CHAPTER 3 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter provides a description of the existing environment in the portions of southwestern Montana and southeastern Idaho that would be potentially affected by construction, operation and maintenance of the proposed MSTI 500 kilovolt (kV) transmission line, and by proposed construction or modification of the substations. The resources addressed in this chapter can be assigned to three broad categories:

- **Natural Environment**
    - Biological Resources (Section 3.2)
    - Water Resources and Wetlands (Section 3.3)
    - Geology and Soils (Section 3.4)
    - Paleontological Resources (Section 3.5)
    - Climate and Air Quality (Section 3.11)
- **Human Environment**
    - Land Use and Transportation (Section 3.6)
    - Visual Resources (Section 3.7)
    - Socioeconomics (Section 3.8)
    - Environmental Justice (Section 3.9)
    - Noise (Section 3.12)
- **Cultural Resources** (Section 3.10)

The description of the affected environment contained in this chapter establishes the baseline for Chapter 4, which evaluates the environmental consequences of the Preferred Route and alternative routes. Two of the sections in Chapter 4 address resources not described in Chapter 3. Section 4.11, EMF, Audible Noise, Corona, and Radio/TV Interference, describes potential effects of the presence of a 500kV transmission line that do not correspond to resources in the existing environment. Section 4.12, Construction Noise, addresses short-term construction noise that would not result in permanent changes to the existing noise environment.

The methods used to inventory existing environmental resources varied among the resources and are summarized in each resource section of this chapter. For more detail on inventory methods and results, the reader is referred to the Technical Reports for biological resources, water resources and wetlands, geology and soils, paleontological resources, land use, visual resources, socioeconomics, and cultural resources. These reports can be found in Volume II of the Environmental Report. To protect certain resources from vandalism, the cultural resource and paleontological resources technical reports are confidential and not available for public review.

The internal organization of Sections 3.2 through 3.11 describes the affected environment for the Preferred Route and alternative routes. Chapter 2 discusses the route selection process in detail. Two alternative routes and NorthWestern's Preferred Route were identified between Townsend and Mill Creek; and two alternative routes and the Preferred Route were identified between Mill Creek and the

Montana/Idaho border. Also identified was an alternative route from Townsend to Mill Creek along the Preferred Route, but with a switching station at Pipestone where the route would continue south to the state line through the Jefferson Valley and along I-15. From the state line to the Midpoint Substation near Shoshone, Idaho, a Preferred Route and three alternative routes were identified.

Each resource section in Chapter 3 describes the affected environment of the alternatives in the following order:

- Townsend to Mill Creek to State Line Routes
  - Townsend to Mill Creek (Melrose) Segment
    A1: Preferred Route
    A2: Parallel Colstrip Lines Route
    A3: Maximize Utility Corridors
  - Mill Creek to State Line Segment
    B1: Preferred Route
    B2: Sheep Creek Route
    B3: I-15 Route
- Townsend to Pipestone/Mill Creek to State Line Route
    AB1: I-15 Jefferson Valley Route
- State Line to Midpoint Route
    C1: Preferred Route
    C2: Eastern Route
    C3: Western Route
    C4: Sheep Creek INL /Brigham Point Route

In addition, each section describes the affected environment in the vicinity of the Townsend Substation, Mill Creek and Midpoint Substation sites. All 14 microwave site locations in Montana and Idaho are either existing or designated communication sites and are described only briefly.

3.2 BIOLOGICAL RESOURCES

3.2.1 INTRODUCTION

The Mountain States Transmission Line Intertie (MSTI) project proposes to construct a 500kV transmission line from southeastern Idaho to southwestern Montana. The proposed line would span 350-400 miles from the southern terminus at midpoint substation in Jerome County, ID to the northern terminus at Townsend substation in Broadwater County, MT. The proposed line traverses 10 counties in ID and 9 counties in Montana. Private, state, and federal jurisdictional lands are crossed in both states. Jurisdictional and county lands crossed by the proposed MSTI project are summarized in Figure 1-1. Biological resourcesq are managed according to jurisdictional associations in many cases. Biological resources falling on private land are generally not under land management authority.

The MSTI project area spans the Continental Divide (Divide) along the Idaho and Montana Border. In Idaho proposed routes are west of the Divide; in Montana proposed routes are east of the Divide. Regional climate lacks a strong Pacific maritime influence and is characterized by average annual high and low temperatures in the uppers 50's and upper twenties (°F). Winters are cold and overcast;

summers are warm and dry. Average annual precipitation varies across the project area from 9.5 inches to over 14 inches with locally higher amounts in mountainous areas. The project area falls within the Middle Rockies level III Environmental Protection Agency (EPA) ecoregion. Characteristic mountain vegetation in this ecoregion includes Douglas-fir, subalpine fir, and Engelmann spruce forests and alpine areas; Pacific tree species such as western red cedar, western hemlock and grand fir may be present but are never dominant. Forest canopies can be open with a well developed grassy understory. Foothills are partly wooded or shrub- and grass-covered. Valleys stretching between mountain ranges are grass- and/or shrub-covered and contain assemblages of terrestrial and aquatic fauna that are distinct from ecological communities in nearby mountains (EPA 2002).

3.2.2 INVENTORY METHODS

3.2.2.1 Data Sources

For biological resources MSTI study corridors extend one mile either side of assumed centerlines. Study corridors start at the new Townsend Substation and proceed south and then west to the existing Midpoint Substation. Biological resources data were collected for the entire project area.

Biological resource data were obtained from a regional study conducted by POWER Engineers in 2006. Additionally, biological data were collected from scientific literature, existing POWER Engineers files, GIS data sets, aerial photography and agency contacts. Sensitive species lists were obtained at the county level for species under the authority of ESA. Sensitive species lists for lands managed by the USFS are limited to species occurring on the Caribou-Targhee National Forests. Sensitive species lists for lands managed by the BLM are limited to the Upper Snake, Shoshone, and Burly Field Offices. State special status species list for Idaho is included in Appendix B of the Biological Technical Report. Elemental occurrence data for species in Idaho was obtained from Idaho Conservation Data Center. Agency personnel were asked to provide information on potential or known occurrences of sensitive species of wildlife and plants, and on habitats of concern within the study corridors. Information was requested from the USDI Bureau of Land Management (BLM) (Upper Snake, Burly, and Shoshone). USDA Forest Service (Caribou-Targhee), U.S. Fish and Wildlife Service (USFWS), Idaho Department of Fish and Game and Idaho Conservation Data Center (CDC). A comprehensive list of federal and state special status species for Idaho is included in Section 3 and Appendix B respectively of the Biology Technical Report. A complete list of individuals and agencies contacted is presented in Appendix A of the Biological Technical Report. Habitat data was derived from aerial photo-interpretation, GAP landcover data, and field verification. Field verification locations and photographs are included in Appendix D in the Biological Technical Report. For this Environmental Report (ER), description and analysis focus on data for Idaho.

3.2.2.2 Data Categories

Data collected for study corridors includes: vegetation types which were condensed into general habitat types, significant wildlife habitats, and know sensitive species locations. A brief description of the data, biological relevance, and primary data follows.

Vegetation types:

- Vegetation data are a compilation of 21 land use categories, categorized into 7 vegetation communities which are synonymously used as habitat types for the MSTI project. The data was generated from aerial photography (National Agriculture Photo Imagery, 2004 for Idaho and 2005 for Montana), Idaho and Montana GAP data, field verification, and agency input. A summary of vegetation communities in Idaho is included below in Tables 3.2-1 and 3.2-2.

Significant wildlife habitats:

- Wildlife habitat was classified based on course-scale vegetation cover. This approach makes the assumption that cover equates to suitable habitat and therefore species presence. The result is a conservative overestimate of both suitable habitat and species occurrence. In cases where quantified species-specific habitat information was available (e.g. sage grouse habitat), refinements were made, to account for the overestimations. Data were available for the following significant habitats:
    - Elk, mule deer, moose, antelope, and bighorn sheep wintering habitat (intersected by the 1-mile biology corridor).
    - Elk summer habitat (intersected by the 1-mile biology corridor)
    - Stream crossings (intersected by proposed transmission links)
    - Class 1 fisheries (intersected by proposed transmission links)
    - Nesting Bald Eagles (800 and 4,000 meters)
    - Wildlife movement corridors (in general vicinity of biology corridor)
    - Grouse leks and habitat (interested by the 1-mile biology corridor, lek occurrence within 2 and 4 miles)
    - Waterfowl use areas (in general vicinity of biology corridor)
    - Potential or known localities of sensitive species (animals-centroid location w/ 2-mile buffer, plants-polygons as is w/in bio-corridor)
        - Sensitive species locations were derived from the Idaho Conservation Data Center and the Montana Natural Heritage Program databases. Special status species were assigned habitat and link associations based on biological requirements.

Sources of these data for the MSTI project include: the 2006 routing study (NWE 2006), literature searches, agency interviews, aerial photography, Idaho and Montana GAP, field verification checking, Montana Natural Heritage data, Idaho Conservation Data Center data, various species specific data sets from Montana Fish, Wildlife, and Parks, and Idaho Fish and Game Department, USGS breeding bird survey data, and agency biological input.

Field Verification

Field investigation and verification was conducted where necessary during the fall of 2007 and spring of 2008. Field checking consisted of identifying general habitat characteristics, ground truthing GIS data, and capturing GPS and photo points of check locations. Field verification trips were conducted during the weeks of September 16th, October 14th 2007, and January 20th, 2008. Field verification trips were conducted during the weeks of September 16^{th}, October 14^{th} 2007, and January 20^{th}, 2008. Over 250 field points have been checked and a total of 330 photos points have been taken in Montana and Idaho (see Appendix D of the Biological Technical Report).

Data were mapped for landcover and wildlife habitat. Landcover data was broken down into 21 unique categories. The 21 landcover categories were condensed into 7 general habitat classifications. Biological data was mapped for elemental occurrences of species, habitat use, breeding areas, and migration routes.

3.2.3 DESCRIPTION OF ALTERNATIVE ROUTES - MONTANA

3.2.3.1 Biological Overview

VEGETATION

The study area is located within the Snake River Plain and Middle Rockies ecoregions (EPA 2002). The Snake River Plain ecoregion encompasses the southern portion of the study area located in Idaho, and is dominated by sagebrush steppe, lava fields, and agricultural lands (McGrath et al. 2002). The northern and central portions of the study area are located in the Middle Rockies ecoregion, which primarily contains consist of spruce-fir forests in the mountains and sagebrush steppe and grasslands in the foothills and valleys (McGrath et al. 2002).

Vegetation communities in the northern portion of the study area are dominated by coniferous forests intermixed with grasslands, agriculture and pockets of sagebrush steppe. In the central portion of the study area, vegetation communities transition to one dominated primarily by sagebrush intermixed with fingers of coniferous forests, agriculture, shrublands and grasslands. The southern portion of the study area is more xeric and is dominated primarily by sagebrush, with smaller areas of agriculture, lava fields, and grasslands. Vegetation summaries by community types and MSTI Alternative are included below in Tables 3.2-1, 3.2-2, and 3.2-3.

A total of 77 special status plant species are associated with the alternative route links in the state of Montana. These include 55 BLM sensitive species, 35 USFS and 77 State of Montana sensitive species. There is no USFWS list plant species in Montana associated with the MSTI routes. Montana special plant species habitat and potential link associations are listed in Table 3.2-4.

Conifer and Broadleaf Forest Communities

The conifer and broadleaf forest communities are represented by juniper, mixed conifer, and mixed conifer deciduous forest land use categories. The conifer forest cover type includes whitebark pine (*Pinus albicaulis*), Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*), subalpine fir (*Abies lasiocarpa*), Douglas fir (*Pseudotsuga menziesii*), and ponderosa pine (*Pinus ponderosa*) forests. Associated shrub species can include huckleberry (*Vaccinium* spp.), snowberry (*Symphoricarpos* spp.), and ninebark (*Physocarpus malvaceus*). Associated grass and forb species include bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), beargrass (*Xerophyllum tenax*), smooth woodrush (*Luzula hitchcokii*), and arnica (*Arnica* spp.).

In the study area, broadleaf forests typically occur in stands intermixed with coniferous forest. Broadleaf species primarily occur in moist forest areas, near riparian areas, or woody draws. Dominant species present in these mixed forests include aspen (*Populus tremuloides*), bur oak (*Quercus macrocarpa*), green ash (*Faxinus pennsylvanica*), plains cottonwood (*Populus deltoides*), birch (*Betula* spp.), grand fir (*Abies grandis*), Douglas-fir, Engelmann spruce, subalpine fir, western larch (*Larix occidentalis*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja* *plicata*). Associated shrub species include alder (*Alnus* spp.), huckleberry, serviceberry (*Amelanchier alnifolia*), thimbleberry (*Rubus parviflorum*), snowberry, and mountain-lover (*Pachistima myrsinites*). Conifer and broadleaf forest communities are traversed by approximately 5.5 % of the distance covered by all alternative route links in the project area. The majority (99%) of this community type occurs along the alternative route links in Montana.

Grassland Communities

The grassland community is represented solely by the grassland land use category. Grasslands in the study area are dominated primarily by short to medium height grasses and forbs. These grasslands typically occur in valleys and foothills and on middle to high elevation slopes on south aspects. Dominant species include arrowleaf balsamroot (*Balsamorhiza sagittata*), bluebunch wheatgrass, blue grama (*Bouteloua gracilis*), bluestem (*Andropogon* spp.), green needlegrass (*Stipa viridula*), Idaho fescue, lupine (*Lupinus* spp.), needle and thread grass (*Hesperostipa comata*), rough fescue (*Festuca scabrella*), Timothy grass (*Phleum pratense*), and western wheatgrass (*Pascopyrum smithii*). A portion of these native grasslands are in a disturbed state. Vegetation in these locations can include bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), cheatgrass (*Bromus tectorum*), common dandelion (*Taraxacum officinale*), crested wheatgrass (*Agropyron cristatum*), field brome (*Bromus arvensis*), leafy spurge (*Euphorbia esula*), smooth brome (*Bromus inermis*), spotted knapweed (*Centaurea maculosa*), St. Johnswort (*Hypericum perforatum*), western ragweed (*Ambrosia* spp.), and yellow sweetclover (*Melilotus officinalis*). The grassland community is traversed by approximately 33% of the distance covered by all alternative route links in the project area. The majority (81%) of this community type occurs along the alternative route links in Montana.

PLACEHOLDER FOR LARGE VEGETATION TABLES

Table 3.2-1 Summary (linear miles) of vegetation communities and habitat types by Alternative for the Townsend to Melrose portion of the MSTI project.

Table 3.2-2 Summary (linear miles) of vegetation communities and habitat types by Alternative for the Melrose to State Line portion of the MSTI project.

Table 3.2-3 Summary (linear miles) of overall vegetation communities by Alternative.

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Table 3.2-4 Montana Special Status Plant Species

	Status[1]					General Habitat Association						
Common Name ***(Scientific Name)***	**USFWS[2]**	**BLM**	**USFS**	**Montana**	**Idaho**	**Grass**	**Shrub**	**Sagebrush**	**Forest**	**Riparian Area & Wetland**	**Rock, Bare, Disturbed**	**General habitat requirements**
Austin knotweed *(Polygonum douglasii austina)*			X	X		✓						Upland meadows.
Beaked spikerush *(Eleocharis rostellata)*			X	X						✓		Wet alkaline soils, associated w/warm springs or fens.
Bitterroot milkvetch *(Astragalus scaphoides)*		X	X	X				✓				Sagebrush grasslands, silty soils, between rocky steep open slopes and level benches.
California false-hellebore *(Veratrum californicum)*			X	X						✓		Wet meadows and streambanks in montane and subalpine zones.
Dense-Leaved Antennaria *(Antennaria densifolia)*			X	X							✓	Limestone talus.
Five-leaf Cinquefoil *(Potentilla quinquefolia)*			X	X							✓	Dry gravelly soil exposed ridges and slopes montane to alpine.
Hiker's gentian *(Gentianopsis simplex)*			X	X						✓		Fens, meadows, and seeps in montane and subalpine zones.
Idaho Sedge *(Carex parryana* ssp. *Idahoa)*		X	X	X	X					✓		Wet meadows.
Jove's buttercup *(Ranunculus jovis)*			X	X				✓	✓			Sagebrush grasslands to open forest slopes in montane to subalpine.
Missoula Phlox *(Phlox kelseyi* var. *missoulensis)*			X	X		✓						Open exposed limestone-derived slopes in foothills and montane.

Table 3.2-4 Montana Special Status Plant Species

	Status[1]					General Habitat Association						
Common Name *(Scientific Name)*	USFWS[2]	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	**General habitat requirements**
Payson bladderpod *(Lesquerella paysonii)*			X	X	X				✓		✓	Windswept, gravelly, calcareous ridgecrests, semi-open slopes and rocky floodplains, talus slopes, rocky clearings in conifer forests.
Peculiar moonwort *(Botrychium paradoxum)*			X	X					✓	✓		Mesic meadows, w/spruce and lodgepole pine forests in montane and subalpine zones.
Pod grass *(Scheuchzeria palustris)*			X	X						✓		Wet organic soils of fens, usually w/sphagnum moss, in valley and montane.
Primrose monkeyflower *(Mimulus primuloides)*			X	X						✓		Fens, sphagnum bogs and wet meadows in montane and subalpine zones.
Storm saxifrage *(Saxifraga tempestiva)*			X	X						✓		Vernally moist, open soils in meadows, subalpine to alpine.
Stream orchid *(Epipactus gigantean)*			X	X						✓		Riparian wetland.
Tapertip onion *(Allium acuminatum)*			X	X		✓			✓			open areas, foothills and plains
Trianglelobe moonwort *(Botrychium crenulatum)*			X	X						✓	✓	Stream bottoms, around seeps, edges of marches, wet roadside swales.
Tufted club-rush *(Scirpus cespitosus)*			X	X						✓		Wet meadows and sphagnum bogs in montane to alpine.
Weber's saw-wort *(Saussurea weberi)*			X	X						✓		Rocky, moist meadows in alpine.
Western moonwort *(Botrychium hesperium)*			X	X		✓					✓	Dry to moist, gravelly and lightly disturbed soils of grasslands, meadows.
Alkali primrose *(Primula alcalina)*		X	X	X						✓		Moist to wet alkaline meadows, 6,300-7,200 ft.

Table 3.2-4 Montana Special Status Plant Species

Common Name *(Scientific Name)*	**Status[1]** USFWS[2]	BLM	USFS	Montana	Idaho	**General Habitat Association** Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	**General habitat requirements**
Alpine meadowrue *(Thalictrum alpinum)*		X	X	X						✓		Moist montane and lower subalpine areas, moist alkaline meadows, peat to marl calcareous silt.
Arrow thelypody *(Thelypodium sagittatum* ssp. *Sagittatum)*		X		X						✓		Moist alkaline meadows, alkaline meadows often dry but may be wet vernally.
Ballhead ipomopsis *(Ipomopsis congesta* ssp. *Crebrifolia)*		X		X				✓			✓	Open, often eroding soil, sandy, of sagebrush steppe in the foothill zone.
Beautiful bladderpod *Lesquerella pulchella*		X	X	X		✓			✓		✓	Stony soils, subalpine slopes 8,600-9,200 ft., lower elevations, mtn. mahogany or limber pine woodland, also sparse grasslands.
Beavertip draba *(Draba globosa* (Syn. *D. apiculata*))		X		X						✓		High elevation (above 9,500 ft) near or above treeline, moist sparsely vegetated.
Buff fleabane *(Erigeron ochroleucus* var. *ochroleucus* (Syn. *E. parryi*))		X		X		✓		✓	✓		✓	Skeletal, limestone derived soils, ridge crests, slopes and outcrops at 5,200 to 6,700 ft., nearby veg – sagebrush or juniper woodlands.
California amaranth *(Amaranthus californicus)*		X		X							✓	Disturbed.
Cushion townsendia *(Townsendia condesata)*		X		X							✓	Open rocky limestone soils exposed ridges.
Cusick's horse-mint *(Agastache cusickii)*		X	X	X							✓	Talus slopes.
Dwarf purple monkeyflower *(Mimulus nanus)*		X		X							✓	Dry open often gravelly or sandy slopes, valleys to foothills.
Fendler's cat's-eye *(Cryptantha fendleri)*		X		X							✓	Sandhills, open areas of sand dunes.
Green molly *(Kochia Americana)*		X		X						✓		Saline, sandy clay loams, valleys to foothills.
Green Spleenwort *(Asplenium trichomanes-ramosum* (syn. *A. viride*))			X	X	X						✓	Crevices of limestone, shaded rocks and talus slopes.

Table 3.2-4 Montana Special Status Plant Species

	Status[1]					General Habitat Association						
Common Name *(Scientific Name)*	USFWS[2]	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	General habitat requirements
Hall's rush *(Juncus hallii)*			X	X	X					✓		Moist to dry meadows and slopes, from valley to montane zones.
Hoary Phacelia *(Phacelia incana)*		X		X			✓				✓	Stony, limestone-derived soil, steep talus slopes in foothills, associated w/Mtn. mahogany.
Idaho fleabane *(Erigeron asperugineus)*		X		X							✓	Windswept rock or gravelly slopes and ridges in alpine zone.
James stitchwort *(Pseudostellaria jamesiana* (Syn. *Stellaria jamesiana*))		X		X					✓			Woodland slopes in foothills or montane.
Large-leafed balsamroot *(Balsamorhiza macrophylla)*		X	X	X		✓		✓	✓			Sagebrush, grasslands, montane zone, also Douglas fir-lodgepole pine forest, in forest openings on steeper east-facing slopes with rockier and clayey soils.
Lemhi beardtongue *(Penstemon lemhiensis)*		X	X	X		✓		✓	✓		✓	Rock outcrops, big sagebrush and bunchgrasses, open soils, openings in lodgepole pine.
Lemmon's alkaligrass *(Puccinellia lemmonii)*		X		X						✓		Alkali meadows.
Lesser rushy milkvetch *(Astragalus convallarius var. convallarius* (Syn. *A. junciformis))*		X		X		✓						Hillsides, bluffs, benches, and valley floors, sandy loamy or clay soils.
Linearleaf fleabane *(Erigeron linearis)*		X		X		✓		✓	✓		✓	Dry, often rocky soils from foothills to moderate elevation, grasslands and mtn big sagebrush.
Long sheath waterweed *(Elodea bifoliata* (Syn. *E. longivaginata*))		X		X						✓		Shallow water of ponds or lakes on the plains.
Low northern-rockcress *(Braya humilis)*		X		X						✓		Sparsely vegetated, moist, calcareous soil in alpine zone.
Marsh (false)felwort *(Lomatogonium rotatum)*		X		X						✓		Alkaline meadows and fens in montane zone.
Matted buckwheat *(Eriogonum caespitosum)*		X		X				✓				Dry, stony limestone, sagebrush steppe.
Meadow lousewort *(Pedicularis crenulata)*		X		X						✓		Riparian meadow habitat.
Meadow pennycress *(Thlaspi parviflorum)*		X		X		✓				✓		Sagebrush steppe mid-elevation, grasslands to alpine turf, moist habitat.

Table 3.2-4 Montana Special Status Plant Species

	Status[1]					General Habitat Association						
Common Name ***(Scientific Name)***	**USFWS[2]**	**BLM**	**USFS**	**Montana**	**Idaho**	**Grass**	**Shrub**	**Sagebrush**	**Forest**	**Riparian Area & Wetland**	**Rock, Bare, Disturbed**	**General habitat requirements**
Mealy primrose *(Primula incana)*		X	X	X						✓		Saturated calcareous wetlands, seep habitat.
Musk-root *(Adoxa moschatellina)*		X	X	X						✓		shaded, damp cliffs and slopes
Northwestern thelypody *(Thelypodium paniculatum)*		X		X						✓		Wet sedge meadows.
Painted milkvetch *(Astragalus ceramicus* var. *apus)*		X		X							✓	Sand dunes, needs early succession sand dune habitat.
Pink agoseris *(Agoseris lackschewitzii)*		X		X	✓					✓		Subalpine wet meadows where soil is saturated
Prostrate hutchensia *(Hutchinsia procumbents)*		X		X				✓		✓		Vernally moist, alkaline soils of sagebrush steppe in the valley and lower montane zones.
Railhead milkvetch *(Astragalus terminalis)*		X		X		✓	✓	✓				Alkaline barren sites, valley grasslands, sagebrush.
Railroad Canyon wild buckwheat *(Eriogonum soliceps)*		X		X				✓			✓	Coarse alkaline clay soils, dry sparse veg, sagebrush, dry stony or shallow soils.
Rocky Mountain dandelion *(Taraxacum eriophorum)*		X		X						✓		Open riparian and wetland areas in foothills and montane, soils silty and saturated, 6,550, 6,900 -9,500 ft.
Sand wildrye *(Leymus flavescens* (Syn. *Elymus flavescens*))		X		X							✓	Sandy soils, sand dunes, and sandy roadsides.
Sapphire rockcress *(Arabis fecunda)*		X	X	X				✓	✓			Mod to steep slopes, sagebrush, ponderosa pine, limber pine woodland or sparse ag. spicatum grassland.
Showy golden eye *(Heliomeris multiflora* var. *multiflora* (Syn. *Viguiera multiflora*))		X		X					✓			Aspen woodlands and open slopes.
Showy townsendia *(Townsendia florifera)*		X		X		✓		✓				Open soil on flats and eroding ridges of grasslands and sagebrush steppe in the foothill zone.

Table 3.2-4 Montana Special Status Plant Species

	Status[1]					General Habitat Association						
Common Name *(Scientific Name)*	**USFWS[2]**	**BLM**	**USFS**	**Montana**	**Idaho**	**Grass**	**Shrub**	**Sagebrush**	**Forest**	**Riparian Area & Wetland**	**Rock, Bare, Disturbed**	**General habitat requirements**
Silver chicken sage *(Sphaeromeria argentea)*		X		X		✓		✓				Shallow limestone soils of sagebrush steppe and dry rocky bunchgrass slopes.
Simple bog sedge *(Kobresia simpliciuscula)*		X		X						✓		Moist tundra in alpine zone.
Sitka columbine *(Aquilegia Formosa)*		X		X					✓	✓		Moist soil of open coniferous, cottonwood, or aspen forests.
Slender-branched popcorn flower *(Plagiobothrys leptocladus)*		X		X						✓		Drying mud on the shores of ponds in the plains and foothills.
Small yellow lady's-slipper *(Cypripedium parviflorum)*		X		X					✓	✓		Fens, damp mossy woods, seepage areas, moist forest-meadow ecotones.
Soft blazingstar *(Mentzelia Montana)*		X		X		✓						Grasslands and sparsely vegetated plains slopes.
Tapered-roor Indian potato *(Orogenia fusiformis)*		X	X	X		✓						Open slopes, ridges, and meadows, lower foothills to mid-montane.
Taper-tip desert-parsley *(Lomatium attenuatum)*		X		X							✓	Scree. Dry gravelly south or west facing slopes, rocky outcrops.
Thorn skeletonweed *(Stephanomeria spinosa* (Syn. *Lygodesmia spinosa*))		X		X		✓						Arid grasslands on stony loam at lower elevations, 5,000-6,400 ft.
Western boneset *Ageratina occidentalis ((*Syn. *Eupatorium occidnetale))*		X		X							✓	Rocky outcrops & slopes in montane & lower subalpine.
Whipple's beardtongue *(Penstemon whippleanus)*		X		X					✓		✓	Open rocky slopes, meadows of scattered timber, subalpine to alpine.
White-stemmed globe-mallow *(Sphaeralcea munroana)*		X		X				✓				Open often calcareous soil of sagebrush grasslands in valley and foothills.
Wind River draba *(Draba ventosa)*		X		X							✓	Scree and shifting talus slopes.
Discoid Goldenweed *(Happlopappus macronema* var. *macronema)*			X	X							✓	Rocky open sparsely wooded slopes or coarse talus, 7,600 ft. elevation.

