## 3.5 Vegetation

### 3.5.1 Regulatory Background

Regulations that directly influence vegetation resources within the analysis area are primarily implemented by the BLM, USFS, Department of Agriculture for Wyoming, Colorado, Utah, and Nevada, and the USACE. The vegetation regulations, including those regulations for noxious weed management, riparian and wetland areas, relevant to the project are presented in **Table 3.5-1**.

**Table 3.5-1 Relevant Regulations for Vegetation Resources**

| Topic | Regulation |
|---|---|
| Noxious and Invasive Weeds | Federal Plant Protection Act of 2000 (formerly the Noxious Weed Act of 1974) 7 United States Code SS 2801-2814<br>Colorado Revised Statutes 35-5.5-104.5 to 35-5.5-119; 25-8-205; 25-8-205.5; 35-9-118<br>Colorado Code of Regulations 8 CCR 1206-2<br>Wyoming Statutes 11- 5- 102.a.xi<br>Wyoming Weed and Pest Control Act<br>Utah Code 04-17-1 to 04-17-11<br>Utah Administrative Code Rules 68-9<br>Nevada Revised Statutes 555.005-555.5570<br>FSM 2000 Zero Code 2080 |
| Riparian and Wetlands | Clean Water Act (33 USC 1344)<br>Rivers and Harbors Act (33 USC 401 et seq.)<br>Code of Federal Regulations Title 33 Navigation and Navigable Waters<br>Executive Order 11988, “Floodplain Management,” May 24, 1977<br>Executive Order 11990, “Protection of Wetlands,” May 24, 1977<br>Colorado Code of Regulations 5-CCR 1002-31<br>Wyoming Wetland Act W.S. 35-11-308 through 35-11-311<br>BLM Utah Riparian Policy (IM-UT-2005-091) |

#### 3.5.1.1 Noxious and Invasive Weed Species

The terms “noxious weed” and “invasive weed” are often used interchangeably to describe any plant that is unwanted and grows or spreads aggressively. The term “noxious weed” is legally defined under both Federal and state laws. Under the Federal Plant Protection Act of 2000, a noxious weed is defined as “any plant or plant product that can directly or indirectly injure or cause damage to crops, livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the U.S., the public health, or the environment” (Animal and Plant Health Inspection Service 2000; Institute of Public Law 1994). Invasive species are defined as plants able to establish on a site where they were not present in the original plant composition (BLM 2008). The Federal Plant Protection Act of 2000 (formerly the Noxious Weed Act of 1974) and EO 13112 of February 3, 1999, require cooperation with state, local, and other federal agencies in the application and enforcement of all laws and regulations relating to the management and control of noxious weeds.

The BLM has established a goal that NEPA documents consider and analyze the potential for the spread of noxious weed species and provide preventative rehabilitation measures for each management action involving surface disturbance. The USFS regulates noxious weeds as required in the USFS FSM 2000 zero code 2080. BLM and USFS BMPs and Stipulations and Guidelines, as defined in the RMPs and LRMPs, list requirements for noxious weed control and management. In addition to the Federal noxious weed list, each

state maintains a list of regulated and prohibited noxious and invasive weed species. Weed control and management is typically required in each county on public and private lands. Counties also can have their own list of regulated and prohibited invasive weed species. For the land management agencies, while the primary concern is the control of noxious weeds of concern identified by the State statutes and regulations in Wyoming, Colorado, Utah, and Nevada, a secondary concern is the control of invasive species (e.g., halogeton, henbane, and cheatgrass). The following paragraphs outline the management and regulatory requirements by state.

Wyoming

The Wyoming Department of Agriculture defines noxious weeds as "weeds, seeds, or other plant parts that are considered detrimental, destructive, injurious or poisonous, either by virtue of their direct effect or as carriers of diseases or parasites that exist within the state, and are on the designated list (by the Wyoming Statutes" (Title 11, Chapter 5, Section 102.a.xi).

Colorado

The Colorado Department of Agriculture (CDA) manages and regulates noxious and invasive species through the Colorado Noxious Weed Act, which classifies noxious weeds into three lists, A, B, and C (§ 35 5.5-101 through 119, C.R.S. [2003]). Each list has specific control requirements, with the most stringent requirements for those species found on List A. List A species are designated for eradication. List B includes species for which state noxious weed management plans would be developed to stop the continued spread of these species. List C includes species for which state noxious weed management plans would be developed to support the efforts of local governing bodies to facilitate more effective integrated weed management on private and public lands (CDA 2011).

Utah

The Utah Department of Agriculture (UDA) defines a "noxious weed" as any plant especially injurious to public health, crops, livestock, land, or other property per the Utah Noxious Weed Act, which classifies noxious weeds into three non-native classes: Class A (Early Detection Rapid Response [EDRR]), Class B (Control), and Class C (Containment). Class A species pose a serious threat to the state and should be considered a very high priority for EDRR. Class B species pose a threat to the state and should be considered a high priority for control. Class C species are widely spread and pose a threat to agricultural industry with a focus on stopping expansion (Utah Weed Control Association 2011).

Nevada

The State of Nevada defines noxious weeds as "any species of plant which is liable to be detrimental or destructive and difficult to control or eradicate" (NRS 555.010-555.220). The state has enacted laws requiring the control of noxious weed species (NRS 555.005, NAC 555.010) for which the Nevada Department of Agriculture (NDA) maintains jurisdiction, management, and enforcement. Under NRS 555.010-555.220 and per the NDA, state-listed noxious weeds are classified into three categories: A, B, and C. Each list has specific control requirements, with the most stringent requirements for those species found in Category A. Category A includes noxious weed species not found or limited in distribution throughout the state, actively excluded from the state, and actively eradicated wherever found, and whose control is required by the state for all infestations. Category B includes noxious weed species which are established in scattered populations in some counties of the state, actively excluded where possible, and whose control is required by the state in areas where populations are not well established or not previously known to occur. Category C includes noxious weed species currently established and generally widespread in many counties of the state, and whose abatement remains at the discretion of the State Quarantine Officer (NDA 2010).

#### 3.5.1.2 Riparian and Wetland Areas

Waters of the U.S. (WUS) are defined in 33 CFR 328.3 as all non-tidal waters that are currently, or were used in the past, or may be susceptible to use in interstate commerce; all interstate waters including wetlands; all other waters such as interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, of which the use, degradation or destruction could affect interstate commerce; and all impoundments of waters otherwise defined as WUS under this definition. In addition, tributaries of the above listed waters, including arroyos and other intermittent drainages, and wetlands adjacent to the above waters also are considered to be WUS.

Criteria used by the USACE to determine whether a drainage constitutes a WUS include presence of a defined bed, banks, or evidence of an ordinary high water mark.

Wetlands adjacent to other WUS, such as streams, also are considered to be WUS. In addition, and as used herein, the term “wetlands” has a regulatory definition as defined in 33 CFR 328. 7(b) as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Note that the frequency and duration of saturation may vary by geographical region, and is largely dependent upon local climatic conditions.

According to the USACE’s 1987 Wetland Delineation Manual, a “three-parameter” approach is required for delineating USACE-defined wetlands (USACE 1987), where areas are identified as wetlands if they exhibit hydrophytic vegetation, hydric soils, and wetland hydrology.

The BLM defines a riparian area as “an area of land that is directly influenced by permanent water. It has visible vegetation or physical characteristics reflective of permanent water influence. Lake shores and stream banks are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil” (BLM 2008 [Richfield RMP/EIS]). The USFS defines riparian areas as “Geographically delineable areas of land directly influenced by water, comprised of the aquatic and riparian ecosystems. Riparian ecosystems occupy the transition between the aquatic and adjacent terrestrial ecosystem and are characterized by distinctive vegetation communities that require free or unbound water” (USFS 1986a,b). Wetland and riparian communities typically have persistent water or obligate vegetation (e.g., sedges, rushes, willows) due to the availability of surface or groundwater.

#### 3.5.1.3 Wildland Fire

Wildland fire is managed by the governing agency's policies through the RMPs or Land Use Plans (LUPs) and corresponding Fire Management Plans (FMPs) for each of the agencies office or fire management organization. The State Agencies also have their own process and policies for managing wildland fire that are set in their state statues delegating the authority to specific organizations within the each state on down to the county level. The National Wildfire Coordinating Group (NWCG) is an operational group designed to coordinate programs of participating wildfire management agencies, which include the BLM, USFS, NPS, USFWS, and BIA. Federal fire regulations are based on the *Federal Wildland Fire Management Policy* (1995) and the *Review and Update of the 1995 Federal Wildland Fire Management Policy* (USDOI and USDA 2001, 1995).

The analysis for vegetation contained in this EIS assumes that the BLM will continue to manage vegetation resources, noxious weeds, riparian and wetland areas, and wildland fires in coordination with the USFS, USACE, and applicable state agencies (i.e., WDA, CDA, UDA, and NDA). The USFWS will continue to have jurisdiction over the management of ESA-listed plant species.

### 3.5.2 Data Sources

Information regarding vegetation resources within the analysis area was obtained from a review of existing published sources; BLM RMPs; USFS LRMPs; and WYNDD, CNHP, UNHP, and NNHP database information. Vegetation communities, including riparian and wetland areas, and acreages were identified using the Southwest Regional Gap Analysis Project (SWReGAP) and Northwest Regional Gap Analysis Project (NWReGAP) land cover data (USGS 2008, 2004). Vegetation community characterizations were compiled based on SWReGAP Land Cover descriptions (USGS 2005), NWReGAP Land Cover Descriptions (NatureServe 2012), BLM RMPs, and USFS LRMPs. Species nomenclature is consistent with the NRCS PLANTS Database (NRCS 2013) unless otherwise specified. Noxious weed regulated species were obtained from state statues and supplemented by information provided on state websites.

### 3.5.3 Analysis Area

The analysis area for vegetation encompasses the total area within the HUC 10 watershed boundaries (as defined in Section 3.4.3) crossed by the 2-mile transmission line corridors for all alternatives and locations of other project components including terminals and ground electrode sites.

### 3.5.4 Baseline Description

#### 3.5.4.1 Vegetation

The analysis area crosses a range of vegetation types in several ecoregions. Ecoregions are areas where the ecosystems, and the type, quality, and quantity of environmental resources are generally similar as defined by the analysis of patterns and composition of biotic and abiotic phenomena including geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology (USEPA 2013). The USEPA has mapped ecoregions at various scales for North America, with the coarsest scale labeled as Level I and the most detailed as Level IV. For this analysis, the Level III ecoregions provide sufficient detail at a broad enough scale to discuss the various ecosystems crossed by the analysis area. The following five Level III ecoregions cover the analysis area: the Wyoming Basin, the Colorado Plateau, the Wasatch and Uinta Mountains, the Central Basin and Range, and the Mojave Basin and Range (USEPA 2013). Climate and precipitation throughout the analysis area are covered in Section 3.1, Climate and Air Quality, while topography, physiographic regions, and range of elevations are discussed in Section 3.2, Geological, Paleontological, and Mineral Resources. Soils and land uses within the analysis area are presented in Section 3.3, Soil Resources, and Section 3.14, Land Use, respectively.

The Wyoming Basin is a broad, arid basin drained by the Green and North Platte rivers within the analysis area. Surrounded by mountains, the basin is dominated by grasslands and shrublands (Chapman et al. 2004). The arid uplifted, eroded, and deeply dissected tableland of the Colorado Plateau is crossed by the Green and Colorado rivers within the analysis area. The vegetation is sparse and predominately composed of dwarf shrubs in the low-elevation basins and canyons, whereas in the uplands and higher valleys, shrublands and pinyon-juniper woodlands are common. The Wasatch and Uinta Mountain region includes the Uinta Mountains, Wasatch Range, and Wasatch Plateau. The vegetation communities tend to group along elevation bands, with grasslands and shrublands common in the low elevations, mixed, ponderosa, and pinyon-juniper forests in the low to middle elevations, and fir, spruce, pine, and aspen species in the forested communities in the middle to high elevations. In the highest elevations, the vegetation tends to be small, low stature, alpine shrub and forb species, with stunted spruce, fir and pine trees. The Central Basin and Range ecoregion is composed of elevated, internally drained xeric basins in between scattered mountain ranges (Bryce et al. 2003). The vegetation is a mosaic of sagebrush or saltbush-greasewood shrublands and salt flats. The Mojave Basin and Range found in southern Nevada and southwestern Utah is sparsely vegetated, dominated by desert shrubs such as creosote bush, white bursage, Joshua-tree, yucca species, and blackbrush. Tree species are found in the higher elevations and include juniper, singleleaf pinyon, ponderosa pine, white fir, limber pine, and bristlecone pine.

The SWReGAP land cover type categories have been grouped into 21 associated vegetation communities, which are further grouped into eight land cover types. The land cover and associated vegetation communities, and their spatial extent within the analysis area, are listed in **Table 3.5-2**. Descriptions of the plant communities for each land cover and associated vegetation communities are provided in the following text.

**Table 3.5-2 Vegetation Cover and Land Use Types within the Analysis Area[1]**

| Land Cover Types | Vegetative Communities Associated with Land Cover Types | Extent within Analysis Area (acres) |
|---|---|---|
| Agriculture | Cultivated Crop and Pasture | 784,433 |
| Barren Areas | Barren/Sparsely Vegetated | 321,697 |
| | Cliff and Canyon | 816,392 |
| | Dunes | 133,157 |
| Developed/Disturbed | Developed/Disturbed | 988,126 |
| Forest and Woodlands | Aspen Forest and Woodland | 641,483 |
| | Conifer Forest | 539,604 |
| | Deciduous Forest | 13,933 |
| | Pinyon-Juniper | 4,081,539 |
| Grasslands | Grassland | 1,537,916 |
| | Montane Grassland | 70,313 |
| | Tundra | 13,956 |
| Greasewood Flat | Greasewood Flat | 875,991 |
| Riparian and Wetlands | Open Water | 154,328 |
| | Herbaceous Wetland | 188,239 |
| | Riparian | 68,489 |
| | Woody Riparian and Wetlands | 214,144 |
| Shrubland | Desert Shrub | 3,074,124 |
| | Saltbush Shrubland | 2,991,796 |
| | Sagebrush Shrubland | 6,539,728 |
| | Montane Shrubland | 875,292 |
| **Total** | | **24,924,680** |

[1] The analysis area includes the HUC 10 watershed boundaries crossed by the 2-mile transmission line corridors and associated facilities.

The agriculture cover type consists of 3 percent of the analysis area and is composed of agriculture lands, cultivated cropland and pasture and hay fields. For additional details of agriculture within the analysis area, see Section 3.14, Land Use.

The barren areas cover type is found in 5 percent of the analysis area, and encompasses three vegetative communities including barren and sparsely vegetated areas, cliff and canyons, and active and stabilized dunes. Barren and sparsely vegetated areas within the analysis area typically have less than 10 percent vegetative cover usually consisting of dwarf shrubs. In the analysis area, these areas are composed of shale badlands in Wyoming, Colorado, and Utah; desert pavements and badlands in Nevada; areas composed of volcanic rock in Utah and Nevada; and scree and bedrock areas in the alpine areas of Utah. Cliff and canyon areas are found throughout the analysis area, but are most common in Utah and Nevada. The cliff and canyon vegetation community is comprised of barren and sparsely vegetated landscapes such as steep cliff faces, narrow canyons, small rock outcrops, and open tablelands of sandstone, shale, and limestone. The vegetation in cliff and canyon areas is characterized by very open tree canopy or scattered trees and shrubs with a sparse herbaceous layer. Common species can include conifers, montane and

desert short-shrub, succulents, and herbaceous species. Dunes are found in Wyoming and Utah on windswept mesas, broad basins and plains where the substrates are stabilized sandsheets or shallow to moderately deep sandy soils that form small hummocks or small coppice dunes. Typical dune vegetation is short shrubs with 10 to 30 percent cover.

The developed/disturbed cover type covers 4 percent of the analysis area and is found throughout the analysis area. Developed areas include urban and rural development, roads, utility corridors and stations, oil and gas development, mines, quarries, and recently burned and chained areas. The urban areas within the analysis area include several towns and subdivisions. For more information on developed areas within the analysis area, see Section 3.14, Land Use, and Section 3.17, Social and Economic Resources.

The forest and woodlands cover type comprises 21 percent of the analysis area and encompasses four vegetation communities including aspen forest and woodland, other deciduous forests, pinyon-juniper woodlands, and other conifer forests. Forest types and dominant tree species in each of these vegetation communities is a factor of elevation, slope, aspect, soil characteristics, and climate. Several of the forest types are commercially important as timber. Aspen forest and woodlands are found in montane and subalpine zones in areas with adequate moisture. The vegetation is dominated by stands of quaking aspen (*Populus tremuloides*), even though other tree species may be present. In the analysis area, aspen woodlands are typically found with mixed conifer forests of fir, pines, and Engelmann spruce. In many areas, the conifers are increasing in dominance in the aspen and mixed conifer woodlands due to pressures from livestock grazing and fire suppression (USGS 2005). Other deciduous forests in the analysis area are found in Wyoming and Utah, and consist of oaks (*Quercus* spp.), maples (*Acer* spp.), and boxelders (*Acer negundo*). In Wyoming, much of the deciduous woodlands have high vegetative tree canopy cover and establishment of invasive vegetation. Conifer forests are found throughout the analysis area, but are most common in Utah's mountainous areas. The dominant coniferous forest type in the analysis area is pinyon-juniper woodlands, which occupy 16 percent of the analysis area. Pinyon-juniper woodlands are located in Colorado Plateau's lower elevations, and the dry mountain ranges of the Great Basin region. Pinyon-juniper communities typically occur on warm, dry areas on mountain slopes, mesas, plateaus, and ridges. Dominant overstory species include singleleaf pinyon (*Pinus monophylla*), two needle pinyon (*Pinus edulis*), and Utah juniper (*Juniperus osteosperma*). Understory vegetation can be sparse shrubs or graminoids with species consisting of greenleaf manzanita (*Arctostaphylos patula*), basin big sagebrush (*Artemisia tridentata* spp. *tridentata*), mountain mahogany (*Cercocarpus* spp.), muttongrass (*Poa fendleriana*), and Idaho fescue (*Festuca idahoensis*). Understory forbs can include penstemons (*Penstemon* spp.) and Scarlet globemallow (*Sphaeralcea coccerea*). Other coniferous forests in the analysis area consist of areas dominated by one species such as ponderosa pine (*Pinus ponderosa*) and lodgepole (*Pinus contorta*) or mixed conifer forests such as spruce-fir, limber pine-bristlecone pine, and limber pine-juniper. These forests are found in foothills, montane, and subalpine environments on dry to mesic sites.

The grasslands cover type occupies 7 percent of the analysis area and encompasses three vegetation communities including grasslands, montane grasslands, and tundra. Grassland vegetation communities occupy a wide range of areas within the analysis area including swales, plains, plateaus, and flat to rolling uplands. Grassland compositions vary across the analysis area with mixed grass prairie occurring in Wyoming, juniper savanna in Colorado, and semi-desert grassland in Colorado, Utah, and Nevada. Throughout the analysis area, invasive noxious and non-native species occur in many of the grasslands. Common species that occur in this vegetation community include western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nassella viridula)*, fescue (*Festuca* spp.), Indian ricegrass (*Achnatherum hymenoides*), blue grama *(Bouteloua gracilis*), needle-and-thread (*Hesperostipa comata*), muhly (*Muhlenbergia* spp.), and James' galleta (*Pleuraphis jamesii*). Montane grasslands are found within the analysis area in montane and subalpine areas predominantly in Utah. Dominant vegetation ranges from graminoids, specifically bunch grasses, to forbs. Dominant graminoid species include oatgrass (*Danthonia* spp.), fescue (*Festuca* spp.), slimstem muhly (*Muhlenbergia filiculmis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), while forb species include fleabane (*Erigeron* spp.), asters (*Asteraceae* spp.), and penstemons (*Penstemon* spp.). In the analysis area, the tundra vegetation community is found above treeline in mountainous regions in Utah. It typically is found on gentle to moderate slopes, flat ridges, valleys, and basins where the soil is relatively

stable and the water supply is fairly constant. Vegetation is low-growing, perennial graminoids, and forbs, with rhizomatous, sod-forming sedges as the dominant graminoids.

The greasewood flat cover type occupies 4 percent of the analysis area. Greasewood flats are found in all four states crossed by the analysis area. This vegetation community type is defined as a mixed wetland and upland land cover type. Based on the categorization used by NWReGAP and SWReGAP, greasewood flats are defined as a woody wetland. More detail about this vegetation community is provided below under Wetland and Riparian Areas.

The riparian and wetland cover type occupies 3 percent of the analysis area and encompasses four vegetation communities including open water, herbaceous wetlands, riparian, and woody riparian and wetlands. More detail about these vegetation communities are provided below under Wetland and Riparian Areas.

The shrubland cover type is the dominant land cover type within the analysis area, comprising 54 percent of the area. Vegetation communities associated with the shrublands cover type include sagebrush shrubland, montane shrubland, saltbush shrubland, and desert shrublands.

Sagebrush and saltbush shrublands are found predominantly in the northeast of the analysis area; montane shrublands in the mountainous regions of central Utah; while desert shrub communities dominant in the southwest portion of the analysis area. In the sagebrush shrubland communities, sagebrush (*Artemisia* spp.) species dominate. The dominant sagebrush species and cover varies with elevation, aspect, water availability, substrate, and disturbance regime. Disturbance regimes also can alter shrub cover with wildfires decreasing shrub cover, while heavy grazing and fire suppression can increase shrub dominance. Typical sagebrush species in the sagebrush shrubland vegetation community are the Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), mountain big sagebrush (*Artemisia tridentata* ssp*. vaseyana*), threetip sagebrush (*Artemisia tripartita*)*,* black sagebrush (*Artemisia nova*), and little sagebrush (*Artemisia arbuscula*). Other shrubs include shadscale saltbush (*Atriplex confertifolia*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), rubber rabbitbrush (*Ericameria nauseosa*), and fringed sage (*Artemisia frigida)*. Herbaceous species are typically less than 25 percent cover, and can include Idaho fescue (*Festuca idahoensis*), prairie junegrass (*Koeleria macrantha*), bluebunch wheatgrass, Sandberg bluegrass (*Poa secunda),* needle-and-thread (*Hesperostipa comata*), and Great Basin wildrye (*Elymus cinereus* var. *cinereus*).

Montane shrublands are found in the mountains, plateaus, foothills, canyons, and hills in all four states. In Wyoming, the montane shrublands are a minor component of the analysis area, and consist of mountain mahogany shrublands on ridges and steep slopes. In Colorado and Utah, the composition of montane shrublands is determined by aspect, climate, and water availability. Dominant species can include gambel oak (*Quercus gambelii*), serviceberry (*Amelanchier* spp.), antelope bitterbrush (*Purshia tridentata*), and mountain mahogany. In the more arid areas in the southwest portions of the analysis area, montane shrublands tend to occur in the transition areas between the Mojave, Sonoran, and northern Chihuahuan deserts where their composition consists of species that are fire-adapted, such as scrub oak (*Quercus* spp.) and ceanothus (*Ceanothus* spp.).

Salt-desert shrublands are found in Wyoming, Colorado, and Utah on lower elevation slopes, saline basins, alluvial slopes, and plains. The vegetation cover is characterized by an open to moderately dense shrubland dominated by shadscale, four-winged saltbush (*Atriplex canescens*), Wyoming big sagebrush, yellow rabbitbrush, rubber rabbitbrush, and Nevada jointfir (*Ephedra nevadensis*). The understory is comprised of herbaceous species such as galleta (*Hilaria jamesii*), Indian ricegrass, blue grama, western wheatgrass, primrose (*Camissonia* spp., *Oenothera* spp.), and annual buckwheat (*Eriogonum* spp.).

The desert shrub vegetation community is the dominant shrubland vegetation community in the southwest portion of the analysis area. It is found on benchlands, pediments, lower piedmont slopes, bajadas, broad valleys, and plains and low hills. The dominant vegetation is dependent on the surrounding vegetation

communities, region, climate, elevation, and substrate. Desert shrub vegetation communities can be quite variable with the vegetation of the Colorado Plateau region typically dominated by blackbrush (*Coleogyne ramosissima*) and mormon tea (*Ephedra viridis*), and the Mojave and Sonoran deserts dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). The shrub cover tends to be open, with a sparse herbaceous layer.

#### 3.5.4.2 Noxious and Invasive Weeds

Noxious and invasive weeds have become a growing concern in the western U.S. as their spread has resulted in impacts to endangered native species, available forage for livestock and wildlife, and economic resources. Noxious and invasive species threaten native ecosystems and biological diversity based on their ability to increase in cover relative to surrounding vegetation and exclude native plants from an area. Noxious and invasive species readily establish and spread in recently disturbed areas, which can impede successful reclamation and impact management of livestock, wildlife, and human activities. State regulated and prohibited noxious and invasive weed species in Colorado, Utah, Wyoming, and Nevada are listed in **Appendix G**.

#### 3.5.4.3 Wetlands and Riparian Areas

Riparian and wetland areas comprise a small percentage of the lands in the West, but their importance to the surrounding ecosystems and associated species is disproportionately great. Most wildlife species use riparian areas at some point in their life cycles (e.g., many migratory birds during breeding and migration seasons), and some depend almost entirely on these systems (e.g., amphibians). Wetlands and riparian areas are often rich in vegetation diversity and structure, providing food, water, shade, and cover to wildlife and livestock, in addition to acting as water purifiers, supplying groundwater recharge, and aiding in flood control.

Wetland and riparian mapping is sparse or unavailable in much of the analysis area. To provide consistent coverage across the entire analysis area, riparian and wetland areas were determined using NWReGAP and SWReGAP land cover type categories. As SWReGAP has not been ground-truthed in the entire coverage area, and delineating wetland and riparian areas from aerial imagery can be difficult, not all wetland and riparian areas may be captured within the analysis area. It also may overestimate wetland and riparian areas especially in the southern portions of the analysis area. Land cover types identified in **Table 3.5-2** were further split out into five riparian and wetland types. The riparian and wetland types and their spatial extent within the analysis area are listed in **Table 3.5-3**.

**Table 3.5-3 Riparian and Wetland Types within the Analysis Area**

| Riparian and Wetland Types | Extent within Analysis Area (acres) |
|---|---|
| *Greasewood Flat* | 875,991 |
| *Herbaceous Wetlands* | |
| Depression Wetlands | 24,477 |
| Marshes | 36,860 |
| Playas | 126,902 |
| *Woody Riparian and Wetland Areas* | |
| Montane Riverine | 132,263 |
| Riverine | 82,609 |

**Table 3.5-3 Riparian and Wetland Types within the Analysis Area**

| Riparian and Wetland Types | Extent within Analysis Area (acres) |
|---|---|
| *Open Water* | 154,328 |
| *Riparian* | |
| Wash | 67,761 |
| **Total** | **1,501,192** |

Wetlands are found in areas with a connection to a permanent water source such as the groundwater table, or surface drainages, or where an impermeable soil subhorizon prevents water from draining through the surface profile. Vegetation can consist of herbaceous and woody species that are adapted to saturated soil conditions, and are often salt tolerant.

