pine County's population is 86.6 percent white. The second largest racial group is black, making up 4.6 percent of the population. Lincoln County's population is over 90 percent white with the second most commonly cited racial category composed of two or more races. In Nye County, 89.7 percent of the population is white, with the second most commonly cited racial category composed of two or more races. Eureka County is 89.3 percent white with the second most commonly cited racial category as other. Clark County's population is 71.7 percent white with the second most commonly cited racial category as African American.

Hispanics, who may be of any race, comprise 10.7 percent of the population of White Pine County, 9.6 percent of Eureka County, 8.3 percent of the Nye County population, and 5.0 percent of Lincoln County's population. In comparison, the State of Nevada in 2000 was about 75.2 percent white, 19.7 percent Hispanic or Latino, 6.6 percent black or African American, and 1.3 percent Native American.

The data demonstrates that there are minority populations in the project area, based on racial factors. The Native American Concerns sections of this FEIS (**Section 3.11** and **4.11**) further describe this segment of the minority population in the area.

The White Pine County population data used for the 2000 Census includes the inmate population (White Pine County 2009b) which is significant due to both a men's maximum-security prison and a men's minimum-security conservation camp being present. The inclusion of the inmate population impacts the population breakdown by racial and ethnic background as well as the percentage of male and female residents of the county. This may be why the percentages of some of the racial/ethnic populations of White Pine County are higher than the state percentages (**Table 3.18-1**).

3.18.4.2 Low Income Communities

Low income families are defined as those families whose incomes do not exceed 150 percent of the poverty level. Poverty is defined by family; either everyone in a family is at poverty level or no one in the family is in poverty. The family characteristics used to determine poverty status include: number of people, number of children in the family under age 18, whether or not the main householder is over age 65, and the household income. Based upon family characteristics, a household income threshold is determined as the basis for whether or not that family is defined as living at or below the poverty level.

In White Pine County in 2004, there were an estimated 961 individuals at poverty level (12.4 percent); 282 were under age 18. In Lincoln County in 2004, 523 (13 percent) individuals were at poverty level; 188 were under age 18. In Eureka County, 206 (12.5 percent) individuals were at poverty level.

The number of low income households surveyed in White Pine County for the White Pine Energy Station Project Draft EIS (BLM 2007c) is 838 (25 percent of the county's households). The number of individuals surveyed who live in low income households in the three census tracts, including Ely and McGill, was 866. Of those 866, 265 lived either in small communities of less than 1,000 people, or in areas where no other residences existed within several miles. Of

241 low-income people surveyed in census tract 9701, 112 live in McGill. There are 489 low-income people in Ely.

Lincoln County has the largest number of persons in the lower income brackets, with 25.3 percent of households having an income of less than $15,000 per year. Lincoln County is also the most rural in nature of the three counties along the transmission line alignment, with 0.4 people per square mile (/sq mi) (1.0/sq mi in White Pine County and 1.8/sq mi in Nye County).

The Robinson Summit Substation and RSS-Site B sub-alternative would be located on public lands in remote areas with limited settlement. Similarly, the Falcon Substation expansion area, although on private lands, is in an area of dispersed population. The transmission line alignments generally pass through public lands or rural areas with dispersed populations. Since there are up to about 25 percent low income households present in Nye, White Pine, and Lincoln counties, it is likely that some rural, low income households would be located near the proposed transmission line.

See, also, **Section 3.17** above for further details on the socio-economics of the area.

3.18.4.3 Public Participation

An integral part of the public participation process included scoping meetings, mailings, and press releases as described in the Scoping Report (JBR 2007c). See **Chapter 6**, Consultation and Coordination, for a complete description of public involvement efforts.

3.19 Hazardous and Solid Waste Materials

3.19.1 Area of Analysis

The project area includes the proposed Robinson Summit Substation site and generally a 1,000-foot-wide area that extends 500 feet from each side of the proposed centerline for the transmission line alignment.

3.19.2 Data Sources and Methods

Data for this section were acquired from field observations.