[1]X = sensitive [2]T= threatened, E = endangered, EXP = experimental, C = candidate

Shrubland Communities (other than sagebrush)

The shrubland community is represented by bitterbush and mixed shrubland land use categories. Xeric shrublands in the study area occur primarily in valleys and low elevation mountain slopes where mixed shrubs are dominant with an understory of grasses and forbs. Dominant shrub species present in xeric shrublands include bitterbrush (*Purshia tridentata*), creeping juniper (*Juniperus horizontalis*), greasewood (*Sarcobatus* spp.), mountain mahogany (*Cercocarpus* spp.), rabbitbrush (*Chrysothamnus* spp.), four-wing saltbush (*Atriplex canescens*), spiny hopsage (*Grayia spinosa*), and budsage (*Artemisia spinescens*). Associated grass species include bluebunch wheatgrass, blue gramma, Idaho fescue and western wheatgrass.

Mesic shrublands in the study area occur in mountain areas in draws and valleys. Mesic shrublands are dominated by alder, buffalo berry (*Shepherdia argentea*), ceanothus (*Ceanothus* spp.), huckleberry, Labrador tea (*Ledum glandulosum*), ninebark, mountain lover, mountain heath (*Phyllodoce empetriformis*), shiny-leaf spiraea (*Spiraea betulifolia*), sumac (*Rhus* spp.), snowberry, serviceberry, and whortleberry (*Vaccinium scoparium*). Common associated species include arnica, beargrass, and pinegrass (*Calamagrostis rubescens*). The shrubland community is traversed by approximately 5.5% of the distance covered by all alternative route links in the project area. The majority (76%) of this community type occurs along the alternative route links in Montana.

Sagebrush Communities

The sagebrush community is represented by low and big sagebrush land use categories. Sagebrush (*Artemisia* spp.) shrublands occur primarily in valleys and occasionally occur on low to mid elevation mountain slopes. The species of sagebrush present depends on site specific requirements such as elevation, slope, aspect, precipitation, and soil type. Sagebrush species present within the study area include basin big sagebrush (*A. tridentata* ssp. *tridentata*), mountain big sagebrush (*A. tridentata* ssp. *vaseyana*), and Wyoming big sagebrush (*A. tridentata* ssp. *wyomingensis*), silver sage (*A. cana*), and black sagebrush (*Artemisia nova*). Associated grass and forb species include bluebunch wheatgrass, blue grama, Idaho fescue, and western wheatgrass. The sagebrush community is traversed by almost half (47.5%) of the distance covered by all alternative route links in the project area. The majority (71%) of this community type occurs along the alternative route links in Idaho.

Riparian, Wetland, and Water Communities

The riparian, wetland, and water communities are represented by riparian shrub, riparian tree, cottonwood, marsh, and water land use categories. Forested riparian areas are dominated by conifers, broadleaf species or a mixture of both. Dominant conifer species present include Douglas fir, Engelmann spruce, grand fir, subalpine fir, western hemlock and western red cedar. Dominant broadleaf species present in riparian areas include aspen, birch, black cottonwood (*Populus trichocarpa*), bur oak, green ash, and plains cottonwood. Associated shrub species present in forest dominated riparian areas include alder, bunchberry (*Cornus canadensis*), serviceberry, thimbleberry, and willow. Within shrub dominated riparian areas, species of willow are dominant. Additional species present in these areas include alder, black hawthorn (*Crataegus douglasii*), bog birch (*Betula glandulosa*), currant (*Ribes* spp.), red-osier dogwood (*Cornus stolonifera*), and water birch (*Betula occidentalis*).

Wetlands dominated by graminoid and forb species are also present in the study area. Species present in wetlands include rushes (*Juncus* spp.), bluejoint reedgrass (*Calamagrostis canadensis*), sedges, bulrushes (*Scirpus* spp.), spikerush (*Eleocharis* spp.) cinquefoil (*Potentilla* spp.), cattails (*Typha* spp.), saxifrage (*Saxifraga* spp.), and tufted hairgrass (*Deschampsia caespitosa*).

The riparian, wetland, and water communities are traversed by approximately 3.5% of the distance covered by all alternative route links in the project area. The majority (87%) of this community type occurs along the alternative route links in Montana.

Sparse Vegetation Communities

The sparse vegetation community is represented by rock, vegetated lava, and mixed barren land use categories. Vegetated lava is lava with greater than 5% total vegetation cover. Plants usually occur on islands or pockets in the lava flow, soils are thin. Mixed barren land is generally defined as barren land and exposed soil with less than 5% total vegetative cover. Rock communities are defined as exposed rock, rock outcrops, talus or scree slopes with less than 5% vegetative cover. Species that may occur in these communities include: Torrey's milkvetch (*Astragalus calycosus*), basalt milkvetch (*Astragalus filipes*), lava aster (*Ionactis alpina*), fennel-leaved desert parsley (*Lomatium foeniculaceum*), tufted evening-primrose (*Oenothera caespit*osa), woolly groundsel (*Packera cana*), various phlox species (*Phlox* spp.), Indian ricegrass (*Achnatherum hymenoides*), and broom snake weed (*Gutierrezia sarothrae*). Sparse vegetation communities are traversed by approximately 0.5% of the distance covered by all alternative route links in the project area. The majority (63%) of this community type occurs along the alternative route links in Montana.

Anthropogenic Communities

The anthropogenic community is represented by irrigated and non-irrigated agriculture, center pivot irrigation agriculture, urban, and disturbed. The anthropogenic community is traversed by approximately 5.4% of the distance covered by all alternative route links in the Project. The majority (52%) of this community type occurs along the alternative route links in Montana. This community type will not be included in the biological resource section. Further detail about this community type can be found in the Land Use Technical report.

Noxious Weeds

Noxious weeds are not a distinct community but are an increasingly important factor in development projects. The State of Montana defines them as any established or introduced exotic plant species, which may render the land unfit for agriculture, forestry, livestock, wildlife, or other beneficial, uses or that may harm native plant communities (MCA §7-22-2101 to 2153). Noxious weeds are managed at the county level in Montana. Federal lands managed by the BLM and USFS are managed under the agencies respective Resource Management Plan and Forest Plan. There are approximately 2,000 weed species identified in the U.S. (Morishita and Lass 1999). Montana designates 31 weed species as the highest priority for management (REF). A summary of noxious weed species potentially occurring along the Alternative routes is summarized in Table 3.2-5 below. Noxious weed distributions are known to the county level.

Table 3.2-5 Noxious Weed Occurrence According to Montana County Association Pertaining to the MSTI Project

Common Name (*Scientific Name*)	County Occurrence	Link Association	Route Association: Townsend to Mill Creek (Melrose) Pre.	Alt. 1	Alt. 2	Route Association: Mill Creek to State Line Pre.	Alt. 1	Alt. 2
Absinth wormweed (*Artemisia absinthium*)	Beaverhead	8, 11-22, 11-3, 11-4, 13, 16's, 18-1	X	X	X	X	X	X
Babysbreath (*Gypsophilia paniculata*)	Deer Lodge	2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-4, 8	X	X	X			
Black henbane (*Hyoscyamus niger*)	Beaverhead, Broadwater Jefferson	1, 8, 13, 16, 2-1, 2-2, 2-3, 3-1, 4-1, 11-3, 11-4, 11-22, 18-1	X	X	X	X	X	X
Burdock (*Arctium minus*)	Beaverhead, Broadwater	1, 8, 13, 16, 2-1, 2-2, 2-3, 3-1, 4-1, 11-3, 11-4, 11-22, 18-1	X	X	X	X	X	X
Common mullein (*Verbascum thapsus*)	Beaverhead, Deerlodge	8, 13, 16, 4-2, 7-6, 7-7, 7-9, 11-3, 11-4, 11-21, 11-22, 18-1	X	X	X	X	X	X
Common teasel (*Dipsacus fullonum*)	Beaverhead	8, 11-22, 11-3, 11-4, 13, 16, 18-1	X	X	X	X	X	X
Curley dock (*Rumex crispus*)	Deerlodge	2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-4, 8	X	X	X			
Field scabious (*Knautia arvensis*)	Beaverhead, Madison	8, 11-22, 11-3, 11-4, 13, 16, 18-1	X	X	X	X	X	X
Kochia (*Kochia scoparia*)	Deerlodge	2-2, 2-3, 3-1, 3-2, 4-1, 4-2, 4-3, 4-4, 7-1, 7-2, 7-3, 7-4, 8	X	X	X			
Meadow salsify (*Tragopogon pratiusus*)	Silverbow	4-2, 7-3, 7-4, 7-5, 7-6, 7-7, 7-8, 8, 11-21, 11-22	X	X	X			
Musk thistle (*Cardus nutans*)	Broadwater, Deerlodge, Madison	1, 8, 2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 7-6, 7-7, 7-9, 11-21	X	X	X			
Perennial sowthistle (*Sonchus aevensis*)	Broadwater, Deerlodge	1, 2-1, 2-2, 2-3, 3-1, 4-1, 4-2, 7-6, 7-7, 7-9, 11-21	X	X	X			
Poison hemlock (*Conuim maculatum*)	Broadwater	1, 2-1, 2-2, 2-3, 3-1, 4-1	X	X	X			
Puncturevine (*Tribulus terrestris*)	Silverbow	4-2, 7-3, 7-4, 7-5, 7-6, 7-7, 7-8, 8, 11-21, 11-22	X	X	X			
Scentless chamomile (*Matricaria maritime*)	Beaverhead	8, 11-22, 11-3, 11-4, 13, 16, 18-1	X	X	X	X	X	X
Swainsonpea (*Sphaerophysa salaula*)	Beaverhead	8, 11-22, 11-3, 11-4, 13, 16, 18-1	X	X	X	X	X	X
Wild licorice (*Centaurea pratensis*)	Broadwater	1, 2-1, 2-2, 2-3, 3-1, 4-1	X	X	X			

Source: Montana Department of Agriculture 2005

WILDLIFE

The vegetative communities associated with the proposed transmission line links support a diversity of wildlife species. This report focuses on habitat associations for wildlife species. Wildlife species that occupy the seven general habitat classifications and are fairly common in the vicinity of the alternative route links are included below. In addition to habitat associations, specific habitats that are biologically important (i.e. winter habitat, breeding habitat, etc.) to certain species are included in tabular summaries below.

A number of special status animal species are known to occur or have the potential to occur in the vicinity of the alternative route links. These include federally listed species under ESA as well species designated as sensitive by the BLM, and USFS. There are five species listed under ESA, 74 BLM sensitive species, and 16 USFS Sensitive species in Montana. State sensitive species include those species designated as Tier 1 species in Montana. In Montana there are 84 Tier one sensitive species. Federally designated special status species is listed in Table 3.2-6 below with habitat associations. State designated special status species are included in Appendix B of the Biological Technical Report in Volume II. There is no critical habitat designated along any of the alternative routes.

Table 3.2-6 Special Status Animal Species of Montana that May Occur in the Study Area

	Status[1]					General Habitat Association					
Common Name ***(Scientific Name)***	**USFWS[2]**	**BLM**	**USFS**	**Montana**	**Idaho**	**Grass**	**Shrub**	**Sagebrush**	**Forest**	**Riparian Area & Wetland**	**Rock, Bare, Disturbed**
BIRDS											
American Peregrine Falcon *Falco peregrinus anatum*		X	X	✓							✓
Black-backed woodpecker *Picoides arcticus*		X	X	✓					✓		
Flammulated Owl *Otus flammeolus*		X	X	✓					✓		
Greater Sage-Grouse *Centrocercus urophasianus*		X	X	✓	✓			✓		✓	
Harlequin Duck *Histrionicus histrionicus*		X	X	✓						✓	
Northern Goshawk *Accipiter gentilis*		X	X	✓					✓		
Trumpeter Swan *Cygnus buccinator*		X	X	✓						✓	
Black tern *Chilodonias niger*		X		✓						✓	
Blue-gray gnatcatcher *Polioptila caerulea*		X		✓					✓		
Common loon *Gavia immer*		X		✓						✓	
Dickcissel *Spiza Americana*		X		✓		✓					
Ferruginous hawk *Buteo regalis*		X		✓		✓	✓	✓			

Table 3.2-6 Special Status Animal Species of Montana that May Occur in the Study Area

Common Name *(Scientific Name)*	**Status[1]**					**General Habitat Association**					
	USFWS[2]	**BLM**	**USFS**	**Montana**	**Idaho**	**Grass**	**Shrub**	**Sagebrush**	**Forest**	**Riparian Area & Wetland**	**Rock, Bare, Disturbed**
Franklin's gull *Larus pipixcan*		X		✓						✓	
Golden eagle *Aquila chrysaetos*		X		✓		✓	✓				
Great gray owl *Strix nubulosa*		X		✓					✓		
Loggerhead shrike *Lanius ludovicianus*		X		✓			✓				
Long-billed curlew *Numenius americanus*		X		✓		✓					
Chestnut-collared longspur *Calcarius ornatus*		X		✓		✓					
McCown's longspur *Calcarius mccownii*		X		✓		✓					
Marbled godwit *Limosa fedoa*		X		✓		✓					
Mountain plover *Charadrius montanus*		X		✓		✓					
Sage thrasher *Oreoscoptes montanus*		X		✓				✓			
Baird's sparrow *Ammodramus bairdii*		X		✓		✓	✓				
Brewer's sparrow *Spizella breweri*		X		✓		✓	✓				
LeConte's sparrow *Ammodramus leconteii*		X		✓		✓					
Nelson's sharp-tailed sparrow *Ammodramus nelsoni*		X		✓						✓	
Sage sparrow *Amphispiza belli*		X		✓			✓	✓			
Sedge wren *Cistothorus platensis*		X		✓						✓	
Sprague's pipit *Anthus spragueii*		X		✓		✓					
Swainson's hawk *Buteo swainsonii*		X		✓					✓		
White-faced ibis *Plegadis chihi*		X		✓						✓	
Willet *Cataptrophorus semipalmatus*		X		✓		✓					
Wilson's phalarope *Phalaropus tricolor*		X		✓						✓	
Three-toed woodpecker *Picoides tridactylus*		X		✓					✓		
Red-headed woodpecker *Melanerpes erythrocephalus*		X		✓					✓		

Table 3.2-6 Special Status Animal Species of Montana that May Occur in the Study Area

Common Name *(Scientific Name)*	Status[1]					General Habitat Association					
	USFWS[2]	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed
Yellow rail *Coturnicops noveboracensis*		X		✓						✓	
MAMMALS											
Towsend's Big-Eared Bat *Corynorhinus townsendii*		X	X	✓							✓
Spotted bat *Euderma maculatum*		X		✓				✓			✓
Fringe-tailed myotis *Myotis thysanodes pahasapensis*		X		✓			✓				✓
Fringed myotis *Myotis thysanodes*		X		✓			✓		✓	✓	
Long-legged myotis *Myotis volans*		X		✓					✓		
Long-eared myotis *Myotis evotis*		X		✓					✓		
Northern myotis *Myotis septentrionalis*		X		✓					✓		✓
Pallid bat *Antrozous pallidus*		X		✓				✓			
White-tailed prairie dog *Cynomys leucurus*		X		✓		✓					
Black-footed ferret *Mustela nigripes*	E	X		✓		✓					
Swift fox *Vulpes velox*		X		✓		✓					
Western spotted skunk *Spilogale gracilis*		X		✓		✓					
Fisher *Martes pennanti*		X	X	✓					✓		
Canada Lynx *Lynx Canadensis*	T			✓	✓				✓		
Gray Wolf *Canis lupus*	EX	X		✓	✓				✓		
Grizzly Bear *Ursus arctos horribilis*	T			✓					✓		
Great Basin Pocket Mouse *Perognathus parvus*		X	X	✓		✓					
North American Wolverine *Gulo gulo luscus*		X	X	✓					✓		
Northern Bog Lemming *Synaptomys borealis*			X	✓					✓	✓	
Pygmy Rabbit *(Brachylagus idahoensis*		X	X	✓	✓			✓			
AMPHIBIANS AND REPTILES											
Northern leopard frog *Rana pipiens*		X	X	✓	✓					✓	
Plains spadefoot *Spea bombifrons*		X	X	✓						✓	

Table 3.2-6 Special Status Animal Species of Montana that May Occur in the Study Area

	Status[1]					General Habitat Association					
Common Name ***(Scientific Name)***	**USFWS[2]**	**BLM**	**USFS**	**Montana**	**Idaho**	**Grass**	**Shrub**	**Sagebrush**	**Forest**	**Riparian Area & Wetland**	**Rock, Bare, Disturbed**
Western toad *Bufo boreas*		X	X	✓				✓			
Great plains toad *Bufo cognatus*		X		✓		✓					
Coeur d' Alene salamander *Plethodon idahoensis*		X		✓						✓	
Great short-horned lizard *Phrynosoma hernandesi*		X		✓			✓				
Milk snake *Lampropeltis traingulum*		X		✓							
Snapping turtle *Chelydra serpentine*		X		✓						✓	
Spiny softshell turtle *Apalone spinifera*		X		✓						✓	
Western hog-nosed snake *Heterodon nasicus*		X		✓							
FISH											
Bull Trout *Salvelinus confluentus*	T			✓	✓					✓	
Artic grayling (fluvial population) *Thymallus arcticus*		X		✓						✓	
Blue sucker *Cycleptus elongatus*		X		✓						✓	
Northern redbelly X Finescale dace *Phoxinus eos x phoxinus neogaeus*		X		✓						✓	
Paddlefish *Polyodon spathula*		X		✓						✓	
Pearl dace *Semotilus/Margariscus margarita*		X		✓						✓	
Sauger *Stizostedion canadense*		X		✓						✓	
Shortnose gar *Lepisosteus platostomus*		X		✓						✓	
Sicklefin chub *Macrhybopis meeki*		X		✓						✓	
Sturgeon chub *Macrhybopis gelida*		X		✓						✓	
Westslope cutthroat trout *Oncorhhynchus clarki lewisi*		X		✓	✓					✓	
Yellowstone cutthroat trout *Oncorhhynchus clarki bouvieri*		X		✓	✓					✓	

[1]X = sensitive [2]T= threatened, E = endangered, EXP = experimental, C = candidate

Wildlife of Conifer and Broadleaf Forest Habitat

Passerines (perching birds) of forest habitat like to occur include American robin (*Turdus migratorius*), dark-eyed junco (*Junco hyemalis*), hermit thrush (*Catharus guttatus*), mountain chickadee (*Parus gambeli*), pine grosbeak (*Pinicola enucleator*), pine siskin (*Carduelis pinus*), ruby-crowned kinglet (*Regulus calendula*), red-breasted nuthatch (*Sitta canadensis*), Stellar's jay (*Cyanocitta stelleri*), and yellow-rumped warbler (*Dendroica coronata*) (USFS 2001). Wild turkey (*Meleagris gallopavo*), mourning doves, spruce, blue, and ruffed grouse (*Falcipennis canadensis*, *Dendragapus obscurus*, and *Bonasa umbellus* respectively), and gray partridge (*Perdix perdix*) are gamebirds found along the MSTI alternative route links in this habitat type. Other avian species likely to be found include the hairy woodpecker, downy woodpecker, and Williamson's sapsucker (*Sphyrapicus thyroideus)*. Common birds of prey likely found in forest habitats along the MSTI alternative route links include red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii)*, and the great horned owl (*Bubo virginianus*) (USFS 2001).

A variety of mammal species typify habitats in conifer and broadleaf communities of southwestern Montana. Small and medium-sized mammals (lagomorphs and rodents) that are likely to be found in forest habitats within the project area include mountain cottontail (*Syvilagus natalii*), deer mouse (*Peromyscus maniculatus*), long-tailed vole (*Microtus longicaudus*), southern red-backed vole (*Clethrionomys gapperi*), least chipmunk (*Tamius minimus*), yellow pine chipmunk (*T. amoenus*), red squirrel (*Tamiasciurus hudsonicus*), Northern flying squirrel (*Glaucomys sabrinus*), Columbian ground squirrel (*Spermophilus columbianus*), Golden-mantled ground squirrel (*S. lateralis*), bushy-tailed woodrat (*Neotoma cinerea*), and porcupine (*Erethizon dorsatum*) (Foresman 2001; MTFWP 2008). Carnivores that may occur in coniferous forest habitat along the MSTI alternative route links include coyote (*Canis latrans*), red fox (*Vulpes vulpes*), long-tailed weasel (*Mustela frenata*), wolverine (*Gulo gulo*), grizzly and black bear (*Ursus arctos* and *U. americana*), cougar (*Puma concolor*), and bobcat (*Lynx rufus*) (Foresman 2001; MTFWP 2008). Wildlife movement corridors facilitate travel between disconnected habitats and are summarized in Table 3.2-7. Conifer forest provides large game winter habitat along the MSTI alternative route links. Important ungulate (hoofed animal) species include moose (*Alces alces*), elk (*Cervus canadensis*) and mule deer (*Odocoileous hemionus*).

Typical bat species of forest habitats include silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*); little brown bat (*Myotis lucifugus*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), Townsend's big-eared bat (Corynorhinus townsendii) and spotted bat (*Euderma maculatum*) (Foresman 2001).

Amphibians and reptiles documented in with the potential to occur in forest habitats along the MSTI alternative route links include western toad (*Bufo boreas*) and western rattlesnake (*Crotalis viridis*) (MTFWP 2008).

Table 3.2-7 Linear Miles of Wildlife Movement Corridors Crossed by the Proposed MSTI Alternatives in Montana

Alternative	Total Linear Miles of Wildlife Movement Corridor	Wildlife Movement Corridor* (Priority)						
		DD (VL)	HP (L)	PH (VH)	SCB (VH)	TSB (VH)	TRB (L)	TRH (VL)
TOWNSEND TO MILL CREEK (MELROSE) SEGEMENT								
A1: Preferred Route	27.6	7.2	0	11.8	0	0	8.6	0
A2: Parallel Colstrip Lines Route	19	7.2	0	11.8	0	0	0	0
A3: Maximize Utility Corridors	27.4	7.2	0	11.8	0	0	8.4	0
MILL CREEK TO STATE LINE SEGMENT								
B1: Preferred Route	61.6	28.3	8.2	11.18	13.9	0	0	0
B2: Sheep Creek Route	67.1	19.9	18.5	11.8	0	16.9	0	0
B3: I-15 Route	48.3	28.3	8.2	11.8	0	0	0	0

*DD = Divide to Dillon, HP = Horse Prairie, PH = Pioneers to Highlands, SCB = Sage Creek Basin, TSB = Tendoys to South Beaverhead, TRB = Tobacco Roots to Boulder, TRH = Tobacco Roots to Highlands, VL = very low, L = low, VH = very high

Source: American Wildlands 2008

Wildlife of Grassland Habitat

Common passerine bird species inhabiting grasslands include the common raven (*Corvus corax*), western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), western kingbird (*Tyrannus verticalis*), lark bunting (*Calamospiza melanocorys*), savannah sparrow (*Passerculus sandwichensis*), and vesper sparrow (*Pooecetes gramineus*) (TBNA 2005). Birds of prey include the golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), prairie falcon (*Falco mexicanus*), American kestrel (*Falco sparverius*), great horned owl, and burrowing owl (*Athene cunicularia*). Sharp-tailed grouse (*Tympanuchus phasianellus*), chukar (*Alectoris chukar*), and gray partridge (*Perdix perdix*) are the most likely upland gamebirds found along the alternative route links associated grassland habitat. Open grassland species may include mourning dove (*Zenaida macroura*), common poorwill (*Phalaenoptilus nuttalii*), broad-tailed hummingbird (*Selasphorus platycercus*), and black-chinned hummingbird (*Archilochus alexandri*). Waterfowl, waterbird, and shorebird use of grasslands is limited along the alternative route links.

A variety of mammal species typify habitats in grassland communities of southwestern Montana. Grassland lagomorphs and small mammals likely include black-tailed jackrabbit (*Lepus californicus*), white-tailed jackrabbit (*L. californicus*), black-tailed prairie dog (*Cynomys ludovicianus*), northern pocket gopher (*Thomonmys talpoides*), deer mouse, Great Basin pocket mouse (*Paragnathus parvus*), northern grasshopper mouse (*Onychomys leucogaster*), montane vole (*Microtus montanus*), and long-tailed vole (Foresman 2001; MTFWP 2008). Common grassland carnivores include coyote (*Canis latrans*), long-tailed weasel, badger (*Taxidea taxus*), and striped skunk (*Mephitis mephitis*) (Foresman 2001; MTFWP 2008).

Elk, whitetail (*Odecoileus viginiana*) and mule deer, and pronghorn (*Antilocapra americana*) are the primary game species which occur in open grassland habitats (MTFWP 2008). Ideal elk habitat contains forested areas interspersed with meadows. However, open grasslands at low elevations may be used during winter (agency defined winter range and critical habitat are included in the inventories listed below). Open grasslands, particularly with scattered shrubs, are used to some degree during winter. Populations for both may vary seasonally and with severity of winter conditions that influence migration movement from elevation to lower elevations. A summary of big game winter and elk summer habitat crossed by the proposed Alternative routes is included in Tables 3.2-8 and 3.2-9. Wildlife movement corridor data is summarized in Table 3.2-7. Grassy habitats in proximity to high relief rocky and sparse habitat may provide forage for bighorn sheep (*Ovis canadensis*)

Table 3.2-8 Linear Miles of Big Game Winter Habitat Crossed by the Proposed MSTI Alternatives in Montana

Alternative	Critical Winter	Winter Habitat				
	Elk	Elk	Mule Deer	Pronghorn	Moose	Bighorn
TOWNSEND to MILL CREEK (MELROSE) SEGMENT						
A1: Preferred Route	0	32.1	40.9	0	3.0	10.4
A2: Parallel Colstrip Lines Route	1.1	22.2	55.6	0	38.9	10.4
A3: Maximize Utility Corridors	10.1	78.5	21.6	0	0	10.4
MILL CREEK TO STATE LINE SEGMENT						
B1: Preferred Route	0	0	30.2	36.5	0	0.6
B2: Sheep Creek Route	0	2.5	25.8	0	0	0.6
B3: I-15 Route	0	0	19.1	24.8	0	0.6

Table 3.2-9 Linear Miles of Elk Summer Habitat Crossed by the Proposed MSTI Alternatives in Montana

Alternative	Summer Elk Habitat			
	Calving	Calving Critical	Calving within 0.5 miles of Road	Calving critical within 0.5 miles of Road
TOWNSEND TO MILL CREEK (MELROSE) SEGMENT				
A1: Preferred Route	3.1	0	15.7	0
A2: Parallel Colstrip Lines Route	18.3	1	48.2	1.8
A3: Maximize Utility Corridors	3.1	0	13.4	0
MILL CREEK TO STATE LINE SEGMENT				
B1: Preferred Route	0	0	1.3	0
B2: Sheep Creek Route	0.1	0	4.2	0
B3: I-15 Route	1	0	1.8	0

Bat species are highly mobile and may range great distances between day roost habitat and high quality feeding habitat. Bat species that may use grassland habitats include fringed myotis and small-footed myotis (*Myotis ciliolabrum*) (Foresman 2001).

Amphibians and reptiles that may occur in grasslands include western toad (*Bufo boreas*), short-horned lizard (*Phrynosoma douglassii*), western fence lizard (*Scelopus occidentalis*), racer (*Coluber constrictor*), and western terrestrial garter snake (*Thamnophis elegans*) (MTFWP 2008).

Wildlife of Shrubland Habitat

Common passerine bird species inhabiting shrublands include green-tailed towhee (*Pipilo chlorurus*), black-headed grosbeak (*Pheucticus melanocephalus*), blue-gray gnatcatcher (*Polioptila caerulea*), MacGillivray's warbler (*Oporornis tolmiei*), and lazuli bunting (*Passerina ciris*)(BBS 2007). Common birds of prey of shrublands are red-tailed hawk, Cooper's hawk (*Accipiter cooperii*), common nighthawk (*Chordeiles minor*), great horned owl, northern saw-whet owl (*Aegolius acadicus*), and sharp-shinned hawk (*Accipiter striatus*). Other shrubland inhabitants may include mourning dove, broad-tailed hummingbird, northern flicker (*Colaptes auratus*), and ladder-backed woodpecker (*Picoides scalaris*) (BBS 2007).