Greasewood flats are found in all four states crossed by the analysis area. This vegetation community type is defined as a mixed wetland and upland land cover type. Based on the categorization used by NWReGAP and SWReGAP, greasewood flats are defined as a woody wetland. Greasewood flats can cover large, flat areas, on broad expenses along lake shores and playas, on older alluvial terraces, on broad or narrow floodplains, or on stream terraces along drainages. Sites typically have saline soils, a shallow water table and flood intermittently, but remain dry for most growing season. Despite salt accumulations, the water table remains high enough to maintain vegetation. The water table is typically shallow, and the soils are extremely saline. The vegetation cover is open to moderately dense shrublands that are typically halophytes (saline tolerant species) and can consist of both upland and wetland species. Typical species include greasewood species (*Sarcobatus* spp.), winter fat (*Kraschenkovia lanata*), and saltbush species (A*triplex* spp.). Herbaceous species are salt tolerant and include salt grass (*Distichlis spicata*), common spikerush (*Eleocharis palustris*), and alkali sacaton (*Sporobolus airoides*).

Based on the NWReGAP and SWReGAP land cover categories, the herbaceous wetland types in the analysis area are depressional wetlands, marshes, and playas. The depressional wetlands are concave to flat herbaceous wetlands which can include alpine wet meadows, fens, palustrine emergent, and closed and open depressions. Typical wetland species include sedges (*Carex* spp.), rushes (*Juncus* spp.), reedgrass (*Calamagrostis* spp.), spikerush (*Eleocharis* spp.), bulrush (*Scirpus* spp., *Schoenoplectus* spp.), cattails (*Typha* spp.), and canarygrass (*Phalaris* spp.). Playas are barren and sparsely vegetated concave areas that are intermittently flooded. Species around the edges of the playas are typically saline-tolerant such as greasewood (*Sarcobatus vermiculatus*) and saltbush species (*Atriplex* spp.). SWReGAP only identifies playas in the southwestern portion of the analysis area. However, playa type wetlands are common throughout the analysis area.

Woody riparian and wetland areas are found along river, stream, and drainage corridors, and greasewood flats. Within the analysis area, woody riparian and wetland areas are further divided into montane riverine and riverine riparian types. Montane riverine areas are found at higher elevations in Regions I, II, and III. Montane riverine communities are found in areas with natural hydrologic regimes, areas with annual to episodic flooding, flood zones, sand or cobble bars, streambanks along perennial and seasonally intermittent streams, and around seeps, fens, and isolated springs on hillsides. Communities tend to be mosaics of multiple woodland and shrubland communities. Vegetation is usually a mix of riparian shrub and tree species including cottonwood (*Populus* spp.), willow (*Salix* spp.), dogwoods (*Cornus* spp.), birch (*Betula* spp.), alders (*Alnus* spp.), chokecherry (*Prunus virginiana*), and boxelder (*Acer negundo*). In the southern portions of Region III, species composition is similar but also can include Arizona willow (*Juglans major*), mesquite (*Prosopis* spp.), velvet ash (*Fraxinus velutina*), and wingleaf soapberry (*Sapindus saponaria*). Herbaceous species are similar to the ones described for herbaceous wetlands. Exotic trees including

Russian olive (*Elaeagnus angustifolia*) and salt cedar (tamarisk [*Tamarix* spp.]) are common in some stands.

Riverine areas are found along washes, arroyos, streams, rivers, floodplains, and desert valleys, where intermittent flooding occurs overflowing the defined banks of the drainage, or where the groundwater table is high. Vegetation types are variable based on elevation, flooding frequency and duration, stream gradient, floodplain width, climate, substrate, and disturbance regimes (livestock grazing, water diversion structures, or invasive species). Typically, annual or periodic flooding, or an annual rise in the water table is required by the riparian species for growth and reproduction. Vegetation is usually a mix of riparian shrub and tree species similar to those identified for montane riverine wetland communities. Typical herbaceous species are similar to the ones described for herbaceous wetlands. The invasive riparian tree species salt cedar and Russian olive are often found in these areas.

Open water in the analysis area consists of rivers, streams, lakes, reservoirs, and stock ponds. See Section 3.4, Water Resources, for a discussion of the open water features within the analysis area.

#### 3.5.4.4 Wildland Fire

Within each vegetative community type found in the analysis area, there is a characteristic fire regime. A fire regime is a general description of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993; Brown 1995). Historical fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. Generally, fire frequency is inversely related to fire intensity. For example, due to higher precipitation levels and cooler mean temperatures (which foster plant growth), there are higher fuel loads in pinyon-juniper woodlands and upper montane forest vegetation types as compared to lowland shrublands and grasslands. In addition, higher precipitation amounts and cooler temperatures provide greater resistance to fire for longer periods. This leads to infrequent, high-intensity fires in montane and subalpine forests. The reverse is true in grasslands where fine fuel types lead to fires at a high frequency that burn rapidly with low intensity. Other factors that determine fire behavior include site topography, weather and climatic conditions, time of year, type of plant community, health of the ecosystem, fuel moisture levels, depth and duration of heat penetration, fire frequency, and site productivity. The highest potential rates of fire spread occur in areas with flashy fuels such as cured-out annual bromes, and steep brushy mountain slopes. Wildland fire risk tends to be high in disturbed grasslands and forblands dominated by non-native noxious and invasive species, especially those dominated by annual brome species.

There are five natural (historical) fire regimes classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation (National Interagency Fuels, Fire, and Vegetation Technology Transfer 2010). These five regimes include:

- I – 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75 percent of the dominant overstory vegetation replaced);
- II – 0-35 year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced);
- III – 35-200+ year frequency and mixed severity (less than 75 percent of the dominant overstory vegetation replaced);
- IV –35-200+ year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced);
- V – 200+ year frequency and high (stand replacement) severity.

Fire Regime Condition Class (FRCC) is a discrete metric that describes how similar a landscape's fire regime is to its natural or historical state. FRCC quantifies the amount that current vegetation has departed from the simulated historical vegetation reference conditions (Barrett et al. 2010; Hann and Bunnell 2001; Hardy et al. 2001; Holsinger et al. 2006). The three condition classes describe low departure (FRCC 1), moderate departure (FRCC 2), and high departure (FRCC 3). Landscapes determined to fall within the category of FRCC 1 contain vegetation, fuels, and disturbances characteristic of the natural regime; FRCC 2 landscapes are those that are moderately departed from the natural regime; and FRCC 3 landscapes reflect vegetation, fuels, and disturbances that are uncharacteristic of the natural regime. More detailed descriptions of the fire regime condition classes and associated attributes are provided in **Table 3.5-4**.

**Table 3.5-4 Fire Regime Condition Class Description**

| Condition Class | Fire Regime | Example Management Options | Species Composition and Structure | Non-native Species |
|---|---|---|---|---|
| Condition Class I | Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances. | Where appropriate, these areas can be maintained within the natural (historical) fire regime by treatments such as fire use. | Species composition and structure are functioning within their natural (historical) range at both patch and landscape scales. | Non-native species are currently not present or present in limited extent. Through time, or following disturbance, sites are potentially vulnerable to invasion by non-native species. |
| Condition Class II | Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances. | Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the natural fire regime. | Species composition and structure have been moderately altered from their historical range at patch and landscape scales. | Populations of nonnative invasive species may have increased, thereby increasing the potential risk for these populations to expand following disturbances, such as wildfires. |
| Condition Class III | High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances. | Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the natural fire regime. | Species composition and structure have been substantially altered from their historical range at patch and landscape scales. | Invasive species maybe common and in some cases the dominant species on the landscape. Any disturbance will likely increase both the dominance and geographic extent of these invasive species. |

### 3.5.4.5 USFS MIS Plant Species

The USFS defines Management Indicator Species (MIS) for each national forest. A Management Indicator Species (MIS) is a plant or animal species selected because its status is believed to: 1) be indicative of the status of a larger group of species; 2) be reflective of the status of a key habitat type; or 3) act as an early warning of an anticipated stressor to ecological integrity. The key characteristics of MIS are that their status and trends provide insight to the integrity of the larger ecological system to which they belong.

Wildlife MIS species are discussed in Section 3.7, Wildlife. There is only one identified MIS plant species within the USFS national forests crossed by the project, which is discussed below.

The one identified MIS plant species is Rydberg milkvetch (*Astragalus perianus*) for the Fishlake National Forest. The perennial species has clustered stems arising from a subterranean caudex. The flowers are sparse and white or lavender tinged. The species flowers and fruits from June to September. It is found in sparsely vegetated areas on shallow soils from 7,200 to 11,500 feet (USFS 2006). It is primarily associated in openings in spruce-fir forests, but other common vegetation community associations include mountain big sagebrush, black sagebrush, alpine krummholz, mixed-conifer, and open aspen-fir-mahogany (USFS 2006). Distribution appears to be determined by substrate and elevation. Typical substrates are igneous intrusive gravels, volcanic gravel, or clayey soils. It was listed as a USFWS threatened species in 1978, and delisted in 1989. The species was listed as a USFS Sensitive Species from 1989 to 1994. The Fishlake National Forest included the species as an MIS in their 1986 forest plan when the population of Rydberg milkvetch on the Fishlake National Forest was estimated to be about 4,000. Currently, the plant is known to exist in at least 20 locations with a combined population in excess of 100,000. The species was included as an MIS species based on its previous listing as a USFWS threatened species, and its representation of a selected habitat type of igneous intrusive and volcanic gravels between 8,000 and 11,000 feet (USFS 2006). Threats to the species include ORV use, grazing, mining, or severe erosion (USFS 2006).

### 3.5.5 Regional Summary of Vegetation

As described in Section 3.5.4, Baseline Description, a wide variety of land cover and associated vegetation communities are found within the analysis area. Many of these vegetation communities are found over a wide geographic area within the analysis area. Land cover and associated vegetation communities are described in Section 3.5.4, Baseline Description, and summarized by Project region below.

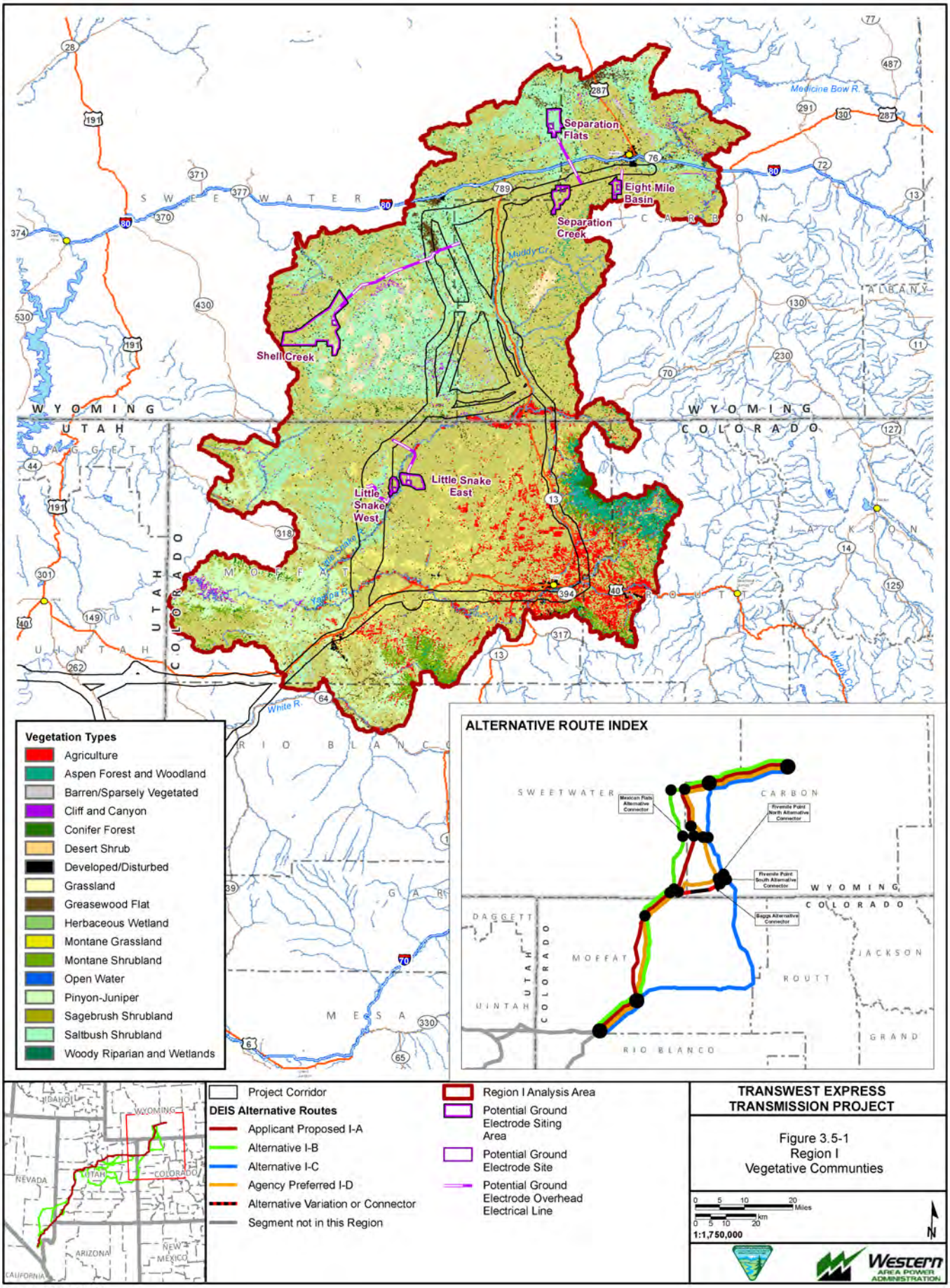
**Table 3.5-5** summarizes the percent of each land cover and associated vegetation community within the analysis area by region. Shrublands are the dominant land cover in each region, with sagebrush shrubland and desert shrub the two most common vegetation communities. Vegetation communities found within the analysis area for each Project region are presented in **Figures 3.5-1** through **3.5-4**.

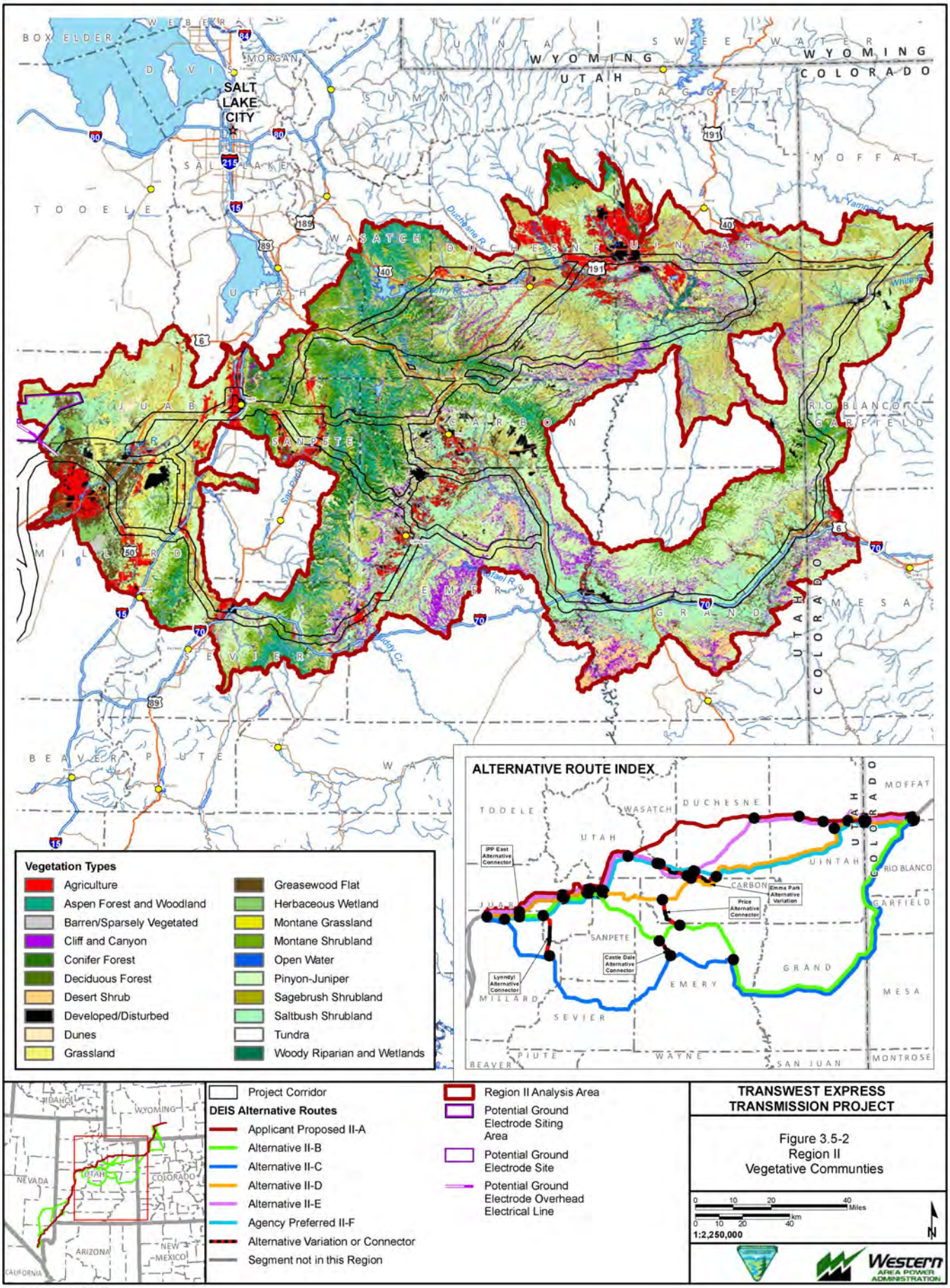
In Region I, the dominant vegetation communities are sagebrush shrubland, and saltbush shrubland, especially through Wyoming, Moffat County, Colorado, and Uintah County, Utah. In the Colorado and Utah portions of Region I at higher elevations, pinyon-juniper communities become more dominant. Overall in Region I, pinyon-juniper accounts for 6 percent of the analysis area. Riparian and wetland areas are predominantly herbaceous wetlands and open water. Open water and associated riparian corridors are found along the Little Snake River and the Yampa River. Agriculture is 4 percent of the analysis area and typically consists of irrigated pasture and haylands. Agriculture lands are found mainly around the valley floors near Baggs, Wyoming. Developed and disturbed lands are 2 percent of the Region I analysis area, and consist predominantly of roads, oil and gas development, and urban areas including Rawlins, Wyoming.

Region II is predominantly sagebrush shrubland, saltbush shrubland, and pinyon-juniper vegetation communities. The topography varies greatly in Region II as the area includes high deserts, mountain ranges, valleys, canyons, gorges, mesas, and buttes. In the east of Region II is the Uintah Basin; while in the south portion of Region II is the Book Cliffs and San Rafael Swell, a dome-shaped anticline of sandstone, shale, and limestone. In the north of Region II are the Uinta Mountains, while the Wasatch Mountains cross the center of the Region. Pinyon-juniper vegetation communities are dominant in the higher elevation areas, especially in the Wasatch Mountains, Book Cliffs, and the Uinta Mountains. Sagebrush shrubland is dominant in the mid-elevation areas, with saltbush shrublands common in the lower elevations and the San Rafael Swell. Riparian and wetland areas are predominantly herbaceous wetlands and open water. Open water and associated riparian corridors are found mainly along the Green River and the White River. Agriculture is 4 percent of the Region II analysis area, and is typically irrigated alfalfa, corn, and hay. Developed and disturbed lands are 4 percent of the analysis area, and consist of oil and gas development, logged areas, roads, power plants, utility corridors, and urban areas.

**Table 3.5-5 Vegetation Community Types Within the Analysis Area by Region**

| Cover and Land Use Types | Vegetative Communities Associated with Each Cover Type | Acres and Percent of Vegetation Type Within the Analysis Area by Region | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | I | | II | | III | | IV | |
| | | Acres | % | Acres | % | Acres | % | Acres | % |
| Agriculture | Agriculture | 230,482 | 4 | 484,528 | 4 | 69,423 | 1 | - | - |
| Barren/Sparsely Vegetated | Barren/Sparsely Vegetated | 36,819 | 1 | 222,948 | 2 | 29,338 | <1 | 32,592 | 3 |
| | Cliff and Canyon | 29,704 | 1 | 565,493 | 5 | 164,119 | 2 | 57,076 | 5 |
| | Dunes | 85,276 | 2 | 32,567 | <1 | 15,313 | <1 | - | - |
| Developed/Disturbed | Developed/Disturbed | 107,794 | 2 | 459,785 | 4 | 180,970 | 2 | 239,577 | 21 |
| Forest and Woodland | Aspen Forest and Woodland | 89,921 | 2 | 544,114 | 5 | 7,448 | <1 | - | - |
| | Conifer Forest | 35,190 | 1 | 477,815 | 4 | 26,599 | <1 | - | - |
| | Deciduous Forest | 39 | <1 | 13,869 | <1 | 26 | <1 | - | - |
| | Pinyon-Juniper | 303,173 | 6 | 2,483,995 | 22 | 1,292,483 | 18 | 1,888 | <1 |
| Grassland | Grassland | 210,626 | 4 | 519,056 | 5 | 801,113 | 11 | 7,121 | 1 |
| | Montane Grassland | 3,788 | <1 | 65,241 | 1 | 1,284 | <1 | - | - |
| | Tundra | - | - | 13,956 | <1 | - | - | - | - |
| Greasewood Flat | Greasewood Flat | 90,502 | 2 | 511,410 | 5 | 274,079 | 4 | - | - |
| Riparian and Wetland Areas | Open Water | 11,332 | <1 | 61,376 | 1 | 12,218 | <1 | 69,401 | 6 |
| | Herbaceous Wetland | 25,146 | <1 | 80,634 | 1 | 81,741 | 1 | 719 | <1 |
| | Riparian | 728 | <1 | - | - | 65,185 | 1 | 2,576 | <1 |
| | Woody Riparian and Wetlands | 47,585 | 1 | 110,822 | 1 | 54,368 | 1 | 1,096 | <1 |
| Shrubland | Desert Shrub | - | - | 125,982 | 1 | 2,227,441 | 30 | 720,701 | 63 |
| | Montane Shrubland | 117,240 | 2 | 570,993 | 5 | 187,059 | 3 | - | - |
| | Sagebrush Shrubland | 3,038,971 | 57 | 2,307,131 | 21 | 1,192,955 | 16 | 671 | <1 |
| | Saltbush Shrubland | 885,851 | 17 | 1,468,576 | 13 | 635,456 | 9 | 1,912 | <1 |
| **Total** | | **5,350,440** | **100** | **11,120,291** | **100** | **7,318,618** | **100** | **1,135,330** | **100** |


Separation Flats
Eight Mile Basin
Separation Creek
Shell Creek
Little Snake East
Little Snake West
Medicine Bow R.
Muddy Cr.
White R.
Little Snake
Yampa R.
SWEETWATER
CARBON
ALBANY
WYOMING
UTAH
COLORADO
DAGGETT
MOFFAT
JACKSON
ROUTT
UINTAH
RIO BLANCO
GRAND
MESA
Vegetation Types
Agriculture
Aspen Forest and Woodland
Barren/Sparsely Vegetated
Cliff and Canyon
Conifer Forest
Desert Shrub
Developed/Disturbed
Grassland
Greasewood Flat
Herbaceous Wetland
Montane Grassland
Montane Shrubland
Open Water
Pinyon-Juniper
Sagebrush Shrubland
Saltbush Shrubland
Woody Riparian and Wetlands
ALTERNATIVE ROUTE INDEX
Mexican Flats Alternative Connector
Riverside Point North Alternative Connector
Riverside Point South Alternative Connector
Baggs Alternative Connector
IDAHO
WYOMING
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
CALIFORNIA
Project Corridor
DEIS Alternative Routes
Applicant Proposed I-A
Alternative I-B
Alternative I-C
Agency Preferred I-D
Alternative Variation or Connector
Segment not in this Region
Region I Analysis Area
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.5-1
Region I
Vegetative Communities
Miles
km
1:1,750,000
N
Western AREA POWER ADMINISTRATION
Exported On: 6/5/2013
X:\0Projects\12907_003_Transwest_Express\Figures\DocumentFigures\2013_DEIS_v3\Veg\Fig_3_05_01_SRI_VegetativeComm.mxd