3.19.3 Existing Conditions

Most of the land uses of the Proposed Action and Action Alternative have been open range or agricultural with no history of solid or hazardous waste generation or disposal. There is evidence of scattered debris being located within the proposed transmission line alignments.

The solid waste disposal activities in the county are described in the White Pine County Solid Waste Management Plan Revision (WPCC 2006). White Pine County and the City of Ely maintain in inter-local agreement governing charges for the use of the City's landfill to meet the needs of county residents. White Pine County maintains a franchise agreement with a contractor for collecting, hauling, and disposing of solid waste from all areas of the county to the White Pine Regional Landfill. The franchise agreement prohibits other parties from providing these same services as a business venture in the county. The franchise agreement does not prohibit solid waste generators from hauling and disposing of their own waste at the landfill.

Beginning in 2003, the City of Ely, Nevada Division of Forestry, BLM, and the USFS collaborated to reduce solid waste disposal in remote areas of the County and direct solid waste from these areas to the Ely landfill. The program has reportedly resulted in fewer illegal dumps occurring on public lands in the area (www.blm.gov/nv).

There is no hazardous waste disposal facility located in the immediate area so these materials that are generated locally and disposed in permitted hazardous waste facilities are trucked by commercial carriers to existing, permitted facilities in Nevada and surrounding states.

3.19.4 Specific Project Area Conditions

The Robinson Summit Substation, RSS-Site B sub-alternative, and transmission line alignments are generally located on BLM-administered land that is currently undeveloped and used for livestock grazing and wildlife habitat. Portions of the land affected by the transmission line alignments cross private property. Although the existence of hazardous materials along these proposed alignments is possible, development within these areas is limited and is not expected to have produced substantial quantities of hazardous materials. There are widely scattered occurrences of solid wastes within the transmission line alignments and no reports of hazardous materials or wastes.

The Falcon Substation is located on private land. The land adjacent to the existing substation is undeveloped. The current uses of the area are rangeland for domestic cattle use and agricultural land use.

3.20 Transportation

3.20.1 Area of Analysis

This section discusses the existing transportation system within the project area for the ON Line Project. The area of analysis for transportation includes the transportation routes potentially used by the ON Line Project and includes roads in White Pine, Nye, Eureka, Lincoln, and Clark counties.

3.20.2 Data Sources and Methods

Existing information on transportation routes within the area of analysis was reviewed and a site-specific transportation study was conducted by HDR Engineering, Inc. and Cummins and Bernard, Inc. (HDR et al. 2007) including:

- Existing highways and road infrastructure
- Other types of transportation routes/access (i.e., railroad, air)
- Level of service of existing primary access routes to project area
- Road administration
- Crash data

3.20.3 Existing Conditions

The project area is generally accessed via a system of regional highways, including US-93, US-50, Interstate 80 (I-80), I-15, SR-318, and US-6 (**Figure 3-20.1**). The Federal Highway Administration (FHWA) administers US-93, I-80, I-15, US-50, and US-6. The Nevada Department of Transportation (NDOT) administers SR-318 and maintains all of the primary routes mentioned. I-80 is an east-west interstate highway that traverses across the northern portion of Nevada. I-15 is generally a north-south interstate highway connecting Las Vegas, Nevada and Salt Lake City, Utah. US-93 runs generally north-south between I-80 and I-15. SR-318 is also a north-south highway that connects US-93 with US-6. US-6, US-50, and I-80 generally run east-west, while US-93, I-15, and SR-318 are generally north-south travelways (see **Figure 3.20-1**).

Both public and private lands are connected to the highway system by an extensive network of unpaved roads. Excluding the primary transportation routes, most roads within the project area are not maintained or paved. Non-maintained or unpaved roads may require four-wheel drive access vehicles due to rough terrain, steep grades, drainage crossings, or other obstructions. These roads include county and private roads.

The primary roads would provide general access to the ON Line Project for construction personnel, construction materials and equipment delivery, and project operation personnel.

There are many cities and towns along this system of highways that could provide personnel, materials, and services. These towns and the highways that link them to the project area are listed in **Table 3.20-1**.