A variety of mammal species typify habitats in shrubland communities of southwestern Montana. Small and medium-sized mammals (insectivores, lagomorphs, rodents) that may occur in shrublands include Merriam's shrew (*Sorex merriami*), mountain cottontail, black-tailed jackrabbit, white-tailed jackrabbit, deer mouse, Great Basin pocket mouse, Montane vole, northern pocket gopher, least chipmunk, golden-mantled ground squirrel, and woodrat (Foresman 2001; MTFWP 2008).

Because of the array of small and medium sized mammalian prey and abundant cover, shrub communities typically support higher densities of carnivore species. Among them are coyote, red fox, cougar, and bobcat (Foresman 2001; MTFWP 2008).

Shrublands are utilized by a variety of big game species including elk and mule deer. Elk use of shrublands increases during winter due to their increased dependence on browse (MTFWP 2008). Bighorn sheep may occur, as described previously.

Bat species that may use shrub-dominated habitats include fringed myotis, small-footed myotis (*Myotis ciliolabrum*), long-eared myotis, Townsend's big-eared bat and spotted bat (Foresman 2001).

Amphibians and reptiles that potentially occur in shrublands include Woodhouse's toad (*Bufo woodhousii*), gopher snake (*Pituophis catenifer*), western rattlesnake (*Crotalus viridis*), and western fence lizard (MTFWP 2008).

Wildlife of Sagebrush Habitat

In Montana's sagebrush dominated communities, birds are similar to those in mixed shrublands described in the previous section. Species include Swainson's hawk (*Buteo swainsoni*), golden eagle (*Aquila chrysaetos*), sage grouse (*Centrocercus urophasianus*), Brewer's sparrow (*Spizella breweri*), sage sparrows (*Amphispiza belli*), and sage thrasher (*Oreoscoptes montanus*).

Table 3.2-10 Linear Miles of Sage Grouse Habitat Crossed by the Proposed MSTI Alternatives and Sage grouse Lek Proximity to the Proposed MSTI Alternatives in Montana

Alternative	High Quality Grouse Habitat*	Linear mileage of line within 2 miles of a lek	Linear mileage of line within 4 miles of a lek
TOWNSEND TO MILL CREEK (MELROSE) SEGMENT			
A1: Preferred Route	5.4	0	7.1
A2: Parallel Colstrip Lines Route	5.4	0	7.1
A3: Maximize Utility Corridors	5.4	0	7.1
MILL CREEK TO STATE LINE SEGMENT			
B1: Preferred Route	64.2	10.7	24.7
B2: Sheep Creek Route	70.2	37.7	28.7
B3: I-15 Route	42.4	10.7	25.1

*High quality sage grouse habitat was delineated by MTFWP

A variety of mammal species typify habitats in sagebrush dominated communities of southwestern Montana. General mammal species are similar to those described above for mixed shrub communities. Sagebrush is utilized by a variety of game species including elk, mule deer, and pronghorn. Sagebrush is used by mule deer for critical winter habitat and is being impacted by all grazing species (elk, deer) and during drought situations (agency defined big game winter range, critical habitat, and movement corridors are included Tables 3.2-7, 3.2-8, 3.2-9 and 3.2-10 above). Sagebrush habitat is critical for sagebrush obligate mammal species such as the pygmy rabbit (*Brachylagus idahoensis*) and sagebrush vole (*Lemmiscus curtatus*).

Amphibians and reptiles that potentially occur in sagebrush include western rattlesnake (*Crotalus viridis*), gopher snake (*Pituophis melanoleucus*), short-horned Lizard (*Phrynosoma douglassi*) sagebrush lizard (*Sceloporus graciosus*), Pacific treefrog, boreal toad, western toad, and long-toed salamander (MTFWP 2008).

Wildlife of Riparian, Wetland, and Water Habitat

Birds found in riparian areas include black-billed magpie (*Pica pica*), Brewer's blackbird (*Euphagus cyanocephalus*), Bullock's oriole (*Icterus bullockii*), rufous hummingbird (*Selasphorus rufus*), calliope hummingbird (*Stellula calliope*) and American goldfinch (*Carduelis tristis*), snadhill crane, heron species, and waterfowl (TBNA 2005). Tree cavities in riparian forested habitat in riparian areas may attract species such as American kestrel, black-capped chickadee (*Parus atricapillus*), European starling (*Sturnus vulgaris*), and house wren (*Troglodytes aedon*). Water bird species likely found in this habitat type include common and Barrow's goldeneye (*Bucephala clagula* and *B. islandica* respectively), northern pintail (*Anas acuta*), canvasback (*Aythya valisineria*), common merganser (*Mergus merganser*), sandhill crane (*Grus canadensis*), great blue heron (*Ardea herodias*), and American bittern (*Botaurus lentiginosus*), spotted sandpiper (*Actitis macularia*), and killdeer (*Charadrius vociferus*). A summary of waterfowl production areas (WPA) crossed (or near) by the proposed Alternative routes is included in Table 3.2-11.

Table 3.2-11 Linear Miles of Waterfowl Production Areas (WPA) Crossed by the Proposed MSTI Alternatives in Montana

Alternative	Linear Miles of WPA Crossed	WPA Collision Risk Factor
TOWNSEND TO MILL CREEK (MELROSE) SEGMENT		
A1: Preferred Route	1.7	High
A2: Parallel Colstrip Lines Route	1.7	High
A3: Maximize Utility Corridors	0.3	High
MILL CREEK TO STATE LINE SEGMENT		
B1: Preferred Route	5	Low
B2: Sheep Creek Route	0.9	Low
B3: I-15 Route	1.1	Moderate

A variety of mammal species typify habitats in riparian and wetland communities of southwestern Montana. Small mammals (insectivores, rodents) potentially found in riparian areas include shrews (*Sorex* spp.), western jumping mouse (*Zapus princes*), meadow vole (*Microtus pennsylvanicus*), long-tailed vole, musk rat (*Ondontra zibethicus*). Carnivores include mink (*Mustela vison*) and river otter (*Lontra canadensis*).

Elk prefer riparian areas or other shaded habitat with green forage and access to water during summer. Moose (*Alces alces*) may be year-round residents of these areas.

Numerous bat species forage over riparian areas or open water, but due to the lack of perennial water and associated riparian habitat, these species may depend partially on artificial water sources such as livestock tanks. Bat species that utilize riparian habitat may include all species occurring in the region. The specific assemblage of bats forming local communities will vary with the proximity and type of roost habitat.

Amphibians and reptiles that potentially occur in riparian habitat include painted turtle (*Chrysemys picta*), western chorus frog (*Pseudacris triseriata*), spotted frog (*Rana luteiventris*), and garter snakes (*Thamnophis spp*.) (MTFWP 2008). Additionally, there are historic but no recent records of northern leopard frog (*Rana pipiens*) in the project area.

Fisheries primarily include cold water species in lotic systems. The major rivers in Montana that are in the vicinity of the MSTI project are: the Beaverhead, Big Hole, Boulder, Gallatin, Jefferson, Red Rock, Madison, and Missouri. The major lakes and reservoirs in Montana are the Whitetail Reservoir, Willow Creek Reservoir, Delmoe Lake, Ennis Lake, Harrison Lake, Ruby Lake Reservoir, Clark Canyon Reservoir, Lima Reservoir, and Red Rock Lakes. Lake and reservoirs primarily support coldwater and game fish species. There are only three class 1 fisheries that are crossed by the MSTI Alternatives and occur among the waterways (lotic and lentic) listed above, they include: the Missouri, Big hole, and Beaverhead Rivers. Fish species that occupy waters in the vicinity of the alternative route links include: brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), common carp (*Cyprinus carpio*) shorthead redhorse (*Moxostoma ictiobus cyprinellus*), fathead minnow (*Pimephales promelas*), yellow perch (*Perca flavescens*), smallmouth bass (*Micropterus dolomieu*), walleye (*Sander vitreus*), and northern pike (*Esox lucius*).

Wildlife of Sparse Vegetation Habitat

Wildlife species that utilize sparse vegetation habitat is generally similar to that described above for grassland and shrublands habitat. A major difference in species would be that this habitat is more typically utilized by generalist (species capable of utilizing a variety habitat types). This habitat would in most cases be considered marginal quality for most obligate species. Certain reptile and raptor species may reside in sparse vegetation habitat, exploiting habitat qualities not desirable by most species such as areas of lava vegetation on Craters of the Moon National Monument. Avian species that occupy such habitat include: mountain bluebird (*Sialia currucoides*), violet-green swallow (*Tachycineta thalassina*), rock wren (*Salpinctes obsoletus*), raven, gray crowned rosy-finch (*Leucosticte tephrocotis*), rough-legged hawk (*Buteo lagopus*), and northern shrike (*Lanius excubitor*). At rocky high elevation sparse sites pika (*Ochotona princeps*) may find habitat. Bighorn sheep may also occur at high elevation rocky sides and surrounding habitats. Reptiles typical of sparse sites include: western fence lizard and western skink (*Eumeces skiltonianus*).

3.2.3.2 Townsend to Mill Creek (Melrose) Segment

The proposed Townsend to Mill Creek (Melrose) route of the MSTI project falls within the northern Montana portion of project. Route alternatives are collectively dominated by grassland communities and secondarily shrubland and conifer forest. Species that reside in grassland, shrubland, and conifer habitats would be dominant along the Townsend to Mill Creek (Melrose) Segment. Alternative characteristics and differences are highlighted below in the individual Alternative sections.

A1: PREFERRED ROUTE

The A1: Preferred Route is dominated by grassland and secondarily low sagebrush and mixed conifer habitats. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. A1 crosses 0.4 miles of class 1 fishery along the Missouri River in the northeastern portion of the project area. There are 1.7 miles of waterfowl production area (WPA) that are considered a high collision risk area. A1 crosses the highest amount (10.4 miles) of bighorn sheep winter habitat and the second highest amount (32.1, 40.9, and 3.0 miles respectively) of elk, mule deer, and moose winter habitat. The second highest amount (15.7 miles) of elk calving habitat within 0.5 miles of a road is crossed by the A1: Preferred Route. A1 does not cross any critical winter habitat for elk, winter habitat for pronghorn, or critical elk calving habitat. A1 crossed the highest amount (5.4 miles) of high quality sage grouse habitat and has 7.1 miles within 4 miles of sage grouse leks. There are 27.8 miles of wildlife movement corridor crossed by A1. This includes 11.8 miles of very high priority, 8.6 miles of low and 7.2 miles of very low priority movement corridors. There are 10 special status wildlife species along A1. Special status wildlife species are known to occur along the Preferred route include: bald eagle nests (Link1), prairie falcon (Link 11-23), heron rockeries (Links 1, 3-1, and 7-2), Brewer's sparrow (Links 3-1 and 7-41), McCowen's longspur (Link 3-1), sage thrasher (Link 7-2), northern leopard frog (Link 1), western toad (Link 11-23), fringed myotis (Link 11-23), and Canada lynx (Links 4-2, 11-23). There are no known special status plants species known to occur along A1. All 17 noxious weed species with potential of occurring along MSTI routes have the potential to occur along the A1: Preferred Route.

A2: Parallel Colstrip Lines Route

The A2: Parallel Colstrip Lines Route is dominated by grassland and secondarily low sagebrush and mixed conifer habitats. A2: Parallel Colstrip Lines Route crosses approximately twice as much mixed conifer habitat and half as much grassland habitat compared to the A1: Preferred Route. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. The A2: Parallel Colstrip Lines Route crosses 0.1 miles of class 1 fishery along the Big Hole River. The A2: Parallel Colstrip Lines Route crossed the same amount of WPA as A1. The A2: Parallel Colstrip Lines Route crosses the highest amount (10.4, 55.6, 38.9, miles respectively) of bighorn sheep mule deer, and moose winter habitat and the second highest amount (1.1) of elk critical winter habitat. The highest amount of all elk summer habitat (calving and critical calving) crossed by the A2: Parallel Colstrip Lines Route compared to A1. The A2: Parallel Colstrip Lines Route does not cross any critical winter habitat for pronghorn. The A2: Parallel Colstrip Lines Route crosses the same amount of high quality sage grouse habitat and sage grouse leks as A1. There are 19 miles of wildlife movement corridor crossed by the A2: Parallel Colstrip Lines Route. This includes 11.8 miles of very high priority, and 7.2 miles of very low priority movement corridors. There are 9 special status wildlife species along the A2: Parallel Colstrip Lines Route. The special status wildlife species are known to occur along the A2: Parallel Colstrip Lines Route include: bald eagle nests (Link1), prairie falcon (Link 11-23), heron rockeries (Link 1), Brewer's sparrow (Link 4-1), northern leopard frog (Link 1), western toad (Links 4-2 and 11-23), fringed myotis (Link 11-23), Canada lynx (Links 4-2, 11-23), and North American wolverine (Link 4-2). There are 2 known special status plants species known to occur along the A2: Parallel Colstrip Lines Route. The special status plants include: muskroot (Link 4-2) and peculiar moonwart (Link 4-2). All 17 noxious weed species with potential of occurring along MSTI routes have the potential to occur along the A2: Parallel Colstrip Lines Route.

A3: Maximize Utility Corridors

The A3: Maximize Utility Corridors route is dominated by grassland and secondarily low sagebrush and mixed shrubland habitats. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. The A3: Maximize Utility Corridors route does not cross any class 1 fisheries. There is 0.3 miles waterfowl production area (WPA) that is considered a high collision risk area. A3 crosses the highest amount (10.1, 78.5, and 10.4 miles) of critical elk winter habitat, and bighorn sheep and elk winter habitat. A3 crosses the third highest amount (21.6 miles) of mule deer winter habitat. The second highest amount (3.1 miles) of elk calving habitat is crossed by A3. The A3: Maximize Utility Corridors route does not cross any winter habitat for pronghorn, or moose. A3 crossed the highest amount (5.4 miles) of high quality sage grouse habitat and has 7.1 miles within 4 miles of sage grouse leks. There are 27.4 miles of wildlife movement corridor crossed by A3. This includes 11.8 miles of very high priority, 8.4 miles of low and 7.2 miles of very low priority movement corridors. There are 12 special status wildlife species along A3. The special status wildlife species are known to occur along A3 include: bald eagle nests (Links 2-1 and 2-3), prairie falcon (Link 11-23), heron rockeries (Links 2-1, 2-3, and 7-2), long-billed curlew (Links 2-1 and 2-3), Brewer's sparrow (Link 7-41), sage thrasher (Link 7-2), northern leopard frog (Link 2-1), western toad (Links 2-3, 7-4, 11-23), fringed myotis (Links 2-3 and 11-23), Townsend's big-eared bat (2-3), western spotted skunk (Link 2-3), and Canada lynx (Links 7-41 and 11-23). There are no known special status plants species known to occur along A3. All 17 noxious weed species with potential of occurring along MSTI routes have the potential to occur along the A3: Maximize Utility Corridors route.

3.2.3.3 Mill Creek to State Line Segment

B1: Preferred Route

The B1: Preferred Route is dominated by grassland and secondarily low sagebrush. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. The preferred crosses 0.1 miles of class 1 fishery along the Beaverhead River. There is a potential WPA near Clark Canyon Reservoir from MP 25-30 along Link 16-1. The B1: Preferred Route crosses the highest amount (30.2 and 36.5 miles) of mule deer and pronghorn winter habitat. The second highest amount (3.1 and 15.7 miles) of elk calving habitat and elk calving habitat within 0.5 miles of a road is crossed by the B1: Preferred Route. The B1: Preferred Route does not cross any critical winter habitat for elk, winter habitat for moose and elk, or critical elk calving habitat. The B1: Preferred Route crossed the second highest amount (64.2 miles) of high quality sage grouse habitat and has 10.7 and 24.7 miles within 2 and 4 miles of sage grouse leks. There are 3 miles (the lowest among the three alternatives) of pygmy rabbit habitat along the B1: Preferred Route. There are 61.6 miles of wildlife movement corridor crossed by the B1: Preferred Route. This includes 25.1 miles of very high priority, 8.2 miles of low and 28.3 miles of very low priority movement corridors. There are 8 special status wildlife species along the B1: Preferred Route. The special status wildlife species are known to occur along the B1: Preferred Route include: bald eagle nests (Link 1), prairie falcon (Link 11-23), heron rockeries (Links 1, 3-1, and 7-2), Brewer's sparrow (Links 3-1 and 7-41), McCowen's longspur (Link 3-1), sage thrasher (Link 7-2), northern leopard frog (Link 1), western toad (Link 11-23), fringed myotis (Link 11-23), and Canada lynx (Links 4-2, 11-23). There are 3 known special status plants species that occur along the B1: Preferred Route. The plant species include: perennial summer Cyprus (Link 11-3), Rail Canyon wild buckwheat (Link 16-2, and Scallop-leaf lousewart (Link 16-1). There are 8 of the 17 potential noxious weed species that have the potential to occur along the B1: Preferred Route.

B2: Sheep Creek Route

The B2: Sheep Creek Route is dominated by grassland and secondarily sagebrush (both low and big) habitats. The B2: Sheep Creek Route crosses approximately twice as much sage brush habitat and half as much grassland habitat compared to the B1: Preferred Route. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. The B2: Sheep Creek Route does not cross any class 1 fisheries. There is 0.9 miles of WPA that is considered a low collision risk area along Link 16-3. The B2: Sheep Creek Route crosses the highest amount (2.5, miles) of elk winter habitat and the second highest amount (25.8 miles) of mule deer winter habitat. The highest amount of all elk calving habitat within 0.5 miles of a road is crossed by the B2: Sheep Creek Route compared to the B1: Preferred Route. The B2: Sheep Creek Route does not cross any winter habitat for pronghorn, moose, and critical winter habitat for elk. The B2: Sheep Creek Route crosses the high amount of high quality sage grouse habitat and sage grouse leks within 2- and 4-miles compare to the other proposed alternatives. There are 25.3 miles (the highest amount among the three alternatives) of pygmy rabbit habitat along the B1: Preferred Route. There are 67.1 miles (the highest among the proposed alternative routes) of wildlife movement corridor crossed by the B2:

Sheep Creek Route. This includes 28.7 miles of very high priority, 18.5 miles of low priority, and 19.9 miles of very low priority movement corridors. There are 5 special status wildlife species along the B2: Sheep Creek Route. The special status wildlife species are known to occur along the B2: Sheep Creek Route include: Brewer's sparrow (Link 11-4, 18-1), sage thrasher (Links 11-4, 18-1), sage sparrow (Links 11-4, 18-1), McCown's longspur (Link 11-4), and plains spadefoot (Link 11-4). There are 12 known special status plants species known to occur along the B2: Sheep Creek Route. The special status plants include: perennial summer Cyprus (Link 11-4), head milkvetch (Link 18-1); lemhi beardtongue (Link 18-1), bitteroot milkvetch (Link 18-1); chicken sage (Link 18-1); small flower pennycress (Link 18-1); Idaho sedge (Link 18-1), alkali primerose (Link 18-1), alpine meadowrue (Link 18-1), mealy primerose (Link18-1); low braya (Link 18-1), marsh fleabane (Link 18-1). There are 8 of the 17 potential noxious weed species that have the potential to occur along the B2: Sheep Creek Route.

B3: I-15 ROUTE

The B3: I-15 Route is dominated by grassland and secondarily low sagebrush and mixed shrubland habitats, similar to the B1: Preferred Route. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. The B3: I-15 Route crosses 0.1 miles of class 1 fishery along the Beaverhead River. There is 1.1 miles waterfowl production area (WPA) that is considered a moderate collision risk area. The B3: I-15 Route crosses the second highest amount (24.8 miles) of pronghorn winter habitat. The highest amount of elk calving and second highest amount (3.1 miles) of elk calving habitat within 0.5 miles of a road is crossed by the B3: I-15 Route. The B3: I-15 Route does not cross any winter habitat for elk or moose. The B3: I-15 Route crosses the lowest amount (42.2 miles) of high quality sage grouse habitat and has 10.7- and 25.1-miles within 2- and 4-miles of sage grouse leks, similar to the B1: Preferred Route. There are 6.1 miles of pygmy rabbit habitat along the B1: Preferred Route. There are 48.3 miles of wildlife movement corridor crossed by the B3: I-15 Route. This includes 11.8 miles of very high priority, 8.2 miles of low and 28.3 miles of very low priority movement corridors. There are 8 special status wildlife species along the B3: I-15 Route. The special status wildlife species are known to occur along the B3: I-15 Route include: bald eagle nests (Links 16-1 and 16-3), McCown's longspur (Links 11-3, 16-1, and 16-3), Brewer's sparrow (Links 11-3, 16-1, and 16-3), sage thrasher (Links 11-3 and 16-3), and sage sparrow (Link 11-3),plains spadefoot (Link 11-3), western toad (Link16-4), and western spotted skunk (Link 16-4). There is one known special status plant species known to occur along the B3: I-15 Route, perennial summer Cyprus (Link 11-3). There are 8 of the 17 potential noxious weed species that have the potential to occur along the B3: I-15 Route.

3.2.3.4 AB1: I-15 Jefferson Valley Route

The AB1: Jefferson Valley Route most closely resembles the B1: Preferred Route in term of flora and fauna present with a couple exceptions. The AB1: Jefferson Valley Route includes Link 8 which is not part of any of the previously described alternative routes above. Aside from Link 8, the description above for the B1: Preferred Route would also capture the characteristics of the AB1: Jefferson Valley Route. A description of Link 8 flora and fauna is included below. Link 8 and the B1: Preferred Route should be considered collectively for the comprehensive description of the AB1: Jefferson Valley Route.

Link 8 is dominated by grassland and secondarily low sagebrush and mixed shrub habitat. Riparian tree and shrub habitat is associated the Big Hole River crossing near MP 37. Wildlife associated with these communities (see Section 3.2-1 above) would be prominent along this link. There are 8 special status species known to occur along Link 8. These species include: heron rockeries, bald eagle nest, sage thrasher, long-billed curlew, Brewer's sparrow, plains spadefoot toad, McCown's longspur, and Townsend big-eared bat. There are two known special status plants that occur along Link 8. These plant species include: silver star and Parry's fleabane. Link 8 crosses 17.5, 32, and 1.7 miles of elk, pronghorn, and mule deer winter range (lower elevation grass and shrub habitat). There are 3.8 miles of summer elk habitat and 7.5 miles of summer elk habitat that is less than 0.5 miles from a road occurring along Link 8. High quality (agency defined) sage grouse habitat occurs from MPs 17.5-23 along Link 8. There is 1.3 miles of route less than 4 miles from sage grouse leks near MPs 49-50. Link 8 is in the vicinity of 16 miles of wildlife movement corridor. These corridors include: 9.4 miles of Tobacco Roots to highlands and 6.6 miles of the Divide to Dillon wildlife movement corridors. Both corridors are considered very low priority (American Wildlands 2008).

3.2.4 DESCRIPTION OF ALTERNATIVE ROUTES - IDAHO

3.2.4.1 Biological Overview

VEGETATION

The study area is located within the Snake River Plain and Middle Rockies ecoregions (EPA 2002). The Snake River Plain ecoregion encompasses the southern portion of the study area located in Idaho, and is dominated by sagebrush steppe, lava fields, and agricultural lands (McGrath et al. 2002). The northern and central portions of the study area are located in the Middle Rockies ecoregion, which primarily contains consist of spruce-fir forests in the mountains and sagebrush steppe and grasslands in the foothills and valleys (McGrath et al. 2002).

Vegetation communities in the northern portion of the study area are dominated by coniferous forests intermixed with grasslands, agriculture and pockets of sagebrush steppe. In the central portion of the study area, vegetation communities transition to one dominated primarily by sagebrush intermixed with fingers of coniferous forests, agriculture, shrublands and grasslands. The southern portion of the study area is more xeric and is dominated primarily by sagebrush, with smaller areas of agriculture, lava fields, and grasslands. Vegetation summaries by community types and MSTI Alternative are included below in Tables 3.2-12 and 3.2-13.

A total of 51 special status plant species may occur in the vicinity of the vicinity of the alternative route links. These include one species listed under the ESA (Ute Ladies' tresses), 32 species listed as BLM sensitive and 24 species listed as USFS sensitive. State special status plant species are included in Appendix A of the Biological Technical Report. Idaho special status plant species habitat and potential link associations are listed in Table 3.2-14. Additional special status plant information is included in Appendices B and C of the Biological Technical Report.

PLACE HOLDER FOR:

Table 3.2-12 Summary of Idaho Vegetation Categories by Proposed MSTI Link.

Table 3.2-13 Summary of Idaho Vegetation Categories by Proposed MSTI Alternative.