Exported On: 4/19/2013

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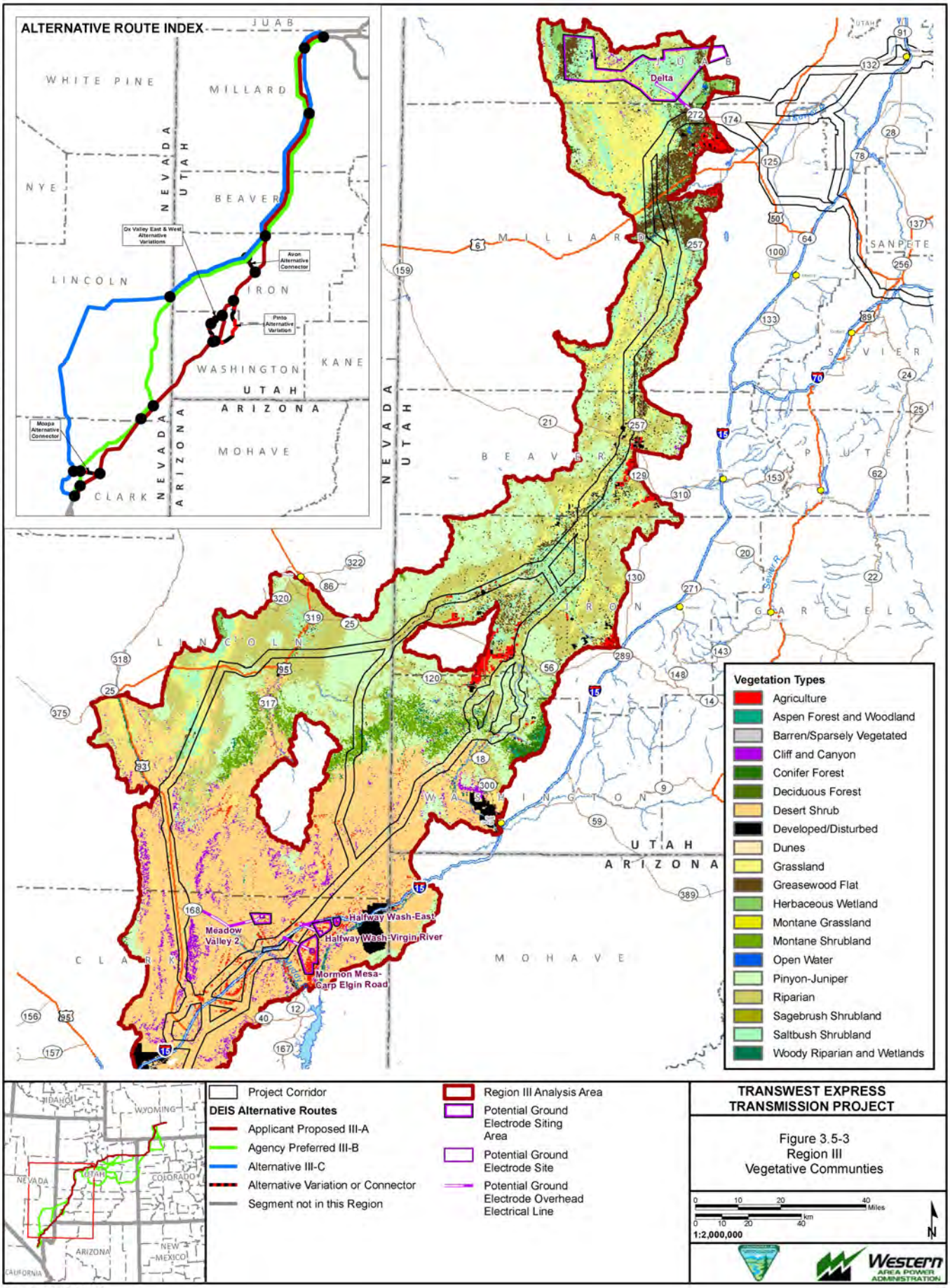
ALTERNATIVE ROUTE INDEX
WHITE PINE
MILLARD
NYE
BEAVER
LINCOLN
IRON
WASHINGTON
KANE
MOHAVE
CLARK
NEVADA
UTAH
ARIZONA
Dx Valley East & West Alternative Variations
Avon Alternative Connector
Pinto Alternative Variation
Moapa Alternative Connector
Delta
SANPETE
SEVIER
PIUTE
GARFIELD
Meadow Valley 2
Halfway Wash-East
Halfway Wash-Virgin River
Mormon Mesa-Carp Elgin Road
Vegetation Types
Agriculture
Aspen Forest and Woodland
Barren/Sparsely Vegetated
Cliff and Canyon
Conifer Forest
Deciduous Forest
Desert Shrub
Developed/Disturbed
Dunes
Grassland
Greasewood Flat
Herbaceous Wetland
Montane Grassland
Montane Shrubland
Open Water
Pinyon-Juniper
Riparian
Sagebrush Shrubland
Saltbush Shrubland
Woody Riparian and Wetlands
Project Corridor
DEIS Alternative Routes
Applicant Proposed III-A
Agency Preferred III-B
Alternative III-C
Alternative Variation or Connector
Segment not in this Region
Region III Analysis Area
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.5-3
Region III
Vegetative Communities
1:2,000,000
Western AREA POWER ADMINISTRATION
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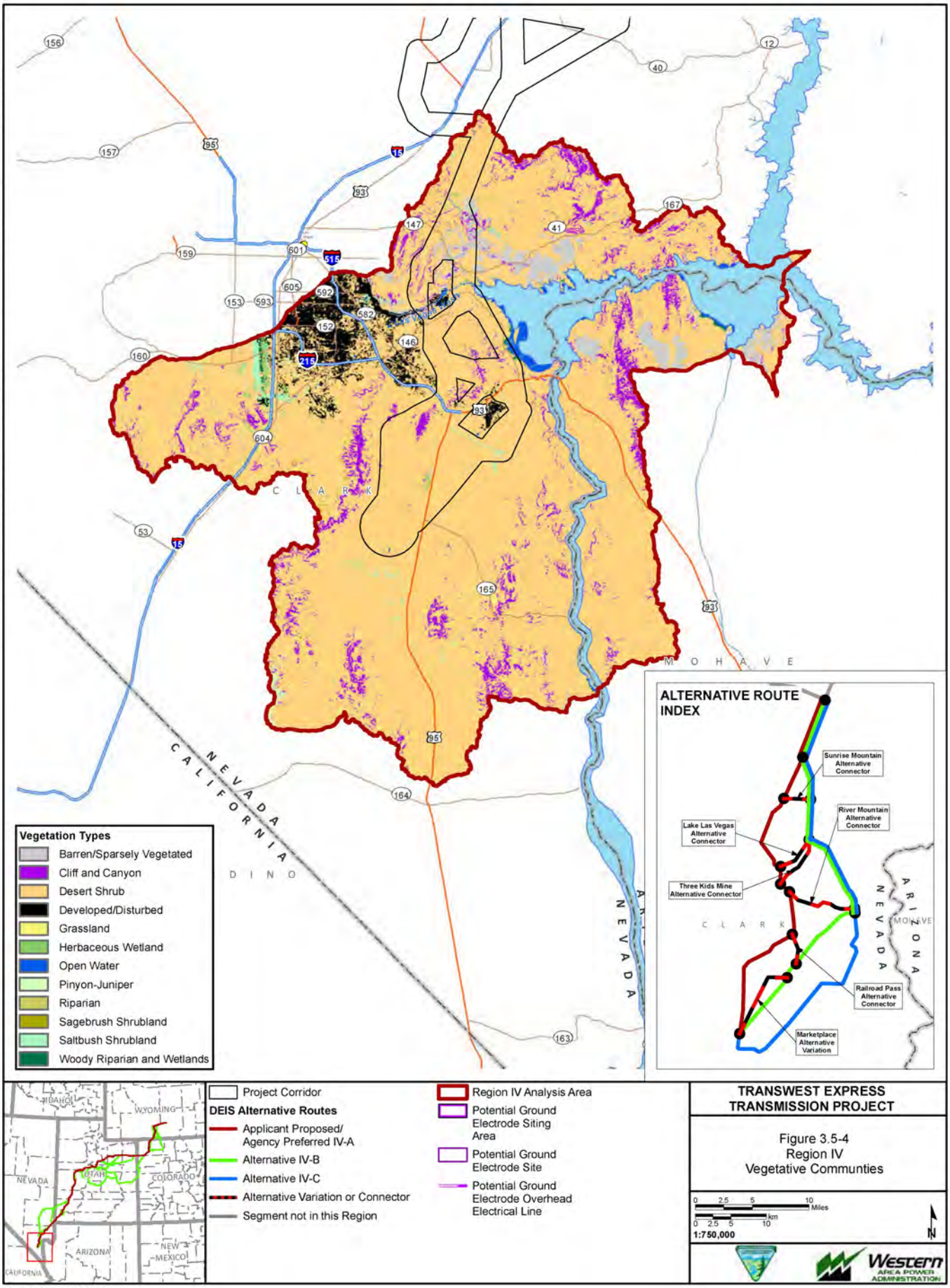
ALTERNATIVE ROUTE INDEX
Sunrise Mountain Alternative Connector
River Mountain Alternative Connector
Lake Las Vegas Alternative Connector
Three Kids Mine Alternative Connector
Railroad Pass Alternative Connector
Marketplace Alternative Variation
CLARK
NEVADA
ARIZONA
MOHAVE
CALIFORNIA
DINO
Vegetation Types
Barren/Sparsely Vegetated
Cliff and Canyon
Desert Shrub
Developed/Disturbed
Grassland
Herbaceous Wetland
Open Water
Pinyon-Juniper
Riparian
Sagebrush Shrubland
Saltbush Shrubland
Woody Riparian and Wetlands
IDAHO
WYOMING
UTAH
COLORADO
NEVADA
ARIZONA
NEW MEXICO
CALIFORNIA
Project Corridor
DEIS Alternative Routes
Applicant Proposed/ Agency Preferred IV-A
Alternative IV-B
Alternative IV-C
Alternative Variation or Connector
Segment not in this Region
Region IV Analysis Area
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.5-4
Region IV
Vegetative Communties
0 2.5 5 10 Miles
0 2.5 5 10 km
1:750,000
N
Western AREA POWER ADMINISTRATION
Exported On: 4/19/2013
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Desert shrub, pinyon-juniper, sagebrush shrubland, grassland, and saltbush shrubland are the dominant vegetation communities in Region III. Sagebrush shrubland, pinyon-juniper, grassland, and saltbush shrubland are dominant in the portions of Region III analysis area in Utah, while desert shrub is dominant in the Nevada portions of Region III. Wetland areas are a mix of herbaceous wetlands, riparian communities, woody riparian and wetlands, and open water. Agriculture is 1 percent of the Region III analysis area, and is limited by available water. Developed and disturbed lands are 2 percent of the analysis area, and consist of military lands, roads, utility corridors, industrial, and urban areas.

Region IV is dominated by desert shrub vegetation communities. Much of Region IV (21 percent) is disturbed and developed. The other common vegetation communities are cliff and canyon, barren/sparsely vegetation, and open water. Wetland areas are a mix of herbaceous wetlands, riparian communities, woody riparian and wetlands, and open water. There are no agriculture lands in Region IV. Developed and disturbed lands are 21 percent of the analysis area, and consist of urban development in the Las Vegas metropolitan area, military lands, transmission line corridors, solar power plants, and electrical substations.

For more detail on land use in each region, see Section 3.14, Land Use. For more detail on surface water, see Section 3.4, Water.

#### 3.5.5.1 Noxious and Invasive Weed Species

As described in Section 3.5.4, Baseline Description, noxious and invasive weed species are an issue for all land management agencies and private landowners throughout the analysis area. **Appendix G** contains a list of regulated noxious weed species by region for each state within the analysis area. Noxious weed occurrence data is not available with enough consistency and geographic range to be presented by region.

On federal lands in the analysis area, dominant noxious and invasive species include grasses in the *Bromus* genus, halogeton, houndstongue, leafy spurge, Canada thistle, salt cedar, spotted knapweed, rush skeletonweed, Russian knapweed, diffuse knapweed, and hoary cress.

#### 3.5.5.2 Riparian and Wetland Areas

As described in Section 3.5.4, Baseline Description, there are several riparian and wetland types found within the analysis area. While only occurring in a small proportion of the analysis area, the riparian and wetland areas are found over a wide geographic area. Riparian and wetland types are described in Section 3.5.4, Baseline Description, and summarized by region below.

**Table 3.5-6** summarizes the percent of each riparian and wetland type within the analysis area. Most of the riparian and wetland areas cover less than 1 percent of the analysis area, except for greasewood flats and open water. Greasewood flats, which can be a mix of wetlands and uplands, cover 2, 5, and 4 percent of Regions I, II and III, respectively, while open water covers 6 percent of Region IV. Riparian and wetland types found within each Project region are included in **Figures 3.5-1** through **3.5-4**.

**Table 3.5-6 Percent of Riparian and Wetland Areas in the Analysis Area by Region**

| | Acres and Percent of Region by Riparian and Wetland Type | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | I | | II | | III | | IV | |
| **Riparian and Wetland Types** | **Acres** | **%** | **Acres** | **%** | **Acres** | **%** | **Acres** | **%** |
| *Greasewood Flat* | 90,502 | 2 | 511,410 | 5 | 274,079 | 4 | -- | -- |
| *Herbaceous Wetlands* | | | | | | | | |
| Depression Wetland | 24,477 | <1 | -- | -- | -- | -- | -- | -- |
| Marsh | 659 | <1 | 30,224 | <1 | 5,522 | <1 | 455 | <1 |
| Playa | 9 | <1 | 50,409 | <1 | 76,220 | 1 | 264 | <1 |

**Table 3.5-6 Percent of Riparian and Wetland Areas in the Analysis Area by Region**

| | Acres and Percent of Region by Riparian and Wetland Type | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | I | | II | | III | | IV | |
| **Riparian and Wetland Types** | **Acres** | **%** | **Acres** | **%** | **Acres** | **%** | **Acres** | **%** |
| *Woody Riparian and Wetland Areas* | | | | | | | | |
| Montane Riverine | 8,824 | <1 | 82,402 | <1 | 41,038 | <1 | -- | -- |
| Riverine | 39,762 | <1 | 28,420 | <1 | 13,331 | <1 | 1,096 | <1 |
| *Open Water* | 11,332 | <1 | 61,376 | <1 | 12,218 | <1 | 69,401 | 6 |
| *Riparian* | | | | | | | | |
| Wash | -- | -- | -- | -- | 65,185 | <1 | 2,576 | <1 |

### 3.5.5.3 Wildland Fire

The analysis area contains a diverse mix of vegetation communities and land cover types, each having a distinct fire regime. All five fire regimes are found within the analysis area. Spatial extent of the analysis area defined by each fire regime is summarized in **Table 3.5-7**. All three categories of FRCC also are found within the analysis area. Spatial extent of the analysis area defined by each Condition Class is summarized in **Table 3.5-8**. **Figures 3.5-5** through **3.5-8** depict the FRCC in each region.

**Table 3.5-7 Fire Regime Acreage for each Region**

| Fire Regime Class | Frequency (Fire Return Interval) | Severity | Region I | Region II | Region III | Region IV |
|---|---|---|---|---|---|---|
| I | 0 to 35+ years, frequent | Predominantly Low | 62,534 | 599,855 | 102,839 | 9,805 |
| II | 0 to 35+ years, frequent | Replacement | 3,052 | 0 | 0 | 0 |
| III | 35 to 200+ years, less infrequent | Mixed and Low | 690,257 | 3,237,004 | 1,528,714 | 3,273 |
| IV | 35 to 200+ years, less infrequent | Replacement | 4,141,470 | 3,526,112 | 1,301,718 | 6 |
| V | 200+ years | Replacement | 233,921 | 2,378,326 | 3,782,259 | 870,198 |

**Table 3.5-8 Acres of Lands Classified as FRCC 1, 2, or 3 within the Analysis Area by Region**

| Condition | Region I | Region II | Region III | Region IV |
|---|---|---|---|---|
| Condition Class 1 | 916,979 | 2,371,562 | 663,238 | 268 |
| Condition Class 2 | 2,771,222 | 3,957,532 | 1,753,603 | 128,741 |
| Condition Class 3 | 1,506,743 | 3,797,577 | 4,207,606 | 717,950 |

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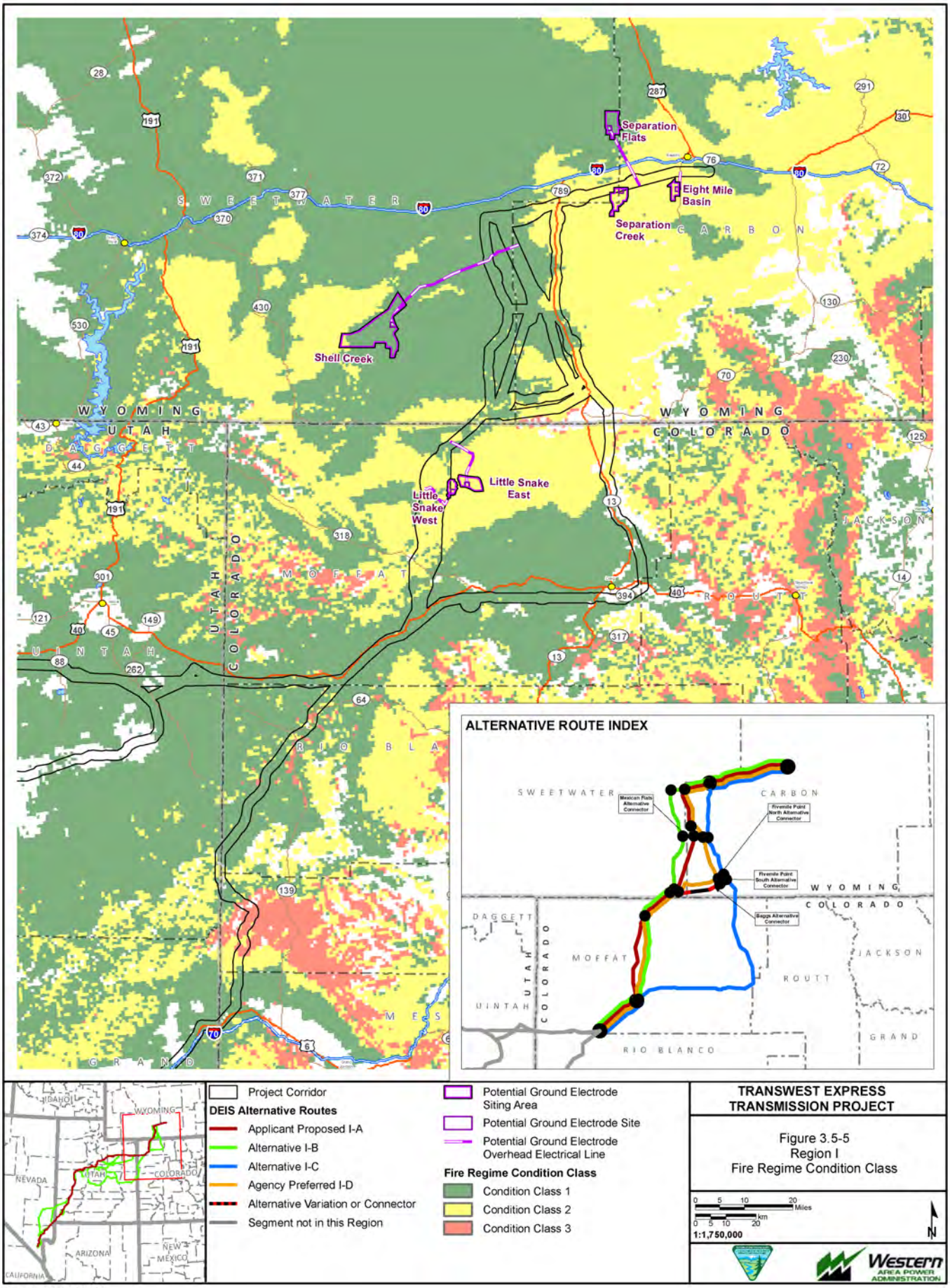


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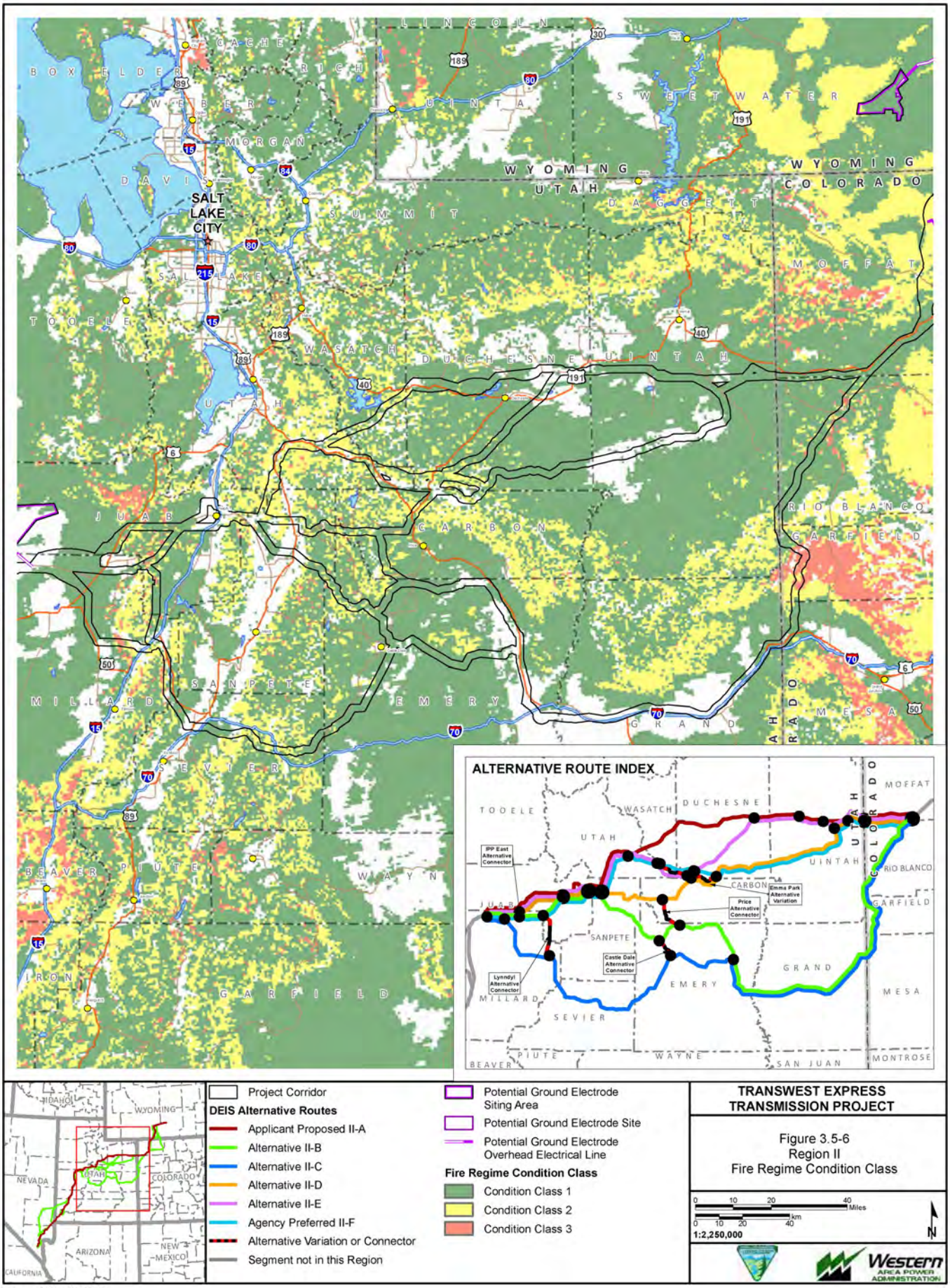


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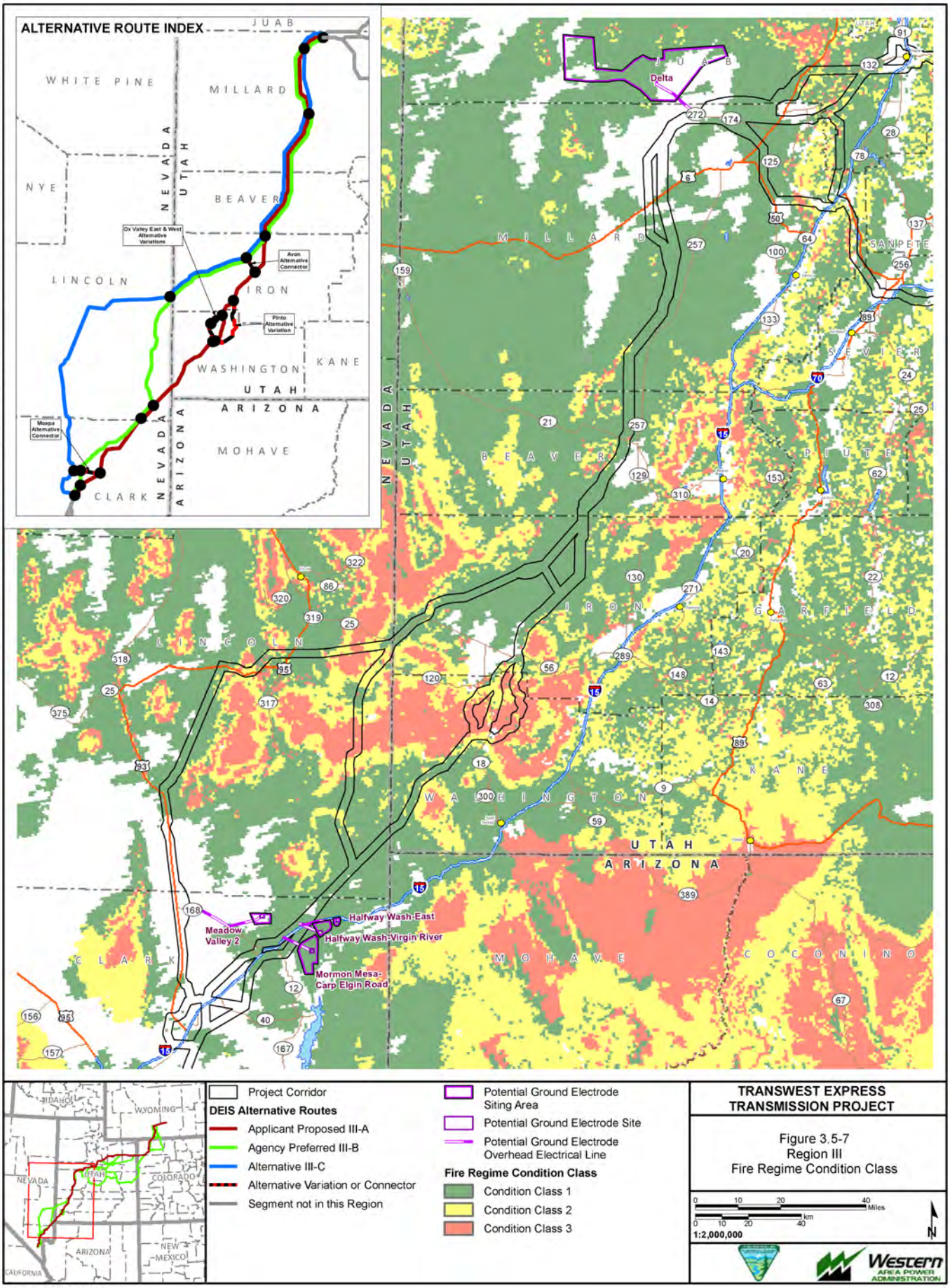
ALTERNATIVE ROUTE INDEX
JUAB
WHITE PINE
MILLARD
NEVADA
UTAH
NYE
BEAVER
Ox Valley East & West Alternative Variations
Avon Alternative Connector
LINCOLN
IRON
Pinto Alternative Variation
WASHINGTON
KANE
UTAH
ARIZONA
Moapa Alternative Connector
MOHAVE
CLARK
Delta
Meadow Valley 2
Halfway Wash-East
Halfway Wash-Virgin River
Mormon Mesa-Carp Elgin Road
SANPETE
SEVIER
PIUTE
GARFIELD
COCONINO
IDAHO
WYOMING
COLORADO
CALIFORNIA
Project Corridor
DEIS Alternative Routes
Applicant Proposed III-A
Agency Preferred III-B
Alternative III-C
Alternative Variation or Connector
Segment not in this Region
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
Fire Regime Condition Class
Condition Class 1
Condition Class 2
Condition Class 3
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.5-7
Region III
Fire Regime Condition Class
Miles
km
1:2,000,000
N
Western AREA POWER ADMINISTRATION
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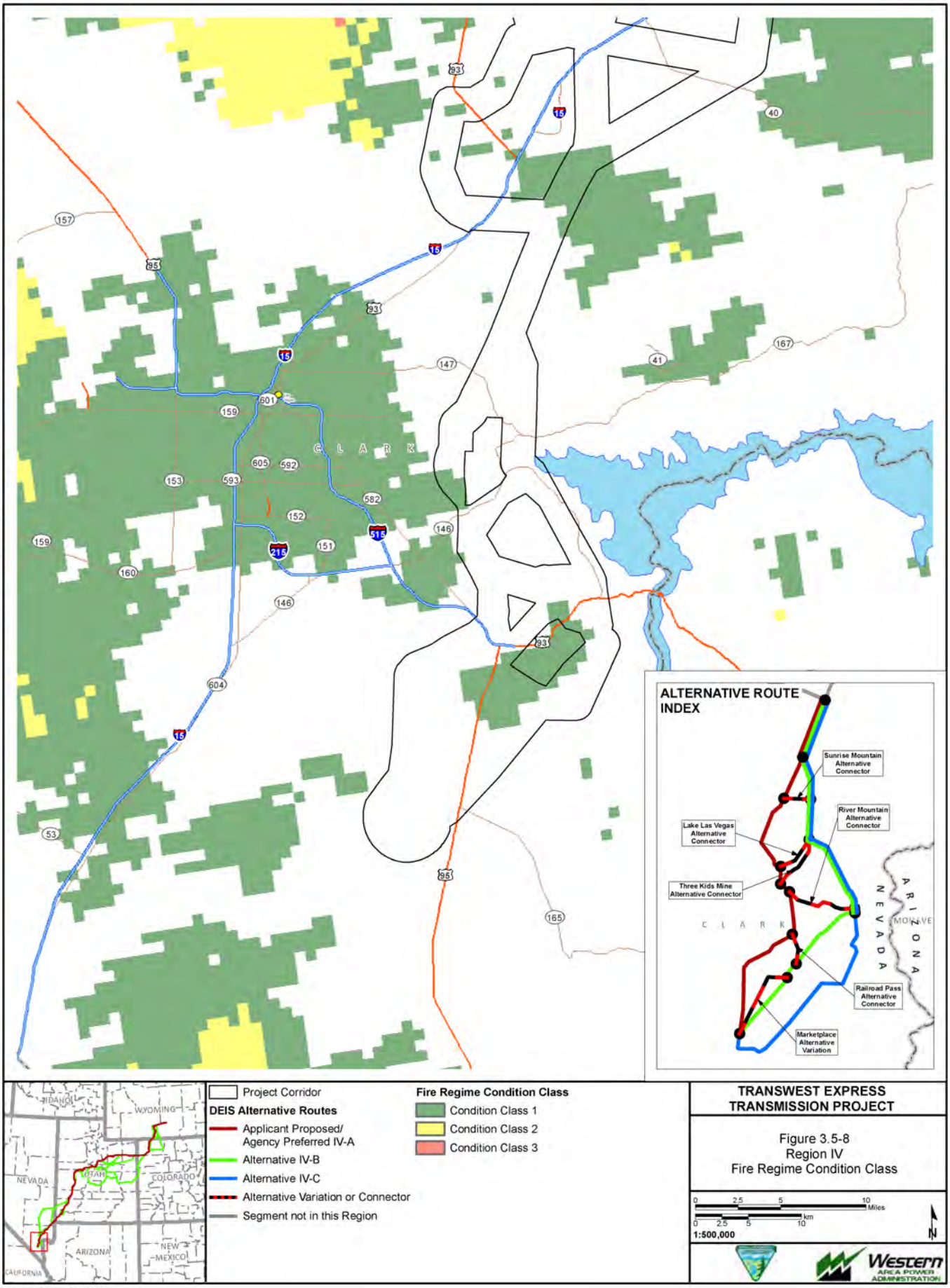


**TRANSWEST EXPRESS TRANSMISSION PROJECT**

Figure 3.5-8
Region IV
Fire Regime Condition Class

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#### 3.5.5.4 USFS MIS Plant Species

Within the analysis area, the Rydberg milkvetch is found in Region II, in the southern part of the USFS Fishlake National Forest. It has been found in five locations in abundant numbers. Potential habitat is found in the analysis are in the USFS Fishlake National Forest based on substrate, elevation, and vegetation parameters. The population historically has been found to be stable and viable across the USFS Fishlake National Forest (USFS 2006).