TABLE 3.20-1 POTENTIAL SOURCE TOWNS AND CITIES FOR PROJECT CONSTRUCTION AND OPERATION PERSONNEL AND ASSOCIATED ROADWAYS TO ACCESS THE ON LINE PROJECT

TOWN/CITY, STATE	ROADWAY
Austin, Nevada	US-50 and US-93
Battle Mountain, Nevada	I-80
Carlin, Nevada	I-80
Elko, Nevada	I-80 and US-93
Ely, Nevada	US-93
Eureka, Nevada	US-50 and US-93
Las Vegas, Nevada	I-15 and US-93 or I-15, US-93, SR-318, and US-6
McGill, Nevada	US-93
Pioche, Nevada	US-93
Salt Lake City, Utah	I-80 and US-93
Wells, Nevada	I-80 and US-93
Wendover, Utah	I-80 and US-93
West Wendover, Nevada	I-80 and US-93

A roads Level of Service (LOS) is a qualitative measure of the operating conditions experienced under varying traffic volumes (HDR et al. 2007). There are six LOS conditions that describe operating traffic conditions from best to worst, A through F, respectively (see **Table 3.20-2**).

TABLE 3.20-2 ROADWAY LEVEL OF SERVICE

LEVEL OF SERVICE (LOS)	DESCRIPTION
A	Free flow, low traffic density or delay
B	Minimum density or delay, stable traffic flow
C	Stable, movements somewhat restricted due to higher volumes, but not objectionable
D	Restricted movements, queues and delay may occur during short peaks, but lower demand occurs often enough to permit clearing, preventing excessive backups
E	Frequent delays, actual capacity is utilized; all movements experience congestion and delay
F	Forced flow, demand volumes exceed capacity resulting in complete congestion

According to the project specific traffic study (HDR et al. 2007), US-93 currently functions at operational LOS A. Traffic counts for various areas along US-93 and other roadways in the

project area are taken by NDOT annually and summarized in their Annual Traffic Report (NDOT 2006).

Traffic crash data indicates the highest crash type applicable to the project area involves vehicles that ran off the roadway and struck a fixed object due to vehicle speeds too fast for driving conditions (HDR et al. 2007). Other primary crash types in the area include: animal, ran off roadway and overturned, rear-end collision, and angle collision. The five primary contributing factors to these accidents include: speed too fast for conditions, failure to yield, inattentive driving, animal in roadway, and improper backing (HDR et al. 2007).

The majority of access on BLM lands in the Ely District is informal with reasonable access made for permitted uses such as mining claims, mining uses, mineral leases, grazing, recreation, rights-of-way, and other specific uses (BLM 2008a). Road system management by the BLM is variable with priorities for road maintenance determined on a case-by-case basis. There has been an increase in informal travel route proliferation in the Ely District. Between 1998 and 2003, there has been a 184 percent increase in off-highway vehicle use in Nevada (BLM 2008a). New roads may be constructed on BLM administered land in connection with an authorized project such as a mineral lease or right-of-way.

The Union Pacific Railroad runs generally east-west through Nevada with a northern and southern route. The northern route roughly follows I-80 through the state, while the southern route links Salt Lake City, Utah to Las Vegas, passing through Caliente and Moapa on the way to Las Vegas. Passenger service is available on the northern route, provided by Amtrak.

3.20.4 Specific Project Area Conditions

The transmission facilities traverse generally north-south from near Ely to northeast of Las Vegas. The primary routes accessing the transmission line alignments would include US-93, US-50, US-6, and I-15. Secondary access from the highways would include local improved and unimproved roads.

The Robinson Summit Substation and RSS-Site B sub-alternative sites are accessed via the Jakes Valley Road that heads south from US-50. The existing Harry Allen Substation is accessed via a paved road off of US-93, I-15, and SR-604. The existing Falcon Substation is accessed via the Dunphy Road and then the Boulder Valley Road, off of I-80.

Figure 3.20-1 Transportation Map