On ONE 11x17 page

BACK OF PLACE HOLDER

Table 3.2-14 Idaho Special Status Plant Species

Common Name *(Scientific Name)*	Status[1]					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS[2]	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Idaho Sedge *(Carex parryana* ssp. *Idahoa)*		X	X	X	X					✓		Wet meadows.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Payson bladderpod *(Lesquerella paysonii)*			X	X	X				✓		✓	Windswept, gravelly, calcareous ridgecrests, semi-open slopes and rocky floodplains, talus slopes, rocky clearings in conifer forests.	21, 23, 25-2
Alkali primrose *(Primula alcalina)*		X	X	X						✓		Moist to wet alkaline meadows, 6,300-7,200 ft.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Bacigalupi's downingia *(Downingia bacigalupii)*		X			X					✓		Moist meadows and vernal pool ecosystems.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Biennial princesplume *(Stanleya confertiflora)*		X			X						✓	Western Idaho and eastern. Oregon dry hillsides, alkali meadows, barren clay slopes, pale gray chip-rock.	21, 23, 25-2
Blue gramma *(Bouteloua gracilis)*		X			X	X			✓			Grasslands and forest openings.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Bugleg goldenweed *(Haplopappus insecticruris)*		X			X			✓		✓		Dry ground w/sagebrush, and vernally wet grasslands and meadows b/w 5,000 to 6,500 ft.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Buxbaum's sedge *(Carex buxbaumii)*		X			X					✓		Wet prairies, seepy areas.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Cache penstemon *(Penstemon compactus)*			X		X						✓	Limestone and dolomite outcrops.	21, 23, 25-2
Centennial rabbitbrush *(Chrysothamnus parryi ssp. Montanus)*		X			X						✓	Found only in high elevation habitat of Red Conglomerate Peaks near the Continental Divide.	21, 23, 25-2

Table 3.2-14 Idaho Special Status Plant Species

Common Name *(Scientific Name)*	Status¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Drummond's milkvetch *(Astragalus drummondii)*		X			X	✓						Common in grassy meadow, open field, rocky soil of hillsides, sandy soils.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
False mountain willow *(Salix pseudomonticola)*		X			X					✓		Streambanks and moist slopes, riparian zone.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Foothill sedge *(Carex tumicola)*			X		X	✓						Wet meadows, slopes	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Garrett's firechalice *(Epilobium canum* spp. *garrettii* (syn. *Zauschneria garrettii*))			X		X		✓					Dry slopes and in chaparral.	18-2, 20, 21, 22, 24, 25-12, 25-11, 26-1
Giant helleborine *(Epipactis gigantean)*		X			X					✓		Streambanks, lake margins, fens w/springs and seeps, often near thermal waters.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Grass-like spleenwort *(Asplenium septentrionale)*			X		X						✓	High montane, rocky crevices.	21, 23, 25-2
Green muhly *(Muhlenbergia racemosa)*			X		X	✓		✓	✓	✓		Dry to moist sites, streambanks, lake margins, 4,100 to 10,400 ft. (and dry slopes).	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Green needlegrass *(Stripa viridula)*		X	X		X	✓						Medium to fine textured soils, true and mixed prairie.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Green Spleenwort *(Asplenium trichomanes-ramosum (syn. A. viride))*			X	X	X						✓	Crevices of limestone, shaded rocks and talus slopes.	21, 23, 25-2
Hall's rush *(Juncus hallii)*			X	X	X					✓		Moist to dry meadows and slopes, from valley to montane zones.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Hall's orthotrichum moss *(Orthotrichum hallii)*		X			X						✓	Moss-soil crust, on granite, at 2,300 ft. in Rocky Mtn region.	21, 23, 25-2

Table 3.2-14 Idaho Special Status Plant Species

Common Name *(Scientific Name)*	Status¹					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS²	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Hoary willow *(Salix candida)*		X	X		X					✓		Fens, bogs, marshes, areas of permanently saturated soils.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Idaho sedge *(Carex idahoa)*		X			X			✓		✓		Ecotone b/t wet meadow and sagebrush steppe, moist, alkaline streamside meadow habitat.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Large-flower triteleia *(Triteleia grandiflora)*			X		X	✓		✓	✓			Grasslands or sagebrush and pinyon-juniper woodlands to pine forest slopes and hills.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Lemhi beardtongue *(Penstemon lemhiensis)*		X	X	X	X	✓		✓	✓		✓	Rock outcrops, big sagebrush and bunchgrasses, open soils, openings in lodgepole pine.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Lemhi milkvetch *(Astragalus aquilonius)*		X			X		✓					Shrub steppe, unstable soils, shale or clay washes, steep eroded canyon.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Lichen *(Catapyrenium congestum)*		X			X			✓				sagebrush or shadscale steppe; restricted to barren, slightly natric soil sites	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Lost River milkvetch *(Astragalus amnis-amnis)*		X			X						✓	Limestone rock, stable talus at bases of cliffs.	21, 23, 25-2
Maguire's primrose *(Primula maguirei)*			X		X					✓	✓	Logan Canyon, Utah, damp ledges, crevices, and overhanging rocks, moss covered limestone at or near canyon bottom.	20, 21, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4

Table 3.2-14 Idaho Special Status Plant Species

Common Name *(Scientific Name)*	Status[1]					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS[2]	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Manyhead bladderpod *(Lesquerella multiceps)*			X		X				✓	✓		Rock outcrops, talus, and dry rocky soils on open ridges and slopes or in woodland openings	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Marsh (false) felwort *(Lomatogonium rotatum)*		X		X	X					✓		Alkaline meadows and fens in montane zone.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Moss rush *(Juncus bryoides)*			X		X					✓		Wet, mesic, moist areas.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Mourning milkvetch *(Astragalus atratus var. inseptus)*		X			X	✓						Range improvements and grazing are threats.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Obscure phacelia *(Phacelia inconspicua)*		X			X		✓			✓		In Idaho, b/w 5,300 and 6,200 ft., steep north to east facing, lower to mid-slope, lying below rimrock of butte tops or foothill ridgetops, toe-slopes immediately above ephemeral moist drainages.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Pale sedge *(Carex livida)*		X			X					✓		Wet organic soils.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Picabo milkvetch *(Astragalus oniciformis)*		X			X			✓				Sandy sites – basins, bowls, almost exclusively within sagebrush.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Pink agoseris *(Agoseris lackschewitzii)*		X		X	X					✓		Subalpine wet meadows where soil is saturated	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Plains milkvetch *(Astragalus gilviflorus)*		X			X						✓	Open, sparsely vegetated rocky, gentle to steeper limestone slopes.	21, 23, 25-2
Red glasswort *(Salicornia rubra)*		X	X		X					✓		Saline wet mesic sites, alkaline.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4

Table 3.2-14 Idaho Special Status Plant Species

Common Name *(Scientific Name)*	Status[1]					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS[2]	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Rydberg's musineon *(Musineon lineare)*			X		X						✓	Rock outcrops.	21, 23, 25-2
Sepal-tooth dodder *(Cuscuta denticulate)*		X			X			✓				Occurs on various shrubs w/in desert areas (Artemisia and Chrysothamnus).	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Slender moonwort *(Botrychium lineare)*			X		X	✓			✓		✓	Grasslands, woodland trails, along roadways in gravelly shoulders created during road construction.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Slick-spot pepper-grass *(Lepidium papilliferum)*			X		X			✓				Small openings in sagebrush steppe, high clay and sodium soils.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Small-flowered ricegrass *(Piptatherum micranthum)*		X			X	✓						Med to coarse textured soils, open.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Snake River milkvetch *(Astragalus purshii var. ophiogenes)*		X			X					✓	✓	Barren sites with big sagebrush, Indian ricegrass, needle-and-thread grass and four-wing satlbush. Growing in loosely aggregated, frequently moving sand and gravelly sand deposits on bluffs, talus, dunes and volcanic ash beds, from 700-1075 m. elevation	20, 21, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Spreading gilia *(Ipomopsis polycladon)*		X			X		✓	✓			✓	Dry, open areas in desert shrub communities, rocky slopes in Eastern Idaho, silt, sand, and clay soils.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31

Table 3.2-14 Idaho Special Status Plant Species

Common Name *(Scientific Name)*	Status[1]					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS[2]	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
St. Anthony evening primrose *(Oenothera psammophila)*		X			X						✓	Sand dunes, trailing margins of migrating sand dunes, and sand-filled cracks over basalt outcrops.	21, 23, 25-2
Starveling milkvetch *(Astragalus jejunus* var. *jejunus)*			X		X						✓	Dry, barren ridges, sparsely vegetated bright outcrops.	21, 23, 25-2
Swamp willow-weed *(Epilobium palustre)*		X			X					✓		Swamps and marshes.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Tall dropseed *(Sporobolus asper)*		X			X	✓		✓				Sagebrush and tallgrass prairie communities.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Tufted Cryptantha *(Cryptantha caespitosa)*			X		X	✓			✓		✓	Rocky or chalky. ridgetops, forb-grass, pinyon-juniper, spruce fir forests.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Two-grooved milkvetch *(Astragalus bisulcatus var. bisulcatus)*		X			X	✓						Alluvial clay soils of bottomlands, plains, prairies.	18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Uinta Basin Cryptantha *(Cryptantha breviflora)*			X		X							Mostly heavy clay soils, poor substrates of eroding knolls and badland slopes and dry, open places, variously on barren clay or in sandy soil, loose and eroding shale	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Ute ladies'-tresses *(Spiranthes diluvialis)*	T	X	X		X						✓	Meandered wetlands and swales in broad open valleys.	20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Wasatch rock-cress *(Arabis lasiocarpa)*			X		X						✓	Lower montane t subalpine rock crevices, rock, and gravelly soils.	21, 23, 25-2

Table 3.2-14 Idaho Special Status Plant Species

Common Name *(Scientific Name)*	Status[1]					General Habitat Association						General habitat requirements	Link Association(s)
	USFWS[2]	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed		
Western sedge *(Carex occidentalis)*			X		X				✓			Dry habitats in montane, spruce-fir alpine and subalpine.	23
White spruce *(Picea glauca)*		X			X				✓			Wooded, well-aerated water, yet the species will tolerate a wide range of moisture conditions	23
Winged-seed evening primrose *(Camissonia pterosperma)*		X			X			✓				Dry, open slopes, ridges, and washes in sagebrush, gravelly, silty soils.	18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31

[1]X = sensitive [2]T= threatened, E = endangered, EXP = experimental, C = candidate

Conifer and Broadleaf Forest Communities

The conifer and broadleaf forest communities are represented by juniper, mixed conifer, and mixed conifer deciduous forest land use categories. The conifer forest cover type includes whitebark pine (*Pinus albicaulis*), Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*), subalpine fir (*Abies lasiocarpa*), Douglas fir (*Pseudotsuga menziesii*), and ponderosa pine (*Pinus ponderosa*) forests. Associated shrub species can include huckleberry (*Vaccinium* spp.), snowberry (*Symphoricarpos* spp.), and ninebark (*Physocarpus malvaceus*). Associated grass and forb species include bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), beargrass (*Xerophyllum tenax*), smooth woodrush (*Luzula hitchcokii*), and arnica (*Arnica* spp.).

In the Idaho study area, broadleaf forests typically occur in stands intermixed with coniferous forest. Broadleaf species primarily occur in moist forest areas, near riparian areas, or woody draws. Dominant species present in these mixed forests include aspen (*Populus tremuloides*), bur oak (*Quercus macrocarpa*), green ash (*Faxinus pennsylvanica*), plains cottonwood (*Populus deltoides*), birch (*Betula* spp.), grand fir (*Abies grandis*), Douglas-fir, Engelmann spruce, subalpine fir, western larch (*Larix occidentalis*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*). Associated shrub species include alder (*Alnus* spp.), huckleberry, serviceberry (*Amelanchier alnifolia*), thimbleberry (*Rubus parviflorum*), snowberry, and mountain-lover (*Pachistima myrsinites*). Conifer and broadleaf forest communities are traversed by approximately 5.5 % of the distance covered by all alternative route links in the project area. The majority (100%) of this community type occurs along alternative links 20 and 23 in Idaho.

Grassland Communities

The grassland community is represented solely by the grassland land use category. Grasslands in the study area are dominated primarily by short to medium height grasses and forbs. These grasslands typically occur in valleys and foothills and on middle to high elevation slopes on south aspects. Dominant species include arrowleaf balsamroot (*Balsamorhiza sagittata*), bluebunch wheatgrass, blue grama (*Bouteloua gracilis*), bluestem (*Andropogon* spp.), green needlegrass (*Stipa viridula*), Idaho fescue, lupine (*Lupinus* spp.), needle and thread grass (*Hesperostipa comata*), rough fescue (*Festuca scabrella*), Timothy grass (*Phleum pratense*), and western wheatgrass (*Pascopyrum smithii*). A portion of these native grasslands are in a disturbed state. Vegetation in these locations can include bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), cheatgrass (*Bromus tectorum*), common dandelion (*Taraxacum officinale*), crested wheatgrass (*Agropyron cristatum*), field brome (*Bromus arvensis*), leafy spurge (*Euphorbia esula*), smooth brome (*Bromus inermis*), spotted knapweed (*Centaurea maculosa*), St. Johnswort (*Hypericum perforatum*), western ragweed (*Ambrosia* spp.), and yellow sweetclover (*Melilotus officinalis*). The grassland community is traversed by approximately 33% of the distance covered by all alternative route links in the project area. The majority (51%) of this community type occurs along the alternative links 20, 23, and 25-11 in Idaho.

Shrubland Communities (other than sagebrush)

The shrubland community is represented by bitterbush and mixed shrubland land use categories. Xeric shrublands in the Idaho study area occur primarily in valleys and low elevation mountain slopes where mixed shrubs are dominant with an understory of grasses and forbs. Dominant shrub species present in xeric shrublands include bitterbrush (*Purshia tridentata*), creeping juniper (*Juniperus horizontalis*), greasewood (*Sarcobatus* spp.), mountain mahogany (*Cercocarpus* spp.), rabbitbrush (*Chrysothamnus* spp.), four-wing saltbush (*Atriplex canescens*), spiny hopsage (*Grayia spinosa*), and budsage (*Artemisia spinescens*). Associated grass species include bluebunch wheatgrass, blue gramma, Idaho fescue and western wheatgrass.

Mesic shrublands in the Idaho study area occur in mountain areas in draws and valleys. Mesic shrublands are dominated by alder, buffalo berry (*Shepherdia argentea*), ceanothus (*Ceanothus* spp.), huckleberry, Labrador tea (*Ledum glandulosum*), ninebark, mountain lover, mountain heath (*Phyllodoce empetriformis*), shiny-leaf spiraea (*Spiraea betulifolia*), sumac (*Rhus* spp.), snowberry, serviceberry, and whortleberry (*Vaccinium scoparium*). Common associated species include arnica, beargrass, and pinegrass (*Calamagrostis rubescens*). The shrubland community is traversed by approximately 5.5% of the distance covered by all alternative route links in the project area. The majority (> 90%) of this community type occurs along the alternative links 20, 21, 22, 24, and 25-12 in Idaho.

Sagebrush Communities

The sagebrush community is represented by low and big sagebrush land use categories. Sagebrush (*Artemisia* spp.) shrublands occur primarily in valleys and occasionally occur on low to mid elevation mountain slopes. The species of sagebrush present depends on site specific requirements such as elevation, slope, aspect, precipitation, and soil type. Sagebrush species present within the study area include basin big sagebrush (*A. tridentata* ssp. *tridentata*), mountain big sagebrush (*A. tridentata* ssp. *vaseyana*), and Wyoming big sagebrush (*A. tridentata* ssp. *wyomingensis*), silver sage (*A. cana*), and black sagebrush (*Artemisia nova*). Associated grass and forb species include bluebunch wheatgrass, blue grama, Idaho fescue, and western wheatgrass. The sagebrush community is traversed by almost half (47.5%) of the distance covered by all alternative route links in the project area. The majority of this community type occurs along alternative route links 18-2, 21, 26-4, 25-4, and 25-12 in Idaho.

Riparian, Wetland, and Water Communities

The riparian, wetland, and water communities are represented by riparian shrub, riparian tree, cottonwood, marsh, and water land use categories. Forested riparian areas are dominated by conifers, broadleaf species or a mixture of both. Dominant conifer species present include Douglas fir, Engelmann spruce, grand fir, subalpine fir, western hemlock and western red cedar. Dominant broadleaf species present in riparian areas include aspen, birch, black cottonwood (*Populus trichocarpa*), bur oak, green ash, and plains cottonwood. Associated shrub species present in forest dominated riparian areas include alder, bunchberry (*Cornus canadensis*), serviceberry, thimbleberry, and willow. Within shrub dominated riparian areas, species of willow are dominant. Additional species present in these areas include alder, black hawthorn (*Crataegus douglasii*), bog birch (*Betula glandulosa*), currant (*Ribes* spp.), red-osier dogwood (*Cornus stolonifera*), and water birch (*Betula occidentalis*).

Wetlands dominated by graminoid and forb species are also present in the study area. Species present in wetlands include rushes (*Juncus* spp.), bluejoint reedgrass (*Calamagrostis canadensis*), sedges, bulrushes (*Scirpus* spp.), spikerush (*Eleocharis* spp.) cinquefoil (*Potentilla* spp.), cattails (*Typha* spp.), saxifrage (*Saxifraga* spp.), and tufted hairgrass (*Deschampsia caespitosa*).

The riparian, wetland, and water communities are traversed by approximately 3.5% of the distance covered by all alternative route links in the project area. The majority (60%) of this community type occurs along alternative links 25-4, and 25-12 in Idaho.

Sparse Vegetation Communities

The sparse vegetation community is represented by rock, vegetated lava, and mixed barren land use categories. Vegetated lava is lava with greater than 5% total vegetation cover. Plants usually occur on islands or pockets in the lava flow, soils are thin. Mixed barren land is generally defined as barren land and exposed soil with less than 5% total vegetative cover. Rock communities are defined as exposed rock, rock outcrops, talus or scree slopes with less than 5% vegetative cover. Species that may occur in these communities include: Torrey's milkvetch (*Astragalus calycosus*), basalt milkvetch (*Astragalus filipes*), lava aster (*Ionactis alpina*), fennel-leaved desert parsley (*Lomatium foeniculaceum*), tufted evening-primrose (*Oenothera caespit*osa), woolly groundsel (*Packera cana*), various phlox species (*Phlox* spp.), Indian ricegrass (*Achnatherum hymenoides*), and broom snake weed (*Gutierrezia sarothrae*). Sparse vegetation communities are traversed by approximately 0.5% of the distance covered by all alternative route links in the project area. The majority (92%) of this community type occurs along alternative route links 21 and 25-2 in Idaho.

Anthropogenic Communities

The anthropogenic community is represented by irrigated and non-irrigated agriculture, center pivot irrigation agriculture, urban, and disturbed. The anthropogenic community is traversed by approximately 5.4% of the distance covered by all alternative route links in the Project. The majority of this community type occurs along alternative route links 21 and 26-2 in Idaho. This community type will not be included in the biological resource section. Further detail about this community type can be found in the Land Use Technical report.

Noxious Weeds

Noxious weeds are plant species designated "noxious" by law or deleterious in Idaho (Callihan and Miller 1999). Noxious weeds are managed at the county level in both states. Federal lands managed by the BLM and USFS are managed under the agencies respective Resource management Plan and Forest Plan. There are approximately 2,000 weed species identified in the U.S. (Callihan and Miller 1999). Idaho designates 35 weed species as the highest priority for management (recently updated from 31 species, Callihan and Miller 1999). A summary of noxious weed species potentially occurring along the alternative route links is summarized in Table 3.2-15 below. Noxious weed distributions are known to the level of county and/or federal jurisdictional boundary.

Table 3.2-15 Noxious Weed Occurrence According to Idaho County Association Pertaining to the MSTI Project

Common Name (*Scientific Name*)	County Occurrence	Link Association	Route Association Stateline to Midpoint C1	C2	C3	C4
Black henbane (*Hyoscyamus niger*)	Jefferson, Blaine, Clark, Butte, Bonneville, Power, Bingham	20, 21, 22, 23, 24, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 26-1, 26-2, 26-3	X	X	X	X
Buffalobur (*Solanum rostratum*)	Clark, Lincoln, Jerome	18-2, 20, 21, 22, 23, 27, 25-2, 25-3, 25-4, 26-4	X	X	X	X
Canada Thistle (*Cirsium arvense*)	All MSTI Idaho Counties	20, 21, 22, 23, 24, 27, 28, 29, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X
Dalmatian toadflax (*Linaria genistifolia ssp. dalmatica*)	Clark, Blaine, Bingham, Bonneville	20, 21, 22, 23, 24, 29, 18-2, 25-12, 25-2, 25-3, 26-1, 26-2, 26-3	X	X	X	X
Diffuse Knapweed (*Centaurea diffusa*)	All MSTI Idaho-Counties	20, 21, 22, 23, 24, 27, 28, 29, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X
Dyer's woad (*Isatis tinctoria*)	Clark, Blaine, Bingham, Bonneville, Lincoln, Minidoka	20, 21, 22, 23, 24, 29, 18-2, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X

Table 3.2-15 Noxious Weed Occurrence According to Idaho County Association Pertaining to the MSTI Project

Common Name (*Scientific Name*)	County Occurrence	Link Association	Route Association: Stateline to Midpoint C1	C2	C3	C4
Field bindweed (*Convolvulus arvensis*)	All Idaho Counties	20, 21, 22, 23, 24, 27, 28, 29, 30, 31, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X
Hoary cress (*Cardaria draba*)	All MSTI Idaho-Counties	20, 21, 22, 23, 24, 27, 28, 29, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X
Johnson grass (*Sorghum halpense*)	Bingham, Bonneville	21, 24, 26-1, 26-2,	X	X		X
Jointed goatgrass (*Aegilops cylindrica*)	Clark, Bingham, Bonneville	20, 21, 22, 23, 24, 18-2, 26-1, 26-2	X	X	X	X
Leafy spurge (*Euphorbia esula*)	All MSTI Idaho-Counties	20, 21, 22, 23, 24, 27, 28, 29, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X
Meadow knapweed (*Centaurea pratensis*)	Clark	18-2, 20, 21, 22, 23	X	X	X	X
Millum (*Milium vernale*)	Clark	18-2, 20, 21, 22, 23	X	X	X	X
Musk thistle (*Cardus nutans*)	Clark	18-2, 20, 21, 22, 23	X	X	X	X
Perennial pepperweed (*Lepidium latifolium*)	Jerome, Minidoka, Bingham, Clark, Jefferson	20, 21, 22, 23, 24, 27, 18-2, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X
Perennial sowthistle (*Sonchus aevensis*)	Blain, Lincoln, Jerome, Bonneville, Bingham	21, 24, 27, 29, 30, 31, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X

Table 3.2-15 Noxious Weed Occurrence According to Idaho County Association Pertaining to the MSTI Project

Common Name *(Scientific Name)*	County Occurrence	Link Association	Route Association Stateline to Midpoint			
			C1	C2	C3	C4
Poison hemlock (*Conuim maculatum*)	All MSTI Idaho-Counties	20, 21, 22, 23, 24, 27, 28, 29, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X
Puncturevine (*Tribulus terrestris*)	All MSTI Idaho-Counties	20, 21, 22, 23, 24, 27, 28, 29, 18-2, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4	X	X	X	X

WILDLIFE

The vegetative communities associated with the proposed transmission line links support a diversity of wildlife species. This report focuses on habitat associations for wildlife species. Wildlife species that occupy the seven general habitat classifications and are fairly common in the vicinity of the alternative route links are included below. In addition to habitat associations, specific habitats that are biologically important (i.e. winter habitat, breeding habitat, etc.) to certain species are included in tabular summaries below.

A number of special status animal species are known to occur or have the potential to occur in the vicinity of the alternative route links. These include federally listed species under ESA as well species designated as sensitive by the BLM, and USFS. There are five species listed under ESA, 74 BLM sensitive species, and 16 USFS Sensitive species in Idaho. State sensitive species include those species designated as Tier 1 species in Idaho. In Idaho there are 84 Tier one sensitive species. Federally designated special status animal species is listed in Table 3.2-16 below with habitat associations. State designated special status species are included in Appendix B of the Biological Technical Report in Volume II. There is no critical habitat designated along any of the alternative routes.

Table 3.2-16 Special Status Animal Species of Idaho that May Occur in the Study Area

Common Name (*Scientific Name*)	Status[1]					General Habitat Association						Link Association(s)
	USFWS[2]	BLM	USFS	Montana	Idaho	Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	
BIRDS												
Greater Sage-Grouse (*Centrocercus urophasianus*)		X	X	✓	✓		✓	✓		✓		18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Yellow-billed cuckoo (*Coccyzus americanus*)	C				✓				✓			18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
American white pelican (*Pelecanus erythrorhynchos*)		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Greater Sage-Grouse (*Centrocercus urophasianus*)		X	X	✓	✓		✓	✓		✓		18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
MAMMALS												
Canada Lynx (*Lynx Canadensi*)	T			✓	✓				✓			18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Gray Wolf (*Canis lupus*)	EXP	X		✓	✓				✓			18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
Pygmy Rabbit (*Brachylagus idahoensis*)		X	X	✓	✓		✓	✓				18-2, 20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4, 26-2, 26-3, 26-4, 27, 28, 29, 30, 31
AMPHIBIANS AND REPTILES												
Northern leopard frog (*Rana pipiens*)		X	X	✓	✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
INVERTEBRATES												
Shortface lanx (*Fisherola nuttalli*)		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Idaho pointed-head grasshopper (*Acrolophitus pulchellus*)		X			✓	✓						18-2, 20, 21, 22, 23, 24, 25-11, 25-12, 25-2, 25-3, 25-4, 26-1, 26-2, 26-3, 26-4, 29, 30, 31
Warm Springs Zaitzevian Riffle Beetle (*Zaitzevia thermae*)	C				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Utah valvata snail (*Valvata utahensis*)	E				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Bliss Rapids snail (*Taylorconcha serpenticola*)	T				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Snake River physa snail (*Physa natricina*)	E				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4

Table 3.2-16 Special Status Animal Species of Idaho that May Occur in the Study Area

Common Name (Scientific Name)	Status¹ USFWS²	BLM	USFS	Montana	Idaho	General Habitat Association: Grass	Shrub	Sagebrush	Forest	Riparian Area & Wetland	Rock, Bare, Disturbed	Link Association(s)
St. Anthony sand dune tiger beetle *(Cicindela arenicola)*		X			✓						✓	21, 23, 25-2
Blind Cave leiodid beetle *(Glacicavicola bathyscoides)*		X			✓						✓	21, 23, 25-2
FISH												
Bull Trout *(Salvelinus confluentus)*	T			✓	✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Steelhead *(Oncorhynchus mykiss)*	T				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Spring/Summer Chinook Salmon *(Oncorhynchu tshawytschas)*	T				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Sockeye Salmon *(Oncorhynchus nerka)*	E				✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Westslope cutthroat trout *(Oncorhhynchus clarki lewisi)*		X		✓	✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Yellowstone cutthroat trout *(Oncorhhynchus clarki bouvieri)*		X		✓	✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Redband Trout *(Oncorhynchus mykiss gibbsi)*		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Shoshone Sculpin *(Cottus greenei)*		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4
Wood River sculpin *(Cottus leiopomus)*		X			✓					✓		20, 22, 23, 25-11, 25-12, 25-2, 25-3, 25-4

¹X = sensitive ²T= threatened, E = endangered, EXP = experimental, C = candidate

Wildlife of Conifer and Broadleaf Forest Habitat

Passerines (perching birds) of forest habitat like to occur include American robin (*Turdus migratorius*), dark-eyed junco (*Junco hyemalis*), hermit thrush (*Catharus guttatus*), mountain chickadee (*Parus gambeli*), pine grosbeak (*Pinicola enucleator*), pine siskin (*Carduelis pinus*), ruby-crowned kinglet (*Regulus calendula*), red-breasted nuthatch (*Sitta canadensis*), Stellar's jay (*Cyanocitta stelleri*), and yellow-rumped warbler (*Dendroica coronata*) (USFS 2001). Wild turkey (*Meleagris gallopavo*), mourning doves, spruce, blue, and ruffed grouse (*Falcipennis canadensis*, *Dendragapus obscurus*, and *Bonasa umbellus* respectively), and gray partridge (*Perdix perdix*) are gamebirds found along the MSTI alternative route links in this habitat type. Other avian species likely to be found include the hairy woodpecker, downy woodpecker, and Williamson's sapsucker (*Sphyrapicus thyroideus*). Common birds of prey likely found in forest habitats along the MSTI alternative route links include red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii),* and the great horned owl (*Bubo virginianus*) (USFS 2001).

A variety of mammal species typify habitats in conifer and broadleaf communities of southwestern Montana. Small and medium-sized mammals (lagomorphs and rodents) that are likely to be found in forest habitats within the project area include mountain cottontail (*Syvilagus natalii*), deer mouse (*Peromyscus maniculatus*), long-tailed vole (*Microtus longicaudus*), southern red-backed vole (*Clethrionomys gapperi*), least chipmunk (*Tamius minimus*), yellow pine chipmunk (*T. amoenus*), red squirrel (*Tamiasciurus hudsonicus*), Northern flying squirrel (*Glaucomys sabrinus*), Columbian ground squirrel (*Spermophilus columbianus*), Golden-mantled ground squirrel (*S. lateralis*), bushy-tailed woodrat (*Neotoma cinerea*), and porcupine (*Erethizon dorsatum*) (Foresman 2001; DAI 2002, MTFWP 2008). Carnivores that may occur in coniferous forest habitat along the MSTI alternative route links include coyote (*Canis latrans*), red fox (*Vulpes vulpes*), long-tailed weasel (*Mustela frenata*), wolverine (*Gulo gulo*), grizzly and black bear (*Ursus arctos* and *U. americana*), cougar (*Puma concolor*), and bobcat (*Lynx rufus*) (Foresman 2001; DAI 2002, MTFWP 2008). Wildlife movement corridors facilitate travel between disconnected habitats and are summarized in Table 3.2-17. Conifer forest provides large game winter habitat along the MSTI alternative route links. Important ungulate (hoofed animal) species include moose (*Alces alces*), elk (*Cervus canadensis*) and mule deer (*Odocoileous hemionus*).

Typical bat species of forest habitats include silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*); little brown bat (*Myotis lucifugus*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), Townsend's big-eared bat (Corynorhinus townsendii) and spotted bat (*Euderma maculatum*) (Foresman 2001).

Amphibians and reptiles documented in with the potential to occur in forest habitats along the MSTI alternative route links include western toad (*Bufo boreas*) and western rattlesnake (*Crotalis viridis*) (DAI 2002, MTFWP 2008).

Table 3.2-17 Linear Miles of Wildlife Movement Corridors Crossed by the Proposed MSTI Alternatives in Idaho

Alternative	Total Linear Miles of the Centennial to Beaverhead Wildlife Movement Corridor*
C1: Preferred	10.8
C2: Eastern	10.8
C3: Western	0
C4: INL BP	0

Source: American Wildlands 2008

Wildlife of Grassland Habitat

Common passerine bird species inhabiting grasslands include the common raven (*Corvus corax*), western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), western kingbird (*Tyrannus verticalis*), lark bunting (*Calamospiza melanocorys*), savannah sparrow (*Passerculus sandwichensis*), and vesper sparrow (*Pooecetes gramineus*) (TBNA 2005). Birds of prey include the golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), prairie falcon (*Falco mexicanus*), American kestrel (*Falco sparverius*), great horned owl , and burrowing owl (*Athene cunicularia*). Sharp-tailed grouse (*Tympanuchus phasianellus*), chukar (*Alectoris chukar*), and gray partridge (*Perdix perdix*) are the most likely upland gamebirds found along the alternative route links associated grassland habitat. Open grassland species may include mourning dove (*Zenaida macroura*), common poorwill (*Phalaenoptilus nuttalii*), broad-tailed hummingbird (*Selasphorus platycercus*), and black-chinned hummingbird (*Archilochus alexandri*). Waterfowl, waterbird, and shorebird use of grasslands is limited along the alternative route links.