### 3.5.6 Impacts to Vegetation Resources

As described in Section 3.5.3, Analysis Area, the analysis area for vegetation resources encompasses the HUC 10 watershed boundaries crossed by the 2-mile transmission line corridor. For the impacts discussion, the focus is on the impacts resulting from construction and operation activities within the 2-mile transmission line corridor and the 250-foot-wide transmission line ROW. The 2-mile transmission line corridor contains a 1-mile buffer on each side of each alternative route. The 250-foot-wide transmission line ROW is located within the 2 mile transmission line corridor and would contain the surface footprint for all facilities associated with construction and operations except the terminals and electrode beds. Access roads would be located within the ROW where practical. Within the 2-mile transmission line corridor and outside the 250-foot-wide transmission line ROW, access roads would be the only surface disturbance. The larger analysis area (2-mile transmission line corridors) for access roads was required because their locations have not been defined at this time. Surface facilities located outside the 2-mile transmission line corridor include terminals and electrode beds.

The primary issues associated with vegetation resources include direct and/or indirect impacts to native vegetation communities, riparian/wetland habitats, impacts associated with the introduction and/or spread of noxious weeds and invasive species, and changes in fire regime and FRCC.

To evaluate impacts on vegetation resources, potential impacts to vegetation resources were identified based on the locations of these resources in relation to the proposed surface disturbance areas. To determine acres of vegetation disturbed by the project, the known locations of proposed surface disturbances have been overlain on the vegetation layer to determine the amount of acreage disturbed for each vegetation type using GIS as described in the introduction to Chapter 3.0. For impacts from noxious weeds, areas of higher risk of introduction or spread of noxious weed and invasive species have been identified based on vegetation community type, soil constraints, and climate. To determine impacts to wetland resources and fire ecology, the same methodology as described above for vegetation resources has been applied.

Impact issues and the analysis considerations for vegetation resources are listed in **Table 3.5-9**. Impact parameters are used in combination with effects information for the purpose of quantifying impacts. The impact parameters also allow comparisons among alternatives or alternative variations. The following impact parameters were used for this analysis:

- Effects of construction activities on the spread and establishment of noxious and invasive weed species;
- Acres of disturbance based on the extent of construction activities in wetland/riparian areas;
- Acres of fire susceptible vegetation communities crossed, fire frequency and interval.

**Table 3.5-9 Relevant Analysis Considerations for Vegetation**

| Resource Topic | Analysis Considerations and Relevant Assumptions |
|---|---|
| Erosion and Non-native Species Invasion | Areas of recently disturbed bare ground would be more susceptible to erosion and invasion by non-native species. |
| Reclamation Timeframes | Erosion from disturbed areas would be minimal once vegetation or other surface stabilization is established. Successful establishment of herbaceous vegetation generally takes a minimum of 3 to 5 years, depending on soil and precipitation. Areas with soil limitations, limited precipitation, and large number of invasive and weedy species can take up to 10 years or longer for herbaceous vegetation to successfully establish. In these areas, additional mitigation measures, such as integrated weed control, are often required for successful establishment of native vegetation. Some plant communities may not return to pre-construction conditions due to alteration of soils, noxious weed invasions, and loss of biological soil crust. |
| Revegetation | Areas with rehabilitation constraints (e.g., highly erodible or droughty soils, low precipitation amounts, etc.) can have little to no reclamation success, unless additional mitigation measures are implemented. |
| Landscape Fragmentation | Extensive networks of roads and utility corridors can lead to fragmentation of native landscapes, which can decrease species diversity, lead to decreases in the number and populations of native and special status species, and provide corridors for invasion of non-native species. |
| Vegetative Type Conversion | Proposed surface disturbance activities can result in the conversion of shrub and tree-dominated vegetation communities to grass/forb-dominated vegetation and the conversion of tree-dominated vegetation communities to shrub-dominated vegetation in the short and long term. |
| Fire and Fuels | Surface disturbance activities may result in noxious weed invasions, which can lead to alterations in fire regime and FRCC for vegetation communities. |
| Accidental Fire | Accidental wild fires caused by construction equipment or smoking during construction |

### 3.5.6.1 Impacts from Terminal Construction and Operation

The Northern Terminal would be constructed regardless of alternative route. For the Proposed Action and alternatives corridors, the Southern Terminal would be located in Clark County, Nevada, at either the Southern Terminal or Southern Terminal Alternative location as described below. Under Design Option 2, the Southern Terminal would be located near IPP near Delta, Utah. **Table 3.5-10** identifies estimated acreage of project-related surface disturbance by vegetation cover type within the Northern, Southern, and Southern Alternative Terminal locations.

<u>Northern Terminal</u>

Construction of the Northern terminal would result in surface direct disturbance effects to 504 acres of vegetation. The majority of the disturbance associated with the Northern Terminal would occur in the saltbush and sagebrush shrubland vegetation communities. For the Northern Terminal, the herbaceous wetlands are depressional wetlands.

Surface disturbance activities associated with the Northern Terminal would include pre-development geotechnical sample drilling and site development, which involves vegetation clearing, grading, and facility construction. Construction-associated surface disturbance includes land cleared for storage areas, a

## Table 3.5-10 Acreages of Affected Vegetation for the Northern, Southern, and Southern Alternative Terminals

| | Northern Terminal | | | | Southern Terminal | | | | Southern Terminal Alternative | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Construction Disturbance | | Operation Disturbance | | Construction Disturbance | | Operation Disturbance | | Construction Disturbance | | Operation Disturbance | |
| Vegetation Type | Acres | % of Analysis Area | Acres | % of Analysis Area | Acres | % of Analysis Area | Acres | % of Analysis Area | Acres | % of Analysis Area | Acres | % of Analysis Area |
| Total | 504 | <1 | 234 | <1 | 412 | <1 | 203 | <1 | 412 | <1 | 203 | <1 |
| Agriculture | - | - | - | - | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | <1 | <1 | <1 | <1 | - | - | - | - | - | - | - | - |
| Cliff and Canyon | 3 | <1 | 1 | <1 | - | - | - | - | - | - | - | - |
| Conifer Forest | <1 | <1 | <1 | <1 | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | - | - | - | - | 11 | <1 | 6 | <1 | 54 | <1 | 26 | <1 |
| Developed/Disturbed | 15 | <1 | 7 | <1 | 401 | <1 | 197 | <1 | 358 | <1 | 177 | <1 |
| Dunes | <1 | <1 | <1 | <1 | - | - | - | - | - | - | - | - |
| Grassland | 1 | <1 | 1 | <1 | - | - | - | - | - | - | - | - |
| Greasewood Flat | 4 | <1 | 2 | <1 | - | - | - | - | - | - | - | - |
| Herbaceous Wetland | 9 | <1 | 4 | <1 | - | - | - | - | - | - | - | - |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | - | - | - | - | - | - | - | - |
| Open Water | <1 | <1 | <1 | <1 | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | - | - | - | - | - | - | - | - | - | - | - | - |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - |
| Sagebrush Shrubland | 180 | <1 | 83 | <1 | - | - | - | - | - | - | - | - |
| Saltbush Shrubland | 265 | <1 | 123 | <1 | - | - | - | - | - | - | - | - |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | 27 | <1 | 12 | <1 | - | - | - | - | - | - | - | - |

Discrepancies in totals due to rounding error.

concrete batch plant site, temporary work areas, and pulling, tensioning, and splicing sites. Operation surface disturbance include foot prints of the access roads, the footprints of the station facilities, and the installation of perimeter fence.

Vegetation would be cleared within the entire Northern Terminal plus an additional buffer of 8 to 10 feet outside the fence. After the vegetation is cleared, the area would be graded to a level surface as needed, and drainage design implemented. A soil sterilizer would be applied to prevent regrowth of vegetation, and four to six inch layer of crushed rock laid down resulting in a permanent loss of vegetation for the footprint of the terminal site. For the Northern Terminal, Project-related activities would result in the conversion of 270 acres of mixed vegetation types to grass/forb-dominated vegetation in the short term, and the long-term loss of 234 acres of vegetated land over the lifetime of the project. Herbaceous wetland and greasewood flat areas would be temporarily impacted by construction activities, and permanently impacted by the placement of surface facilities in each of these areas. The conversion and loss of vegetation also would impact the quantity and arrangement of surface fuels, resulting in both temporary and long-term impacts to fire regime condition classifications within the area.

Indirect effects associated with construction of the Northern Terminal would include the potential spread and establishment of noxious and invasive weed species, changes in surface fuels due to establishment and growth of annual species, erosion and sedimentation, and fugitive dust generation. Following surface disturbance activities, noxious weeds and invasive species may readily colonize areas that have minimal vegetation cover. It is anticipated that populations of weedy annual species (e.g., halogeton, cheatgrass) may become established in localized areas for extended periods of time. The establishment of weedy annual species may lead to buildup of fine fuels that ignite readily and are consumed rapidly. Noxious weed invasions into disturbed areas may result in incremental changes to the FRCC for each vegetation community. These changes may result in landscape altercations that shift FRCC 1 classified communities into FRCC 2 or 3. These alterations may result in fire frequencies departing from their natural frequencies.

Following completion of Northern Terminal construction, 270 acres of disturbed land would be immediately reclaimed pursuant to TWE's Final POD. Reclamation would consist of re-grading, mitigating soil compaction, and preparing areas for seeding and revegetating in accordance with land management agency or private landowner requirements. TWE has committed to the development of a Wetlands and Waters of the U.S. Plan as part of the CWA 404 Permit, which would include measures to avoid and minimize impacts to wetlands and WUS to the extent practical. If wetlands are impacted by the project, mitigation measures would be developed through the CWA 404 permitting process. At the end of the useful life of the project, decommissioning would occur, the facilities would be dismantled and removed and the entire terminal site would be reclaimed.

The applicant has committed to the following design features (i.e., environmental protection measures) to mitigate impacts to the Project.

- TWE Design Features - TWE-19 (Erosion Control Plan), TWE-26 (Vegetation Management Plan and Noxious Weed Management Plan), TWE-20 (As part of the CWA 404 Permit, development of a Wetlands and Waters of the U.S. Plan to avoid and minimize impacts to wetlands and WUS to the extent practical), TWE-21 (NPDES Permit), TWE-22 to TWE-25 (Mitigation for runoff and limits to impacts near waterbodies), TWE-29 (Biological Protection Plan), TWE-58 (development of a Pesticide Use Plan), and TWE-64 (Fire Protection Plan).

Additional environmental protection measures that would apply to the project include the WWEC performance standards (i.e., BMPs) which are listed in **Appendix C**. Also listed in **Appendix C** are the NSU and CSU restrictions, which include restrictions for surface disturbance around wetlands, riparian areas, and drainages. A brief overview of the WWEC performance standards applicable to vegetation resources are listed below:

- WWEC performance standards – VEG-1 (restoration must use weed-free native species), VEG-3 (pesticide use), ECO-1/ECO-2/ECO-4/ECO-6 (protection of sensitive and unique habitats), ECO-3/ECO-5 (in consultation with USACE and in accordance with permit requirements, delineate and avoid, minimize or mitigate impacts to wetlands and riparian areas); FIRE-1/FIRE-2 (fire management and fuels buildup strategies); REST-1 (topsoil salvage, seeding with weed-free, native seeds, and restoring pre-development contours), and REST-2 (restoring vegetation to values commensurate with the ecological setting), WAT-9 (erosion controls), WAT-7 (development of SWPPP), WAT-10 (minimization of stream crossings), AIR-1/AIR-2 (fugitive dust control).

Individual BLM FOs have field office-specific BMPs, and USFS forests have forest-specific stipulations and guidelines, that will apply to the project within the boundaries of each FO and forest. Where there is conflict with the WWEC performance standards, and individual BLM or USFS FO BMPs and stipulations and guidelines, the requirements of the individual offices will supersede the WWEC performance standards. Example of agency BMPs specific to vegetation resources include:

- Fugitive dust abatement techniques;
- No surface disturbing activities within a specified distance of riparian areas and wetlands;
- Erosion control methods; and
- Reclamation standards, including seed mix requirements, noxious weed control, and fencing to limit herbivory.

In addition, the following are proposed mitigation measures for vegetation, wetlands and riparian areas, and noxious weeds:

***VG-1****: Native seed mixes to be used for reclamation would be developed in consultation with the land managers for the various regions crossed by the Project. Seed mixes would meet the requirements of the individual agency FO's crossed by the Project. Site-specific seed mixes for soils with low reclamation potential (LRP) would be developed. The LRP seed mixes would be specifically designed for alkaline, saline, or sodic soils and would be used in areas where reclamation would potentially be difficult based on soil conditions. Additional soil amendments may be required in these areas, and would be implemented at the direction of the land manager.*

***WET-1****: Wetland surveys would be conducted at terminal, ROW, ancillary facilities, and along proposed access roads corridors to identify wetland, WUS, and riparian areas located in these areas. Survey information collected would include wetland type, type and cover of hydrophytic and riparian vegetation species present, soil characteristics, site hydrology, global positioning system location of the wetland, and associated information required to determine jurisdictional status. Based on survey results, no surface disturbance including temporary and permanent facilities, the placement of fill material or vegetation clearing for storage, parking, construction activities, or construction work areas as feasible will occur within the avoidance buffer, or surface use restriction defined in the resource management plan for each BLM FO and USFS national forest. If avoidance is not feasible, USACE, BLM, USFS, USFWS crossing and construction techniques for wetlands and riparian areas will be employed. The wetland crossing and construction techniques will be approved by the USACE, BLM, USFS, and USFWS and will be outlined in the Final POD.*

***WET-2****: For any features identified during field surveys as jurisdictional under the USACE and EPA guidance under Section 4 of the Clean Water Act, consultation with the USACE will occur prior to construction. Mitigation for these features will be determined in consultation with the USACE and BLM.*

***NX-1****: The noxious weed management plan to be developed as part of the Construction, Operation and Maintenance (COM) Plan would include the following:*

1. *Pre-construction surveys for noxious weeds in the footprints of the ROW, access roads, and ancillary facilities;*
2. *Pre-construction weed control;*
3. *Education of construction and operation personnel in each project region;*
4. *Washing of vehicles and equipment before entering and leaving the ROW;*
5. *Herbicide spraying; and*
6. *Annual monitoring and reporting.*

*Survey information collected during pre-construction surveys would include species name, global positioning system location of weed infestations, percent cover, and approximate size of weed infestations. Control of noxious and invasive species could include chemical, physical, and biological methods and will be developed in consultation with the land agencies and private landowners. The plan will identify species of concern for each BLM FO and USFS forest, and focus monitoring and control methods on these species. The plan would comply with the existing BLM, USFS, USFWS, state, and federal regulations concerning noxious weed management.*

***NX-2**: Herbicide spraying would be conducted following all applicable state and federal laws regarding chemical use, adverse weather, chemical storage, and chemical drift. Further guidelines and protocols for herbicide spraying on BLM land is provided in the Final BLM Vegetation Treatment Using Herbicides Programmatic EIS (BLM Vegetation EIS) (BLM 2007). Standard operating procedures for herbicide spraying include buffers for sensitive areas such as riparian and wetland areas and threatened and endangered species habitat, timing restrictions, and safety protocols.*

***NX-3**: On lands managed by the BLM, an approved Pesticide Use Proposal (PUP) would be obtained from each BLM FO prior to herbicide spraying. PUPs would have site-specific information about the herbicides to be used. The PUPs and associated reporting requirements would be submitted on the schedule required for each BLM FO. Herbicide spraying in desert tortoise habitat in Nevada would require consultation with the BLM and USFWS.*

*Effectiveness:* Implementation of mitigation measure **VG-1**, as well as BMPs and design features would aid in reclamation activities and restoring communities to native ecosystems, especially in areas where reclamation is difficult. Implementation of mitigation measures **WET-1** and **WET-2** would help minimize or avoid direct and indirect impacts to wetlands and riparian areas resulting from construction and operation of the Northern and Southern Terminals. Implementation of **NX-1** would minimize and mitigate impacts associated with the potential introduction or spread of noxious weeds and invasive species, and control the methods used to treat noxious and invasive species. WWEC VEG-3 ensures herbicide use be in compliance with agency policies, and be applied in a manner consistent with label directions and state pesticide regulations. **NX-2** and **NX-3** would ensure compliance BLM standards for herbicide use on BLM lands.

While mitigation measures, BMPs, and design features would increase reclamation success, in areas of temporary disturbance the loss of woody-dominated vegetation related to construction activities would represent a long-term impact, as it would take up to 10 to 25 years following reclamation for mature shrub species to re-establish, and 30 to 50 or more years for re-establishment of mature woodlands. Through the implementation of mitigation measures, direct impacts to wetlands and riparian areas would be avoided, and the spread of noxious weeds would be minimized.

<u>Southern Terminal</u>

Construction of the Southern Terminal would result in surface direct disturbance effects to 412 acres of vegetation. **Table 3.5-10** identifies estimated acreage of project-related surface disturbance by vegetation cover type within the Northern and Southern Terminal locations. The Southern Terminal is located in only

two vegetation community types (Desert Shrub and Developed/Disturbed). The majority of the disturbance in the Southern Terminal would occur in the Developed/Disturbed community type.

Surface disturbance activities and site clearing operation and decommissioning impacts associated with the Southern Terminal would be identical to those associated with the Northern Terminal. Since the predominant cover type within the Southern Terminal area is developed/disturbed, no direct impacts to vegetation resources are anticipated. As with the Northern Terminal, indirect effects associated with construction of the Southern Terminal include the spread and establishment of noxious and invasive weed species, erosion and sedimentation, and fugitive dust generation.

*Conclusion:* As the majority of the construction and operations disturbance would occur on already developed/disturbed vegetation cover type, direct impacts to vegetation, wetlands, and fire would not be anticipated. Indirect impacts associated with vegetation, wetlands, and noxious weeds would be similar to those discussed for the Northern Terminal. The same design features, BMPs, and mitigation measures listed for the Northern Terminal would be implemented to minimize these impacts.

Southern Terminal Alternative

Construction of the Southern Terminal Alternative location would result in surface direct disturbance effects to 412 acres of vegetation. **Table 3.5-10** identifies estimated acreage of project-related surface disturbance by vegetation cover type within the Northern and Southern Terminal Siting Areas. The Southern Terminal Alternative is located in the same siting area as the Southern Terminal. Within the site for the Southern Terminal Alternative are two vegetation community types (Desert Shrub and Developed/Disturbed). The majority of the disturbance in the Southern Terminal Alternative would occur in the Developed/Disturbed community type.

Surface disturbance activities and site clearing operation and decommissioning impacts associated with the Southern Terminal Alternative would be identical to those described for the Northern Terminal. Since the predominant cover type within the Southern Terminal area is developed/disturbed, no direct impacts to vegetation resources are anticipated. Indirect impacts to vegetation, wetlands, and noxious weeds would be similar to those discussed for the Northern Terminal. The same design features, BMPs, and mitigation measures listed for the Northern Terminal would be implemented to minimize these impacts.

Design Options

Design options would utilize the same alternative routes and construction techniques as the proposed Project. Impacts from construction and operation of this design option would be similar to those discussed under the alternative routes.

*Design Option 2 – DC from Wyoming to IPP; AC from IPP to Marketplace Hub*

Differences between this design option and the proposed Project include the locations of the Southern Terminal near IPP, southern converter station and ground electrode system, as well as the addition of a series compensation station midway between IPP and Marketplace. The series compensation station would be located adjacent to the transmission line, and impacts are therefore disclosed within the description of the proposed Project routes. The southern converter station would be located near IPP in Utah instead of Marketplace in Nevada, and the ground electrode system would be within 50 miles of IPP. **Table 3.5-11** provides a summary of impacts associated with Design Option 2.

Construction and operation of a converter station near IPP, ground electrode system, and series compensation station would be similar to impacts described in Section 3.5.6.1, Impacts from Terminal Construction and Operation. The same design features, BMPs, and mitigation measures listed for the Northern Terminal would be implemented to minimize these impacts resulting from Design Option 2. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area.

**Table 3.5-11 Summary of Design Option 2 Southern Terminal and Ground Electrode Site Impacts to Vegetation**

| | Design Option 2 Southern Terminal – Converter/Substation | | | | Delta Ground Electrode Site | | | |
|---|---|---|---|---|---|---|---|---|
| | Construction Disturbance | | Operation Disturbance | | Construction Disturbance | | Operation Disturbance | |
| Vegetation Communities | Acres | % of Analysis Area | Acres | % of Analysis Area | Acres | % of Analysis Area | Acres | % of Analysis Area |
| **Total** | **181** | **<1** | **113** | **<1** | **131** | **<1** | **40** | **<1** |
| Agriculture | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | - | - | - | - | 1 | <1 | <1 | <1 |
| Cliff and Canyon | - | - | - | - | <1 | <1 | <1 | <1 |
| Conifer Forest | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - |
| Desert Shrub | - | - | - | - | - | - | - | - |
| Developed/Disturbed | - | - | - | - | 2 | <1 | 1 | <1 |
| Dunes | - | - | - | - | - | - | - | - |
| Grassland | 18 | <1 | 11 | <1 | 26 | <1 | 8 | <1 |
| Greasewood Flat | 17 | <1 | 11 | <1 | 18 | <1 | 6 | <1 |
| Herbaceous Wetland | 7 | <1 | 4 | <1 | 2 | <1 | 1 | <1 |
| Montane Grassland | - | - | - | - | <1 | <1 | <1 | <1 |
| Montane Shrubland | - | - | - | - | <1 | <1 | <1 | <1 |
| Open Water | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | - | - | - | - | <1 | <1 | <1 | <1 |
| Riparian | - | - | - | - | - | - | - | - |
| Sagebrush Shrubland | - | - | - | - | 11 | <1 | 3 | <1 |
| Saltbush Shrubland | 139 | <1 | 87 | <1 | 69 | <1 | 21 | <1 |
| Tundra | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | - | - | - | - | <1 | <1 | <1 | <1 |

*Design Option 3 – Phased Build Out*

Design Option 3 would utilize the same alternative routes, facilities, and construction techniques as the proposed Project; however, construction would occur in phases as described in Chapter 2. Differences between this design option and the proposed Project include the construction of an interim substation and connection at IPP and a series compensation station midway between Sinclair, Wyoming and IPP that would operate during Phase I of the design option as described in Chapter 2.0. **Table 3.5-12** provides a summary of impacts associated with the interim substation under Design Option 3.

The total surface disturbance at a given time might be less depending on the timing and reclamation activities associated with the phased build out. Impacts from construction and operation of this design option would be similar as those discussed under the alternative routes below. The series compensation station would be located adjacent to the transmission line, and impacts are therefore disclosed within the description of the proposed Project routes below.

**Table 3.5-12 Summary of Design Option 3 Substation Impact Parameters to Vegetation**

| Vegetation Communities | Design Option 3 Converter/Substation | | | |
|---|---|---|---|---|
| | Construction Disturbance | | Operation Disturbance | |
| | Acres | % of Analysis Area | Acres | % of Analysis Area |
| **Total** | **171** | **<1** | **75** | **<1** |
| Agriculture | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - |
| Barren/Sparsely Vegetated | - | - | - | - |
| Cliff and Canyon | - | - | - | - |
| Conifer Forest | - | - | - | - |
| Deciduous Forest | - | - | - | - |
| Desert Shrub | - | - | - | - |
| Developed/Disturbed | 1 | <1 | <1 | <1 |
| Dunes | - | - | - | - |
| Grassland | 5 | <1 | 2 | <1 |
| Greasewood Flat | 96 | <1 | 42 | <1 |
| Herbaceous Wetland | 1 | <1 | 1 | <1 |
| Montane Grassland | - | - | - | - |
| Montane Shrubland | - | - | - | - |
| Open Water | - | - | - | - |
| Pinyon-Juniper | - | - | - | - |
| Riparian | - | - | - | - |
| Sagebrush Shrubland | <1 | <1 | <1 | <1 |
| Saltbush Shrubland | 68 | <1 | 30 | <1 |
| Tundra | - | - | - | - |
| Woody Riparian and Wetlands | - | - | - | - |

Construction and operation of a substation and series compensation station would have similar impacts as those described in Section 3.5.6.1, Impacts from Terminal Construction and Operation and Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. The same design features, BMPs, and mitigation measures listed for the Northern Terminal would be implemented to minimize these impacts resulting from Design Option 3. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area.

### 3.5.6.2 Impacts Common to All Alternative Routes and Associated Components

Construction Impacts

Construction-related surface-disturbing activities would occur in the 250-foot-wide transmission line ROW, the 2-mile transmission line corridor, and the ancillary facilities. In the ROW, surface-disturbing activities would consist of ROW clearing, installation of transmission line structures and wires, and construction of temporary and long-term facilities related to construction and operations. In the corridor, surface-disturbing activities would be related to the construction of temporary and long-term access roads. Acres of surface impacts are listed below under each of the Region's impact discussions.

Construction of the transmission line would occur concurrently with construction of terminals and ground electrode system construction. Prior to construction, sensitive environmental features to be avoided during

construction would be flagged. Direct surface disturbing impacts to vegetation would include the trampling/crushing of vegetation, the removal of vegetation, and soil compaction. Indirect effects to vegetation would include increased erosion, sedimentation, fugitive dust generation, the potential spread and establishment of noxious and invasive weed species, and habitat fragmentation.