A variety of mammal species typify habitats in grassland communities of southwestern Idaho. Grassland lagomorphs and small mammals likely include black-tailed jackrabbit (*Lepus californicus*), white-tailed jackrabbit (*L. californicus*), black-tailed prairie dog (*Cynomys ludovicianus*), northern pocket gopher (*Thomonmys talpoides*), deer mouse, Great Basin pocket mouse (*Paragnathus parvus*), northern grasshopper mouse (*Onychomys leucogaster*), montane vole (*Microtus montanus*), and long-tailed vole (Foresman 2001; DAI 2002, MTFWP 2008). Common grassland carnivores include coyote (*Canis latrans*), long-tailed weasel, badger (*Taxidea taxus*), and striped skunk (*Mephitis mephitis*) (Foresman 2001; DAI 2002, MTFWP 2008).

Elk, whitetail (*Odecoileus viginiana*) and mule deer, and antelope (*Antilocapra americana*) are the primary game species which occur in open grassland habitats (DAI 2002, MTFWP 2008). Ideal elk habitat contains forested areas interspersed with meadows. However, open grasslands at low elevations may be used during winter (agency defined winter range and critical habitat are included in the inventories listed below). Open grasslands, particularly with scattered shrubs, are used to some degree during winter. Populations for both may vary seasonally and with severity of winter conditions that influence migration movement from elevation to lower elevations. A summary of big game winter and elk summer habitat crossed by the proposed Alternative routes is included in Tables 3.2-18 and 3.2-19. Wildlife movement corridor data is summarized in Table 3.2-17 above. Grassy habitats in proximity to high relief rocky and sparse habitat may provide forage for bighorn sheep (*Ovis canadensis*).

Table 3.2-18 Linear Miles of Big Game Winter Habitat Crossed by the Proposed MSTI Alternatives in Idaho

Alternative	Critical Winter	Winter Habitat	
	Elk	Elk	Mule Deer
C1: Preferred	2	18.9	52.7
C2: Eastern	26	30.8	50.3
C3: Western	14.9	8.2	35.8
C4: INL BP	15	18.9	52.7

Table 3.2-19 Linear Miles of Elk Summer Habitat Crossed by the Proposed MSTI Alternatives in Idaho

Alternative	Summer Elk Habitat		
	Calving	Calving Critical	Calving within 0.5 miles of Road
C1: Preferred	4.8	0	89.9
C2: Eastern	30.5	0	68.7
C3: Western	18.3	2.2	89.6
C4: INL BP	3.3	0	73.7

Bat species are highly mobile and may range great distances between day roost habitat and high quality feeding habitat. Bat species that may use grassland habitats include fringed myotis and small-footed myotis (*Myotis ciliolabrum*) (Foresman 2001).

Amphibians and reptiles that may occur in grasslands include western toad (*Bufo boreas*), short-horned lizard (*Phrynosoma douglassii*), western fence lizard (*Scelopus occidentalis*), racer (*Coluber constrictor*), and western terrestrial garter snake (*Thamnophis elegans*) (DAI 2002, MTFWP 2008).

Wildlife of Shrubland Habitat

Common passerine bird species inhabiting shrublands include green-tailed towhee (*Pipilo chlorurus*), black-headed grosbeak (*Pheucticus melanocephalus*), blue-gray gnatcatcher (*Polioptila caerulea*), MacGillivray's warbler (*Oporornis tolmiei*), and lazuli bunting (*Passerina ciris*)(BBS 2007). Common birds of prey of shrublands are red-tailed hawk, Cooper's hawk (*Accipiter cooperii*), common nighthawk (*Chordeiles minor*), great horned owl, northern saw-whet owl (*Aegolius acadicus*), and sharp-shinned hawk (*Accipiter striatus*). Other shrubland inhabitants may include mourning dove, broad-tailed hummingbird, northern flicker (*Colaptes auratus*), and ladder-backed woodpecker (*Picoides scalaris*) (BBS 2007).

A variety of mammal species typify habitats in shrubland communities of southwestern Montana and northeastern Idaho. Small and medium-sized mammals (insectivores, lagomorphs, rodents) that may occur in shrublands include Merriam's shrew (*Sorex merriami*), mountain cottontail, black-tailed jackrabbit, white-tailed jackrabbit, deer mouse, Great Basin pocket mouse, Montane vole, northern pocket gopher, least chipmunk, golden-mantled ground squirrel, and woodrat (Foresman 2001; DAI 2002, MTFWP 2008).

Because of the array of small and medium sized mammalian prey and abundant cover, shrub communities typically support higher densities of carnivore species. Among them are coyote, red fox, cougar, and bobcat (Foresman 2001; DAI 2002, MTFWP 2008).

Shrublands are utilized by a variety of big game species including elk and mule deer. Elk use of shrublands increases during winter due to their increased dependence on browse (DAI 2002, MTFWP 2008). Bighorn sheep may occur, as described previously.

Bat species that may use shrub-dominated habitats include fringed myotis, small-footed myotis (*Myotis ciliolabrum*), long-eared myotis, Townsend's big-eared bat and spotted bat (Foresman 2001).

Amphibians and reptiles that potentially occur in shrublands include Woodhouse's toad (*Bufo woodhousii*), gopher snake (*Pituophis catenifer*), western rattlesnake (*Crotalus viridis*), and western fence lizard (DAI 2002, MTFWP 2008).

Wildlife of Sagebrush Habitat

In Idaho's sagebrush dominated communities, birds are similar to those in mixed shrublands described in the previous section. Species include Swainson's hawk (*Buteo swainsoni*), golden eagle (*Aquila chrysaetos*), sage grouse (*Centrocercus urophasianus*), Brewer's sparrow (*Spizella breweri*), sage sparrows (*Amphispiza belli*), and sage thrasher (*Oreoscoptes montanus*). A summary of sage grouse habitat is included below in Table 3.2-20.

Table 3.2-20 Linear Miles of Sage Grouse Habitat Crossed by the Proposed MSTI Alternatives and Sage grouse Lek Proximity to the Proposed MSTI Alternatives in Idaho

Alternative	Linear Miles of High Quality Grouse Habitat crossed by proposed MSTI line	Number of leks within 2 miles of proposed MSTI line	Number of leks 2-4 miles of proposed MSTI line
C1: Preferred	64.4	25	25
C2: Eastern	62.8	22	30
C3: Western	129.7	18	16
C4: INL BP	89.5	19	22

*High quality sage grouse habitat was delineated by MTFWP and IDFG

A variety of mammal species typify habitats in sagebrush dominated communities of southeastern Idaho. General mammal species are similar to those described above for mixed shrub communities. Sagebrush is utilized by a variety of game species including elk, mule deer, and antelope. Sagebrush is used by mule deer for critical winter habitat and is being impacted by all grazing species (elk, deer) and during drought situations (agency defined big game winter range, critical habitat, and movement corridors are included Tables 3.2-17, 3.2-18, and 3.2-19 above). Sagebrush habitat is critical for sagebrush obligate mammal species such as the pygmy rabbit (*Brachylagus idahoensis*) and sagebrush vole (*Lemmiscus curtatus*).

Amphibians and reptiles that potentially occur in sagebrush include western rattlesnake (*Crotalus viridis*), gopher snake (*Pituophis melanoleucus*), short-horned Lizard (*Phrynosoma douglassi*) sagebrush lizard (*Sceloporus graciosus*), Pacific treefrog, boreal toad, western toad, and long-toed salamander (DAI 2002, MTFWP 2008).

Wildlife of Riparian, Wetland, and Water Habitat

Birds found in riparian areas include black-billed magpie (*Pica pica*), Brewer's blackbird (*Euphagus cyanocephalus*), Bullock's oriole (*Icterus bullockii*), rufous hummingbird (*Selasphorus rufus*), calliope hummingbird (*Stellula calliope*) and American goldfinch (*Carduelis tristis*), snadhill crane, heron species, and waterfowl (TBNA 2005). Tree cavities in riparian forested habitat in riparian areas may attract species such as American kestrel, black-capped chickadee (*Parus atricapillus*), European starling (*Sturnus vulgaris*), and house wren (*Troglodytes aedon*). Water bird species likely found in this habitat type include common and Barrow's goldeneye (*Bucephala clagula* and *B. islandica* respectively), northern pintail (*Anas acuta*), canvasback (*Aythya valisineria*), common merganser (*Mergus merganser*), sandhill crane (*Grus canadensis*), great blue heron (*Ardea herodias*), and American bittern (*Botaurus lentiginosus*), spotted sandpiper (*Actitis macularia*), and killdeer (*Charadrius vociferus*). A summary of waterfowl production areas (WPA) crossed (or near) by the proposed Alternative routes is included in Table 3.2-21.

Table 3.2-21 Linear Miles of Waterfowl Production Areas (WPA) Crossed by the Proposed MSTI Alternatives in Idaho

Alternative	Linear Miles of WPA Crossed	WPA Collision Risk Factor
C1: Preferred	0	N/A
C2: Eastern	7.7	7-miles low, 0.7-miles high
C3: Western	0	N/A
C4: INL BP	0	N/A

A variety of mammal species typify habitats in riparian and wetland communities of southwestern Montana. Small mammals (insectivores, rodents) potentially found in riparian areas include shrews (*Sorex* spp.), western jumping mouse (*Zapus princes*), meadow vole (*Microtus pennsylvanicus*), long-tailed vole, musk rat (*Ondontra zibethicus*). Carnivores include mink (*Mustela vison*) and river otter (*Lontra canadensis*).

Elk prefer riparian areas or other shaded habitat with green forage and access to water during summer. Moose (*Alces alces*) may be year-round residents of these areas.

Numerous bat species forage over riparian areas or open water, but due to the lack of perennial water and associated riparian habitat, these species may depend partially on artificial water sources such as livestock tanks. Bat species that utilize riparian habitat may include all species occurring in the region. The specific assemblage of bats forming local communities will vary with the proximity and type of roost habitat.

Amphibians and reptiles that potentially occur in riparian habitat include painted turtle (*Chrysemys picta*), western chorus frog (*Pseudacris triseriata*), spotted frog (*Rana luteiventris*), and garter snakes (*Thamnophis spp*.) (DAI 2002, MTFWP 2008). Additionally, there are historic but no recent records of northern leopard frog (*Rana pipiens*) in the project area.

Fisheries primarily include cold water species in lotic systems. The major rivers in Idaho that are in the vicinity of the MSTI project are: the Big Lost and Little Wood River, Divide, Silver, Horse, Fritiz, and Deep Creeks. The major lakes and reservoirs crossed in Idaho include Sid and Sand Lakes. Lake and reservoirs primarily support coldwater and game fish species. Fish species that occupy waters in the vicinity of the alternative route links include: brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), common carp (*Cyprinus carpio*) shorthead redhorse (*Moxostoma ictiobus cyprinellus*), fathead minnow (*Pimephales promelas*), yellow perch (*Perca flavescens*), smallmouth bass (*Micropterus dolomieu*), walleye (*Sander vitreus*), and northern pike (*Esox lucius*).

Wildlife of Sparse Vegetation Habitat

Wildlife species that utilize sparse vegetation habitat is generally similar to that described above for grassland and shrublands habitat. A major difference in species would be that this habitat is more typically utilized by generalist (species capable of utilizing a variety habitat types). This habitat would in most cases be considered marginal quality for most obligate species. Certain reptile and raptor species may reside in sparse vegetation habitat, exploiting habitat qualities not desirable by most species such as areas of lava vegetation on Craters of the Moon National Monument. Avian species that occupy such habitat include: mountain bluebird (*Sialia currucoides*), violet-green swallow (*Tachycineta thalassina*), rock wren (*Salpinctes obsoletus*), raven, gray crowned rosy-finch

(*Leucosticte tephrocotis*), rough-legged hawk (*Buteo lagopus*), and northern shrike (*Lanius excubitor*). At rocky high elevation sparse sites pika (*Ochotona princeps*) may find habitat. Bighorn sheep may also occur at high elevation rocky sides and surrounding habitats. Reptiles typical of sparse sites include: western fence lizard and western skink (*Eumeces skiltonianus*).

C1: Preferred Route

The C1: Preferred Route is dominated by sagebrush and secondarily grassland habitats. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. There are no waterfowl production areas (WPA) that are crossed by C1. C1 crosses the highest amount (52.7 miles) of mule deer winter habitat and the second highest amount (18.9) of elk, winter habitat. The highest amount (89.9 miles) of elk calving habitat within 0.5 miles of a road is crossed by the C1: Preferred Route. C1 does not cross any critical winter habitat for elk, winter habitat for pronghorn, or critical elk calving habitat. C1 crossed the second lowest amount (64.4 miles) of high quality sage grouse habitat and has 50 leks within 4 miles of proposed MSTI line. There is 10.8 miles of wildlife movement corridor crossed by C1. This includes 10.8 miles of very high priority. There are 9 special status wildlife species along C1. Special status wildlife species are known to occur along the Preferred route include: There is northern goshawk, great gray owl, ferruginous hawk, loggerhead shrike, long-billed curlew, bald eagle, mountain plover, wolverine, and Townsend big-ear bat. There are 4 special status plants species known to occur along C1, these include: Idaho sedge, three-leaf milkvetch, lehmi milkvetch; and spreading gilia. All 18 noxious weed species with potential of occurring along MSTI routes have the potential to occur along C1. There is likely additional sage grouse and pygmy rabbit occurrences along Links 23 and 24; however biological data was limited at the time this report was written.

C2: Eastern Route

The C2: Eastern Route is dominated by sagebrush and secondarily grassland habitats. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. There are 7.7 miles of waterfowl production area (WPA) that are considered a high (0.7 miles) and low (7.0 miles) collision risk area. C2 crosses the highest amount (30.8 and 26 miles respectively) of critical winter and winter elk habitat. The highest amount of elk summer habitat (calving) is crossed by C2. C2 crosses the lowest amount of high quality sage grouse habitat and has 52 sage grouse leks within 4 miles of the proposed MSTI line. There is 10.8 miles of wildlife movement corridor crossed by the C2. This includes 10.8 miles of very high priority movement corridors. There are 19 special status wildlife species along C2. The special status wildlife species are known to occur along the C2 include: There is ferruginous hawk, northern goshawk, great gray owl, wolverine, golden eagle, Idaho dunes tiger beetle, loggerhead shrike, long-billed curlew, American white pelican, black tern, Franklin's gull, marbled godwit, mountain plover, trumpeter swan, white-face ibis, Wilson's phalarope, willet, yellow rail, and yellow-billed cuckoo. There are 2 known special status plants species known to occur along the C2. The special status plants include: Idaho sedge and blue grama. All 18 noxious weed species with potential of occurring along MSTI routes have the potential to occur along the C2.

C3: Western Route

The C3: Western Route is dominated by sagebrush and secondarily grassland habitats. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. C3 does not cross any class 1 fisheries or WPAs. C3 crosses the lowest amount (8.2 and 35.8 miles) of mule deer and elk winter habitat. C3 crosses the third highest amount (14.9 miles) of critical elk winter habitat. The second highest amount (18.3 and 89.6 miles respectively) of elk calving habitat summer elk habitat is crossed by the C3. C3: crosses the highest amount (129.7 miles) of high quality sage grouse habitat and has 34 sage grouse leks within 4 miles of the proposed MSTI line. There are no wildlife movement corridors crossed by the C3. There are 11 special status wildlife species along the C3. The special status wildlife species are known to occur along the C3 include: golden eagle, great gray owl, ferruginous hawk, bald eagle, mountain plover, loggerhead shrike, Brewer's sparrow, long-billed curlew, northern goshawk, Canada lynx, and wolverine. There are 6 special status plant species known to occur along C3 and these include: bugleg goldenweed , mourning milkvetch, winged-seed evening primerose, three-leaf milkvetch, lehmi milkvetch; and spreading gilia. All 18 noxious weed species with potential of occurring along MSTI routes have the potential to occur along C3. There is likely additional sage grouse and pygmy rabbit occurrences along Links 23 and 24; however biological data was limited at the time this report was written.

C4: Sheep Creek INL/Bringham Point Route

The C4: Sheep Creek INL/Bringham Point Route is dominated by sagebrush and secondarily grassland habitats. Riparian tree and shrub habitat is associated with stream and river crossings (see Section 3.3 Water Resources). Wildlife associated with these communities (see Section 3.2.3 above) would be prominent along this link. C4 does not cross any class 1 fisheries or WPAs. C4 crosses the highest amount (52.7 miles) of mule deer winter habitat. The second highest amount (15 and 18.9 miles) of elk critical winter and wintering habitat occurs along C4. The second highest amount of elk calving habitat within 0.5 miles of a road is crossed by the C4. C4 crosses the lowest amount of elk calving habitat. C4 crosses the second highest amount (89.5 miles) of high quality sage grouse habitat and has 44 sage grouse leks within 4 miles of the proposed MSTI line. There are 16 special status wildlife species along C4. The special status wildlife species are known to occur along C4 include: Idaho dune tiger beetle, northern leopard frog, Brewer's sparrow, sage thrasher, sage sparrow, long-billed curlew, loggerhead shrike, sage thrasher, mountain plover, golden eagle, great gray owl, ferruginous hawk, northern goshawk, Townsend's big-ear bat, wolverine, and Canada lynx. There are 4 known special status plants species that occur along C4. The plant species include: Three-leaf milkvetch, Picabo milkvetch, lehmi milkvetch, and spreading gilia. All 18 potential noxious weed species have the potential to occur along C4. There is likely additional sage grouse and pygmy rabbit occurrences along Links 23 and 24; however biological data was limited at the time this report was written.

3.2.5 Substations

3.2.5.1 New Townsend Substation

The new Townsend Substation is dominated by agriculture land use (anthropogenic habitat type). Riparian tree and shrub habitat is associated with the Missouri River which is nearby. Wildlife associated with these communities (see Section 3.2-1 above) would be prominent in the vicinity of the substation site. There is no summer elk habitat and winter range for elk, mule deer, bighorn sheep, moose, and pronghorn in the vicinity of the new substation. High quality (agency defined) sage grouse habitat does not occur in the vicinity of the new Townsend substation. There are no known wildlife movement corridors, high quality grouse habitat, and grouse leks in the vicinity of the new Townsend substation. There are no special status plant species known to occur in the vicinity of the substation. There are 3 special status wildlife species known to occur in the vicinity of the new substation. These three species include: bald eagle, heron rockeries, and northern leopard frog. The new Townsend substation does not cross or is in the vicinity of wildlife movement corridors.

3.2.5.2 Mill Creek Substation Addition

The Mill Creek Substation is dominated by grassland and disturbed habitat types. Wildlife associated with these communities (see Section 3.2-1 above) would be prominent in the vicinity of the substation site. The Mill Creek substation is in the vicinity of elk and mule deer winter range (lower elevation grass and shrub habitat). There is no summer elk habitat and winter range for bighorn sheep, moose, and pronghorn in the vicinity of the new substation. High quality (agency defined) sage grouse habitat does not occur in the vicinity of the Mill Creek substation. There are no known wildlife movement corridors, high quality grouse habitat, and grouse leks in the vicinity of the Mill Creek substation. There are no special status species (plants and wildlife) known to occur in the vicinity of the substation. The Mill Creek substation does not cross or is in the vicinity of wildlife movement corridors.

3.2.5.3 Midpoint Substation Addition

The Midpoint substation would be expanded to accommodate the additional 500kV transmission line. The area of the existing substation is dominated by agriculture land use (anthropogenic habitat type) and sagebrush habitats. Wildlife associated with these communities (see Section 3.2-1 above) would be prominent in the vicinity of the substation site. There is no summer elk habitat and winter range for elk, mule deer, bighorn sheep, and pronghorn in the vicinity of the substation. There is known sage grouse occurrence approximately 7 miles to the east of the Midpoint substation. There are no known grouse leks in the vicinity of the substation. There are no special status plant species known to occur in the vicinity of the substation. There are 4 special status wildlife species known to occur in the vicinity of the substation. These four species include: loggerhead shrike, Brewer’s sparrow, sage sparrow, and long-billed curlew.

3.2.6 COMMUNICATION SYSTEM

As discussed in Section 2.3.2.1, preliminary locations for microwave facilities along the Preferred Route (Alternatives A1, B1 and C1) have been identified (see Figure 2-4). The microwave site locations in Montana include Mill Creek, Fleecer, Beef Trail, East Ridge, Cardwell Hill, Townsend Substation, and Mauer Mountain, and the locations in Idaho are Humphrey Ridge, Big Grassy Substation, Howe Peak, American Falls SE, Borah Substation, Dietrich Butte, and Midpoint Substation. All 14 microwave site locations are either existing or designated communication sites.

3.3 WATER AND WETLAND RESOURCES

3.3.1 INTRODUCTION

This section describes the inventory methods, data sources, data categories, alternative routes, substations, and communication system for water resources and wetlands. Refer to the Water and Wetland Resources Technical Report in Volume II and the water resource map and Missouri River crossing map located in Volume III.

3.3.2 INVENTORY METHODS

For water and wetland resources MSTI study corridors extend one mile either side of the proposed centerlines. Study corridors start at the new Townsend Substation and proceed south and then west to the existing Midpoint Substation in south-central Idaho, seven miles south of Shoshone.

Water and wetland resource data for Montana and Idaho were obtained from a regional study conducted by POWER in 2006 (see Volume IV). Additional water resource data was collected from government agencies, review of relevant studies, scientific literature, and agency programs, and inspection of resources in the field. See Volume II, Water and Wetland Resources Technical Report in and the water resource map and Missouri River crossing map located in Volume III.

Baseline data requirements were followed as outlined in MDEQ's MFSA Application Requirements for Linear Facilities (MDEQ 2004a). As specified, water resources include the following if they occurred within the impact zone:

- Municipal watersheds;
- Streams and rivers listed in Montana Department of Fish, Wildlife and Parks (MTFWP) river database as being class I or II streams or rivers;
- Streams listed by the department pursuant to 75-5-702, MCA, that are not attaining designated beneficial uses of water;
- Any undeveloped land or water areas that contain known natural features of unusual scientific, educational or recreational significance;
- Standing water bodies, including any lake, wetland, marsh or reservoir; and intermittent water bodies and internally drained basins that reach a surface area of 20 acres or more at least one year out of ten;
- Surface supplies of potable water

3.3.2.1 Data Sources

Surface Water

Stream crossing data were obtained from the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) and the National hydrologic database from U.S. Geological Survey (USGS).

Navigable Waterways

Navigable river information was gathered from the U.S. Army Corps of Engineers (USACE) website, the Montana Department of Natural Resources and Conservation (MDNRC) Trust Land Management Division and the Idaho Department of Lands (IDL).

Wetlands

Digital and hard copy NWI maps were obtained from the USFWS but were not available for all quadrangles for the project area. Hard copy maps were digitized. NWI provides approximate locations of wetlands one acre or larger and may or may not be jurisdictional based on the 1987 USACE Wetlands Delineation Manual.

Aerial photographs and National Gap Analysis Program (GAP) digital data were used to interpret land cover within the study corridors for wetland identification.

The Montana Natural Resource Information System (NRIS) is currently mapping the wetlands in the project area, but information is not available for official use at this time. Maps for the project may be completed sometime during the summer of 2009.

Hydric Soils

Digital soils data for the Soil Survey Geographic (SSURGO) were obtained from the Natural Resource Conservation Service (NRCS) and were available for most quadrangles in the project area. A combination of hydric soils and land cover were used to identify wetlands not mapped by NWI.

Floodplains

Digital floodplain data were available from the Federal Emergency Management Agency (FEMA) for approximately 30 percent of the project area.

Water Quality

Water quality information for streams and rivers in the study corridors was obtained from the Montana Department of Environmental Quality (MDEQ) and the Idaho Department of Environmental Quality (IDEQ).

Class I and II Fisheries Resource Rivers

Class I and II stream fishery classifications for Montana were obtained from MTFWP. Class I and II stream fishery classifications are specific to Montana and do not exist for Idaho.

Municipal Watersheds

Municipal watershed information for Montana was collected from MDEQ. There are no municipal watershed designations in Idaho per IDEQ.

Surface Supplies of Potable Water

Information regarding surface supplies of potable water for Montana was obtained from MDEQ Source Water Protection Program. Information was reviewed for the following six counties: Beaverhead, Broadwater, Deer Lodge, Jefferson, Madison, and Silver Bow.

Information regarding surface supplies of potable water for Idaho was obtained the following IDEQ district offices: Twin Falls, Pocatello, and Idaho Falls.

3.3.2.2 Data Categories

Water resources data collected for the preferred and alternative routes include surface water, navigable waterways, wetlands, land use/land cover, floodplains, hydric soils, water quality, class I and II fisheries resource rivers, municipal watersheds, and surface supplies of potable water. The project area in Montana comprises a total of 121 quadrangle maps at a scale of 1:24K.

SURFACE WATER

Stream crossing data include rivers, perennial and intermittent streams, and canals or ditches. A river is a large natural flow of water that is larger than a stream or creek. A perennial stream is defined as a stream that normally has water in its channel at all times. An intermittent stream is defined as a stream that flows only when it receives water from rainfall runoff or springs, or from some surface source such as melting snow. Canals or ditches are manmade channels used to move water from one location to another, usually for agricultural purposes.

NAVIGABLE WATERWAYS

Navigable waterways are administered at the federal level by the USACE and at the state level by the MDNRC Trust Land Management Division and Idaho Department of Lands (IDL). Navigable waterways are as those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity.

WETLANDS

The regulatory definition of Section 404 CWA jurisdictional wetlands according to the U.S. Environmental Agency (EPA) and USACE are “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.”

Wetlands can be vegetated or nonvegetated and are classified on the basis of their hydrology, vegetation, and substrate. In this report, wetlands are classified according to the system proposed by Cowardin and others, which is used by the NWI to map and inventory the Nation’s wetlands.

Four categories of land use/land cover identified potential wetlands: marsh, mud flat, riparian shrub, and riparian tree. A marsh is defined as a water-saturated, poorly drained area, intermittently or permanently water covered, having aquatic and grass-like vegetation. A mud flat is defined as a relatively level area of fine silt along a shore or around an island, alternately covered and uncovered by the tide, or covered by shallow water. Riparian shrub cover is defined as the area pertaining to or situated on the bank of a natural body of flowing water that is predominately covered with shrubs. Riparian tree cover is defined as the area pertaining to or situated on the bank of a natural body of flowing water that is predominately vegetated with trees (USGS 1996).

A combination of land cover and hydric soils were used to identify wetlands not mapped by NWI.

HYDRIC SOILS

The definition of a hydric soil is soil that is wet long enough to periodically produce anaerobic conditions, thereby influencing the growth of plants. Some series, designated as hydric, have phases that are not hydric depending on water table, flooding, and ponding characteristics.

The SSURGO data are classified as all hydric soils, partially hydric soils, not hydric, and no data available. Partially hydric soils are non-hydric soils with hydric soil inclusions that can vary from 5 percent to 99 percent of the total soil area.

A combination of hydric soils and land cover were used to identify wetlands not mapped by NWI.

FLOODPLAINS

A floodplain is the area on the sides of a stream, river, or watercourse that is subject to periodic flooding. The extent of the floodplain is dependent on soil type, topography, and water flow characteristics. A 100-year flood is a flood stage that statistically has a 1 percent probability of occurring in any given year.

Floodplain categories in the study area included 100-year floodplain zones (Zone A) and no flood zones (Zone X), which are outside the 100 and 500-year floodplains. Flood Insurance Risk Zone A areas are subject to inundation by the 1-percent-annual-chance flood event. Because detailed hydraulic analyses have not been performed, no base flood elevation or depths are available.