Vegetation clearing in the ROW during construction would occur as described in the COM Plan, PDTR and associated framework summary of the draft Vegetation Management Plan (PDTR, **Appendix D**). Based on the draft plan, vegetation clearing during construction would be stratified by vegetation height. Vegetation over 6 feet in height would be cleared or removed as described below. Vegetation over 6 feet in height predominantly would include trees and larger shrub species found in the following vegetation community types: Aspen Forest and Woodland, Conifer Forest, Deciduous Forest, Pinyon-Juniper, and Woody Riparian and Wetlands. Low-growing trees, shrubs, and ground vegetation under 6 feet in height would be left in place. Trees to be cleared would be cut off at ground level, and the stumps left in place for erosion control. Vegetation would be removed using mechanical means appropriate for the area. Marketable timber removed from the ROW would be purchased from the appropriate land management agency or private landowner. Slash would be removed from the ROW or chipped and spread according to approved land agency practices. The depth of wood chips spread over the ROW after vegetation clearing activities could impact vegetation and soil resources in the ROW. Spreading wood chips at a 3-inch depth could increase soil temperature in the winter, moderately increase soil moisture, and substantially decrease soil nitrogen supply and understory vegetation. The increase in soil temperature and soil moisture would have relatively minor ecological effects. However, reductions in the soil N supply may temporarily reduce productivity of the soil and affect revegetation rates (Binkley et al. 2003). With increasing depth of mulch, these impacts will increase in magnitude and duration. As access is needed to the ROW during construction activities, the remaining vegetation not removed during clearing would be driven over resulting in trampling and/or crushing of the vegetation. This would leave the root stock and topsoil in place in the majority of the ROW. Leaving the root stock and topsoil in place would allow the vegetation in the ROW to resprout from the existing seed bank and root stock. The removal of woody vegetation over 6 feet in height could result in changes in vegetation community structure, through increases in the amount of light and open areas in the ROW. Depending on the species present, and the length of time for the woody species to re-establish in the ROW, woody communities could temporarily or permanently shift to communities dominated by herbaceous and/or low growing shrubs. In addition, increased light and open areas in the ROW could lead to increased noxious and invasive weed species establishment and spread.

For any routes that cross IRAs, special construction and maintenance methods are proposed (see **Appendix D**, Section D.3.8.3). A 100-foot-wide construction ROW would be used to install the transmission line through these areas. Within the construction zone, vegetation clearing, and grading would be the same as in the non-IRA portion of the ROW. Construction in IRAs would occur over a shorter time frame (6 to 9 months) and helicopter construction methods may be used to the extent practical.

Biological soil crusts damaged during construction activities could affect the health and successful restoration of native vegetative communities. See Section 3.3, Soils, for further discussion of impacts related to compaction and topsoil. Wetlands would be avoided to the extent practical.

Indirect impacts from ROW clearing could include increased runoff, erosion, and sedimentation; potential spread and establishment of noxious and invasive species, herbicide drift, changes in the quantity and arrangement of surface fuels, and changes in surface runoff from additional surface disturbance. The amount of vegetation impacted by indirect impacts as a result of project implementation would vary depending on the type of indirect disturbance. Typically, indirect impacts occur 100 to 300 feet away from the construction impact, but could affect vegetation communities further away such as through increased sedimentation into drainages affecting communities downstream (USFWS 2013).

Construction activities may increase erosion and sedimentation, and modify the floodplain surface as well as channel beds and banks. These effects may create indirect impacts on nearby riparian vegetation or directly affect habitat for wildlife and endangered fish, adversely impact water quality, and may adversely affect

wildlife and plant species further downstream. Following surface disturbance activities, noxious weeds and invasive species may readily colonize areas that have minimal vegetation cover. It is anticipated that populations of weedy annual species (e.g., halogeton, cheatgrass) may become established in localized areas for extended periods of time. The establishment of weedy annual species may lead to buildup of fine fuels that ignite readily and are consumed rapidly. Noxious weed invasions into disturbed areas may result in incremental changes to the FRCC for each vegetation community. These changes may result in landscape alterations that shift FRCC 1 classified communities into FRCC 2 or 3. These alterations may result in fire frequencies departing from their natural regime.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1**, **VG-2**, and **VG-3** would mitigate impacts to the natural fire regime of these communities.

Accidental wildfires ignited as a result of construction activities could affect vegetation communities in a variety of ways. Impacts may include, but are not limited to, the following: partial to complete removal of aboveground plant cover and belowground components (e.g., roots, rhizomes, and seed bank); soil moisture loss and possible subsequent hydrophobic soil; loss of cacti, yucca, and special status plant species and/or their associated habitats; propensity to increase the spread or introduction of noxious and non-native invasive weed species; and loss of suitable habitat for wildlife and grazing animals.

The land cover type with the highest overall risk of accidental fires spreading upon ignition is sagebrush shrubland. The risk of fire spread in the sagebrush cover type would largely depend on the shrub interspaces and the cover of the herbaceous understory in any given area. Wide interspaces among shrubs and low herbaceous cover would limit fire spread whereas dense sagebrush shrub stands, and/or extensive herbaceous plant cover could increase the risk of fire spread. Post-wildfire revegetation to a pre-disturbance baseline structure and composition may vary depending on physical, environmental, and physiological factors such as the severity, intensity, and duration of the wildfire; extent of disturbance; topography; slope; soil moisture; precipitation; and sensitivity of the impacted species. Vegetation cover type recovery time frames would be generally consistent with those described above for post-construction reclamation.

Temporary work areas would be located within the 2-mile transmission line corridor, and would include staging areas, material storage yards, fly yards, pulling, tensioning, and splicing sites, work areas at each structure site, batch plant sites, and guard structures. The portion of surface disturbance associated with each of a these areas varies. Staging areas, fly yards, batch plant sites would be, to the extent possible, co-located in areas that are previously disturbed or areas of minimal vegetation to minimize surface disturbance. The vegetation in these areas would be cleared as necessary. Staging areas and fly yards might be bladed and graveled. Equipment staging and refueling sites would be co-located with other temporary work areas. Wire pulling, tensioning, and splicing sites, as well as and structure work areas, would be completely cleared of vegetation during construction. The applicant would locate wire pulling, tensioning, and splicing sites such that clearing and blading activities would be minimized to the extent practical. The work area to be cleared around the each structure would depend on the type of structure (e.g., guyed lattice structures, tubular steel pole, and self supporting lattice structures) installed.

Within the ROW and corridor, temporary and long-term access roads would be required to provide surface access to all structures and work areas. To minimize disturbance, existing access roads would be utilized wherever practical. Existing roads would be improved as necessary. Non-graded overland access would be used where terrain and soil conditions are suitable. Vegetation along existing access roads would be affected (e.g., reduction in growth rate) as a result of dust deposition. No access roads are proposed in IRAs.

Where access to structures or work areas is prohibited by lack of existing roads, or where topographic conditions prohibit safe overland access to the site, new access roads would be constructed. To limit surface disturbance from construction of new access roads, the new roads would be located within the

ROW where practical, and sited to minimize potential environmental impacts. An access road plan would be developed during engineering and design, which would define site-specific access. Access roads would be constructed in accordance with AASHTO standards and guidelines, and BLM, USFS, and county road requirements on public lands. Water crossings to be implemented for access roads are described in the PDTR (**Appendix D**).

Direct surface disturbance impacts from access road construction would include vegetation trampling/crushing, vegetation removal, grading, and compaction. Indirect impacts from access road construction would include increased erosion, sedimentation, fugitive dust generation, the potential spread and establishment of noxious and invasive weed species, and habitat fragmentation. In the corridor, outside of the ROW, construction impacts would be limited to the construction of access roads. The linear construction surface disturbance-related activities can result in increased introduction and/or spread of noxious weeds and invasive species within adjacent areas. In areas where there are already extensive infestations of noxious weeds, noxious weed control during construction, operation, and maintenance activities could be difficult due to the large local seed source.

Linear surface disturbances such as those associated with transmission lines and roads can and have provided corridors (Gelbard and Belnap 2003; Watkins et al. 2003) and serve as a source of propagules (D'Antonio et al. 2001) for further spread of noxious and invasive species into adjacent undisturbed areas. Localized surface disturbances can facilitate the invasion of noxious and invasive species by removing native vegetative cover, creating areas of bare ground (Burke and Grime 1996; Watkins et al. 2003), and increasing light and nutrient availability (Stohlgren et al. 2003, 1999). Noxious and invasive weed species compete with native plants, can degrade and modify native communities, and reduce resources for native species (e.g., moisture, soil nutrients, and light).

Landscape fragmentation would result from the development of the access road network, facilities, and transmission line towers. Landscape fragmentation is defined as the transformation or break-up of large patches of continuous, connected areas into a number of patches of smaller total area, that are isolated from each other. Landscape fragmentation, through the construction of access roads, utility corridors, and facilities, breaks up native habitats into smaller units separated by areas of disturbance, or different habitat types. Landscape fragmentation can result in loss of habitats, increased edge effects, effects on sensitive species populations, and increased competition from noxious and invasive weed species. Surface disturbance and associated landscape fragmentation increases the potential for noxious weed and invasive species to spread and establish proportionate to the amount of disturbance.

Fire regimes in vegetation communities modified by construction activities would be altered. Cover type conversions, the removal or rearrangement of canopy and surface fuels, the temporary creation of localized areas devoid of vegetation or firebreaks, and colonization of disturbed areas by annual invasive species would result in altered fire regime condition classes at facility locations and within vegetation communities within the ROW. The majority of the facilities sites would be located in the ROW, while the terminal and ground electrode facilities would be located outside this 2-mile-wide transmission line corridor.

Impacts to vegetation from reclamation would be similar to those described under Section 3.5.6.1, Impacts from Terminal Construction and Operation. In IRAs, areas disturbed in the construction zone would be re-contoured, the topsoil replaced, and revegetated per USFS requirements and the Vegetation Management Plan. Areas disturbed and reclaimed in the IRAs would be monitored for 3 to 5 years, in accordance with USFS requirements. For all areas disturbed and reclaimed, a general mitigation monitoring plan would be developed as part of the COM Plan that would address how each mitigation measure would be monitored for compliance, as described in the PDTR (**Appendix D**). Reclamation of the vegetation communities back to their native diversity and composition would vary across the ROW and corridor due to various factors such as soil mixing, timing and duration of disturbance, topography, slope, soil moisture, and precipitation. Reclamation standards for the project would vary by the requirements defined by each land management agency crossed by the project. In general, reclamation success is defined as re-establishing a self-sustaining, diverse vegetation community composed of species native to the region in sufficient species

density and diversity to closely approximate natural, undisturbed vegetation potential. In herbaceous communities, reclamation is often determined by the establishment of adequate ground cover to prevent erosion and provide forage for wildlife species and grazing operations.

It is estimated that overall, herb-dominated plant communities would require a minimum of 2 to 5 years to establish adequate ground cover to prevent erosion and provide forage for wildlife species and grazing operations. Woody-dominated plant communities would require at least 10 to 25 years for shrubs to recolonize the area while re-establishment of mature woodlands would require at least 30 to 50 or more years. Depending on the composition and topography of existing woodlands, recovery could take up to 80 to 100 years to achieve mature trees of similar stature to pre-construction conditions. In areas with soil reclamation constraints, low regional annual precipitation rates, and the invasion and spread of noxious and invasive weed species, successful reestablishment of native vegetation may require additional measures, and take a longer timeframe. The success of woodland re-establishment could be impacted by co-located disturbances and adverse environmental conditions including wildfire, drought, climate change, insects, and disease (Folke et al. 2004; Loehman et al. 2011). Wildfire in combination with adverse environmental conditions could result in woodlands converting to shrubland communities over time.

In areas with soil reclamation constraints, low regional annual precipitation rates, and the invasion and spread of noxious and invasive weed species, community recovery is anticipated to be long-term, and may not be successful (10 to 100 years depending on the community structure). Some plant communities may not return to pre-construction conditions due to alteration of soil communities, noxious weed invasion, and loss of biological soil crusts. The implementation of additional reclamation techniques such as minimization of surface disturbance, soil amendments, and noxious weed control may be required in these areas to achieve successful reclamation. Areas with soil reclamation constraints are identified in Section 3.3, Soils.

The implementation of BMPs and design features would be the same as described under Section 3.5.6.1, Impacts from Terminal Construction and Operation. Additional Project design features to be implemented include:

- TWE Design Features TWE-9/TWE-10 (restrict travel to pre-designated areas, access or public roads), TWE-11/TWE-27 (where re-contouring not required, vegetation will be left in place wherever possible), TWE-12 (no widening or upgrading of existing access roads in areas sensitive to disturbance), TWE-13 (restoration of temporary work areas), TWE-14 (borrow pits), and TWE-28 (clearing will be minimized to extent possible).

Additional WWEC BMPs that would apply to the project include:

- WWEC BMPs – VEG-2 (integrated vegetation management plan development), SOIL-1 (topsoil salvage), SOIL-2 (slopes), WAT-10 (minimize stream crossings), and WAT-11 (erosions controls at drainage crossings).

Each BLM FO and USFS Forest has specific surface disturbance avoidance buffers for riparian and wetland areas. Examples of NSU and CSU restrictions that apply to wetland and riparian resources include:

- Rock Springs FO – 500 feet from surface water, perennial streams, riparian areas, and wetlands. Surface disturbing activities will be avoided within 100 feet from the inner forge of ephemeral channels.
- Little Snake FO – NSO stipulations for up to 0.25 mile from perennial water sources, if necessary, depending on type and use of the water source, soil type, and slope steepness.

- Las Vegas FO – Protect artificial and natural waters that provide benefit to wildlife by providing a minimum buffer of 0.25 mile for permitted activities (such as for off-road vehicle events).
- Uinta National Forest – 300-foot buffer associated with major drainages where volumes of base water flows are at least 10 cubic feet per second (cfs).

Examples of agency BMPs specific to vegetation resources would be the same as described in Section 3.5.6.1, Impacts from Terminal Construction and Operation. The following mitigation measures are proposed to minimize impacts to vegetation, to wetlands and riparian areas, and from noxious weeds:

***VG-2****: Woody areas such as pinyon-juniper, which are on average taller than the 6 feet minimum clearance, but with wide spacing between the trees allowing vehicle and equipment access to the transmission line ROW, would not be cleared during construction activities. This measure would consider conductor clearance requirements.*

***VG-3****: A vegetation reclamation and monitoring plan will be developed as part of the Construction, Operation, and Maintenance (COM) Plan. The reclamation monitoring plan would define reclamation success for each vegetation type and management agency, list reclamation seed mixes, and detail reclamation monitoring for both interim and final reclamation. Interim and final reclamation success would be monitored quarterly for the first year, and then annually for at least three years, or until reclamation success as defined by each land management agency crossed by the project is achieved. Reporting of construction, reclamation progress, and monitoring results would be submitted to each land management agency per each office's reporting requirements.*

***VG-4****: During vegetation clearing, if chipping and spreading woody material in the ROW, wood chips will not exceed 3 inches in depth. Distribute chips in discontinuous patches that do not result in a continuous chip mat (<40% of surface covered by 3 inches of chips).*

***VG-5****: Masticated material spread in the ROW will not exceed a depth of 3 to 6 inches. Distribute material in discontinuous patches that do not result in a continuous chip mat (less than 40 percent of surface covered 3 to 6 inches thick.*

***NX-4****: The cut-stumps of mature salt cedar stands that are cut as part of vegetation clearing will be immediately painted with herbicides. The specific control methods, and herbicide to be used will be determined in consultation with the Nevada BLM State and FOs. Additional control measures could the planting of native or desired plant species following treatment to provide erosion control, and the use of biocontrols.*

***WET-3****: Access roads will be routed around riparian areas, wetlands, intermittent or perennial drainages, and ephemeral channels to the extent practical. If jurisdictional wetlands or WUS cannot be avoided, USACE approved construction techniques for construction in wetlands and WUS will be applied. BLM and USFS construction techniques for non-jurisdictional wetlands, riparian areas, intermittent drainages, and ephemeral channels would be applied on BLM and USFS lands, as appropriate. These include the use of timber mats, erosion controls, and the placement of equipment outside of the wetland, riparian areas, intermittent drainages, and ephemeral channels boundaries.*

*Effectiveness:* By minimizing the number of trees cut or removed, mitigation measure **VG-2** would diminish the impacts of construction-related activities to woodlands in the Project ROW. **VG-3** would define the reclamation requirements, seed mixes to be used for reclamation, and reclamation success monitoring to be conducted by the applicant. **VG-4** and **VG-5** would mitigate impacts to soil and vegetation resources from the spreading of chipped and masticated material in the ROW as part of vegetation clearing activities. **NX-4** would improve the control and management of salt cedar stands that are to be cleared as part of the construction and maintenance activities. Implementation of mitigation measure **WET-1** through **WET-3**, in conjunction with design feature TWE-20 (as part of the CWA 404 Permit, development of a Wetlands and

Waters of the U.S. Plan to avoid and minimize impacts to wetlands and WUS to the extent practical), would mitigate impacts to wetlands and riparian areas through identification and mapping of wetlands, riparian areas, and drainages, and the avoidance of surface disturbance in these areas. For access roads, where avoidance of wetland, riparian areas, and drainages is not feasible, mitigation will be applied as directed in **WET-3** to minimize impacts.

Project-related activities would result in the conversion of tree-dominated vegetation communities to shrub- and grass/forb-dominated vegetation in the short and long-term. Long-term impacts would include the loss of vegetation from long-term facilities (structure footprints and roads) during the life of the project; other disturbed areas would be reclaimed immediately following completion of construction.

Through the implementation of mitigation measures **VG-1** and **VG-2**, direct impacts to woody vegetation would be minimized. The loss of woody-dominated vegetation related to construction activities would represent a long-term impact. Implementation of **WET-2** and **WET-3** would minimize or avoid direct and indirect impacts to wetlands and riparian areas due to construction. Implementation of **NX-1** would minimize and mitigate impacts associated with the potential introduction or spread of noxious weeds and invasive species, through the development of the Noxious Weed Management Plan and identification of noxious weed species of concern in the ROW and ancillary facilities during annual monitoring. The Noxious Weed Management Plan would identify control and prevention methodologies and techniques to be implemented during the construction, reclamation, operation, and decommissioning phases of the proposed Project.

If wetlands and riparian areas cannot be avoided, potential construction impacts may include, but are not limited to, clearing of all vegetation, topsoil handling during construction and restoration, and potential temporary disturbance of the surface and subsurface hydrology. If drainages cannot be avoided, construction impacts may include erosion and sedimentation of stream channels, and the introduction of contaminants into flows and/or existing channel sediments. Cuts-and-fills at streams associated with access road crossings or other project features may affect the extent and cross-sectional geometry of drainages. The extent of impacts would depend on presence of water at the time of construction, channel crossing methods, erosion controls during construction, and the subsequent success of reclamation and stabilization. To minimize impacts at stream crossings, TWE would apply design features TWE-20 to TWE-25. Potential post-construction impacts may include alteration of vegetation composition resulting from the establishment of noxious weeds and invasive plant species.

Operation and Maintenance Impacts

Operation and maintenance impacts include the permanent loss of vegetation due to facility, structure, and access road footprints, maintenance activities in the ROW, and increased use of access roads. Acres of operation-related surface impacts are listed under each of the Region's specific impact discussions below.

Vegetation maintenance for the ROW would be defined by the Vegetation Management Plan. The development of a Vegetation Management Plan is a requirement of NERC reliability standard FAC-003-02. NERC reliability standard FAC-003-2 is focused on preventing vegetation-related outages from occurring on transmission lines. The Vegetation Management Plan would define levels of maintenance and would be developed during Project engineering and design as part of the COM plan. Based on the current draft plan (PDTR Volume I **Appendix D**), maintenance activities would be stratified into three categories for management (Levels I, II, and III). Level I would be applied to the majority of the ROW, while Levels II and III, due to their increased cost and maintenance, would only be applied to areas identified as sensitive based on biological, cultural, visual, or other characteristics. The definitions and specific details of the individual management levels are explained in the PDTR Volume I and **Appendix D**.

Level I is the standard ROW vegetation management category that would be applied across the majority of the ROW. Vegetation would be maintained to achieve stable, low-growth plant communities that would be free of noxious or invasive plants and comprised of herbaceous plants and low-growing shrubs. The desirable condition for this standard is vegetation heights averaging 3 feet in height, ranging between 2 and

6 feet. Vegetation debris and density would be assessed to determine wildfire risks, and additional mitigation. Level II and III measures are treated as the same vegetation maintenance plan for impact analysis. These activities would be applied in sensitive and constrained areas as defined by the permitting agencies. Level II and Level III maintenance activities would be applied to the crossings of riparian vegetation to mitigate impacts from maintenance activities in riparian areas. Any direct maintenance activities that occur in the wetlands or riparian areas could impact wetlands and other WUS and may require USACE consultation.

The desired condition is defined by the Wire Border Zone concept, and defines two zones (wire zone, and border zone) for vegetation management in the ROW. The wire zone is defined as the section of the utility ROW that is directly under the wires and extends outward a distance sufficient to accommodate anticipated wire movement (90 feet in width centered on the centerline of the transmission line). Within the wire zone, vegetation maintenance would be the same as for Level I. The border zone extends 80 feet from the wire zone boundary to the ROW boundary. The desired condition within the border zone is stable low-growth vegetation consisting of small trees and large shrubs, and herbaceous vegetation. The maximum height in the border zone varies from 25 feet to 35 feet. In canyons, or low-lying valleys, and depending on growth and density characteristics of individual trees, taller vegetation might be allowed.

In IRAs, maintenance activities would be conducted using aircraft, non-motorized methods, or by approved all terrain vehicles. For emergency repairs, or to maintain NESC electrical line clearance, motorized vehicles potentially would be used. Active vegetation management would occur in a limited ROW width for the life of the project.

Noxious weed and invasive species impacts could result from maintenance activities and increased use of access roads. Maintenance activities can aid in the mechanical transport of propagules from outside the ROW. Removal of taller vegetation can create open patches of vegetation and bare ground and facilitate the invasion of noxious and invasive species and increase light and nutrient availability (Burke and Grime 1996; Stohlgren et al. 2003, 1999; Watkins et al. 2003). Mitigation measures and their effectiveness are the same as described for construction activities.

Vegetation management levels would be applied as temporary use areas cleared during construction are successfully reclaimed once construction activities are completed. Mitigation measure **VG-2** is recommended to be implemented during operation activities to mitigate impacts to pinyon-juniper communities and other wooded areas with trees that are widely spaced.

Removal of fuels along the power lines through vegetation management would reduce the hazard of wildland fire caused by power line malfunction. The removal of hazardous trees and fuels in a linear fashion along the power line ROW would create a zone of disturbed fuels in the event of power line discharge or arcing. With little or no vegetation and forest fuels to sustain a fire, an arc from the power line would not likely be able to ignite a fire event. Indirectly, removal of hazard trees and fuel loads along the power lines may prevent power line damage from wildfire by moving the sources of heat and flame away from power lines and power line structures, thus preventing power failure.

In areas where removal is not feasible or possible, fuel treatments such as mastication, chipping, or lopping and scattering would be used to reduce overhead hazards; however, these methods would do little to slow or prevent fire movement to the power line structures. These fuel treatments are designed to place as much of the fuel as possible in direct contact with the ground to facilitate decay through increased moisture retention, potentially lessening the intensity of a fire situation over time while providing increased access for firefighters.

The response and revegetation potential of each vegetation type varies depending on actual fire conditions, the seasonal timing, pre- and post- fire vegetation, elevation and post-fire weather patterns. Vegetation in cool fire areas (for example areas where native perennial bunchgrass cover and site productivity are high) can frequently revegetate naturally without seeding. Hot fires in areas with dense sagebrush or

pinyon-juniper stands can result in scorched, water-resistant soils that become unproductive until the condition changes, which could take several years. Extremely severe fires have been known to sterilize soils and lead to the permanent loss of productivity.

Decommission Impacts

Decommissioning activities would include the removal of facilities, and the reclamation of the ROW, access roads, and ancillary facilities. Impacts would be similar to those as discussed for construction activities, except that removal of vegetation would not be required as part of decommissioning. The same BMPs and design features and mitigation measures would be applied to reduce impacts during decommissioning activities. See **Appendix D** for more details on decommissioning activities.

### 3.5.6.3 Region I

Impact areas in the regional table are split between ROW clearing/trampling and facilities. Clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height, and driving over the vegetation with construction equipment. Facilities would include access roads; temporary work areas such as staging areas, material storage yards, fly yards, drilling, fencing, and splicing sites; batch plant sites; and guard structures within the 2-mile transmission line corridor. **Table 3.5-13** provides a comparison of impacts associated with the alternative routes in Region I.

Alternative I-A (Applicant Proposed)

*Key Parameters Summary*

In Alternative I-A the majority of the disturbance would occur in the sagebrush and saltbush shrubland vegetation community types. Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. The route follows I-40 for a considerable portion of the line's length in Colorado. This area historically has been disturbed. Clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 1 acre of conifer forest, 43 acres of pinyon-juniper, and 28 acres of woody riparian and wetland vegetation communities. Vegetation in the remaining portions of the ROW not impacted by facility construction would be trampled or driven-over during construction activities. Implementation of **VG-1** would mitigate impacts to saltbush communities, and other areas that may be difficult to reclaim to pre-disturbance native vegetation conditions. Implementation of mitigation measure **VG-2** would mitigate impacts to pinyon-juniper communities along the ROW, and decrease the amount of area to be cleared. Implementation of **VEG-3** would assist in ensuring post-reclamation success through monitoring and reporting of reclamation results. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 21 acres of greasewood flat, 23 acres of herbaceous wetlands, and 16 acres of woody riparian and wetlands. Of this, 6 acres of greasewood flat, 5 acres of herbaceous wetlands, and 4 acres of woody riparian and wetland areas would be impacted by operation impacts. Specific herbaceous wetland and riparian types along Alternative I-A include wet meadows, fens, and wetlands associated with topographical depressions. Specific riparian woodlands and wetlands found along Alternative I-A would include riparian woodlands and shrublands in both montane and lower elevation areas. Implementation of **WET-1** through **WET-3** would mitigate impacts to wetland and woody riparian and wetland areas, as described in Section 3.5.6.1 and Section 3.5.6.2.

## Table 3.5-13 Summary of Region I Alternative Route Impacts for Vegetation

| | Construction Disturbance | | | | | | | | Operation Disturbance | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alternative I-A | | Alternative I-B | | Alternative I-C | | Alternative-I-D | | Alternative I-A | | Alternative I-B | | Alternative I-C | | Alternative I-D | |
| Vegetation Communities | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I |
| **Total** | **3,242** | **<1** | **3,304** | **<1** | **3,848** | **<1** | **3,500** | **<1** | | | | | | | | |
| **ROW Clearing/Trampling[1]** | | | | | | | | | | | | | | | | |
| Agriculture | 20 | <1 | 28 | <1 | 356 | <1 | 28 | <1 | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | 19 | <1 | 15 | <1 | 6 | <1 | 11 | <1 | - | - | - | - | - | - | - | - |
| Cliff and Canyon | 16 | <1 | 29 | <1 | 7 | <1 | 14 | <1 | - | - | - | - | - | - | - | - |
| Conifer Forest | 1 | <1 | 1 | <1 | 1 | <1 | 1 | <1 | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Developed/Disturbed | 81 | <1 | 80 | <1 | 95 | <1 | 95 | <1 | - | - | - | - | - | - | - | - |
| Dunes | 26 | <1 | <1 | <1 | <1 | <1 | 1 | <1 | - | - | - | - | - | - | - | - |
| Grassland | 146 | <1 | 128 | <1 | 275 | <1 | 128 | <1 | - | - | - | - | - | - | - | - |
| Greasewood Flat | 29 | <1 | 123 | <1 | 38 | <1 | 63 | <1 | - | - | - | - | - | - | - | - |
| Herbaceous Wetland | 37 | <1 | 23 | <1 | 4 | <1 | 46 | <1 | - | - | - | - | - | - | - | - |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | 1 | <1 | - | - | - | - | - | - | - | - | - | - |
| Open Water | 3 | <1 | 3 | <1 | 3 | <1 | 3 | <1 | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | 43 | <1 | 45 | <1 | 46 | <1 | 45 | <1 | - | - | - | - | - | - | - | - |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sagebrush Shrubland | 1,921 | <1 | 1,826 | <1 | 2,616 | <1 | 2,198 | <1 | - | - | - | - | - | - | - | - |
| Saltbush Shrubland | 872 | <1 | 974 | <1 | 377 | <1 | 84 | <1 | - | - | - | - | - | - | - | - |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | 28 | <1 | 29 | <1 | 23 | <1 | 24 | <1 | - | - | - | - | - | - | - | - |
| **Facilities[2]** | | | | | | | | | | | | | | | | |
| **Total** | **2,057** | **<1** | **2,083** | **<1** | **2,511** | **<1** | **2,306** | **<1** | **526** | **<1** | **495** | **<1** | **618** | **<1** | **531** | **<1** |
| Agriculture | 14 | <1 | 19 | <1 | 254 | <1 | 19 | <1 | 4 | <1 | 5 | <1 | 68 | <1 | 5 | <1 |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | 11 | <1 | 10 | <1 | 4 | <1 | 7 | <1 | 3 | <1 | 2 | <1 | 1 | <1 | 2 | <1 |
| Cliff and Canyon | 11 | <1 | 19 | <1 | 4 | <1 | 9 | <1 | 3 | <1 | 5 | <1 | 1 | <1 | 2 | <1 |

## Table 3.5-13 Summary of Region I Alternative Route Impacts for Vegetation

| | Construction Disturbance | | | | | | | | Operation Disturbance | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alternative I-A | | Alternative I-B | | Alternative I-C | | Alternative-I-D | | Alternative I-A | | Alternative I-B | | Alternative I-C | | Alternative I-D | |
| Vegetation Communities | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I |
| Conifer Forest | 1 | <1 | 1 | <1 | 1 | <1 | 2 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 1 | <1 |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Developed/Disturbed | 52 | <1 | 50 | <1 | 70 | <1 | 61 | <1 | 13 | <1 | 12 | <1 | 18 | <1 | 15 | <1 |
| Dunes | 16 | <1 | 1 | <1 | <1 | <1 | 1 | <1 | 4 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Grassland | 105 | <1 | 92 | <1 | 187 | <1 | 92 | <1 | 30 | <1 | 25 | <1 | 50 | <1 | 25 | <1 |
| Greasewood Flat | 21 | <1 | 78 | <1 | 31 | <1 | 41 | <1 | 6 | <1 | 17 | <1 | 8 | <1 | 9 | <1 |
| Herbaceous Wetland | 23 | <1 | 15 | <1 | 7 | <1 | 29 | <1 | 5 | <1 | 3 | <1 | 2 | <1 | 6 | <1 |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | 2 | <1 | - | - | - | - | - | - | 1 | <1 | - | - |
| Open Water | 3 | <1 | 2 | <1 | 3 | <1 | 2 | <1 | 1 | <1 | 1 | <1 | 1 | <1 | 1 | <1 |
| Pinyon-Juniper | 29 | <1 | 30 | <1 | 31 | <1 | 30 | <1 | 8 | <1 | 8 | <1 | 9 | <1 | 8 | <1 |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sagebrush Shrubland | 1,203 | <1 | 1,125 | <1 | 1,663 | <1 | 1,434 | <1 | 309 | <1 | 272 | <1 | 404 | <1 | 328 | <1 |
| Saltbush Shrubland | 552 | <1 | 624 | <1 | 235 | <1 | 565 | <1 | 135 | <1 | 140 | <1 | 52 | <1 | 127 | <1 |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | 16 | <1 | 17 | <1 | 19 | <1 | 15 | <1 | 4 | <1 | 4 | <1 | 5 | <1 | 3 | <1 |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

[2] Facilities would include access roads, temporary work areas such as staging areas, material storage yards, fly yards, pulling, tensioning, and splicing sites, work areas at each structure site, batch plant sites, and guard structures within the 2-mile wide corridor. Staging areas, fly yards, batch plant sites would be cleared as necessary. Staging areas and fly yards might be bladed and graveled. Equipment staging and refueling sites would be co-located with other temporary work areas. Wire pulling, tensioning, and splicing sites, structure work areas would be completely cleared of vegetation during construction.

Discrepancies in totals due to rounding error.

Alternative I-B

*Key Parameters Summary*

In Alternative I-B, the majority of the disturbance would occur in the sagebrush and saltbush shrubland vegetation communities. Clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 1 acre of conifer forest, 45 acres of pinyon-juniper, and 29 acres of woody riparian and wetland vegetation communities. Vegetation in the remaining portions of the ROW not impacted by facility construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 78 acres of greasewood flat, 15 acres of herbaceous wetlands, and 17 acres of woody riparian and wetland areas. Of this, 17 acres of greasewood flat, 3 acres of herbaceous wetlands, and 4 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetland and riparian types in Alternative I-B include wetlands associated with topographical depressions. Specific riparian woodlands and wetlands found along Alternative I-B would include riparian woodlands and shrublands in lower elevation areas.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative I-C

*Key Parameters Summary*

In Alternative I-C, the majority of the disturbance would occur in the sagebrush vegetation community. Clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 1 acre of conifer forest, 46 acres of pinyon-juniper, and 23 acres of woody riparian and wetland vegetation communities. Vegetation in the remaining portions of the ROW not impacted by facility construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 31 acres of greasewood flat, 7 acres of herbaceous wetlands, and 19 acres of woody riparian and wetland areas. Of this, 8 acres of greasewood flat, 2 acres of herbaceous wetlands, and 5 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along Alternative I-C include wetlands associated with topographical depressions. Specific riparian woodlands and wetlands types found along Alternative I-C include riparian woodlands and shrublands in montane and lower elevation areas.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative I-D (Agency Preferred)

*Key Parameters Summary*

The majority of the disturbance for this alternative would occur in the sagebrush vegetation community. Clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 1 acre of conifer forest, 45 acres of pinyon-juniper, and 24 acres of woody riparian and wetland vegetation communities. Alternative I-D has less impact to agriculture lands and grasslands compared to Alternative I-C. Vegetation in the remaining portions of the ROW not impacted by facility construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 41 acres of greasewood flat, 29 acres of herbaceous wetlands, and 15 acres of woody riparian and wetland areas. Of this, 9 acres of greasewood flat, 6 acres of herbaceous wetlands, and 3 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along Alternative I-D include wetlands associated with topographical depressions. Specific riparian woodlands and wetlands types found along Alternative I-D include riparian woodlands and shrublands in montane and lower elevation areas.

Along Alternative I-D are the Tuttle Easement micro-siting options 1, 2, and 3. For the Tuttle Easement micro-sites, the vegetation communities located along options 1, 2, and 3 are similar to the vegetation communities located along Alternative I-D. All three micro-siting options would affect more pinyon-juniper from ROW clearing and trampling compared to Alternative I-D. Impacts to vegetation would be similar between the three micro-siting options and the comparable section of Alternative I-D.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative Connectors in Region I

The Alternative Connectors in Region I would include minimal increases in surface disturbance acreages for the various vegetation community types crossed, if constructed. Wetlands and riparian areas in the Fivemile Point North and South Alternative Connectors include herbaceous riparian washes, streams, rivers, and floodplains. Wetlands and riparian areas in the Mexican Flats Alternative Connectors include greasewood flats. Wetlands and riparian areas in the Baggs Alternative Connectors include greasewood flats, and riparian woodlands and shrublands in lower elevation areas. **Table 3.5-14** summarizes impacts and advantages associated with the alternative connectors in Region I. Impacts to each vegetative community would comprise less than 1 percent of the total acreage of each vegetative community in the analysis area.

Alternative Ground Electrode Systems in Region I

The northern ground electrode system would be necessary within 100 miles of the northern terminal as discussed in Chapter 2.0. Although the location for this system has not been determined, conceptual locations and connections to the alternative routes have been provided. The impacts associated with constructing and operating this system are discussed in Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. **Table 3.5-15** summarizes impacts associated with the northern ground electrode system. **Table 3.5-16** summarizes impacts associated with the northern ground electrode transmission line. Some locations might serve multiple alternative routes, while others could only be associated with a certain alternative route. Impacts to each vegetative community would comprise less than 1 percent of the total acreage of each vegetative community in the analysis area.

**Table 3.5-14 Summary of Region I Alternative Connector Impacts for Vegetation**

| | Fivemile Point North Alternative Connector | | | | | | Fivemile Point South Alternative Connector | | | | | | Mexican Flats Alternative Connector | | | | | | Baggs Alternative Connector | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROW-vegetation Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW-vegetation Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW-vegetation Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW-vegetation Clearing[1] | | Construction Disturbance | | Operation Disturbance | |
| **Vegetation Communities** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** | **Acres** | **% of Region I** |
| **Total** | **20** | **<1** | **82** | **<1** | **8** | **<1** | **42** | **<1** | **31** | **<1** | **6** | **<1** | **206** | **<1** | **129** | **<1** | **26** | **<1** | **464** | **<1** | **294** | **<1** | **70** | **<1** |
| Agriculture | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <1 | <1 | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | - | - | <1 | <1 | - | - | - | - | - | - | - | - | -- | -- | -- | -- | -- | -- | 4 | <1 | 3 | <1 | 1 | <1 |
| Cliff and Canyon | - | - | - | - | - | - | - | - | - | - | - | - | 1 | <1 | <1 | <1 | -- | -- | 8 | <1 | 7 | <1 | 2 | <1 |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | <1 | 2 | <1 | 1 | <1 |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Developed/ Disturbed | 4 | <1 | 14 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | -- | -- | 8 | <1 | 5 | <1 | 1 | <1 | 14 | <1 | 8 | <1 | 2 | <1 |
| Dunes | - | - | - | - | - | - | - | - | - | - | - | - | 26 | <1 | 15 | <1 | 3 | <1 | - | - | - | - | - | - |
| Grassland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <1 | <1 | <1 | <1 | -- | -- |
| Greasewood Flat | 1 | <1 | 6 | <1 | 1 | <1 | 2 | <1 | 1 | <1 | <1 | <1 | 5 | <1 | 4 | <1 | 1 | <1 | 6 | <1 | 4 | <1 | 1 | <1 |
| Herbaceous Wetland | - | - | - | - | - | - | - | - | - | - | - | - | 2 | <1 | 1 | <1 | <1 | <1 | 3 | <1 | 2 | <1 | 1 | <1 |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Open Water | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sagebrush Shrubland | 14 | <1 | 59 | <1 | 6 | <1 | 40 | <1 | 30 | <1 | 6 | <1 | 21 | <1 | 16 | <1 | 3 | <1 | 382 | <1 | 237 | <1 | 57 | <1 |
| Saltbush Shrubland | 1 | <1 | 2 | <1 | <1 | <1 | - | - | - | - | - | - | 143 | <1 | 87 | <1 | 18 | <1 | 45 | <1 | 31 | <1 | 7 | <1 |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | <1 | <1 | 1 | <1 | - | - | - | - | - | - | - | - | - | - | <1 | <1 | <1 | <1 | 1 | <1 | 1 | <1 | <1 | <1 |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

Discrepancies in totals due to rounding error.

**Table 3.5-15 Summary of Region I Alternative Ground Electrode Siting Area Impact Parameters for Vegetation**

| | Eight Mile Basin (All Alternatives) | | | | Separation Flat (All Alternatives) | | | | Little Snake West (Alternative I-A) | | | | Little Snake West (Alternatives I-B and I-D) | | | | Little Snake East (Alternatives I-A, I-B, I-D) | | | | Separation Creek (All Alternatives) | | | | Shell Creek (Alternatives I-A and I-D) | | | | Shell Creek (Alternative I-B) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | |
| Vegetation Communities | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I | Acres | % of Region I |
| **Total** | **86** | **<1** | **18** | **<1** | **128** | **<1** | **39** | **<1** | **121** | **<1** | **37** | **<1** | **93** | **<1** | **21** | **<1** | **108** | **<1** | **29** | **<1** | **138** | **<1** | **48** | **<1** | **223** | **<1** | **89** | **<1** | **189** | **<1** | **71** | **<1** |
| Agriculture | <1 | <1 | <1 | <1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Aspen Forest and Woodland | <1 | <1 | <1 | <1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barren/Sparsely Vegetated | 1 | <1 | <1 | <1 | -- | -- | -- | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Cliff and Canyon | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Conifer Forest | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Deciduous Forest | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Desert Shrub | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Developed/Disturbed | 3 | <1 | 1 | <1 | 2 | <1 | 1 | <1 | 1 | <1 | <1 | <1 | 1 | <1 | <1 | <1 | 1 | <1 | <1 | <1 | 3 | <1 | 1 | <1 | 3 | <1 | 1 | <1 | 3 | <1 | 1 | <1 |
| Dunes | <1 | <1 | <1 | <1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 14 | <1 | 6 | <1 | 12 | <1 | 5 | <1 |
| Grassland | 2 | <1 | <1 | <1 | -- | -- | -- | -- | <1 | <1 | <1 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Greasewood Flat | 1 | <1 | <1 | <1 | 3 | <1 | 1 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 1 | <1 | <1 | <1 | 2 | <1 | 1 | <1 | 1 | <1 | <1 | <1 | 1 | <1 | <1 | <1 |
| Herbaceous Wetland | 2 | <1 | <1 | <1 | 7 | <1 | 2 | <1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <1 | <1 | <1 | <1 | 2 | <1 | 1 | <1 | 2 | <1 | 1 | <1 |
| Montane Grassland | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Montane Shrubland | <1 | <1 | <1 | <1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | <1 | <1 | <1 | <1 | -- | -- | -- | -- | -- | -- | -- | -- |
| Open Water | 2 | <1 | <1 | <1 | -- | -- | -- | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pinyon-Juniper | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Riparian | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Sagebrush Shrubland | 61 | <1 | 12 | <1 | 9 | <1 | 3 | <1 | 104 | <1 | 31 | <1 | 79 | <1 | 18 | <1 | 106 | <1 | 29 | <1 | 129 | <1 | 45 | <1 | 124 | <1 | 49 | <1 | 105 | <1 | 39 | <1 |
| Saltbush Shrubland | 13 | <1 | 3 | <1 | 107 | <1 | 32 | <1 | 15 | <1 | 5 | <1 | 11 | <1 | 3 | <1 | <1 | <1 | <1 | <1 | 3 | <1 | 1 | <1 | 75 | <1 | 30 | <1 | 63 | <1 | 24 | <1 |
| Tundra | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Woody Riparian and Wetlands | <1 | <1 | <1 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | -- | -- | -- | 1 | <1 | <1 | <1 | 4 | <1 | 2 | <1 | 4 | <1 | 1 | <1 |

Discrepancies in totals due to rounding error.

## Table 3.5-16 Summary of Region I Alternative Ground Electrode Overhead Electric Line Impact Parameters for Vegetation (Miles)

| Vegetation Communities | Separation Flat (All Alternatives) | Little Snake West (Alternative I-A) | Little Snake West (Alternatives I-B and I-D) | Little Snake East (Alternatives I-A, I-B, I-D) | Eight Mile Basin (All Alternatives) | Shell Creek (Alternatives I-A and I-D) | Shell Creek (Alternative I-B) | Separation Creek (All Alternatives) |
|---|---|---|---|---|---|---|---|---|
| **Total** | **13** | **18** | **14** | **12** | **4** | **32** | **25** | **1** |
| Agriculture | | | | | | | | |
| Aspen Forest and Woodland | | | | | | | | |
| Barren/Sparsely Vegetated | | <1 | <1 | | | <1 | <1 | |
| Cliff and Canyon | <1 | | | | | <1 | <1 | |
| Conifer Forest | | | | | | | | |
| Deciduous Forest | | | | | | | | |
| Desert Shrub | | | | | | | | |
| Developed/Disturbed | 1 | <1 | <1 | <1 | 1 | 1 | <1 | <1 |
| Dunes | <1 | | | | | 1 | 1 | |
| Grassland | <1 | 1 | 1 | | <1 | | | |
| Greasewood Flat | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Herbaceous Wetland | <1 | | | | | <1 | <1 | |
| Montane Grassland | | | | | | | | |
| Montane Shrubland | | | | | | | | |
| Open Water | | | | <1 | | | | |
| Pinyon-Juniper | | | | | | | | |
| Riparian | | | | | | | | |
| Sagebrush Shrubland | 5 | 9 | 7 | 11 | 3 | 14 | 12 | <1 |
| Saltbush Shrubland | 7 | 8 | 5 | <1 | <1 | 15 | 11 | <1 |
| Tundra | | | | | | | | |
| Woody Riparian and Wetlands | <1 | | | | | 1 | 1 | |

Discrepancies in totals due to rounding error. Blanks indicate no impact.

Region I Conclusion

In Region I, the alternative resulting in the most acres of vegetation impacted is Alternative I-C. Alternative I-A would impact the least vegetation acreage. Impacts from vegetation clearing are fairly similar between Alternative I-A and the Alternative I-D as both alternatives cross similar vegetation communities with similar acreages. Vegetation clearing would impact less than 1 percent of each vegetation community for each alternative in the Region I analysis area. Noxious weeds impacts would be similar between these two alternatives due to the similarities in vegetation communities crossed, and similar climate conditions between these two alternatives. Revegetation constraints would be similar between Alternatives I-A and I-C, as would the potential for vegetation type conversion from either shrublands to grasslands, or woodlands to shrublands/grasslands.

Impacts to wetland and riparian areas would be similar between Alternative I-A and Alternative I-D, with slightly more impacts to herbaceous wetlands under Alternative I-D. Impacts to wetlands would be the least under Alternative I-C. Less than 1 percent of wetlands would be impacted for each alternative in Region I of the analysis area.

#### 3.5.6.4 Region II

**Table 3.5-17** provides a comparison of impacts associated with the alternative routes in Region II.

Alternative II-A

*Key Parameters Summary*

In Alternative II-A, the majority of disturbance would occur in the sagebrush shrubland vegetation community. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 165 acres of aspen forest and woodland, 68 acres of conifer forest, 29 acres of deciduous forest, 732 acres of pinyon-juniper, and 53 acres of woody riparian and wetland vegetation communities. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 152 acres of greasewood flat, 12 acres of herbaceous wetlands, and 38 acres of woody riparian and wetlands. Of this, 36 acres of greasewood flat, 3 acres of herbaceous wetlands, and 12 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetland and riparian types along Alternative II-A include playas and wet meadows. Specific riparian woodlands and wetlands found along Alternative II-A would include riparian woodlands and shrublands in both montane and lower elevation areas.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

**Table 3.5-17 Summary of Region II Alternative Route Impacts for Vegetation**

| | Construction Disturbance | | | | | | | | | | | | Operation Disturbance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alternative II-A | | Alternative II-B | | Alternative II-C | | Alternative II-D | | Alternative II-E | | Alternative II-F | | Alternative II-A | | Alternative II-B | | Alternative II-C | | Alternative II-D | | Alternative II-E | | Alternative II-F | |
| Vegetation Communities | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II |
| **ROW Clearing/Trampling[1]** | | | | | | | | | | | | | | | | | | | | | | | | |
| **Total** | **5,392** | **<1** | **7,103** | **<1** | **7,487** | **<1** | **5,267** | **<1** | **5,499** | **<1** | **5,393** | **<1** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| Agriculture | 457 | <1 | 168 | <1 | 237 | <1 | 80 | <1 | 288 | <1 | 104 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | 165 | <1 | 149 | <1 | 49 | <1 | 270 | <1 | 65 | <1 | 162 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | 37 | <1 | 314 | <1 | 339 | <1 | 47 | <1 | 41 | <1 | 48 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Cliff and Canyon | 96 | <1 | 89 | <1 | 161 | <1 | 140 | <1 | 100 | <1 | 133 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Conifer Forest | 68 | <1 | 150 | <1 | 34 | <1 | 124 | <1 | 82 | <1 | 191 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | 29 | <1 | - | - | - | - | - | - | 4 | <1 | 4 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | - | - | 22 | <1 | 37 | <1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Developed/Disturbed | 296 | <1 | 365 | <1 | 245 | <1 | 252 | <1 | 341 | <1 | 281 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dunes | 2 | <1 | 4 | <1 | 7 | <1 | 2 | <1 | 2 | <1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Grassland | 377 | <1 | 365 | <1 | 473 | <1 | 427 | <1 | 388 | <1 | 418 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Greasewood Flat | 249 | <1 | 817 | <1 | 878 | <1 | 326 | <1 | 283 | <1 | 299 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Herbaceous Wetland | 17 | <1 | 13 | <1 | 9 | <1 | 18 | <1 | 49 | <1 | 9 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Grassland | 15 | <1 | 22 | <1 | 1 | <1 | 39 | <1 | 46 | <1 | 51 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | 400 | <1 | 269 | <1 | 222 | <1 | 342 | <1 | 448 | <1 | 459 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Open Water | 5 | <1 | 4 | <1 | 14 | <1 | 2 | <1 | 6 | <1 | 3 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | 732 | <1 | 956 | <1 | 1,026 | <1 | 727 | <1 | 894 | <1 | 865 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sagebrush Shrubland | 1,936 | <1 | 1,297 | <1 | 1,449 | <1 | 1,741 | <1 | 1,916 | <1 | 1,741 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Saltbush Shrubland | 461 | <1 | 2,055 | <1 | 2,277 | <1 | 716 | <1 | 514 | <1 | 610 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Tundra | - | - | 14 | <1 | - | - | 1 | <1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | 53 | <1 | 36 | <1 | 30 | <1 | 15 | <1 | 34 | <1 | 15 | <1 | - | - | - | - | - | - | - | - | - | - | - | - |
| **Facilities[2]** | | | | | | | | | | | | | | | | | | | | | | | | |
| **Total** | **3,744** | **<1** | **5,002** | **<1** | **5,064** | **<1** | **4,055** | **<1** | **3,935** | **<1** | **4,276** | **<1** | **1,178** | **<1** | **1,436** | **<1** | **1,308** | **<1** | **1,223** | **<1** | **1,195** | **<1** | **1,392** | **<1** |
| Agriculture | 330 | <1 | 138 | <1 | 177 | <1 | 71 | <1 | 210 | <1 | 82 | <1 | 93 | <1 | 51 | <1 | 49 | <1 | 29 | <1 | 61 | <1 | 32 | <1 |
| Aspen Forest and Woodland | 105 | <1 | 144 | <1 | 39 | <1 | 240 | <1 | 68 | <1 | 185 | <1 | 35 | <1 | 59 | <1 | 12 | <1 | 85 | <1 | 28 | <1 | 71 | <1 |
| Barren/Sparsely Vegetated | 24 | <1 | 195 | <1 | 212 | <1 | 42 | <1 | 27 | <1 | 43 | <1 | 6 | <1 | 47 | <1 | 52 | <1 | 13 | <1 | 7 | <1 | 13 | <1 |
| Cliff and Canyon | 71 | <1 | 74 | <1 | 127 | <1 | 122 | <1 | 83 | <1 | 117 | <1 | 24 | <1 | 21 | <1 | 34 | <1 | 37 | <1 | 25 | <1 | 36 | <1 |
| Conifer Forest | 52 | <1 | 137 | <1 | 29 | <1 | 119 | <1 | 76 | <1 | 227 | <1 | 20 | <1 | 54 | <1 | 9 | <1 | 43 | <1 | 26 | <1 | 91 | <1 |
| Deciduous Forest | 17 | <1 | - | - | - | - | - | - | 3 | <1 | 3 | <1 | 5 | <1 | - | - | - | - | - | - | 1 | <1 | 1 | <1 |
| Desert Shrub | - | - | 14 | <1 | 25 | <1 | - | - | - | - | - | - | - | - | 3 | <1 | 5 | <1 | - | - | - | - | - | - |
| Developed/Disturbed | 215 | <1 | 294 | <1 | 189 | <1 | 190 | <1 | 235 | <1 | 213 | <1 | 66 | <1 | 84 | <1 | 53 | <1 | 55 | <1 | 69 | <1 | 64 | <1 |
| Dunes | 1 | <1 | 2 | <1 | 5 | <1 | 1 | <1 | 1 | <1 | - | - | <1 | <1 | 1 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | - | - |
| Grassland | 252 | <1 | 238 | <1 | 305 | <1 | 292 | <1 | 251 | <1 | 286 | <1 | 63 | <1 | 62 | <1 | 72 | <1 | 75 | <1 | 63 | <1 | 77 | <1 |
| Greasewood Flat | 152 | <1 | 506 | <1 | 538 | <1 | 215 | <1 | 176 | <1 | 212 | <1 | 36 | <1 | 119 | <1 | 129 | <1 | 53 | <1 | 41 | <1 | 54 | <1 |
| Herbaceous Wetland | 12 | <1 | 8 | <1 | 7 | <1 | 15 | <1 | 35 | <1 | 6 | <1 | 3 | <1 | 2 | <1 | 2 | <1 | 4 | <1 | 8 | <1 | 1 | <1 |
| Montane Grassland | 10 | <1 | 22 | <1 | 1 | <1 | 33 | <1 | 32 | <1 | 43 | <1 | 3 | <1 | 9 | <1 | <1 | <1 | 10 | <1 | 8 | <1 | 13 | <1 |
| Montane Shrubland | 310 | <1 | 216 | <1 | 171 | <1 | 312 | <1 | 371 | <1 | 392 | <1 | 118 | <1 | 77 | <1 | 50 | <1 | 118 | <1 | 152 | <1 | 159 | <1 |
| Open Water | 6 | <1 | 5 | <1 | 11 | <1 | 3 | <1 | 6 | <1 | 4 | <1 | 2 | <1 | 2 | <1 | 3 | <1 | 1 | <1 | 1 | <1 | 1 | <1 |
| Pinyon-Juniper | 558 | <1 | 744 | <1 | 768 | <1 | 606 | <1 | 677 | <1 | 672 | <1 | 199 | <1 | 242 | <1 | 210 | <1 | 199 | <1 | 232 | <1 | 241 | <1 |

**Table 3.5-17 Summary of Region II Alternative Route Impacts for Vegetation**

| | Construction Disturbance | | | | | | | | | | | | Operation Disturbance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alternative II-A | | Alternative II-B | | Alternative II-C | | Alternative II-D | | Alternative II-E | | Alternative II-F | | Alternative II-A | | Alternative II-B | | Alternative II-C | | Alternative II-D | | Alternative II-E | | Alternative II-F | |
| Vegetation Communities | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sagebrush Shrubland | 1,278 | <1 | 874 | <1 | 918 | <1 | 1,255 | <1 | 1,316 | <1 | 1,313 | <1 | 400 | <1 | 257 | <1 | 232 | <1 | 355 | <1 | 377 | <1 | 407 | <1 |
| Saltbush Shrubland | 312 | <1 | 1,350 | <1 | 1,517 | <1 | 528 | <1 | 340 | <1 | 463 | <1 | 92 | <1 | 335 | <1 | 388 | <1 | 140 | <1 | 88 | <1 | 124 | <1 |
| Tundra | - | - | 9 | <1 | - | - | <1 | <1 | - | - | - | - | - | - | 3 | <1 | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | 38 | <1 | 27 | <1 | 26 | <1 | 12 | <1 | 28 | <1 | 16 | <1 | 12 | <1 | 7 | <1 | 8 | <1 | 4 | <1 | 9 | <1 | 7 | <1 |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

[2] Facilities would include access roads, temporary work areas such as staging areas, material storage yards, fly yards, pulling, tensioning, and splicing sites, work areas at each structure site, batch plant sites, and guard structures within the 2-mile wide corridor. Staging areas, fly yards, batch plant sites would be cleared as necessary. Staging areas and fly yards might be bladed and graveled. Equipment staging and refueling sites would be co-located with other temporary work areas. Wire pulling, tensioning, and splicing sites, structure work areas would be completely cleared of vegetation during construction.