WATER QUALITY

MDEQ is responsible for protecting and regulating the beneficial uses of the state's surface waters in Montana and the IDEQ is responsible for protecting and regulating the beneficial uses of the state's surface waters in Idaho. Both the MDEQ and IDEQ rely on the water quality standards set forth by the EPA for identifying potential causes of impairment. MDEQ and IDEQ designate uses for specific water bodies of their respective states. The degree of support or attainment of a designated use for a particular stream is determined by an analysis of biological, physiochemical, physical-habitat, and toxicity data. Each designated use is assessed as full support (good), partial support (fair), or nonsupport (poor).

CLASS I AND II STREAMS

The State of Montana has classified all major rivers as to their fisheries resource value. The resource value was determined by an assessment of fish abundance, fishing pressure, esthetics and ingress by MTFWP and federal land management fisheries biologists. This classification system does not exist in Idaho.

MUNICIPAL WATERSHEDS

A watershed is an area of land that drains to a common waterway, such as a stream, lake, estuary, wetland, aquifer, or even the ocean. Municipal watersheds are important sources of surface water and groundwater for domestic, industrial, and commercial use.

SURFACE SUPPLIES OF POTABLE WATER

Potable water is water that is safe for human consumption, better known as drinking water.

3.3.3 DESCRIPTION OF ALTERNATIVE ROUTES - MONTANA

This section describes the A1: Preferred Route and A2: Parallel Colstrip Lines Route, the A3: Maximize Utility Corridors route for the Townsend to Mill Creek (Melrose) Segment, and the B1: Preferred Route and B2: Sheep Creek Route, the B3: I-15 Route for the Mill Creek to State Line Segment. The AB1: I- 15 Jefferson Valley Route is also discussed. The coincidence of project elements and water and wetland resources is described as the number of 0.1-mile segments of line that cross permanent or intermittent, standing or flowing surface water bodies or wetlands. This permits consistent comparisons of data categories to be made among alternative routes.

3.3.3.1 Townsend to Mill Creek (Melrose) Segment

A1: PREFERRED ROUTE

The A1: Preferred Route would cross perennial rivers and streams 27 times. The river crossings would include the Missouri River west of the Townsend Substation (Link 1), the Boulder River north of Whitehall and Interstate 90 (Link 3-1), and the Big Hole River southeast of Maiden Rock (Link 11-23). Perennial stream crossings would be distributed throughout this route.

The Missouri River is designated as a navigable waterway beginning at the headwaters near Three Forks. The MTFWP has classified the Missouri River as a class I fisheries resource river between Sixteen Mile Creek and Canyon Ferry Lake (Link 1).

MTFWP has classified the Big Hole River as a class I fisheries resource river in the section where the transmission line would cross (Link 11-23).

The Missouri, Boulder, and Big Hole Rivers are 303(d) listed as impaired waters under the Clean Water Act by the MDEQ. The Missouri and Boulder Rivers are impaired due to flow alterations, metals (cadmium, copper, zinc, and lead), siltation, riparian degradation, other habitat alterations and thermal modifications. Major pollution sources are abandoned mines, agriculture (crops and grazing), resource extraction, flow regulation, and construction. The Big Hole River, in the area of potential crossings, is impaired due to metals (cadmium, copper, and lead), flow and thermal alterations, and physical substrate habitat. Major pollution sources for the Big Hole River are abandoned mines, agriculture (crops and grazing), streambank modifications, and construction. Other perennial streams are 303(d) listed, see Table A-1 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

A1 would have 210 segments crossing intermittent streams. Intermittent stream crossings are concentrated in two areas: 95 crossings between Crow Creek and the eastern edge of the BLM property on the east side of the Beaverhead–Deerlodge National Forest (Links 3-1 and 7-2), and 51 crossings between the transmission line junction east of Interstate 15 and Melrose (Link 11-23). The remainder of intermittent stream crossings would be distributed throughout the route.

A1 would cross canals or ditches at 11 segments. There are two canal crossings 21.7 miles west of the Missouri River (Link 3-1), three crossings between the last Interstate 90 crossing and the Interstate 15 crossing (Link 7-8), two crossings just south of the Mill Creek Substation (Link 7-9), and four crossings between transmission line junction east of Interstate 15 and Melrose (Link 11-23).

A single segment of A1 would cross a perennial lake, Homestake Lake. This is a small lake located in the Homestake Recreation Area six miles east of Butte, near Interstate 90, in the Beaverhead-Deerlodge National Forest (Link 7-42).

A1 would cross 8.7 miles of wetlands (0.0 NWI, 8.7 interpreted), with 2.6 miles of wetlands located between the transmission line junction west of Interstate 15 and Melrose (Link 11-23). The remaining interpreted wetlands would be distributed throughout A1.

The A1: Preferred Route would have three segments crossing flood zones, designated as Flood Zone A by FEMA. These flood zones are associated with the Missouri River, Mill Creek, and Willow Creek. The Missouri River flood zone is just west of the Townsend Substation (Link 1). The Mill Creek and Willow Creek flood zones would be crossed just south of the Mill Creek Substation (Link 7-9).

A2: PARALLEL COLSTRIP LINES ROUTE

The A2: Parallel Colstrip Lines Route would cross perennial rivers and streams 50 times. The river crossings would include the Missouri River west of the Townsend Substation (Link 1) and the Big Hole River southeast of Maiden Rock (Link 11-23). The majority of the perennial stream crossings (33) are located in the northern-most segment of the route which runs through the Beaverhead – Deerlodge National Forest (Link 4-2). See discussion of the Missouri and Big Hole Rivers under the A1: Preferred Route in this section (3.3.3.1).

Numerous perennial streams in this alternative are 303(d) listed, see Table A-1 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

The A2: Parallel Colstrip Lines Route would cross intermittent streams 143 times. The intermittent stream crossings are concentrated in two areas: 60 crossings between Crow Creek and the western edge of the Beaverhead – Deerlodge National Forest (Links 4-1 and 4-2) and 51 crossings between the transmission line junction east of Interstate 15 and Melrose (Link 11-23). The remaining crossing sites would be distributed throughout the route.

The A2: Parallel Colstrip Lines Route would cross canals or ditches 14 times. There are four canal crossings in the first three miles of Link 4-1 (from east to west). There are four canal crossings in the last four miles of Link 4-2 just before the Mill Creek Substation including the Mill-Willow Bypass. There would be two canal crossings in Link 7-9 just south of the Mill Creek Substation and four canal crossings in Link 11-23.

The A2: Parallel Colstrip Lines Route would cross 10.6 miles of wetlands (0.0 NWI, 10.6 interpreted), with 4.0 miles of crossings located on the northernmost segment that runs through the Beaverhead – Deerlodge National Forest (Link 4-2) and 2.6 miles of crossings located between the transmission line junction east of Interstate 15 and Melrose (Link 11-23). The remaining interpreted wetlands would be distributed throughout the A2: Parallel Colstrip Lines Route.

Three segments of A2: Parallel Colstrip Lines Route would cross flood zones, designated as Flood Zone A by FEMA. These three flood zones are associated with the Missouri River, Silver Bow Creek, Mill Creek, Mill-Willow Bypass, and Willow Creek. The Missouri River flood zone is just west of the Townsend Substation (Link 1). The Silver Bow Creek, Mill Creek, and Mill-Willow Bypass flood zones are each crossed within an area five miles east of the Mill Creek Substation (Link 4-2). Mill Creek and Willow Creek flood zones would also be crossed just south of the Mill Creek Substation (Link 7-9).

A3: MAXIMIZE UTILITY CORRIDORS

The A3: Maximize Utility Corridors route would cross perennial rivers and streams 32 times. The river crossings would include the Missouri River nine miles south of the Townsend Substation (Link 2-1), the Boulder River just north of Whitehall (Link 2-3), and the Big Hole River southeast of Maiden Rock (Link 11-23) The perennial stream crossings are scattered throughout this alternative route. See discussion of the Missouri, Boulder, and Big Hole Rivers under the A1: Preferred Route in this section (3.3.3.1).

Numerous perennial streams in this alternative are 303(d) listed, see Table A-1 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

The A3: Maximize Utility Corridors route would cross intermittent streams 197 times. The intermittent stream crossings are concentrated in two areas: 96 crossings between the Townsend Substation and the eastern edge of the BLM property on the east side of the Beaverhead – Deerlodge National Forest (Links 2-1, 2-3, 7-2) and 51 crossings between the transmission line junction east of Interstate 15 and Melrose (Link 11-23). The remaining intermittent stream crossings are distributed throughout the route.

The A3: Maximize Utility Corridors route would cross canals or ditches 12 times. The Broadwater Missouri Canal is crossed just south the Townsend Substation and again 8.6 miles south of the substation (Link 2-1). The Big Springs Ditch is crossed 8.9 miles south of the Townsend Substation and the Totson Canal is crossed 10.5 miles south of the Townsend Substation. There would be two canal crossings south of Butte (Link 7-61), two crossings just south of the Mill Creek Substation

(Link 7-9), and four crossings between transmission line junction east of Interstate 15 and Melrose (Link 11-23).

A3 would have a single crossing of a perennial lake, Homestake Lake. This is a small lake located in the Homestake Recreation Area six miles east of Butte, near Interstate 90, in the Beaverhead – Deerlodge National Forest (Link 7-42).

The A3: Maximize Utility Corridors route would cross no NWI designated wetlands, but would cross 11.0 miles of interpreted wetlands. The two concentrations of interpreted wetlands are located at the start and end of this route. There are 2.8 miles of interpreted wetlands crossed between the Townsend Substation and Boulder River crossing (Links 2-1 and 2-3) and 2.6 miles of interpreted wetlands located between the transmission line junction west of Interstate 15 and Melrose (Link 11-23). The remaining interpreted wetlands would be distributed throughout this alternative route.

Three segments of A3 would cross flood zones, designated as Flood Zone A by FEMA. These flood zones are associated with the Missouri River, Mill Creek, and Willow Creek. The Missouri River flood zone is nine miles south of the Townsend Substation (Link 2-1). The Mill Creek and Willow Creek flood zones are crossed just south of the Mill Creek Substation (Link 7-9).

3.3.3.2 Mill Creek to State Line Segment

B1: Preferred Route

The B1: Preferred Route would cross perennial rivers and streams 13 times. The Beaverhead River is crossed where the transmission line crosses Interstate 15 (Link 16-1) and the Red Rock River is crossed just east of Lima (Link 16-2). Perennial stream crossings would be distributed throughout this route.

The MTFWP has classified the Beaverhead River as a class I fisheries resource river between Clark Canyon Reservoir and a point north of Grasshopper Creek which is the section where the transmission line would cross (Link 16-1).

The Beaverhead and Red Rock Rivers are 303(d) listed as impaired waters under the Clean Water Act by the MDEQ. The Beaverhead River, in the area of the potential crossing, is impaired due to alteration of streamside or littoral vegetative covers, lead, and low flow alteration. Major pollution sources for the Beaverhead River are abandoned mines, agriculture (crop production), and dam or impoundments. The Red Rock River is impaired due to alteration in streamside or littoral vegetative covers, phosphorus (total), siltation, temperature modification, and total Kjehldahl nitrogen (TKN). The major pollution source for the Red Rock River is grazing in the riparian or shoreline zones. Other perennial streams are 303(d) listed, see Table A-1 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

The B1: Preferred Route would cross intermittent streams at 197 segments. The intermittent stream crossings are primarily in the first three links of this route: Link 11-3 with 47 crossings, Link 16-1 with 51 crossings, and Link 16-2 with 85 crossings. Perennial and intermittent streams are associated with drainage systems from the Beaverhead – Deerlodge National Forest to the west of this route.

The B1: Preferred Route would cross canals or ditches seven times. There would be four canal crossings in Link 11-3 including the South Channel Ditch, Willow Creek Ditch, and two unnamed canals. There would be three crossings of the Beaverhead Water Company Ditch within the first 1.4 miles of Link 16-1.

The B1: Preferred Route would cross 13.9 miles of wetlands (8.2 NWI, 5.7 interpreted). All of the NWI wetlands would be located between Clark Canyon Creek and the state line (Links 16-1, 16-2, 16-4). These NWI wetlands are characterized as follows:

- Palustrine emergent (PEM) 3.1 miles
- Palustrine scrub-shrub (PSS) 1.0 miles
- Riverine lower perennial (R2) 0.1 miles
- Riverine upper perennial (R3) 0.1 miles
- Riverine intermittent (R4) 3.9 miles

Link 16-2 has the most NWI wetlands crossings at 4.9 miles and they are classified as follows:

- Palustrine emergent (PEM) 0.9 miles
- Palustrine scrub-shrub (PSS) 0.4 miles
- Riverine lower perennial (R2) 0.1 miles
- Riverine upper perennial (R3) 0.1 miles
- Riverine intermittent (R4) 3.4 miles

The B1: Preferred Route would cross 5.7 miles of interpreted wetlands with all of them located in Links 11-3 (3.6 miles) and 16-1 (2.1 miles). The interpreted wetlands in Link 11-3 are associated with Cherry Creek, Brownes Gulch, Rock Creek, Lost Creek, Willow Creek, South Channel Ditch, an unnamed canal, and several unnamed intermittent streams. The interpreted wetlands in Link 16-1 would be associated with the Beaverhead Water Company Ditch, Rattlesnake Creek, Beaverhead River, Gallagher Creek, Clark Canyon Creek, and several unnamed intermittent streams.

The B1: Preferred Route would cross no FEMA designated flood zones.

THE B2: SHEEP CREEK ROUTE

The B2: Sheep Creek Route would cross perennial streams 28 times. There would be no river crossings. The majority of the perennial stream crossings (21) would be located between the Peterson Flats Substation and the state line (Link 18-1).

Numerous perennial streams in this alternative are 303(d) listed, see Table A-1 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

The B2: Sheep Creek Route would cross intermittent streams at 110 segments. The intermittent streams would be distributed relatively evenly throughout this route and are associated with drainage systems from the Beaverhead – Deerlodge National Forest to the west and east of this route.

The B2: Sheep Creek Route would cross canals or ditches twice. It would cross the Beaverhead Water Company Ditch twice, between 16.8 and 17 miles south of Melrose (Link 11-4).

The B2: Sheep Creek Route would cross 13.6 miles of wetlands (7.7 NWI, 5.9 interpreted). All of the NWI wetlands are located between Horse Prairie Creek just north of the Peterson Flats Substation and the state line (Link 18-1). These NWI wetlands are characterized as follows:

- Palustrine emergent (PEM) 6.4 miles
- Palustrine scrub-shrub (PSS) 0.3 miles
- Palustrine aquatic bed (PAB) 0.1 miles
- Riverine upper perennial (R3) 0.3 miles
- Riverine intermittent (R4) 0.6 miles

The B2: Sheep Creek Route would cross 5.9 miles of interpreted wetlands. The majority of these wetlands (4.2 miles) are located between Medicine Lodge Creek approximately 7 miles south of the Peterson Flats Substation and the state line (Link 18-1).

The B2: Sheep Creek Route would cross no FEMA designated flood zones.

B3: I -15 ROUTE

The B3: I-15 Route would cross 13 perennial rivers and streams. The river crossings would include the Beaverhead River where the transmission line crosses Interstate 15 (Link 16-1), approximately nine miles north of Clark Canyon Reservoir and the Red Rock River just south of the Clark Canyon Reservoir (Link 16-3). Perennial stream crossings would be distributed throughout this alternative route. See Section 3.3.3.2 under the B1: Preferred Route for a discussion of the Beaverhead and Red Rock Rivers.

Numerous perennial streams in this alternative are 303(d) listed, see Table A-1 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

The B3: I-15 Route would cross 161 intermittent streams. The intermittent stream crossings (147) are concentrated in the first three Links (11-3, 16-1, and 16-3) and are associated with drainage systems from the Beaverhead – Deerlodge National Forest to the west of this alternative route.

The B3: I-15 Route would cross canals or ditches seven times. This route would cross the South Channel Ditch, Willow Creek Ditch and two unnamed canals, located between 15.4 and 18.2 miles south of Melrose (Link 11-3). This route would also cross the Beaverhead Water Company Ditch in three locations just north of the Dillon Substation (Link 16-1).

The B3: I-15 Route would cross 15 miles of wetlands (9.3 NWI, 5.7 interpreted). All of the NWI wetlands are located between the north end of Clark Canyon Reservoir and the state line (Links 16-1, 16-3, and 16-4). These NWI wetlands are characterized as follows:

- Palustrine emergent (PEM) 5.7 miles
- Palustrine scrub-shrub (PSS) 1.1 miles
- Palustrine aquatic bed (PAB) 0.2 miles
- Palustrine unconsolidated bottom (PUB) 0.2 miles
- Riverine lower perennial (R2) 0.1 miles
- Riverine upper perennial (R3) 0.1 miles

- Riverine intermittent (R4) 1.9 miles

Link 16-3 has the most NWI wetlands crossings at 56 for a total of 6.0 miles and they are classified as follows:

- Palustrine emergent (PEM) 3.5 miles
- Palustrine scrub-shrub (PSS) 0.5 miles
- Palustrine aquatic bed (PAB) 0.2 miles
- Palustrine unconsolidated bottom (PUB) 0.2 miles
- Riverine lower perennial (R2) 0.1 miles
- Riverine upper perennial (R3) 0.1 miles
- Riverine intermittent (R4) 1.4 miles

The B3: I-15 Route would cross 5.7 miles of interpreted wetlands. These interpreted wetlands are primarily associated with Cherry Creek, Brownes Gulch, Rock Creek, Willow Creek, South Channel Ditch, Willow Creek Ditch, Beaverhead Water Company Ditch, Rattlesnake Creek and the Beaverhead River. These water crossings would be located between Melrose and the Beaverhead River crossing approximately nine miles north of Clark Canyon Reservoir (Links 11-3 and 16-1). These interpreted wetlands are associated with drainage systems from the Beaverhead – Deerlodge National Forest to the west of this alternative route.

The B3: I-15 Route would cross no FEMA designated flood zones.

3.3.3.3 AB1: I-15 Jefferson Valley Route

The AB1: Jefferson Valley Route would cross perennial rivers and streams 40 times. This alternative would cross the Missouri, Big Hole, Beaverhead, and Red Rock Rivers. See Sections 3.3.3.1 and 3.3.3.2 under the A1: and B1: Preferred Routes for a discussion of these rivers. This alternative would cross the Big Hole River just east of the Block Mountain ACEC (Link 8). Perennial stream crossings would be distributed throughout this alternative route.

Numerous perennial streams in this alternative are 303(d) listed, see Table A-1 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

The AB1: Jefferson Valley Route would cross intermittent streams 384 times. Intermittent stream crossings are concentrated in Links 3-1 (63 crossings), 7-2 (32 crossings), 8 (84 crossings), 16-1 (51 crossings), and 16-2 (85 crossings).

The AB1: I-15 Jefferson Valley Route is the same as the A1: Preferred Route from Townsend to the Mill Creek Substation. See Section 3.3.3.1 under the A1: Preferred Route for a discussion of the following common Links: 1, 3-1, 7-2, 7-41, 7-42, 7-5, 7-8, 11-22, and 11-21, 7-9. The AB1: I-15 Jefferson Valley Route is the same as the B1: Preferred Route from eight miles north of Dillon to the state line. See Section 3.3.3.2 under the B1: Preferred Route for a discussion of the following common Links: 16-1, 16-2, and 16-4.

The following is a discussion of Link 8 which is unique to this alternative.

Link 8 would cross perennial rivers and streams (including the Big Hole River) at nine segments. The MTFWP has classified the Big Hole River as a class I fisheries resource river in the section where the transmission line would cross, east of the Block Mountain ACEC.

This link would cross intermittent streams at 84 segments. Crossings would be distributed throughout this alternative.

Link 8 would cross canals or ditches six times. This route would cross the Pipestone Ditch and two unnamed canals within 4.2 miles after the Interstate 90 crossing; the Larson-Narangich Ditch and Cocanougher Ditch next to the Big Hole River crossing; and one unnamed canal 11.7 miles south of the river crossing.

Link 8 would cross 1.0 miles of wetlands (0.0 NWI, 1.0 interpreted). These interpreted wetlands are associated with the Big Pipestone Creek, Little Pipestone Creek, Fish Creek, Cherry Creek, and the Big Hole River. These four creeks are located between mile 1.0 and mile 14.8 after the line crosses Interstate 90.

Link 8 would cross no FEMA designated flood zones.

3.3.4 Description of Alternative Routes - Idaho

This section describes the Preferred Route and alternative routes for the Stateline to Midpoint section. The coincidence of project elements and water and wetland resources is described as the number of 0.1-mile segments of line that cross permanent or intermittent, standing or flowing surface water bodies or wetlands. This permits consistent comparisons of data categories to be made among alternative routes.

3.3.4.1 Stateline to Midpoint Routes

C1: Preferred Route

The C1: Preferred Route, would cross perennial rivers and streams 12 times. The perennial stream crossings are all located in Link 20, which is the first link to the south of Monida Pass.

The C1: Preferred Route would have 139 segments crossing intermittent streams. Intermittent stream crossings are concentrated between Monida Pass and a point just north of the Borah Substation (Links 20, 22, 23, 23, 26-1, and 26-2). There would be one river crossing, the Big Lost River in Link 24, which runs intermittently at this location.

The Big Lost River is 303(d) listed as impaired waters under the Clean Water Act by the IDEQ. It is impaired due to organic enrichment/low dissolved oxygen, flow alteration, nutrients, siltation, and thermal modifications. Other streams that are 303(d) listed include: Beaver, Modoc, Berry, Miners, and Dairy Creeks. See Table A-2 in Appendix A of the Water Resource Technical Report in Volume II.

Two segments of C1 would cross intermittent lakes: Sid Lake and Sand Lake. These intermittent lakes are located west of the Shale Butte WSA in Link 26-4.

C1 would cross canals or ditches at six segments. It would cross Reno Ditch in Link 23, four unnamed canals in Link 24, and the Gooding Canal in Link 26-4.

The C1: Preferred Route would cross 4.2 miles of wetlands (4.2 NWI, 0.0 interpreted). The NWI wetlands are located between Monida Pass and the Big Lost River crossing at the beginning of Link 24 (Links 20, 22, 23, and 24). The majority of the wetlands (3.0 miles) would be located in Link 20. The NWI wetlands are characterized as follows:

- Palustrine emergent (PEM) 1.9 miles
- Palustrine scrub-shrub (PSS) 1.5 miles
- Riverine upper perennial (R3) 0.1 miles
- Riverine intermittent (R4) 0.7 miles

The C1: Preferred Route would cross no FEMA designated flood zones.

C2: Eastern Route

The C2: Eastern Route would cross perennial rivers and streams 13 times. There would be no river crossings in this alternative. The perennial stream crossings (12 crossings) are concentrated in Link 20, located south of Monida Pass.

Six perennial streams in this alternative are 303(d) listed: Beaver, Modoc, Berry, Miners, Dairy, and Camas Creeks. See Table A-2 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

The C2: Eastern Route would cross intermittent streams 131 times. The intermittent stream crossings are located between Monida Pass and a point just north of the Borah substation (Links 20, 21, 26-1, and 26-2). Link 21 has the most intermittent stream crossings at 62 and Link 26-2 has 34 crossings.

Two segments of C2 would cross intermittent lakes: Sid Lake and Sand Lake. These intermittent lakes are located west of the Shale Butte WSA in Link 26-4.

C2 would cross canals or ditches seven times. There are six canal crossings in Link 21 including three unnamed canals and three crossings of the Robinson Canal. The one other canal crossing is in Link 26-4, which is the Gooding Canal near the end of this link.

The C2: Eastern Route would cross 3.4 miles of wetlands (3.4 NWI, 0.0 interpreted). All of these wetlands are located in Links 20 and 21, specifically between Monida Pass and Camas Creek which is located 15.5 miles from the start of Link 21. The NWI wetlands are characterized as follows:

- Palustrine emergent (PEM) 1.6 miles
- Palustrine scrub-shrub (PSS) 1.5 miles
- Riverine upper perennial (R3) 0.2 miles
- Riverine intermittent (R4) 0.1 miles

C2 would cross 20 segments of flood zones, designated as Flood Zone A by FEMA. These flood zones are associated with three unnamed canals, the Robinson Canal, and two unknown streams all in Link 21.

C3: Western Route

The C3: Western Route would cross perennial rivers and streams 15 times. C3 would cross Silver Creek (Link 25-3) and the Little Wood River (six times in Link 25-4). Seven perennial stream crossings are located in Link 18-2, south of the Continental Divide.

Thirteen streams in this alternative are 303(d) listed, see Table A-2 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

The C3: Western Route would cross intermittent streams 134 times. Link 25-12 has 38 crossings, Link 23 has 29 crossings and Link 18-2 has 24 crossings. The other intermittent stream crossings are scattered throughout the remaining links with the exception of Link 27 which has zero crossings. There would be one river crossing, the Big Lost River in Link 25-12, which runs intermittently at this location.

C3 would cross canals or ditches 16 times. This alternative would cross Reno Ditch in Link 23; an unnamed ditch in Link 25-11; Martins Ditch in Link 25-12; East Canal, West Canal, and two unnamed ditches in Link 25-3; and the Dietrich Main Canal eight times and Gooding Canal one time in Link 25-4.

C3 would cross 5.0 miles of wetlands (3.7 NWI, 1.3 interpreted). Wetlands are located in every link except 27. Link 18-2 has the most wetlands at 1.9 miles (NWI), then Link 25-4 at 1.0 miles (interpreted). The NWI wetlands in this alternative are characterized as follows:

- Palustrine emergent (PEM) 2.4 miles
- Palustrine scrub-shrub (PSS) 0.4 miles
- Riverine intermittent (R4) 0.9 miles

The C3: Western Route would have three segments crossing flood zones, designated as Flood Zone A by FEMA. These three segments are directly adjacent to each other in Link 25-3 and are associated with the East Canal, West Canal, and Little Wood River.

C4: Sheep Creek INL/Brigham Point Route

The C4: Sheep Creek INL/Brigham Point Route would cross perennial rivers and streams seven times. All the stream crossings are located in Link 18-2 which is the first link south of the Continental Divide.

Four streams in this alternative are 303(d) listed: Divide, Horse, Fritz, and Deep Creeks. See Table A-2 in Appendix A of the Water and Wetland Resources Technical Report in Volume II.

The C4: Sheep Creek INL/Brigham Point Route would cross intermittent streams at 118 segments. The intermittent stream crossings are concentrated between the Continental Divide and a point just north of the Borah substation (Links 18-2, 23, 24, 26-1, and 26-2). The link with the most intermittent stream crossings is Link 26-2 at 34 crossings, then Link 23 at 29 crossings, and Link 18-2 at 24 crossings. There would be one river crossing, the Big Lost River in Link 24, which runs intermittently at this location.

The Big Lost River is 303(d) listed as impaired waters under the Clean Water Act by the IDEQ. It is impaired due to organic enrichment/low dissolved oxygen, flow alteration, nutrients, siltation, and thermal modifications.

C4 would cross canals or ditches six times. It would cross Reno Ditch in Link 23, four unnamed canals in Link 24, and the Gooding Canal in Link 26-4.

The C4: Sheep Creek INL/Brigham Point Route would cross 2.6 miles of wetlands (2.6 NWI, 0.0 interpreted). All of these wetlands would be located between the Continental Divide and the Big Lost River at the start of Link 24 (Links 18-2, 23, and 24). Link 18-2 has the most wetlands at 1.9 miles and Link 23 has 0.4 miles of wetlands. The NWI wetlands are characterized as follows:

- Palustrine emergent (PEM) 1.1 miles
- Palustrine scrub-shrub (PSS) 0.3 miles
- Riverine intermittent (R4) 1.2 miles

The C4: Sheep Creek INL/Brigham Point Route would cross no designated FEMA flood zones.

3.3.5 SUBSTATIONS

3.3.5.1 New Townsend Substation

The new 500kV Townsend Substation would be located in southwestern Montana, five miles south of Townsend, Montana, east of State Highway 287 in Broadwater County. More specifically, the new Townsend substation would be located approximately 3,000 feet west of Flynn Lane and 1,500 feet north of Dry Creek Road. The current land use of the site is center-pivot irrigation. There are agricultural outbuildings and a residence, located approximately 1,030 feet south of the substation site. Access to the site would be from Dry Creek Road, and the substation would require additional access road construction. The total size would be approximately 80 acres and possibly as much as 100 acres.