Discrepancies in totals due to rounding error.

Along Alternative II-A are two sets of micro-siting options, Strawberry IRA option 1, 2, and 3 and Cedar Knoll IRA options 1 and 2. For the Strawberry IRA micro-siting options, the vegetation communities located along options 1, 2, and 3 are similar to the vegetation communities located along Alternative II-A. Impacts to vegetation would be the same for each Strawberry IRA micro-siting option and for Alternative II-A. The Cedar Knoll IRA options 1 and 2 have similar vegetation communities to Alternative II-A. Impacts to vegetation would be the same for each Cedar Knoll option and Alternative II-A.

Alternative II-B

*Key Parameters Summary*

In Alternative II-B, the majority of the disturbance would occur in the saltbush and sagebrush shrubland vegetation community types. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 149 acres of aspen forest and woodland, 150 acres of conifer forest, 956 acres of pinyon-juniper, and 36 acres of woody riparian and wetland vegetation communities. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations of FRCC for each vegetation community implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 506 acres of greasewood flat, 8 acres of herbaceous wetlands and 27 acres of woody riparian and wetlands. Of this, 119 acres of greasewood flat, 2 acres of herbaceous wetlands and 7 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along Alternative II-B include playas, emergent marshes, and wet meadows. Specific riparian woodlands and wetlands found along Alternative II-B would include riparian woodlands and shrublands in both montane and lower elevation areas.

The USFS MIS plant species, Rydberg milkvetch is listed for the USFS Fishlake National Forest, which is crossed by Alternative II-B. Based on the elevation requirements for the species, there is no habitat for the species along this alternative within the USFS Fishlake National Forest.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative II-C

*Key Parameters Summary*

In Alternative II-C, the majority of the disturbance would occur in the saltbush and sagebrush shrubland vegetation community types. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 237 acres of aspen forest and woodland, 34 acres of conifer forest, 1,026 acres of pinyon-juniper, and 30 acres of woody riparian and wetland vegetation communities. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

Construction of facilities would disturb 538 acres of greasewood flat, 7 acres of herbaceous wetlands, and 26 acres of woody riparian and wetlands. Of this, 129 acres of greasewood flat, 2 acres of herbaceous wetlands, and 8 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along Alternative II-C include playas, emergent marshes, and wet meadows. Specific riparian woodlands and wetlands found along Alternative II-C would include riparian woodlands and shrublands in both montane and lower elevation areas.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

The USFS MIS plant species, Rydberg milkvetch is listed for the USFS Fishlake National Forest, which is crossed by Alternative II-C. While there are no known occurrences along Alternative II-C in Sevier County, Utah, where the route crosses the USFS Fishlake National Forest, potential habitat would be possible based on substrate, elevation, and vegetation parameters. Direct impacts would include the loss of potential habitat, while indirect impacts could include the spread and establishment of noxious and invasive weed species and increased access in the vicinity of the known populations.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative II-D

*Key Parameters Summary*

In Alternative II-D, the majority of the disturbance would occur in the sagebrush shrubland vegetation community type. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 270 acres of aspen forest and woodland, 124 acres of conifer forest, 727 acres of pinyon-juniper, and 15 acres of woody riparian and wetland vegetation communities. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 215 acres of greasewood flat, 15 acres of herbaceous wetlands and 12 acres of woody riparian and wetlands. Of this, 53 acres of greasewood flat, 4 acres of herbaceous wetlands, and 4 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along in Alternative II-D include playas, emergent marshes, and wet meadows. Specific riparian woodlands and wetlands found along Alternative II-D would include riparian woodlands and shrublands in both montane and lower elevation areas.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative II-E

*Key Parameters Summary*

In Alternative II-E, the majority of the disturbance would occur in the sagebrush shrubland and pinyon-juniper vegetation community types. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 65 acres of aspen forest and woodland, 82 acres of conifer forest, 4 acres of deciduous forest, 894 acres of pinyon-juniper, and 34 acres of woody riparian and wetland vegetation communities. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 176 acres of greasewood flat, 35 acres of herbaceous wetlands, and 28 acres of woody riparian and wetlands. Of this, 41 acres of greasewood flat, 8 acres of herbaceous wetlands, and 9 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along Alternative II-E include playas, emergent marshes, and wet meadows. Specific riparian woodlands and wetlands found along Alternative II-E include riparian woodlands and shrublands in both montane and lower elevation areas.

Along Alternative II-E are the micro-siting options, Cedar Knoll IRA options 1 and 2. Cedar Knoll IRA options 1 and 2 have similar vegetation communities. Impacts to vegetation would be the same for each Cedar Knoll option and the comparable section of Alternative II-E.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative II-F (Agency Preferred)

*Key Parameters Summary*

The majority of the disturbance for this alternative would occur in the sagebrush shrubland and pinyon-juniper vegetation community types. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 162 acres of aspen forest and woodland, 191 acres of conifer forest, 4 acres of deciduous forest, 865 acres of pinyon-juniper, and 15 acres of woody riparian and wetland vegetation communities. Alternative II-A impacts more acres of agriculture but less acres of forests than Alternative II-F. The vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 212 acres of greasewood flat, 6 acres of herbaceous wetlands and 16 acres of woody riparian and wetlands. Of this, 54 acres of greasewood flat, 1 acre of herbaceous wetlands and 7 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along Alternative II-F include playas, emergent marshes, and wet meadows. Specific riparian woodlands and wetlands found along Alternative II-F include riparian woodlands and shrublands in both montane and lower elevation areas.

Along Alternative II-F are the micro-siting options, Cedar Knoll IRA options 1 and 2. Cedar Knoll IRA options 1 and 2 have similar vegetation communities. Impacts to vegetation would be the same for each Cedar Knoll option and the comparable section of Alternative II-F.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative Variation in Region II

*Emma Park Alternative Variation*

The Emma Park Alternative Variation would impact similar vegetation community types compared to those of Alternative II-F. The Emma Park Alternative Variation would increase the total area affected by ROW trampling and clearing from 577 to 669 acres. The area of forests impacted would increase slightly in the Emma Park Alternative Variation (310 versus 296 acres), with greater impacts to aspen forest and woodland (211 versus 133 acres) and pinyon-juniper (73 versus 2 acres), but with smaller impacts to conifer forest (26 versus 161 acres). The Emma Park Alternative Variation also would have larger impacts to agriculture, cliff and canyon, montane shrubland, sagebrush shrubland, and herbaceous wetlands compared to Alternative II-F. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative Connectors in Region II

Each of the Region II alternative connectors would result in small disturbance acreage increases in the various vegetation community types crossed. Wetlands and riparian areas in the Lynndyl and IPP East Alternative Connectors include herbaceous wetlands. Vegetation clearing would occur in aspen forest and woodlands, conifer forests, pinyon-juniper, and woody riparian and wetlands if some of these alternative connectors were used. **Table 3.5-18** summarizes impacts and advantages associated with the alternative connectors in Region II. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area.

Region II Conclusion

In Region II, Alternative II-F would affect almost the same total acreage as Alternative II-A. Both routes would cross the Uintah Basin and the Wasatch Mountains. Alternative II-F would cross more acreage at higher elevation terrain than Alternative II-A. Alternative II-A would cross more agriculture lands, deciduous forests, and woody riparian and wetlands. Vegetation clearing would impact more forested areas in Alternative II-F, whereas there would be a greater impact to wetlands on Alternative II-A. Impacts to vegetation communities under Alternative II-F would comprise less than 1 percent of the analysis area in Region II.

For all routes, reclamation in the Uintah Basin would be difficult due to soil reclamation constraints, low regional annual precipitation rates, and the invasion and spread of noxious and invasive weed species, specifically halogeton. Additionally, reclamation in the San Rafael Swell area, specifically along Alternatives II-B and II-C, would be difficult due to soil reclamation constraints, and low regional annual precipitation rates. Construction and operation impacts would be similar between Alternative II-F and Alternative II-A due to the similarities in vegetation communities crossed, and similar climate conditions between the two alternatives.

### 3.5.6.5 Region III

**Table 3.5-19** provides a comparison of impacts associated with the alternative routes in Region III.

Alternative III-A (Applicant Proposed)

*Key Parameters Summary*

In Alternative III-A, the majority of the disturbance would occur in the desert shrub, grassland, sagebrush shrubland, and saltbush shrubland vegetation community types. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 276 acres of pinyon-juniper and 12 acres of woody riparian and wetlands. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

**Table 3.5-18 Summary of Region II Alternative Connector Impacts for Vegetation (acres)**

| Vegetation Communities | Lynndyl Alternative Connector | | | | | | IPP East Alternative Connector | | | | | | Price Alternative Connector | | | | | | Castle Dale Alternative Connector | | | | | | Highway 191 Alternative Connector | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | |
| | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II |
| **Total** | **511** | **<1** | **305** | **<1** | **72** | **<1** | **50** | **<1** | **36** | **<1** | **7** | **<1** | **369** | **<1** | **280** | **<1** | **81** | **<1** | **225** | **<1** | **176** | **<1** | **50** | **<1** | **61** | **<1** | **119** | **<1** | **38** | **<1** |
| Agriculture | - | - | 4 | <1 | 1 | <1 | - | - | - | - | - | - | - | - | - | - | - | - | 17 | <1 | 17 | <1 | 6 | <1 | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | <1 | 9 | <1 | 4 | <1 |
| Barren/ Sparsely Vegetated | - | - | - | - | - | - | - | - | - | - | - | - | 2 | <1 | 2 | <1 | 1 | <1 | 2 | <1 | 2 | <1 | 1 | <1 | - | - | - | - | - | - |
| Cliff and Canyon | - | - | - | - | - | - | - | - | - | - | - | - | 7 | <1 | 8 | <1 | 3 | <1 | 10 | <1 | 8 | <1 | 2 | <1 | 5 | <1 | 10 | <1 | 3 | <1 |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | <1 | <1 | <1 | - | - | - | - | - | - | 12 | <1 | 22 | <1 | 7 | <1 |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Developed/ Disturbed | 12 | <1 | 8 | <1 | 2 | <1 | - | - | <1 | <1 | - | - | 22 | <1 | 18 | <1 | 6 | <1 | 32 | <1 | 21 | <1 | 5 | <1 | 2 | <1 | 4 | <1 | 1 | <1 |
| Dunes | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Grassland | 138 | <1 | 79 | <1 | 18 | <1 | 10 | <1 | 7 | <1 | 1 | <1 | 4 | <1 | 3 | <1 | 1 | <1 | 9 | <1 | 6 | <1 | 1 | <1 | - | - | - | - | - | - |
| Greasewood Flat | 2 | <1 | 1 | <1 | <1 | <1 | 13 | <1 | 10 | <1 | 2 | <1 | 12 | <1 | 7 | <1 | 2 | <1 | 8 | <1 | 7 | <1 | 2 | <1 | - | - | - | - | - | - |
| Herbaceous Wetland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Grassland | 15 | <1 | 13 | <1 | 3 | <1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | <1 | <1 | <1 |
| Montane Shrubland | - | - | <1 | <1 | - | - | - | - | - | - | - | - | 6 | <1 | 5 | <1 | 2 | <1 | - | - | - | - | - | - | 10 | <1 | 17 | <1 | 4 | <1 |
| Open Water | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <1 | <1 | <1 | <1 | - | - | - | - | - | - |
| Pinyon-Juniper | 47 | <1 | 34 | <1 | 9 | <1 | - | - | - | - | - | - | 139 | <1 | 106 | <1 | 31 | <1 | 11 | <1 | 9 | <1 | 3 | <1 | 3 | <1 | 6 | <1 | 2 | <1 |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Sagebrush Shrubland | 295 | <1 | 164 | <1 | 38 | <1 | - | - | - | - | - | - | 133 | <1 | 99 | <1 | 28 | <1 | 16 | <1 | 14 | <1 | 4 | <1 | 26 | <1 | 51 | <1 | 16 | <1 |

**Table 3.5-18 Summary of Region II Alternative Connector Impacts for Vegetation (acres)**

| Vegetation Communities | Lynndyl Alternative Connector | | | | | | IPP East Alternative Connector | | | | | | Price Alternative Connector | | | | | | Castle Dale Alternative Connector | | | | | | Highway 191 Alternative Connector | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | |
| | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II | Acres | % of Region II |
| Saltbush Shrubland | 2 | <1 | 2 | <1 | 1 | <1 | 26 | <1 | 18 | <1 | 3 | <1 | 44 | <1 | 30 | <1 | 8 | <1 | 117 | <1 | 89 | <1 | 25 | <1 | - | - | - | - | - | - |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | - | - | - | - | - | - | - | - | - | - | - | - | 2 | <1 | 1 | <1 | <1 | <1 | 3 | <1 | 3 | <1 | 1 | <1 | - | - | - | - | - | - |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

Discrepancies in totals due to rounding error.

## Table 3.5-19 Summary of Region III Alternative Route Impacts for Vegetation

| | Construction Disturbance | | | | | | Operation Disturbance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alternative III-A | | Alternative III-B | | Alternative III-C | | Alternative III-A | | Alternative III-B | | Alternative III-C | |
| **Vegetation Communities** | **Acres** | **% of Region III** | **Acres** | **% of Region III** | **Acres** | **% of Region III** | **Acres** | **% of Region III** | **Acres** | **% of Region III** | **Acres** | **% of Region III** |
| **ROW Clearing/Trampling[1]** | | | | | | | | | | | | |
| **Total** | **5,852** | **<1** | **6,056** | **<1** | **6,539** | **<1** | **-** | **-** | **-** | **-** | **-** | **-** |
| Agriculture | - | - | 14 | <1 | 4 | <1 | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | 14 | <1 | 15 | <1 | 1 | <1 | - | - | - | - | - | - |
| Cliff and Canyon | 33 | <1 | 14 | <1 | 9 | <1 | - | - | - | - | - | - |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | 2,013 | <1 | 1,688 | <1 | 1,648 | <1 | - | - | - | - | - | - |
| Developed/Disturbed | 105 | <1 | 87 | <1 | 83 | <1 | - | - | - | - | - | - |
| Dunes | - | - | 45 | <1 | 45 | <1 | - | - | - | - | - | - |
| Grassland | 1,018 | <1 | 1,057 | <1 | 1,108 | <1 | - | - | - | - | - | - |
| Greasewood Flat | 345 | <1 | 378 | <1 | 463 | <1 | - | - | - | - | - | - |
| Herbaceous Wetland | 79 | <1 | 92 | <1 | 115 | <1 | - | - | - | - | - | - |
| Montane Grassland | <1 | <1 | <1 | <1 | <1 | <1 | - | - | - | - | - | - |
| Montane Shrubland | 10 | <1 | 134 | <1 | - | - | - | - | - | - | - | - |
| Open Water | 2 | <1 | 2 | <1 | 1 | <1 | - | - | - | - | - | - |
| Pinyon-Juniper | 276 | <1 | 331 | <1 | 337 | <1 | - | - | - | - | - | - |
| Riparian | 58 | <1 | 79 | <1 | 18 | <1 | - | - | - | - | | - |
| Sagebrush Shrubland | 974 | <1 | 1,083 | <1 | 1,479 | <1 | - | - | - | - | - | - |
| Saltbush Shrubland | 912 | <1 | 984 | <1 | 1,215 | <1 | - | - | - | - | - | - |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | 12 | <1 | 53 | <1 | 12 | <1 | - | - | - | - | - | - |
| **Facilities[2]** | | | | | | | | | | | | |
| **Total** | **3,641** | **<1** | **3,543** | **<1** | **3,926** | **<1** | **996** | **<1** | **875** | **<1** | **953** | **<1** |
| Agriculture | 2 | <1 | 9 | <1 | 4 | <1 | 1 | <1 | 2 | <1 | 1 | <1 |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | 9 | <1 | 10 | <1 | 2 | <1 | 3 | <1 | 2 | 1 | <1 | <1 |

## Table 3.5-19 Summary of Region III Alternative Route Impacts for Vegetation

| | Construction Disturbance | | | | | | Operation Disturbance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alternative III-A | | Alternative III-B | | Alternative III-C | | Alternative III-A | | Alternative III-B | | Alternative III-C | |
| Vegetation Communities | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III |
| Cliff and Canyon | 23 | <1 | 11 | <1 | 15 | <1 | 7 | <1 | 4 | <1 | 5 | <1 |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | 1,267 | <1 | 1,009 | <1 | 1,026 | <1 | 389 | <1 | 263 | <1 | 251 | <1 |
| Developed/Disturbed | 64 | <1 | 56 | <1 | 54 | <1 | 16 | <1 | 13 | <1 | 13 | <1 |
| Dunes | - | - | 27 | <1 | 27 | <1 | - | - | 6 | <1 | 6 | <1 |
| Grassland | 592 | <1 | 613 | <1 | 639 | <1 | 139 | <1 | 142 | <1 | 154 | <1 |
| Greasewood Flat | 210 | <1 | 229 | <1 | 287 | <1 | 48 | <1 | 51 | <1 | 70 | <1 |
| Herbaceous Wetland | 46 | <1 | 55 | <1 | 75 | <1 | 10 | <1 | 12 | <1 | 19 | <1 |
| Montane Grassland | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Montane Shrubland | 15 | <1 | 86 | <1 | - | - | 8 | <1 | 24 | <1 | - | - |
| Open Water | 2 | <1 | 2 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Pinyon-Juniper | 227 | <1 | 215 | <1 | 207 | <1 | 77 | <1 | 61 | <1 | 53 | <1 |
| Riparian | 41 | <1 | 50 | <1 | 11 | <1 | 13 | <1 | 11 | <1 | 3 | <1 |
| Sagebrush Shrubland | 594 | <1 | 617 | <1 | 863 | <1 | 156 | <1 | 144 | <1 | 208 | <1 |
| Saltbush Shrubland | 539 | <1 | 576 | <1 | 709 | <1 | 126 | <1 | 132 | <1 | 169 | <1 |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | 9 | <1 | 28 | <1 | 7 | <1 | 3 | <1 | 6 | <1 | 2 | <1 |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

[2] Facilities would include access roads, temporary work areas such as staging areas, material storage yards, fly yards, pulling, tensioning, and splicing sites, work areas at each structure site, batch plant sites, and guard structures within the 2-mile wide corridor. Staging areas, fly yards, batch plant sites would be cleared as necessary. Staging areas and fly yards might be bladed and graveled. Equipment staging and refueling sites would be co-located with other temporary work areas. Wire pulling, tensioning, and splicing sites, structure work areas would be completely cleared of vegetation during construction.

Discrepancies in totals due to rounding error.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 210 acres of greasewood flats, 46 acres of herbaceous wetlands, 41 acres of riparian, and 9 acres of woody riparian and wetlands. Of this, 48 acres of greasewood flats, 10 acres of herbaceous wetlands, 13 acres of riparian, and 3 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along in Alternative III-A include wetlands associated with topographical depressions. Specific riparian woodlands and wetlands found along Alternative III-A would include riparian woodlands and shrublands in both montane and lower elevation areas.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative III-B (Agency Preferred)

*Key Parameters Summary*

The majority of the disturbance would occur in the desert shrub, grassland, sagebrush shrubland, and saltbush shrubland vegetation community types. Alternative III-B would cross in the vicinity of the Little Sahara Sand Dunes Recreation Area. Due to the sandy substrate, shifting topography, and winds in the area, reclamation would be difficult and most likely would not be successful. See Section 3.3, Soils, for more detail. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 331 acres of pinyon-juniper and 53 acres of woody riparian and wetlands. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 229 acres of greasewood flat, 55 acres of herbaceous wetlands, 50 acres of riparian, and 28 acres of woody riparian and wetlands. Of this, 51 acres of greasewood flat, 12 acres of herbaceous wetlands, 11 acres of riparian, and 6 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along in Alternative III-B include wetlands associated with topographical depressions. Specific riparian woodlands and wetlands found along Alternative III-B would include riparian woodlands and shrublands in lower elevation areas.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative III-C

*Key Parameters Summary*

In Alternative III-C, the majority of the disturbance would occur in the desert shrub, grassland, sagebrush shrubland, and saltbush shrubland vegetation community types. Alternative III-C would cross in the vicinity of the Little Sahara Sand Dunes Recreation Area. Due to the sandy substrate, shifting topography, and winds in the area, reclamation would be difficult and most likely would not be successful. See Section 3.3,

Soils, for more detail. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 337 acres of pinyon-juniper and 12 acres of woody riparian and wetlands. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 287 acres of greasewood flat, 75 acres of herbaceous wetlands, 11 acres of riparian, and 7 acres of woody riparian and wetlands. Of this, 70 acres of greasewood flat, 19 acres of herbaceous wetlands, 3 acres of riparian, and 2 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetland and riparian types along Alternative III-C include wetlands associated with topographical depressions. Specific riparian woodlands and wetlands found along Alternative III-C would include riparian woodlands and shrublands in both montane and lower elevation areas.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative Variations in Region III

**Table 3.5-20** provides a comparison of impacts associated with the alternative variations in Region III.

The Ox Valley East Alternative Variation would impact similar vegetation community types compared to those of Alternative III-A; however, there would be additional impacts in the aspen forest and woodland, cliff and canyon, and pinyon-juniper vegetation community types. Wetlands and riparian areas in the Ox Valley East Variation include riparian woodlands and shrublands in both montane and lower elevation areas. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

The Ox Valley West Alternative Variation would impact similar vegetation community types compared to those of Alternative III-A; however, there would be additional impacts in the aspen forest and woodland, cliff and canyon, pinyon-juniper, and woody riparian community types, and decreased impacts in the developed/disturbed, montane shrubland, and sagebrush shrubland community types under this variation. Wetlands and riparian areas in the Ox Valley West Variation include riparian woodlands and shrublands in both montane and lower elevation areas. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

The Pinto Alternative Variation would impact similar vegetation community types compared to those of Alternative III-A, however there would be additional impacts in the agriculture, desert shrub, pinyon-juniper, saltbush shrub community types, and decreased impacts in the grassland, and sagebrush shrubland community types under this variation. Wetlands and riparian areas in the Ox Valley East Variation include riparian woodlands and shrublands in both montane and lower elevation areas. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative Connectors in Region III

The Moapa Alternative Connector and Avon Alternative Connector would include minor disturbance acreage increases across the various vegetation community types crossed if constructed. Vegetation clearing would occur in the woody riparian and wetlands community type for the Moapa Alternative Connector. There would be no vegetation clearing for the Avon Connector as there are no vegetation communities identified as likely

**Table 3.5-20 Summary of Region III Alternative Variation Impacts for Vegetation (acres)**

| Vegetation Communities | Ox Valley East Alternative Variation | | | | | | *Alternative III-A Comparable* | | | | | | Ox Valley West Alternative Variation | | | | | | *Alternative III-A Comparable* | | | | | | Pinto Alternative Variation | | | | | | *Alternative III-A Comparable* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | |
| | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III |
| **Total** | **315** | **<1** | **276** | **<1** | **100** | **<1** | ***285*** | ***<1*** | ***252*** | ***<1*** | ***95*** | ***<1*** | **333** | **<1** | **268** | **<1** | **100** | **<1** | ***285*** | ***<1*** | ***252*** | ***<1*** | ***95*** | ***<1*** | **572** | **<1** | **449** | **<1** | **111** | **<1** | ***469*** | ***<1*** | ***381*** | ***<1*** | ***125*** | ***<1*** |
| Agriculture | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | <1 | <1 | <1 | - | - | - | - | - | - |
| Aspen Forest and Woodland | 3 | <1 | 2 | <1 | 1 | <1 | - | - | - | - | - | - | 3 | <1 | 2 | <1 | 1 | <1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/ Sparsely Vegetated | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Cliff and Canyon | 4 | <1 | 2 | <1 | <1 | <1 | - | - | *<1* | *<1* | *<1* | *<1* | 4 | <1 | 2 | <1 | <1 | <1 | - | - | *<1* | *<1* | *<1* | *<1* | - | - | <1 | <1 | <1 | <1 | - | - | *<1* | *<1* | *<1* | *<1* |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | <1 | <1 | <1 | <1 | - | - | *1* | *<1* | *1* | *<1* | *1* | *<1* | <1 | <1 | <1 | <1 | - | - | *1* | *<1* | *1* | *<1* | *1* | *<1* | 17 | <1 | 11 | <1 | 2 | <1 | - | - | *<1* | *<1* | *<1* | *<1* |
| Developed/ Disturbed | 4 | <1 | 3 | <1 | 1 | <1 | *5* | *<1* | *4* | *<1* | *1* | *<1* | 3 | <1 | 2 | <1 | 1 | <1 | *5* | *<1* | *4* | *<1* | *1* | *<1* | 16 | <1 | 11 | <1 | 2 | <1 | *14* | *<1* | *9* | *<1* | *2* | *<1* |
| Dunes | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Grassland | <1 | <1 | 2 | <1 | 1 | <1 | *1* | *<1* | *2* | *<1* | *1* | *<1* | <1 | <1 | 2 | <1 | 1 | <1 | *1* | *<1* | *2* | *<1* | *1* | *<1* | 3 | <1 | 5 | <1 | 2 | <1 | *1* | *<1* | *2* | *<1* | *1* | *<1* |
| Greasewood Flat | - | - | - | - | - | - | - | - | *<1* | *<1* | - | - | - | - | - | - | - | - | - | - | *<1* | *<1* | - | - | 1 | <1 | 1 | <1 | <1 | <1 | - | - | *<1* | *<1* | - | - |
| Herbaceous Wetland | - | - | - | - | - | - | - | - | *<1* | *<1* | *<1* | *<1* | - | - | - | - | - | - | - | - | *<1* | *<1* | *<1* | *<1* | - | - | <1 | <1 | <1 | <1 | - | - | *<1* | *<1* | *<1* | *<1* |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | 39 | <1 | 36 | <1 | 16 | <1 | *8* | *<1* | *14* | *<1* | *7* | *<1* | 37 | <1 | 35 | <1 | 15 | <1 | *8* | *<1* | *14* | *<1* | *7* | *<1* | 13 | <1 | 11 | <1 | 3 | <1 | *8* | *<1* | *14* | *<1* | *7* | *<1* |
| Open Water | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <1 | <1 | <1 | <1 | - | - | *<1* | *<1* | - | - |
| Pinyon-Juniper | 155 | <1 | 134 | <1 | 46 | <1 | *126* | *<1* | *113* | *<1* | *43* | *<1* | 169 | <1 | 129 | <1 | 45 | <1 | *126* | *<1* | *113* | *<1* | *43* | *<1* | 304 | <1 | 250 | <1 | 64 | <1 | *176* | *<1* | *156* | *<1* | *54* | *<1* |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

**Table 3.5-20 Summary of Region III Alternative Variation Impacts for Vegetation (acres)**

| Vegetation Communities | Ox Valley East Alternative Variation | | | | | | *Alternative III-A Comparable* | | | | | | Ox Valley West Alternative Variation | | | | | | *Alternative III-A Comparable* | | | | | | Pinto Alternative Variation | | | | | | *Alternative III-A Comparable* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | |
| | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III |
| Sagebrush Shrubland | 107 | <1 | 93 | <1 | 32 | <1 | *139* | *<1* | *115* | *<1* | *41* | *<1* | 112 | <1 | 91 | <1 | 34 | <1 | *139* | *<1* | *115* | *<1* | *41* | *<1* | 215 | <1 | 156 | <1 | 36 | <1 | *267* | *<1* | *196* | *<1* | *59* | *<1* |
| Saltbush Shrubland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <1 | <1 | - | - | - | - | - | - | - | - |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | 3 | <1 | 5 | <1 | 3 | <1 | *3* | *<1* | *3* | *<1* | *1* | *<1* | 4 | <1 | 5 | <1 | 3 | <1 | *3* | *<1* | *3* | *<1* | *1* | *<1* | 2 | <1 | 3 | <1 | 1 | <1 | *3* | *<1* | *3* | *<1* | *1* | *<1* |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

Discrepancies in totals due to rounding error.

having vegetation over 6 feet in height along the 250-foot-wide transmission line ROW. Wetlands and riparian areas in the Moapa Alternative Connector include riparian woodland and shrublands. The Avon connector includes riparian communities, such as warm desert washes. **Table 3.5-21** summarizes impacts and advantages associated with the alternative connectors in Region III. Impacts to each vegetative community would comprise less than 1 percent of the total of each vegetative community in the analysis area.

Alternative Ground Electrode Systems in Region III

The southern ground electrode system would be necessary within 100 miles of the southern terminal as discussed in Chapter 2. Although the location for this system has not been determined, conceptual locations and connections to the alternative routes have been provided by the proponent. The impacts associated with constructing and operating this system are discussed in Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. **Table 3.5-22** summarizes impacts associated with the southern ground electrode system. **Table 3.5-23** summarizes impacts associated with the southern ground electrode transmission line. Some locations might serve multiple alternative routes, while others could only be associated with a certain alternative route.

Region III Conclusion

In Region III, the alternative with the most acres impacted is Alternative III-C. Alternative III-A would impact the least vegetation acreage. Impacts from vegetation clearing are fairly similar between Alternative III-A and Alternative III-B as both alternatives cross similar vegetation communities with similar acreage of disturbance. Impacts to vegetation communities under Alternative III-B would be less than 1 percent of the analysis area in Region III. Alternative III-B and Alternative III-C would cross in the vicinity of the Little Sahara Sand Dunes Recreation Area, which would be difficult to reclaim. For more information, see Section 3.3, Soils.

Noxious weeds impacts would be similar between the two alternatives due to the similarities in vegetation communities crossed and similar climate conditions between the two alternatives. Revegetation constraints would be similar between the two alternatives, as would the potential for vegetation type conversion from either shrublands to grasslands, or woodlands to shrublands/grasslands. The agency preferred alternative crosses more acres of herbaceous wetlands, specifically in Lincoln County, Nevada, while the Applicant Proposed route crosses slightly more acres of woody riparian and wetlands habitat.

### 3.5.6.6 Region IV

**Table 3.5-24** provides a comparison of impacts associated with the alternative routes in Region IV.

Alternative IV-A (Applicant Proposed and Agency Preferred)

*Key Parameters Summary*

The majority of the disturbance for this alternative would occur in the desert shrub and developed/disturbed vegetation community types, with minor impacts occurring in the barren/sparsely vegetated, cliff and canyon, riparian, saltbush shrubland, and woody riparian and wetland community types. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in less than 1 acre of the woody riparian and wetland community type. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

## Table 3.5-21 Summary of Region III Alternative Connector Impacts for Vegetation

| | Moapa Alternative Connector | | | | | | Avon Alternative Connector | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | |
| **Vegetation Communities** | **Acres** | **% of Region III** | **Acres** | **% of Region III** | **Acres** | **% of Region III** | **Acres** | **% of Region III** | **Acres** | **% of Region III** | **Acres** | **% of Region III** |
| **Total** | **264** | **<1** | **168** | **<1** | **34** | **<1** | **164** | **<1** | **104** | **<1** | **21** | **<1** |
| Agriculture | - | - | - | - | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | - | - | - | - | - | - | - | - | - | - | - | - |
| Cliff and Canyon | - | - | - | - | - | - | - | - | - | - | - | - |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | 178 | <1 | 116 | <1 | 24 | <1 | - | - | - | - | - | - |
| Developed/Disturbed | 2 | <1 | 1 | <1 | <1 | <1 | 2 | <1 | 2 | <1 | <1 | <1 |
| Dunes | - | - | - | - | - | - | - | - | - | - | - | - |
| Grassland | - | - | - | - | - | - | 8 | <1 | 5 | <1 | 1 | <1 |
| Greasewood Flat | - | - | - | - | - | - | 1 | <1 | 1 | <1 | <1 | <1 |
| Herbaceous Wetland | - | - | - | - | - | - | - | - | <1 | <1 | - | - |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | - | - | - | - | - | - | - | - |
| Open Water | - | - | - | - | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | - | - | - | - | - | - | - | - | - | - | - | - |
| Riparian | 84 | <1 | 51 | <1 | 10 | <1 | - | - | - | - | - | - |
| Sagebrush Shrubland | - | - | - | - | - | - | 21 | <1 | 14 | <1 | 3 | <1 |
| Saltbush Shrubland | - | - | - | - | - | - | 132 | <1 | 81 | <1 | 16 | <1 |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | 1 | <1 | <1 | <1 | - | - | - | - | - | - | - | - |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

Discrepancies in totals due to rounding error.

**Table 3.5-22 Summary of Region III Alternative Ground Electrode Siting Area Impact Parameters to Vegetation**

| Vegetation Communities | Halfway Wash – Virgin River (Alternative III-A) | | | | Halfway Wash – Virgin River (Alternative III-B) | | | | Halfway Wash East (Alternative III-A) | | | | Halfway Wash East (Alternative III-B) | | | | Meadow Valley 2 (Alternative III-C) | | | | Mormon Mesa-Carp Elgin Rd (Alternative III-A) | | | | Mormon Mesa-Carp Elgin Rd (Alternative III-B) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | |
| | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III |
| **Total** | **84** | **<1** | **16** | **<1** | **93** | **<1** | **20** | **<1** | **104** | **<1** | **26** | **<1** | **102** | **<1** | **25** | **<1** | **174** | **<1** | **66** | **<1** | **91** | **<1** | **19** | **<1** | **103** | **<1** | **26** | **<1** |
| Agriculture | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/ Sparsely Vegetated | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | - | - | - | - | - | - | - | - | 1 | <1 | <1 | <1 | - | - | - | - | - | - | - | - |
| Cliff and Canyon | 1 | <1 | <1 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 5 | <1 | 2 | <1 | - | - | - | - | - | - | - | - |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | 65 | <1 | 12 | <1 | 71 | <1 | 15 | <1 | 76 | <1 | 19 | <1 | 75 | <1 | 18 | <1 | 144 | <1 | 54 | <1 | 57 | <1 | 12 | <1 | 64 | <1 | 16 | <1 |
| Developed/ Disturbed | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Dunes | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Grassland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Greasewood Flat | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Herbaceous Wetland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Open Water | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Riparian | 18 | <1 | 3 | <1 | 20 | <1 | 4 | <1 | 27 | <1 | 7 | <1 | 27 | <1 | 7 | <1 | 16 | <1 | 6 | <1 | 35 | <1 | 7 | <1 | 49 | <1 | 10 | <1 |

**Table 3.5-22 Summary of Region III Alternative Ground Electrode Siting Area Impact Parameters to Vegetation**

| Vegetation Communities | Halfway Wash – Virgin River (Alternative III-A) | | | | Halfway Wash – Virgin River (Alternative III-B) | | | | Halfway Wash East (Alternative III-A) | | | | Halfway Wash East (Alternative III-B) | | | | Meadow Valley 2 (Alternative III-C) | | | | Mormon Mesa-Carp Elgin Rd (Alternative III-A) | | | | Mormon Mesa-Carp Elgin Rd (Alternative III-B) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | | Construction Dist (acres) | | Operation Dist (acres) | |
| | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III | Acres | % of Region III |
| Sagebrush Shrubland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Saltbush Shrubland | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | - | - | - | - | - | - | - | - | 8 | <1 | 3 | <1 | - | - | - | - | - | - | - | - |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | - | - | - | - | - | - | - | - | 1 | <1 | <1 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | - | - | - | - | - | - | - | - |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

Discrepancies in totals due to rounding error.

**Table 3.5-23 Summary of Region III Alternative Ground Electrode Transmission Line Impact Parameters to Vegetation (Miles)**

| Vegetation Communities | Halfway Wash – Virgin River (Alternative III-A) | Halfway Wash – Virgin River (Alternative III-B) | Halfway Wash East (Alternative III-A) | Halfway Wash East (Alternative III-B) | Meadow Valley 2 (Alternative III-C) | Mormon Mesa – Carp Elgin Rd (Alternative III-A) | Mormon Mesa-Carp Elgin Rd (Alternative III-B) |
|---|---|---|---|---|---|---|---|
| **Total** | **4** | **6** | **8** | **9** | **22** | **5** | **16** |
| Agriculture | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | - | - | - | - | <1 | - | - |
| Cliff and Canyon | <1 | <1 | - | - | - | - | - |
| Conifer Forest | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - |
| Desert Shrub | 3 | 5 | 7 | 8 | 21 | 4 | 10 |
| Developed/Disturbed | - | <1 | - | <1 | - | - | <1 |
| Dunes | - | - | - | - | - | - | - |
| Grassland | - | - | - | - | - | - | - |
| Greasewood Flat | - | - | - | - | - | - | - |
| Herbaceous Wetland | - | - | - | - | <1 | - | - |
| Montane Grassland | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | - | - | - |
| Open Water | - | - | - | - | - | - | - |
| Pinyon-Juniper | - | - | - | - | - | - | - |
| Riparian | <1 | 1 | 1 | 1 | <1 | 1 | 5 |
| Sagebrush Shrubland | - | - | - | - | - | - | - |
| Saltbush Shrubland | - | - | - | - | 1 | - | - |
| Tundra | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | - | - | - | - | <1 | - | - |

Discrepancies in totals due to rounding error.

Construction of facilities would disturb 5 acres of riparian, and less than 1 acre of woody riparian and wetlands, while operation impacts would occur in 1 acre of riparian.

Specific riparian woodlands and wetlands found along Alternative IV-A would include desert washes and riparian woodlands and shrublands.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

## Table 3.5-24 Summary of Region IV Alternative Route Impacts for Vegetation

| | Construction Disturbance | | | | | | Operation Disturbance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alternative IV-A | | Alternative IV-B | | Alternative IV-C | | Alternative IV-A | | Alternative IV-B | | Alternative IV-C | |
| | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV |
| **ROW Clearing/Trampling[1]** | | | | | | | | | | | | |
| **Total** | **738** | **<1** | **818** | **<1** | **893** | **<1** | **-** | **-** | **-** | **-** | **-** | **-** |
| Agriculture | - | - | - | - | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | 35 | <1 | 38 | <1 | 38 | <1 | - | - | - | - | - | - |
| Cliff and Canyon | 9 | <1 | 12 | <1 | 12 | <1 | - | - | - | - | - | - |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | 454 | <1 | 459 | <1 | 465 | <1 | - | - | - | - | - | - |
| Developed/Disturbed | 225 | <1 | 295 | <1 | 355 | <1 | - | - | - | - | - | - |
| Dunes | - | - | - | - | - | - | - | - | - | - | - | - |
| Grassland | - | - | - | - | - | - | - | - | - | - | - | - |
| Greasewood Flat | - | - | - | - | - | - | - | - | - | - | - | - |
| Herbaceous Wetland | - | - | 1 | <1 | 1 | <1 | - | - | - | - | - | - |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | - | - | - | - | - | - | - | - |
| Open Water | - | - | - | - | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | - | - | - | - | - | - | - | - | - | - | - | - |
| Riparian | 8 | <1 | 1 | <1 | 1 | <1 | - | - | - | - | - | - |
| Sagebrush Shrubland | - | - | - | - | - | - | - | - | - | - | - | - |
| Saltbush Shrubland | 6 | <1 | 5 | <1 | 14 | <1 | - | - | - | - | - | - |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | <1 | <1 | 7 | <1 | 7 | <1 | - | - | - | - | - | - |
| **Facilities[2]** | | | | | | | | | | | | |
| **Total** | **566** | **<1** | **573** | **<1** | **663** | **<1** | **148** | **<1** | **180** | **<1** | **182** | **<1** |
| Agriculture | - | - | - | - | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | 25 | <1 | 32 | <1 | 32 | <1 | 5 | <1 | 8 | <1 | 8 | <1 |

## Table 3.5-24 Summary of Region IV Alternative Route Impacts for Vegetation

| | Construction Disturbance | | | | | | Operation Disturbance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alternative IV-A | | Alternative IV-B | | Alternative IV-C | | Alternative IV-A | | Alternative IV-B | | Alternative IV-C | |
| | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV |
| Cliff and Canyon | 13 | <1 | 11 | <1 | 11 | <1 | 4 | <1 | 3 | <1 | 3 | <1 |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | 341 | <1 | 322 | <1 | 328 | <1 | 87 | <1 | 106 | <1 | 106 | <1 |
| Developed/Disturbed | 179 | <1 | 194 | <1 | 272 | <1 | 51 | <1 | 55 | <1 | 56 | <1 |
| Dunes | - | - | - | - | - | - | - | - | - | - | - | - |
| Grassland | - | - | - | - | - | - | - | - | - | - | - | - |
| Greasewood Flat | - | - | - | - | - | - | - | - | - | - | - | - |
| Herbaceous Wetland | - | - | 1 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | - | - | - | - | - | - | - | - |
| Open Water | - | - | 5 | <1 | 5 | <1 | - | - | 4 | <1 | 4 | <1 |
| Pinyon-Juniper | - | - | - | - | - | - | - | - | - | - | - | - |
| Riparian | 5 | <1 | 1 | <1 | 1 | <1 | 1 | <1 | <1 | <1 | <1 | <1 |
| Sagebrush Shrubland | - | - | - | - | - | - | - | - | - | - | - | - |
| Saltbush Shrubland | 3 | <1 | 2 | <1 | 8 | <1 | 1 | <1 | 1 | <1 | 2 | <1 |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | <1 | <1 | 5 | <1 | 5 | <1 | - | - | 2 | <1 | 2 | <1 |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

[2] Facilities would include access roads, temporary work areas such as staging areas, material storage yards, fly yards, pulling, tensioning, and splicing sites, work areas at each structure site, batch plant sites, and guard structures within the 2-mile-wide corridor. Staging areas, fly yards, batch plant sites would be cleared as necessary. Staging areas and fly yards might be bladed and graveled. Equipment staging and refueling sites would be co-located with other temporary work areas. Wire pulling, tensioning, and splicing sites, structure work areas would be completely cleared of vegetation during construction.

Discrepancies in totals due to rounding error.

Alternative IV-B

*Key Parameters Summary*

In Alternative IV-B, the majority of the disturbance would occur in the desert shrub and developed/disturbed community types, with minor impacts occurring in the barren/sparsely vegetated, cliff and canyon, herbaceous wetland, riparian, saltbush shrubland, and woody riparian and wetland community types. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 7 acres of woody riparian and wetlands. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 1 acre of herbaceous wetlands, 1 acre of riparian, and 5 acres of woody riparian and wetlands. Of this, less than 1 acre of herbaceous wetlands, less than 1 acre of riparian, and 2 acres of woody riparian and wetlands would be impacted by operations. Specific herbaceous wetlands and riparian types along Alternative IV-B include emergent marshes, while specific riparian woodlands and wetlands include desert washes and riparian woodlands and shrublands.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative IV-C

*Key Parameters Summary*

In Alternative IV-C, the majority of the disturbance would occur in desert shrub and developed/disturbed vegetation community types, with minor impacts occurring in the barren/sparsely vegetated, cliff and canyon, herbaceous wetland, riparian, saltbush shrubland, and woody riparian and wetland vegetation community types. Vegetation clearing of woody vegetation over 6 feet in height along the construction ROW would occur in 7 acres of the woody riparian and wetland vegetation community. Vegetation in the remaining portions of the ROW not impacted by construction would be trampled or driven-over during construction activities.

Construction activities could alter vegetation communities classified as FRCC 1. These alterations may result in fire frequencies departing from their natural frequencies. To minimize the potential alterations of FRCC for each vegetation community, implementation of **VG-1** and **VG-2** would mitigate impacts to the natural fire regime of these communities.

Construction of facilities would disturb 1 acre of herbaceous wetlands, 1 acre of riparian, and 5 acres of woody riparian and wetlands. Of this, less than one acre each of herbaceous wetlands and riparian and 2 acres of woody riparian and wetlands would be impacted by operation impacts. Specific herbaceous wetlands and riparian types along Alternative IV-C include emergent marshes, while specific riparian woodlands and wetlands include desert washes, and riparian woodlands and shrublands.

Construction and operation impacts would be the same as described for Section 3.5.6.2, Impacts Common to All Alternative Routes and Associated Components. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area. Implementation and effects of mitigation measures would be the same as described for Alternative I-A.

Alternative Variations in Region IV

The Marketplace Alternative Variation would impact the same vegetation communities as compared to Alternative IV-B. Implementation and effects of mitigation measures would be the same as described for Alternative I-A. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area.

**Table 3.5-25** provides a comparison of impacts associated with the alternative variations in Region IV.

**Table 3.5-25 Summary of Region IV Alternative Variation Impacts for Vegetation**

| | **Marketplace Alternative Variation (Alternative IV-B)** | | | | | | ***Alternative IV-B Comparable*** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ROW Clearing[1]** | | **Construction Disturbance** | | **Operation Disturbance** | | **ROW Clearing[1]** | | **Construction Disturbance** | | **Operation Disturbance** | |
| **Vegetation Communities** | **Acres** | **% of Region IV** | **Acres** | **% of Region IV** | **Acres** | **% of Region IV** | **Acres** | **% of Region IV** | **Acres** | **% of Region IV** | **Acres** | **% of Region IV** |
| **Total** | **155** | **<1** | **108** | **<1** | **21** | **<1** | ***154*** | ***<1*** | ***82*** | ***<1*** | ***19*** | ***<1*** |
| Agriculture | - | - | - | - | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | - | - | - | - | - | - | - | - | - | - | - | - |
| Cliff and Canyon | - | - | 1 | <1 | <1 | <1 | - | - | - | - | - | - |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | 66 | <1 | 50 | <1 | 10 | <1 | *1* | *<1* | *<1* | *<1* | *<1* | *<1* |
| Developed/Disturbed | 88 | <1 | 58 | <1 | 11 | <1 | *153* | *<1* | *82* | *<1* | *18* | *<1* |
| Dunes | - | - | - | - | - | - | - | - | - | - | - | - |
| Grassland | - | - | - | - | - | - | - | - | - | - | - | - |
| Greasewood Flat | - | - | - | - | - | - | - | - | - | - | - | - |
| Herbaceous Wetland | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | - | - | - | - | - | - | - | - |
| Open Water | - | - | - | - | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | - | - | - | - | - | - | - | - | - | - | - | - |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - |
| Sagebrush Shrubland | - | - | - | - | - | - | - | - | - | - | - | - |
| Saltbush Shrubland | - | - | - | - | - | - | - | - | - | - | - | - |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | - | - | - | - | - | - | - | - | - | - | - | - |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

Discrepancies in totals due to rounding error.

Alternative Connectors in Region IV

All the Alternative Connectors in Region IV would include minor surface disturbance increases across the various vegetation community types, with the greatest disturbances associated with barren/sparsely vegetated and desert shrub community types. There would be no vegetation clearing of woody vegetation over 6 feet in height along the construction ROW for the Region IV alternative connectors. The River Mountains Alternative Connector includes a small area of riparian vegetation communities. **Table 3.5-26** summarizes impacts and advantages associated with the alternative connectors in Region IV. Impacts to each vegetative community would occur in less than 1 percent of the total of each vegetative community in the analysis area.

Region IV Conclusion

In Region IV, the alternative resulting in the most acres of vegetation impacted is Alternative IV-C, while Alternative IV-A would impact the least vegetation acreage. Impacts to vegetation communities on the various alternatives would comprise less than 1 percent of the analysis area in Region IV.

Noxious weeds impacts would be similar between these two alternatives due to the similarities in vegetation communities crossed, and similar climate conditions between the two alternatives. Revegetation constraints would be similar between the two alternatives, as would the potential for vegetation type conversion from either shrublands to grasslands, or woodlands to shrublands/grasslands. The Agency Preferred Alternative crosses herbaceous wetlands and woody riparian and wetlands habitat, while according to the SWReGAP data, the Applicant Proposed route does not cross herbaceous wetlands, or woody riparian and wetlands.

### 3.5.6.7 Residual Impacts

Residual impacts would include the loss of vegetation related to the permanent placement of facilities, and access roads for the life of the project, the invasion and spread of noxious weeds and invasive species into previously undisturbed areas, and fragmentation of native habitats.

Vegetation recovery to similar cover and species composition after implementation of a reclamation program is expected to occur at varying rates. Overall community recovery is anticipated to take 2 to 3 years to reestablish an early seral vegetation community. In areas with soil reclamation constraints, low regional annual precipitation rates, and the invasion and spread of noxious and invasive weed species, successful reestablishment of early seral native vegetation may take a longer timeframe. It is estimated that overall, herbaceous-dominated plant communities would require a minimum of 3 to 5 years to establish adequate ground cover to prevent erosion and provide forage for wildlife species and grazing operations. Woody-dominated plant communities would require at least 10 to 25 years for shrubs to recolonize the area while re-establishment of mature woodlands would require at least 30 to 50 or more years. In areas with soil reclamation constraints, low regional annual precipitation rates, and the invasion and spread of noxious and invasive weed species, community recovery is anticipated to be long-term, and may not be successful (10 to 100 years depending on the community structure).

Depending on the composition and topography of existing woodlands, recovery could take up to 80 to 100 years to achieve mature trees of similar stature to pre-construction conditions. The success of woodland re-establishment could be impacted by co-located disturbances and adverse environmental conditions including wildfire, drought, climate change, insects, and disease (Folke et al. 2004; Loehman et al. 2011). Wildfire in combination with adverse environmental conditions could result in woodlands converting to shrubland communities over time.

Implementation of the Project design features, the agency and WWEC BMPs, and the proposed additional mitigation measures would minimize residual impacts to vegetation, wetlands, and riparian areas from noxious weeds and invasive species, erosion, and fire. Residual impacts due to the loss of sagebrush habitat are discussed in Section 3.8, Special Status Wildlife Species. Noxious weed and invasive species may persist over the long term regardless of the implementation of control programs. Some plant

communities may not return to pre-construction conditions due to alteration of soil communities, noxious weed invasion, and loss of biological soil crusts. Fragmentation and the conversion of vegetation communities may occur over the long term, depending on the success of reclamation and associated disturbance from maintenance activities over the life of the Project.

Residual impacts, especially noxious weed invasion, may impact the reclamation success as defined by each BLM FO and USFS forest. Residual impacts, depending on their type, and quantity, may exceed the significance threshold of impacts for individual BLM FOs or USFS forests, depending on the requirements of the management documents.

#### 3.5.6.8 Impacts to Vegetation from the No Action Alternative

Under the No Action Alternative, the proposed Project would not be constructed or operated. The analysis area would exist under current authorizations and land uses (e.g., livestock grazing, agriculture, energy development, mining, etc.). Therefore, impacts to vegetation resources associated with the development of the proposed Project would not occur.

#### 3.5.6.9 Irreversible and Irretrievable Commitment of Resources

For all alternatives, Project-related impacts that may affect productivity include the disturbance of shrub-dominated and woody vegetation cover types that would require 10 to 100 years to recover, and the potential that populations of weedy annual species (e.g., halogeton, cheatgrass) may become established in localized areas for extended periods of time. The decrease in vegetation cover types either through direct impacts (i.e., removal of vegetation) or indirect impacts (i.e., the spread of noxious and invasive species) could impact ecological function, livestock and wildlife grazing, and recreation activities in and around the areas to be disturbed.

For areas with low reclamation potential (i.e., the slow revegetation rates and low revegetation success), the proposed project could result in impacts to vegetation communities that would extend beyond construction, operation, and decommissioning activities, affecting long-term habitat value and human uses of these areas.

#### 3.5.6.10 Relationship Between Local Short-term Uses and Long-term Productivity

For areas successfully reclaimed (as defined by each land management agency after construction), no irretrievable commitments are anticipated. For plant communities, including woody dominated vegetation communities, and areas of low-reclamation potential, the alteration of these communities may persist during the life of the project, resulting in an irretrievable loss of these resources. These impacts would be reversible by the successful reclamation of these communities to pre-construction conditions.

Irreversible commitments would result from construction and operation impacts that result in the permanent conversion of plant communities. This may occur in areas where reclamation is not successful, or fragmentation and noxious weed and invasive species permanently alter native habitats. If successful reclamation is not achieved, disturbed areas would no longer support native vegetation.

**Table 3.5-26 Summary of Region IV Alternative Connector Impacts for Vegetation**

| | Sunrise Mountain Alternative Connector | | | | | | Lake Las Vegas Alternative Connector | | | | | | Three Kids Mine Alternative Connector | | | | | | River Mountains Alternative Connector | | | | | | Railroad Pass Alternative Connector | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | | ROW Clearing[1] | | Construction Disturbance | | Operation Disturbance | |
| Vegetation Communities | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV | Acres | % of Region IV |
| **Total** | **50** | **<1** | **37** | **<1** | **8** | **<1** | **86** | **<1** | **54** | **<1** | **19** | **<1** | **106** | **<1** | **93** | **<1** | **33** | **<1** | **132** | **<1** | **142** | **<1** | **57** | **<1** | **48** | **<1** | **58** | **<1** | **14** | **<1** |
| Agriculture | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Aspen Forest and Woodland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Barren/Sparsely Vegetated | 28 | <1 | 20 | <1 | 4 | <1 | 3 | <1 | 1 | <1 | <1 | <1 | - | - | - | - | - | - | <1 | <1 | <1 | <1 | <1 | <1 | - | - | - | - | - | - |
| Cliff and Canyon | 2 | <1 | 1 | <1 | <1 | <1 | - | - | - | - | - | - | 1 | <1 | 1 | <1 | <1 | <1 | 4 | <1 | 6 | <1 | 3 | <1 | - | - | <1 | <1 | <1 | <1 |
| Conifer Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Deciduous Forest | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Desert Shrub | 19 | <1 | 16 | <1 | 4 | <1 | 68 | <1 | 42 | <1 | 15 | <1 | 86 | <1 | 77 | <1 | 28 | <1 | 127 | <1 | 131 | <1 | 50 | <1 | 2 | <1 | 7 | <1 | 3 | <1 |
| Developed/Disturbed | - | - | - | - | - | - | 15 | <1 | 10 | <1 | 4 | <1 | 19 | <1 | 15 | <1 | 5 | <1 | - | - | 5 | <1 | 3 | <1 | 46 | <1 | 50 | <1 | 11 | <1 |
| Dunes | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Grassland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Greasewood Flat | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Herbaceous Wetland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Grassland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Montane Shrubland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Open Water | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pinyon-Juniper | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Riparian | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | <1 | <1 | <1 | <1 | <1 | <1 | - | - | - | - | - | - |
| Sagebrush Shrubland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Saltbush Shrubland | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Tundra | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Woody Riparian and Wetlands | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

[1] Within the ROW, vegetation would be cleared or trampled. Vegetation clearing is defined as cutting off at ground level vegetation over 6 feet in height and leaving the stumps in place for erosion control. Trampling is defined as leaving vegetation under 6 feet in height in the ROW, and driving over the vegetation with construction equipment.

Discrepancies in totals due to rounding error.