The proposed site is located on the east side of the Missouri River, which is approximately 2,125 feet or 0.4 miles away. State Highway 287 runs between the proposed substation and the Missouri River and it is approximately 1,000 feet or 0.19 miles from the substation, blocking surface flow between the site and the river. The proposed site is outside the areas identified as containing potential wetlands.

3.3.5.2 Mill Creek Substation Addition

The existing Mill Creek Substation site is located in an arid landscape. There are partially hydric soils and a small drainage system west of the site; otherwise there are no major water resources associated with this site.

3.3.5.3 Midpoint Substation Addition

The proposed modifications to the substation cannot be completed in the existing fenced area; expansion of the substation yard would be required. The adjacent land to the south is irrigated farmland and the adjacent land to the west, north, and east is sagebrush steppe habitat that has been disturbed by grazing and fire. The soil survey map shows partically hydric soils on and surrounding the site. The site is located between two low rolling hills, but the desert habitat and lack of streams or drainages indicates there are no major water resources on or surrounding this site.

3.3.6 COMMUNICATION SYSTEM

As discussed in Section 2.3.2.1, preliminary locations for microwave facilities along the Preferred Route (Alternatives A1, B1 and C1) have been identified (see Figure 2-4). The microwave site locations in Montana include Mill Creek, Fleecer, Beef Trail, East Ridge, Cardwell Hill, Townsend Substation, and Mauer Mountain, and the locations in Idaho are Humphrey Ridge, Big Grassy Substation, Howe Peak, American Falls SE, Borah Substation, Dietrich Butte, and Midpoint Substation. All 14 microwave site locations are either existing or designated communication sites.

3.4 GEOLOGY AND SOILS

3.4.1 INTRODUCTION

3.4.1.1 Montana

The MSTI project area is located in the Northern Rocky Mountain physiographic province, which is characterized by tall mountains and broad valleys. The mountains consist of a wide variety of sedimentary, metamorphic and igneous rocks ranging from Archean gneiss greater than 2.5 billion years old to Eocene volcanics approximately 40 million years old. The valleys are generally filled with young sedimentary material eroded from the emergent mountain peaks. In places, the sedimentary valley-fill deposits extend more than 10,000 feet below the ground surface.

The project area is in the proximity of several active fault zones (USGS 2008). Active faults are defined as those that have had significant movement in the Quaternary period (the last 1.6 million years). The faults mapped in the southwestern Montana region generally occur in northwest to southeast trending zones. The zones are comprised of several individual fault strands that are similar in sense of motion and age of activity. Analysis of movement on most of the recent faults suggest this region is undergoing tectonic extension. This type of faulting results in the relative uplift of the mountain ranges in comparison to adjacent valley floors.

Soil development is reflective of source material, climate, and duration of weathering. In general, the soils in the MSTI project area are derived from relatively local sources, such as bedrock or alluvial deposits. The bedrock parent material has a great influence on the resulting soil. For example, coarse grain igneous intrusives like granite weather to sandy soils with few organics and many residual boulders. Due to the predominant mechanical weathering process and the skeletal texture, these soils are prone to erosion, especially on steep hillsides. Conversely, limestone weathers chemically by dissolution in rainwater and snowmelt. The resulting soils contain a large fine fraction and generally support groundcover vegetation. Soils originating from limestone bedrock are more resistant to erosion by wind and water. Due to the varied geology in the study area, there are many soil types represented.

3.4.1.2 Idaho

The MSTI project area is divided at the northern margin of the Snake River Plain into two physiographic provinces. The northern portion of the project is located in the Northern Rocky Mountain physiographic province, and the southern portion is located in the Snake River Plain physiographic province. There is a striking contrast in the geology and landforms between the two provinces.

The Northern Rocky Mountain Province is characterized by tall mountains and broad valleys. The mountains consist of a wide variety of sedimentary and igneous rocks ranging from Paleozoic sedimentary rocks greater than 350 million years old to Eocene volcanics approximately 40 million years old. The valleys are generally filled with young sedimentary material eroded from the emergent mountain peaks. The sedimentary valley-fill deposits extend more than 4,000 feet below the ground surface in some intermontane valleys.

The eastern Snake River Plain province is characterized as a nearly level volcanic plain. The rocks underlying the surface are generally composed of rhyolite, with minor basalt flows emplaced within the uppermost part of the thick rhyolite sequence.

In between the basalt outcrops, the surface of the Plain is covered with unconsolidated deposits including sand dune fields, shallow dry lake beds, stream deposits and loess.

Several areas of very young basalt occur in this area, including the black lava flows at Craters of the Moon National Monument and Great Rift National Natural Landmark. The youngest of these basalt flows are estimated to be about 2,000 years old.

The project area is in the proximity of several active fault zones (USGS, 2008). Active faults are defined as those that have had significant movement in the Quaternary period (the last 1.6 million years). The faults mapped in the eastern Idaho region generally occur in northwest to southeast trending zones. The zones may be comprised of several individual fault strands that are similar in sense of motion and age of activity. Analysis of movement on most of the recent faults suggested this region is undergoing tectonic extension or “pull-apart” forces. The locations of the active faults are tabulated in Section 4.1.1.

Soil development is reflective of source material, climate, and duration of weathering. In general, the soils in the MSTI project area are divided into two groups: (1) a northern group occurring north of the Snake River Plain; and (2) a southern group occurring within the Snake River Plain. Soils within the northern group are derived from relatively local sources, for example bedrock or alluvial deposits. Soils within the Snake River Plain are largely derived from weathering of wind-blown loess originating close to the retreating ice front far to the north and deposited during the close of the last Ice Age, approximately 10,000 years before present. The arid Snake River Plain also is host to numerous large dune fields. The dunes are composed almost entirely of cohesionless fine to medium sand that actively migrates along with the prevailing wind direction.

3.4.2 INVENTORY METHODS

The geologic inventory presents an overview of the regional geology and the specific geologic formations and features occurring within the study corridor. The objectives of geologic inventory are to: (1) summarize the bedrock and surficial geologic units within the study corridors; (2) identify geologic hazards that could pose a risk to the transmission line. The study corridor for both geologic and soil resources was limited to one mile on either side of the transmission line centerline, resulting in a two-mile wide corridor along each alternative route. Additional detail on the inventory can be found in Volume II, Geology and Soils Technical Report.

3.4.2.1 Data Sources

A compete list of information sources for the geologic inventory is presented in the reference section of Volume II, Geology and Soils Technical Report, and includes:

- Montana Bureau of Mines and Geology (MBMG)
- U.S. Geological Survey (USGS)
- USGS Quaternary Fault and Fold Database
- Idaho Geological Survey (IGS)
- U.S. Geological Survey (USGS)
- USGS Quaternary Fault and Fold Database

Information for the Montana geologic inventory was obtained primarily from the MBMG electronic data files, published paper maps, and interviews with MBMG staff. Information for the Idaho geologic inventory was obtained primarily from the USGS electronic data files, published paper maps, and interviews with IGS staff. Geologic units underlying the proposed project were identified using GIS data compiled from geologic maps prepared by the USGS, MBMG and IGS. A list of geologic maps used to identify the geologic units intersected by the proposed project are in Volume II, Geology and Soils Technical Report.

Soil data was obtained from the Natural Resource Conservation Service (NRCS) Soil Data Mart and compiled in a GIS. The data comes from the State Soil Geographic (STATSGO) database.

3.4.2.2 Data Categories

GEOLOGY

Data collected from geologic maps of areas within the study corridors includes:

- Formation names and rock types,
- Active faults, and
- Mapped landslides and avalanche debris.

Rock types and total mileage of each rock type were summarized for each alternative route link. In addition, potential geologic hazards including mapped landslides, areas of potential liquefaction risk, and active faults were identified. Each of these features could pose a risk to the integrity of a transmission line.

Landslide locations were transcribed directly from the geologic maps.

Active faults were identified from the USGS Quaternary Fault and Folds database. Only those known or mapped faults that show geologic evidence of having been the source of large-magnitude, surface-deforming earthquakes of Mercalli Index greater than magnitude 6 (M > 6) during the Quaternary (since 1.6 million years ago (Ma)) are included. The Mercalli Index is a descriptive scale of earthquake effects.

Liquefaction is a geohazard risk that was not identified on geologic maps. Liquefaction is the condition in which unconsolidated, saturated strata lose bearing strength when agitated by forces such as seismic events. Liquefaction-prone areas were not specifically identified on the referenced maps, so the locations of liquefiable soils were instead inferred from soil texture and proximity to a shallow water table in an alluvial floodplain setting. Data on likely liquefiable soils in the study area are presented in the Geology and Soils Technical Report, but pre-construction geoengineering studies will be necessary to verify the distribution of these soils.

Circular MFSA-2 requires identification of areas of "... severe reclamation constraints, defined as soils developed on Cretaceous shales, intrusives and certain lacustrine deposits…"). As a means of explanation:

- Cretaceous shales are those shales deposited in the Cretaceous period approximately 145 to 65 Ma.
- Intrusives are igneous rocks that crystallized (i.e., formed a solid mass) below the earth's surface. A common example of an intrusive rock is granite.
- Lacustrine deposits are sediments deposited in lakes. The lakes can be either freshwater or saline (playa) lakes. Playa lake deposits are a reclamation challenge because the high percentage of salts in the sediments limits plant growth.

The milepost-by-milepost occurrence of Cretaceous shales, intrusives and lacustrine deposits is also included in Volume II, Geology and Soils Technical Report.

The descriptions of alternative route geology also indicate the portions of the links located within the Craters of the Moon National Monument and Great Rift National Natural Landmark areas. These administrative areas are managed to preserve the unique qualities of geologic features, and require special management action as discussed in Section 2.0 Regulatory Framework of the Geology and Soils Technical Report in Volume II.

SOILS

Selected soil attributes identified for evaluation in this report included erosion by wind and water, and reclamation and revegetation potential. Soil factors used to perform this assessment included T Factor for reclamation and revegetation potential, water erosion potential (Kw), and wind erodibility group (WEG).

T Factor – Soil Erosion Factor

T is an estimate of the average annual rate of soil erosion by wind and water that can occur without affecting crop productivity over a sustained period. The STATSGO data range from a T of 1 to 5. For this study, the T Factor data were assigned these relative descriptors:

1	Least Resilient
2	Less Resilient
3	Moderately Resilient
4	Somewhat Resilient
5	Most Resilient

Kw – Erosion factor

K indicates the susceptibility of a soil to sheet or rill erosion. The estimates are based primarily on the percentage of silt, sand and organic matter, and on soil structure and permeability. The entire range for Kw values is from 0.02 to 0.69. The highest value noted for soils in this study was 0.49. In general, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. For this study the Kw data were subjectively assigned these relative descriptors:

0.37 - 0.69	Most Susceptible
0.20 - 0.32	Moderately Susceptible
0.10 - 0.17	Least Susceptible

WEG – Wind Erodibility Group

The WEG groups are comprised of soils having similar properties affecting their susceptibility to wind erosion in cultivated areas. The WEG groups range from 1 to 8. Soils assigned to Group 1 are the most susceptible to wind erosion, and those assigned to Group 8 are the least susceptible to wind erosion. There is a close correlation between wind erosion and surface layer texture, the size and durability of surface clods, rock fragments, organic matter and calcareous cements. Soil moisture and frozen soil layers also influence wind erosion. For the purposes of this study the WEG data were subjectively assigned these relative descriptors:

1-2	Most Susceptible
3-6	Moderately Susceptible
7-8	Least Susceptible

3.4.3 Description of Alternative Routes - Montana

3.4.3.1 Townsend to Mill Creek (Melrose) Segment

A narrative description of each route are discussed in this section. Refer to Table 3.4-1 for a summary of the geologic features and Table 3.4-2 for soils.

Table 3.4-1 Miles of Geologic Features by Alternative

	Geologic Feature				
Alternative	Intrusives	Cretaceous Shales	Landslides	Active Faults	Total
A1	4.9	0.6	0.1	0.2	5.8
A2	16.9	0.3			17.2
A3	2.7			0.2	2.9
B1		1.1		2.3	3.4
B2		0.1	3.4	0.1	3.6
B3				0.5	0.5
AB1	5.3	2.3		2.6	10.2

Table 3.4-2 Miles of High Soil Erodibility by Alternative

	Geologic Feature		
Alternative	T-Factor >	Kw >	WEG >
A1	18.8	32.9	0.0
A2	16.9	19.1	0.0
A3	22.1	52.8	0.0
B1	7.0	23.2	0.0
B2	6.5	17.5	0.0
B3	3.3	46.5	0.0
AB1	23.3	62.0	0.0

A1: PREFERRED ROUTE

Geology

The A1: Preferred Route exits the new Townsend Substation and proceeds about 38 miles southwest across the foothills of the Elkhorn Mountains and open range to a point north of Whitehall in the Jefferson River Valley. The principal geologic units crossed in this segment consist of alluvial fans in the lowland areas, and folded and faulted limestone and dolomite laced with small bodies of granite and andesite in the upland areas. Approximately 0.6 mile of Link 3-1 is underlain by Cretaceous shale in hilly terrain.

From Whitehall, the route proceeds west about 24 miles, skirting the south end of the Bull Mountains and up and over the Boulder Mountains to the South Butte Substation. This segment is underlain by a wedge of alluvial fan and pediment deposits on the east side of the mountains and through the granite core of the range across the summit prior to descending to the Basin Creek Valley. One active fault is located within Link 7-42.

From the South Butte Substation, Link 7-8,traverses about 11 miles west across the alluvial fan complex at the south end of the Basin Creek Valley to the western margin of the valley on the east flank of the Fleecer Mountain. One active fault is mapped in Link 7-42.

Along Links 7-9, 11-21 and 11-22, the terrain is primarily underlain by granite and rhyolite, transitioning to pediment deposits in the vicinity of the Mill Creek Substation.

Link 11-23 proceeds over the Continental Divide and through the Big Hole River Valley to a point in the foothills west of Melrose. This link is chiefly underlain by pediment deposits, with lesser amounts of alluvial floodplain, andesite and sedimentary units.

Soils

A1 crosses level to moderately steep slopes with generally deep, well drained soils in Links 1, 3-1 and 7-2. The exceptions to this are the poorly drained clay-rich soils developed on shale and argillite (approximately 4 miles), and the thin, stony soils developed on bedrock of granite and andesite (less than 6 miles). The potential for erosion by wind (WEG) is low to moderate throughout the segment and the potential for erosion by water (Kw) is low except in approximately 12 miles in Link 3-1 underlain by limestone and conglomerate. The soils exhibit moderate to high resiliency (durability or T-Factor in the results tables) related to potential soil loss except in the areas in Link 3-1 underlain by limestone and andesite.

Links 7-41 and 7-42 cross the Continental Divide through the Boulder Mountains. These form thin to medium, well to very well drained soils. The potential for erosion by wind is low to moderate throughout the segment and the potential for erosion by water is low except for steep terrain in Link 7-42 underlain by granite, where the potential is high. The soils exhibit moderate to high resiliency related to potential soil loss except in the areas in Link 7-41 underlain by granite.

Links 7-5, 7-8, 7-9, 11-21, 11-22 and 11-23 cross nearly level valley floors to gently rolling foothills generally underlain by deep, well drained soils of alluvial parent material. The soils have a low potential for wind and water erodibility except for a short length in Link 11-21 underlain by granite where the water erosion potential is high. Soil resiliency is moderate to high except for a 1.9 mile section of 7-8 and a 3.2-mile section in 11-23 underlain by granite. These areas are least resistant to disturbance and subsequent loss of productivity for revegetation purposes.

A2: Parallel Colstrip Lines Route

Only those segments of Alternative A2 not shared with or discussed under A1 are discussed below.

Geology

In A2, Links 4-1 and 4-2 traverse the southern portion of the Elkhorn Range and the central Boulder Mountains before descending into the alluvial deposits of the upper Clark Fork River Valley. The upland regions of this segment are underlain by folded and faulted sedimentary rocks and andesite in the Elkhorn Mountains, and primarily granite with lesser amounts of andesite and rhyolite in the Boulder Mountains. The Boulder Mountain segment includes more than 17 miles of rugged, steep terrain prone to erosion due to the granitic bedrock.

Soils

A2 (Links 4-1 and 4-2, not discussed under A1) crosses extended, steep rugged terrain chiefly underlain by igneous rocks such as granite and andesite. The soils developed along this segment range from deep, well drained soils on the pediment deposits to thin to moderately deep, well drained soils developed on the igneous rocks. The soils have a low potential for wind erodibility and water erodibility except for a series of short segments in Link 4-2, with an aggregate length of 12.2 miles, underlain by granite where water erosion potential is high. Soil resiliency is moderate to high except for an 8.0-mile segment in Link 4-1 and a 12.1-mile segment in 4-2 underlain by granite where the soils are least resistant to disturbance and subsequent loss of productivity.

ALTERNATIVE A3: MAXIMIZE UTILITY CORRIDORS

Only those segments of A3 and not shared with or discussed under A1 are discussed below.

Geology

In A3, Link 2-2 is underlain by floodplain and pediment deposits in the lower reaches, and folded and faulted sedimentary rocks in the upland areas.

From the South Butte Substation, A3 proceeds northwest through the central portion of the Basin Creek Valley and Ramsey Flats. This 20-mile segment of A3 is underlain by alluvial fan and pediment deposits with lesser amounts of granite and andesite. One active fault is mapped in Link 7-61.

Soils

In A3, Links 2-1 and 2-3 are in gently rolling to very steep (> 30 degrees) terrain west of the Missouri River and north of the Jefferson River. The topography consists of highly dissected alluvial fans and pediment deposits, and upland areas underlain by fine grain claystone, mudstone and shale interbedded with limestone. Due to the generally high clay content, the soils are deep and well drained to excessively drained. The soils in this segment have a low potential for wind erodibility. Water erosion potential is moderate to high in Link 2-1 and high in 2-3 due to the presence of the fine grained bedrock and steep slopes. Soil resiliency is moderate to high except for a 16.4-mile segment in Link 2-1 underlain by shale where the soils are least resistant to disturbance and subsequent loss of productivity for revegetation purposes.

Links 7-61, 7-62 and 7-72 cross the relatively level Basin Creek Valley and Ramsey Flats southwest of Butte. The soils are moderate to deep, and well drained. Wind erosion potential is low, and soil resiliency is high. Water erosion potential is moderate to high. The susceptibility to water erosion does not appear to be related to either slope of parent material.

3.4.3.2 Mill Creek to State Line Segment

B1: PREFERRED ROUTE

Geology

In B1, Links 11-3 and 16-1 are principally underlain by alluvial fan, pediment and floodplain deposits.

Alternative B1 proceeds southeast on the east side of the Red Rock River Valley along the western slopes of the Blacktail Range for about 29 miles on Link 16-2. This link is underlain by an extensive alluvial fan complex, with lesser amounts of folded and faulted sedimentary rocks. Approximately 1.1

miles of the link is underlain by Cretaceous shales on moderately sloping hillsides. This link is located in an area of active faulting. Although no faults are mapped crossing the transmission line footprint, one of a series of active *en echelon* faults parallels and almost touches the corridor from MP 21.7 to MP 24.0. Due to the approximate location of the faults near the transmission line corridor, and scaling errors inherent in work at this scale, it is possible the active fault trace crosses the corridor one or more times in Link 16-2.

The final 8.7 miles of the Alternative B1 on Link 16-4 is underlain by floodplain and pediment deposits and lesser amounts of sandstone and valley fill material, including colluvium, deeply weathered and unidentified bedrock, and glacial outwash.

Soils

Alternative B1 is predominantly on gently rolling to moderately steep (8-15 degrees) and is underlain primarily by extensive alluvial fan complexes, pediment and terrace deposits, and to a much lesser extent by sedimentary and igneous rocks. Soils developed in this environment are generally moderate to deep and well drained. Wind erosion potential is moderate to low, and soil resiliency is moderate to high. Water erosion potential is moderate to high in Links 11-3 and 16-1, and moderate in Links 16-2 and 16-4. The susceptibility to water erosion is related to the occurrence of pediment deposits in this route.

B2: SHEEP CREEK ROUTE

Geology

Alternative B2 is generally underlain by alluvial fan, pediment and floodplain deposits. Bedrock recorded in this route includes sedimentary rock and metamorphic rock including quartzite and gneiss.

Approximately 5.6 miles of Link 16-4 are underlain by a map unit identified as “undifferentiated Cretaceous rocks and Blackleaf formation”. The Blackleaf formation is a Cretaceous Shale. No further definition of the extent of the shale is available. As a conservative measure the entire mapped extent of this unit was considered Cretaceous shale. Within this 5.6-mile interval, about 0.1 mile occurs on steeply sloping hillsides. Although there is no confirmation of the presence of the Cretaceous shale beneath the transmission line corridor, the 0.1-mile segment has been identified as a feature of concern for geohazards.

Link 18-1 traverses a number of active landslides. The mapping indicates a series of five landslides with an aggregate distance of 3.4 miles in this Link. The longest continuous landslide feature is 1.6 miles long, located between MP 37.5 and MP 39.1. The landslide locations are designated by milepost in Geology and Soils Technical Report (Volume II).

Soils

B2 impact length is 87.0 miles long and includes Links 11-4 and 18-1. It is comprised of nearly level to gently rolling terrain for its entire length. It is underlain by alluvial fan, pediment, floodplain and terrace deposits with a small amount of igneous, metamorphic and sedimentary bedrock. Soils developed in this segment are generally moderate to deep and well drained. Wind erosion potential is moderate to low, and soil resiliency is moderate. Water erosion potential is moderate except for certain pediment deposits in Link 11-4 and certain floodplain landslide deposits and sandstone bedrock material in Link 18-1 where water erosion potential is high.

B3: I-15 ROUTE

Geology

The B3: I-15 Route is similar to B1 except that B3 extends along the west side of Red Rock River Valley in Link 16-3. This link is underlain by an extensive alluvial fan complex, and additional alluvial terrace, floodplain and pediment deposits. Five active faults are mapped beneath the transmission line corridor in this link. The fault intercepts are identified in the Geology and Soils Technical Report (Volume II).

Soils

In B3, Link 16-3 traverses gently rolling to steep terrain (15-30 degrees) consisting of dissected alluvial fan complexes. Soils in this segment are medium to deep and well drained. Wind erosion potential is moderate to low, and soil resiliency is moderate. Water erosion potential is generally high, suggesting the composition of the fan deposits at this elevation and aspect are susceptible to this risk.

3.4.3.3 Townsend to Pipestone/Mill Creek to State Line Route

AB1: I-15 JEFFERSON VALLEY ROUTE

In AB1, Link 8 is the only link not included in the previous discussions.

Geology

Link 8 is about 50 miles long and is underlain by about 36 miles of alluvial fan, floodplain and pediment deposits, with lesser amounts of gneiss and sedimentary rock. The sedimentary rocks include 2.2 miles of Cretaceous shales located west of the transmission line footprint within the two-mile wide corridor. Since the Cretaceous shales are located in relatively level ground in areas planned for minor ground disturbance, the shales are not considered a geologic hazard. One active fault is mapped in Link 8 between MP 1.4 and MP 1.5.

Soils

Topography in Link 8 varies from nearly level to very steep (> 30 degrees). The landscape is underlain primarily with alluvial fan and pediment deposits, with a much smaller component of gneiss and various sedimentary bedrock types. Soils in this segment are typically medium to deep and well drained. Wind erosion potential is moderate to low, and soil resiliency is moderate to high. Water erosion potential is moderate to high, likely owing to the susceptibility of the fan and pediment deposits to rill and sheet erosion.

3.4.4 DESCRIPTION OF ALTERNATIVE ROUTES - IDAHO

A narrative description of each route is presented in this section. Refer to Table 3.4-3 for a summary of the geologic features and Table 3.4-2 for soils. Intrusives and Cretaceous shales are not listed in Table 3.4-4 because these features do not occur within the study corridors.

The total miles of highly erodible or low resilience soils is not calculated because some of the segments are both highly erodible segments show low resilience to disturbance (T-Factor). Thus a total length for each attribute may overestimate the mileage of these soils.

Table 3.4-3 Miles of Geologic Features by Alternative

	Geologic Feature				
Alternative	**Landslides**	**Active Faults**	**Lacustrine**	**Special Management Area**	**Total**
C1: Preferred Route	0.0	0.4	3.3	5.5	9.2
C2: Eastern Route	0.0	0.2	3.4	5.5	9.1
C3: Western Route	5.2	0.7	8.2	0.0	14.1
C4: Sheep Creek INL/ Brigham Point	5.2	0.5	3.3	5.5	14.5

Table 3.4-4 Miles of Highly Erodible/Low Resilience Soils by Alternative

	Soil Factor		
Alternative	**T - Factor**	**Kw**	**WEG**
C1: Preferred Route	10.4	1.2	11.5
C2: Eastern Route	5.2	0.5	3.3
C3: Western Route	15.6	1.7	14.8
C4: Sheep Creek INL/ Brigham Point	31.2	3.4	29.6

C1: PREFERRED ROUTE

Geology

The C1: Preferred Route enters Idaho on Link 20 just west of the Idaho – Montana state line and proceeds south, roughly paralleling I-15 to approximately four miles south of Spencer. This portion of the route descends from the Continental Divide down to the Eastern Snake River Plain. The upland areas are underlain by Paleozoic sedimentary Tertiary volcanic rocks mantled with residual weathering products mapped as colluvium. Nearing the Snake River Plain the corridor intercepts alluvial fan and floodplain deposits, and eolian loess (wind-deposited silt and fine sand). The remainder of the preferred route lies within the Snake River Plain.

From the southern terminus of Link 20 the route extends southwest, skirting the broad alluvial fans of the southern foothills of the Beaverhead and Lemhi Ranges in Links 22 and 23. Portions of Links 23 and 24 traverse an extensive area of floodplain deposits formed where Birch Creek and Little Lost River emerge from the mountains onto the Snake River Plain and sink below the surface, providing recharge to the Snake Plain Aquifer.

Four active faults are mapped within Link 23, and the link also includes a 0.8-mile interval of lacustrine deposits.

Links 24, 26-1 and 26-2 cross the central portion of the eastern Snake River Plain from north to south. This section of the preferred route is comprised almost entirely of eolian loess, with minor intervals of lacustrine and alluvial terrace and floodplain deposits.

Form the southern terminus of Link 26-2 the route proceeds west-northwest along Links 26-3 and 26-4 to the Midpoint Substation at Link 27. This segment of the route is underlain almost entirely by eolian loess with two notable exceptions. Link 26-3 is underlain by recent basalt flows within the Great Rift National Natural Landmark; this link crosses the Landmark between mileposts 9.6 and 15.1. The second exception is Link 27, the Midpoint substation, which is underlain primarily by lacustrine deposits.

Soils

The soils within Link 20 consist of thin to deep, well drained loamy-skeletal soils on topography ranging from nearly level to very steep (> 30% grade). The potential for erosion by wind (WEG) is low throughout the link and the potential for erosion by water (Kw) is moderate to low. The soils exhibit moderate to high resiliency (durability or T-Factor in the results tables) related to potential soil loss except for the four miles from MP 16.0 to 20.0 underlain by eolian loess which is less resilient.

The remainder of C1 lies within the Eastern Snake River Plain along Links 22, 23, 24, 26-1, 26-2, 26-3, 26-4 and 27. Topography is nearly level to gently rolling. The soil of Links 22 and 23 are coarse skeletal, thin to medium and well drained. The potential for erosion by wind (WEG) is low throughout the links and the potential for erosion by water (Kw) is moderate to low. The soils exhibit generally low resiliency.

Links 24 and 26-1 are composed of coarse to fine loams, thin to medium deep and well drained. The potential for erosion by wind (WEG) is low throughout the links and the potential for erosion by water (Kw) is moderate to high. The soils exhibit generally low to moderate resiliency.

Links 26-2 consists primarily of coarse silty, medium to deep well drained soils with low potential for wind erosion. The link generally exhibits high susceptibility to water erosion and low resilience when disturbed.

Links 26-3, 26-4 and 27 are composed of fine to coarse silt and loam, grading to fine loams in the western portion of Link 26-4 and 27. The soils are thin to deep and well drained. The potential for erosion by wind (WEG) is generally high throughout the links and the potential for erosion by water (Kw) is moderate to high. The soils exhibit generally moderate to high resiliency.

C2: Eastern Route

Geology

The C2: Eastern Route alternative is the same as the C1: Preferred Route except for the substitution of Link 21 for Links 22, 23, and 24. Link 21 proceeds south from the southern terminus of Link 20, parallel to I-15, then swings southwest through the central portion of the Eastern Snake River Plain to the southern terminus of Link 24. About 95% of Link 21 is underlain by eolian deposits and about 3% by lacustrine deposits. Two active faults are mapped in this link.

Soils

The 89.4-mile long Link 21 is divided into two soil types. From milepost 0.0 to 38.9 the link is underlain by a heterogeneous mix of loamy skeletal, loamy silty, fine loamy and sandy soils. From MP 38.98 to the terminus the link is underlain by coarse silty soil grading to fine loam the last two miles. The potential for erosion by wind is predominantly moderate but ranges from low to high. The coarse silty soil interval is highly susceptible to erosion by water. The soils are bimodaly distributed between highly resilient (72%) and least resilient (28%).

C 3: Western Route

Geology

With the exception of common Links 23 and 27, the C3: Western Route is undescribed. This route proceeds south through the Medicine Lodge Creek Valley from the Montana border on Link 18-2, joining the preferred alternative at the north end of Link 23. Link 18-2 is underlain by Paleozoic sedimentary and Tertiary volcanic rocks weathering to a mantle of residual colluvium and talus. Approximately 5.2 miles of this link are mapped as landslides that occur in three discrete, extensive zones, the longest of which is 3.5 miles long. One active fault is mapped in this link.

From the southern terminus of Link 23, C3 proceeds on along Links 25-11 and 25-12 southwest through the southern foothills of the Lost River and Pioneer Ranges and the broad Big Lost River Valley. This interval is underlain by alluvial fan, colluvium and floodplain deposits, with minor intervals of eolian and lacustrine deposits and basalt. Two active faults are mapped in Link 25-12.

From the western terminus of Link 25-12, C3 proceeds south along Links 25-3 and 25-4 to Link 27 at the Midpoint Substation. This segment extends from the northern margin to the central portion of the Eastern Snake River Plain. This portion of Alternative 3 is underlain by eolian loess (73%), colluvium (22%), and alluvial fan and floodplain deposits (< 1%).

Soils

Link 18-2 is underlain by medium to deep, loamy skeletal well drained soils as the route descends from the Continental Divide to the Eastern Snake River Plain. The soils exhibit low potential for wind erosion and low to moderate potential for water erosion. Soil resilience ranges from low to high.

The loess and lacustrine deposits in the first eleven miles of Link 25-11 form fine loamy soils deep well drained soils. The remainder of the link is underlain by a combination of fine loamy to loamy skeletal, medium to deep well drained soils. Wind erosion potential is low. Susceptibility to water erosion exhibits a bimodal distribution of low and high, and soil resiliency is low to moderate.

Links 25-12, 25-3 and 25-4 are predominantly loamy skeletal to fine loamy, medium to deep well drained soils. Wind erodibility in Links 25-12 and 25-3 is low; and in 25-4 ranges from low to high. Potential for water erosion is generally low, and soil resilience ranges from low to moderate.

C4: Sheep Creek INL/ Brigham Point

This route alternative consists of links described in previous sections.

3.4.5 SUBSTATIONS

3.4.5.1 New Townsend Substation

GEOLOGY

The proposed substation site is located on level ground underlain by alluvial floodplain deposits originating from overbank deposition of the nearby Missouri River. The site may be underlain by liquefiable soils.

SOILS

The 52-acre substation site is underlain by three soil types. The soil types as a percentage of the total substation area are: Brocko silt loam (28%), Mussel loam (37%) and Thess silt loam (35%). Soil attributes for the substation footprint were obtained from the NRCS Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app).

The data indicate that soils are deep and well drained. Wind erosion potential is moderate, and water erosion potential high. Soil resiliency ranges from low (Thess) to high (Brocko and Mussel).

Table 3.4-5 New Townsend Substation Site Soil Attributes

	Soil Attribute		
Soil Type	**T-Factor >**	**Kw >**	**WEG >**
Brocko Silt Loam	Most Resilient	Most Susceptible	Moderately Susceptible
Mussel Loam	Most Resilient	Most Susceptible	Moderately Susceptible
Thess Silt Loam	Less Resilient	Most Susceptible	Moderately Susceptible

3.4.5.2 Mill Creek Substation Addition

The exact location of the substation addition is not yet known. Pre-construction geotechnical investigations will indicate soil and geologic constraints in the selected location.

3.4.5.3 Midpoint Substation Addition

GEOLOGY

The Midpoint Substation is located on relatively level ground underlain by loess. The depth to bedrock is unknown, but will be determined by geotechnical engineering studies prior to construction.

SOILS

The Midpoint Substation site is underlain by a single soil type – the Power-Owinza Outcrop complex. Soil attributes for the substation footprint were obtained from the NRCS Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app). The soil attributes for the soil types are as follows:

Table 3.4-6 Midpoint Substation Soil Attributes

Soil Attribute		
T	**Kw**	**WEG**
Most Resilient	Most Susceptible	Moderately Susceptible

The data indicate that soils are deep and well drained. Wind erosion potential is moderate, soil resiliency is high, and water erosion potential high.

3.4.6 COMMUNICATIONS SYSTEM

As discussed in Section 2.3.2.1, preliminary locations for microwave facilities along the Preferred Route (A1 and B1) have been identified (see Figure 2-4). The microwave site locations in Montana include Mill Creek, Fleecer, Beef Trail, East Ridge, Cardwell Hill, Townsend Substation, and Mauer Mountain. All seven microwave site locations in the state are either existing or designated communication sites.

3.5 PALEONTOLOGICAL RESOURCES

3.5.1 INTRODUCTION

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered non-renewable resources because the organisms from which they derive no longer exist. Thus, once destroyed, a fossil can never be replaced. Fossils are important scientific and educational resources because they are used to:

- Study the phylogenetic relationships between extinct organisms, as well as their relationships to modern groups.
- Elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including biases in the fossil record.
- Reconstruct ancient environments, climate change, and paleoecological relationships.
- Provide a measure of relative geologic dating which forms the basis for biochronology and biostratigraphy, which is an independent and supporting line of evidence for isotopic dating.
- Study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time.
- Study patterns and processes of evolution, extinction, and speciation.

This section outlines the affected environment for potential paleontological resources based on the location of paleontologically sensitive geologic units.

3.5.2 INVENTORY METHODS

Due to the nature of the fossil record, paleontologists cannot know either the quality or quantity of paleontological resources present in a given geologic unit prior to natural erosion or human-induced exposure. No preliminary field surveys were conducted for the MSTI project; therefore, it is necessary to assess the paleontological sensitivity of geologic units based on their known potential to produce scientifically significant fossils elsewhere within the same geologic unit (both within and outside of the project area).

3.5.2.1 Data Sources

For the Montana portion of the MSTI project area, paleontological records searches were conducted for the following institutions:

- Montana SHPO (Montana Historical Society)
- Museum of the Rockies Collections Database
- University of California Museum of Paleontology Collections Database
- BLM
- Beaverhead–Deerlodge National Forest
- Helena National Forest

For the Idaho portion of the MSTI project area, paleontological records searches were conducted for the following institutions:

- Idaho State Historic Preservation Office (Idaho State Historical Society)
- Idaho Museum of Natural History Collections Database
- Museum of the Rockies Collections Database
- University of California Museum of Paleontology Collections Database
- BLM
- Caribou – Targhee National Forest

A detailed review of museum collection databases and SHPO records, professional publications, and field reports was performed to the extent feasible to determine whether there are any known paleontological localities within one mile of the centerline for each alternative route link of the MSTI project. In addition, the regional paleontologists for the BLM (Dale Hanson), the USFS (Barb Beasley) and the Idaho BLM State archeologist (Stan McDonald) were consulted regarding any known paleontological localities within one mile of the centerline for each alternative route link of the MSTI project crossing federal lands. This led to the identification of the geologic units underlying the alternative route links and a determination of the paleontological sensitivity ratings of those geologic units.

Geologic units underlying the MSTI project in Montana were identified using GIS data compiled from geologic maps prepared by the USGS and the Montana Bureau of Mines and Geology (MBMG). Geologic maps used to identify the geologic units intersected by the MSTI project include the following:

- Geologic Map of the Ennis 30' x 60' Quadrangle, Quadrangle, Madison and Gallatin counties, Montana and Park County, Wyoming (Kellogg and Williams, 2005)
- Geologic Map of the Butte 1° x 2° Quadrangle, South-Western Montana (Lewis, 1998)
- Preliminary Geologic Map of the Lima 30' x 60' Quadrangle, Southwest Montana (Lonn, et al., 2000)
- Preliminary Geologic Map of the Townsend 30' x 60' Quadrangle, Montana (Reynolds and Brandt, 2006)
- Geologic Map of the Eastern Part Leadore 30' x 60' Quadrangle, Montana and Idaho (Ruppel, 1998)
- Geologic Map of the Dillon 1° x 2° Quadrangle, Idaho and Montana (Ruppel, et al., 1993)
- Geologic Map of the Montana Part of the Dubois 30’ x 60’ Quadrangle, Southwest Montana (Skipp and Janecke, 2004)
- Preliminary Geologic Map of the Bozeman 30' x 60' Quadrangle, Southwestern Montana (Vuke et al., 2002)

Geologic units underlying the MSTI project in Idaho were identified using GIS data compiled from geologic maps prepared by the USGS, the Idaho Geological Survey, and Wyoming Geological Survey. Geologic maps used to identify the geologic units intersected by the MSTI project include the following:

- Geologic Map of the Idaho National Engineering Laboratory and Adjoing Areas, Eastern Idaho (Kuntz, et al., 1994)
- Geologic map of the Craters of the Moon 30' X 60' quadrangle, Idaho (Kuntz, et al., 2007)
- Geologic map compilation of the Pocatello 30 x 60 minute quadrangle, Idaho (Link and Stanford, 1999)
- Geologic Map of the Eastern Part Leadore 30' x 60' Quadrangle, Montana and Idaho (Ruppel, 1998)
- Surficial Geologic Map of the eastern Snake River Plain and Adjacent Areas, 111–115 W, Idaho and Wyoming (Scott, 1982)

3.5.2.2 Data Categories

The following information regarding paleontological sensitivity analysis and evaluation used for this project has been modified from BLM Instruction Memorandum No. 2008-009, which went into effect on October 15, 2007. While developed specifically for use in managing paleontological resources on public lands administered by the BLM, the procedures can also be used in a more general sensitivity analysis and evaluation for USFS, State and private lands, such as those found in the MSTI study area.

Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them. The probability for finding paleontological resources can be broadly predicted from the geologic units present at or near the surface. Therefore, geologic mapping can be used for assessing the potential for the occurrence of paleontological resources.

Using the Potential Fossil Yield Classification (PFYC) system, geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. This classification is applied to the geologic formation, member, or other distinguishable unit, preferably at the most detailed mappable level. It is not intended to be applied to specific paleontological localities or small areas within units. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher class; instead, the relative abundance of significant localities is intended to be the major determinant for the class assignment.

The BLM's PFYC system is meant to provide baseline guidance for predicting, assessing, and mitigating paleontological resources. The descriptions for the classes below serve as guidelines rather than as strict definitions. A more detailed discussion of the PFYC classes can be found in the Paleontological Resources Technical Report (Volume II), as can the explanation for why different geologic units in Montana were assigned to specific PFYC classes..

Class 1 – Very Low

Geologic units that are not likely to contain recognizable fossil remains.

- Units that are igneous or metamorphic, excluding reworked volcanic ash units.
- Units that are Precambrian in age or older.

Class 2 – Low

Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant non-vertebrate fossils.

- Vertebrate or significant invertebrate or plant fossils not present or very rare.
- Units that are generally younger than 10,000 years before present.
- Recent aeolian deposits.
- Sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration).

Class 3 – Moderate or Unknown

Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.

> *Class 3a* – Moderate Potential Units are known to contain vertebrate fossils or scientifically significant non-vertebrate fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area. The potential for a project to be sited on or impact a significant fossil locality is low, but is somewhat higher for common fossils.
>
> *Class 3b* – Unknown Potential Units exhibit geologic features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant finds. The units in this Class may eventually be placed in another Class when sufficient survey and research is performed. The

unknown potential of the units in this Class should be carefully considered when developing any mitigation actions.

- Often marine in origin with sporadic known occurrences of vertebrate fossils.
- Vertebrate fossils and scientifically significant invertebrate or plant fossils known to occur intermittently; predictability known to be low.
  (or)
- Poorly studied and/or poorly documented. Potential yield cannot be assigned without ground reconnaissance.

Class 4 – High

Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Surface disturbing activities may adversely affect paleontological resources in many cases.

Class 4a – Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two acres. Paleontological resources may be susceptible to adverse impacts from surface disturbing actions.

Class 4b – These are areas underlain by geologic units with high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
- Areas of exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic conditions.
- Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources.

Class 5 – Very High

Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation.

Class 5a – Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two contiguous acres. Paleontological resources are highly susceptible to adverse impacts from surface disturbing actions. Unit is frequently the focus of illegal collecting activities on public lands.

Class 5b – These are areas underlain by geologic units with very high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has very high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
- Areas of exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic conditions.
- Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources.

3.5.3 Description of Alternative Routes - Montana

The Paleontological Resources Technical Report (see Volume II) addresses the paleontological sensitivity ranking for specific geologic units encountered along each alternative route by link and milepost.

All alternative routes described below cross a variety of geologic units with varying degrees of paleontological sensitivity, ranging from Class 1 (very low) to Class 5 (very high). The Paleontological Resources Technical Report (Volume II) addresses the paleontological sensitivity of each geologic unit. The location of Class 3 and higher paleontologically sensitive areas are shown in the confidential Cultural and Paleontological Resource Map Book submitted under separate cover.

3.5.3.1 Townsend to Mill Creek (Melrose) Segment

A1: Preferred Route

Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline along approximately 81.6 miles of Alternative A1.

A2: Parallel Colstrip Lines Route

Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline along approximately 50.6 miles of the Alternative A2 route.

A3: Maximize Utility Corridors

Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline along approximately 88.2 miles of the Alternative A3 route.

3.5.3.2 Mill Creek to State Line Segment

B1: Preferred Route

Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline along approximately 64.8 miles of Alternative B1.

B2: Sheep Creek Route

Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline along approximately 61.5 miles of the Alternative B2 route.

B3: I-15 Route

Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline along approximately 39.1 miles of the Alternative B3 route.

3.5.3.3 Townsend to Pipestone/Mill Creek to State Line Route

AB1: I-15 Jefferson Valley Route

Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline along approximately 147.2 miles of the Alternative AB1 route in Montana.

3.5.4 Description of Alternative Routes - Idaho

The Paleontological Resources Technical Report (see Volume II) addresses the paleontological sensitivity ranking for specific geologic units encountered along each alternative route by link and milepost.

All alternative routes described below cross a variety of geologic units with varying degrees of paleontological sensitivity, ranging from Class 1 (very low) to Class 5 (very high). The Paleontological Resources Technical Report (Volume II) addresses the paleontological sensitivity of each geologic unit. The location of Class 3 and higher paleontologically sensitive areas are shown in the confidential Cultural and Paleontological Resource Map Book submitted under separate cover.

3.5.4.1 Stateline to Midpoint

C1: Preferred Route

No Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline of Alternative C1.

C2: Eastern Route

No Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline of Alternative C2.

C3: Western Route

Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline along approximately 8.2 miles of Alternative C3.

C4: Sheep Creek INL/ Brigham Point

Class 3 or higher paleontologically sensitive geologic units were identified within 1 mile of the centerline along approximately 8.2 miles of Alternative C4.

3.5.5 Substations

3.5.5.1 New Townsend Substation

The new Townsend Substation site is located over Quaternary Alluvium which has been identified as a Class 2 geologic unit with low paleontological sensitivity.

3.5.5.2 Mill Creek Substation Addition

The exact location of the proposed Mill Creek Substation Addition is not yet known, but the general area is located over Quaternary Sediments which have been identified as a Class 2 geologic unit with low paleontological sensitivity.

3.5.5.3 Midpoint Substation Addition

The Midpoint Substation site is located over Pleistocene age basalt which has been identified as a Class 1 geologic unit with very low paleontological sensitivity.

3.5.6 Communication System

As discussed in Section 2.3.2.1, preliminary locations for microwave facilities along the Preferred Route (Alternatives A1, B1 and C1) have been identified (see Figure 2-4). The microwave site locations in Montana include Mill Creek, Fleecer, Beef Trail, East Ridge, Cardwell Hill, Townsend Substation, and Mauer Mountain, and the locations in Idaho are Humphrey Ridge, Big Grassy Substation, Howe Peak, American Falls SE, Borah Substation, Dietrich Butte, and Midpoint Substation. All 14 microwave site locations are either existing or designated communication sites.

3.6 LAND USE

3.6.1 INTRODUCTION

This section provides an overview and baseline level description of land use and land use designations in the study area, or affected environment, along with the technical methodology used in collecting baseline conditions and evaluating impacts.

The inventory team compiled data for land uses within a four-mile wide study area, two miles on each side of the assumed centerline of each alternative route. Data tables provide, mile by mile, specific land uses along the assumed centerlines of each of the alternative routes.

In addition, information presented in the Land Use Technical Report, Volume II, provides more detailed discussion on specific federal, state, and local agencies, relevant planning documents, designated and/or proposed/potential utility corridors, policies or requirements, associated land use designations, and other regulatory considerations that may be applicable to the Project.

3.6.2 INVENTORY METHODS

3.6.2.1 Data Sources

Initially, data from the Townsend to Midpoint 500kV Transmission Line Siting Study and Preliminary Engineering Report (2006) was reviewed. Land use data for the study corridors were then obtained from a variety of sources, including published and unpublished literature (agency planning documents, reports, studies, and maps), correspondence (telephone, letter, e-mail) and discussions with personnel from federal, state, regional, and local agencies. Additional data sources included National Agricultural Imagery Program (NAIP) aerial photography, agency GIS data layers, zoning ordinances, BLM master title plats, rural addressing systems, and computer assisted mass appraisal (CAMA) data. Land uses were then mapped at a scale of 1:24,000 utilizing a geographic information system (GIS). Ground reconnaissance, aided by the use of a Global Positioning System, was conducted to verify specific data between September 2007 and June 2008.

3.6.2.2 Data Categories

The land use study was divided into the following five major components:

- land jurisdiction
- existing and planned land use
- parks, recreation, and preservation areas
- transportation and access
- minerals and energy

The **land jurisdiction** component identifies the primary owner or administrator of the lands crossed by the alternative route. The individual holdings of private landowners were not specifically identified.

The **existing and planned land use** component identified the physical-surface uses and legal designations by the landowner or administrator. Planned land uses are those uses of land to be carried out in the future or as guided by land use plans.

The **parks, recreation, and preservations areas** component identifies areas where the established or proposed land use is primarily for recreational enjoyment or to protect and preserve a valuable environmental resource.

The **transportation and access** component identifies the existing network of access to the lands in the study area.

The last component is **minerals and energy** land uses. Minerals and energy include those areas identified for exploration, development and production of energy resources. This component also includes mining claims. A mining claim is a legal designation of the land that implies some future potential for the extraction of minerals or patent into private ownership by some private or corporate entity. Mines can be developed from mining claims, however many claims are never developed.

3.6.3 DESCRIPTION OF ALTERNATIVE ROUTES - MONTANA

Overview

The alternative routes in Montana are located on federal, state, and private lands in portions of Deer Lodge, Silver Bow, Jefferson, Broadwater, Madison, and Beaverhead Counties. The study area is generally characterized by broad valleys bounded by rolling foothills, which rise into steep mountain ranges. The rolling hills and benches of the lower valleys are typically utilized for agricultural purposes while the peripheral areas in the mountainous regions consist of vast and rugged forested lands. The Beaverhead and Big Hole Rivers originate in Beaverhead County and join to form the Jefferson River. The Jefferson River is a major upper tributary, which helps to form the upper main stem of the Missouri River. Many of the river valleys have terraces at their margins which, when irrigated, are some of the most productive farmlands.

Existing land uses within the study area are diverse (see Volume IV- Maps, Existing and Planned Land Use, Parks, Recreation, and Preservation Areas, and Minerals and Energy), and include residential, commercial, public/quasi public, industrial, linear facilities, agriculture, military, air facilities, Superfund sites, parks, recreation, and preservation areas, transportation, and mineral extraction uses.

Existing and Planned Land Use

Residential

Residences are dispersed throughout the Montana study area, but are present in greater concentrations along major transportation routes. The communities of Butte, Whitehall, and Lima are the only incorporated areas within the study area. Other population centers include unincorporated communities (Radersburg, Ramsay, Rocker, Nissler, Melrose, Gregson/Fairmont, Divide, Opportunity, Cardwell, Glen, Apex, Barretts, Red Rock, Kidd, and Dell). Unincorporated communities generally consist of residential and commercial development. Most communities contain typical residential development along a grid system of streets. Dwellings are primarily located on 0.25 to 1-acre parcels and include a variety of housing types. Outside of the communities, residential development is found around Clark Canyon Reservoir and scattered in an open and rural environment. This development includes mobile home parks, large-lot rural residential development, and farmsteads. Farmsteads represent isolated residential structures with structures associated with farming or ranching operations. Some recreational cabin and second home development also exists, primarily in scenic mountainous regions. Concentrations of subdivided lands occur throughout the study area and vicinity, but are most heavily concentrated in the valleys in and around Butte, Anaconda, Boulder, Whitehall, and Dillon. Most new housing construction has occurred as single family detached dwellings, particularly near the urban and suburban areas of Butte, as well as the fringes of agricultural land. Some new construction has also occurred south of Rocker and Ramsay, southeast of Gregson/Fairmont, northwest of Whitehall, and along U.S. Highway 287, near the junction of Interstate 90 (I-90).

With the exception of the current economic situation, subdivision activity in the Montana study area has increased significantly over the past years. This includes platted subdivisions (both minor and major) as well as numerous parcels greater than 20 acres in size. A number of certificate of surveys identified in the study area were associated with family transfers, agricultural exemptions or boundary relocations. Since many of these parcels have little, if any infrastructure, it remains to be seen whether they will be converted to residential use.

The desire for a rural setting for second homes and commuter based housing could result in more residential subdivision activity near the existing rural communities and in areas near the primary and interstate highway system. The Broadwater County Growth Policy Plan identifies the junction of I-90 and U.S. Highway and Toston as areas desirable for future development.

Due to the increase in value placed on aesthetic quality and recreational opportunities, conversion of rangeland and farmland to residential subdivisions and recreational development is expected to continue. Large ranch or other properties within the study area (i.e., Seven Mountains, Upper T Bar, Journeys End, Mantle Ranch, and Big Hole Outlook) may also provide opportunities for either recreation based, ranch lifestyle subdivisions or conservation/preservation purposes.

Commercial, Public/Quasi-Public, Industrial

Commercial, public/quasi-public (includes school facilities), and industrial development in the Montana study area is primarily found in or around incorporated and unincorporated communities. Commercial uses also exist near the on/off ramps of I-15 and state highways. Commercial microwave, cellular and radio towers are generally located in and around communities, along major roadways, and on mountain peaks. A BLM administrative withdrawal for an air navigation site (10 acres) is located approximately twelve miles southwest of Dillon (near Pipe Organ Rock).

The Port of Montana (Port) is located west of Butte. The Port is strategically located at the only rail interline of the Burlington Northern and Santa Fe Railway (BNSF) and Union Pacific Railroad (UPRR) in Montana, and the intersection of two major interstates: I-15 (north-south) and I-90 (east-west). The Port's Intermodal Hub serves shippers through the Montana corridor.

Butte has extensive public water and sewer systems with an operating facility (Big Hole Water Treatment Plant) located southwest of Butte at 847 Divide Creek Road. A Radersburg Solid Waste Canister site was also identified in the study area. There are 14 schools located in the Montana study area and vicinity (see Volume I-C, Appendix H, Table 3.6-1). None of the school properties are crossed by the alternative routes. According to county school superintendents, there are no plans for future schools in the study area.

Linear Facilities

The Montana study area contains electrical transmission lines owned and operated by NorthWestern and Bonneville Power Administration (BPA). With the exception of the Townsend-Garrison transmission line (BPA), the transmission lines are owned and operated by NorthWestern. Transmission lines situated in the study area and vicinity include:

- Townsend-Garrison (500kV)
- Mill Creek-Rattlesnake (100kV)

- North Butte-East Helena (100kV)
- White Hall-South Butte (100kV)
- Mill Creek-Dillon (161kV)
- South Butte-# Rivers (161kV)
- White Hall-Asimi (161kV)
- Mill Creek-Peterson (230kV)
- Mill Creek-Wilsalt (230kV)
- Broadview-Townsend (500kV)
- Trident-Garrison (500kV)
- Dillon-Big Grassy (161kV)
- Dillon-Sheridan (161kV)
- Dillon-Tendoy (161kV)
- Peterson-AMPS (230kV)

In addition, numerous sub-transmission and distribution lines (both aerial lines and buried cable); petroleum pipelines (NorthWestern and ConocoPhillips) and other utility features are located in the study area. Other utility features include long distance and local telephone aerial wires; buried copper and fiber optic cables; aerial and buried cable television lines; gas lines; and domestic water lines.

<u>Agriculture</u>

Agricultural lands (crops and livestock) are present in the Montana study area. Crops include irrigated and non-irrigated (dryland) field crops. Where conditions are favorable, wheat, barley, hay, potatoes and other crops are grown with lands supporting both irrigated and non-irrigated crop production. Specialty crops, such as waxy barley, canola, and nursery and vegetable crops, are also important products. Irrigated and partially irrigated croplands are located in the valleys. Irrigated pasture also exists in river and stream bottoms. Irrigation methods include sprinkler (center pivot, wheel and hand line) and flood (basin or furrow). The Land Use Technical Report in Volume II provides crop and livestock inventory data at the county level.

The Missouri River flows through the eastern portion of the Montana study area from south to north, serving as a source of irrigation for crops and recreational opportunities. Toston Dam on the Missouri, located approximately four miles south of the community of Toston, provides water for the Broadwater Missouri Diversion Project. This project furnishes water to irrigate croplands along both sides of the river through two canals. Many of the smaller streams entering this area are used for irrigation, particularly in the Radesburg-Toston area, around Winston, and along the east side of Canyon Ferry Lake.

Most of the new water development in the Montana study area is sprinkler irrigation. In addition, many previously flood-irrigated lands are now sprinkler irrigated, since these systems are generally more efficient than flood irrigation. Aerial spraying (crop dusting) is used to apply pesticides, fungicides, and fertilizers via aircraft to farmlands and fields in some of the agricultural areas. Usually agricultural airplanes are used for aerial seeding and spraying but helicopters and small turboprop jets can also be used for this purpose. Crop type at any one location is variable and occasionally in fallow. Livestock production also exists in the study area.

Agricultural uses also include agriculture storage and farmstead categories. Storage buildings or structures can range from grain bins to abandoned buildings, with no human occupancy. Uses in the farmstead category consist of residential dwellings that have adjacent agricultural operations, including agriculture buildings and/or family livestock operations.

Large areas of rangeland provide forage for livestock. Livestock grazing allotments are primarily managed by the BLM or USDA Forest Service (refer to Land Use Technical Report, Volume II for locations within study area). The domestic livestock permitted to graze on allotments in the study area include cattle, sheep, horses, and buffalo.

The MDNRC, Trust Land Management Division, Agriculture and Grazing Management Bureau, is responsible for leasing and managing agreements for crop and rangeland uses on school trust lands within the study area. Crops raised on state trust lands are primarily dryland hay and small grains, but also include irrigated grain crops, corn, sugar beets, potatoes, peas, lentils, garbanzo beans, canola, safflower, alfalfa seed, and native grass seed. State grazing allotments (Montana school trust lands) leased under agreement for grazing use are also located within the study area.

The Montana Department of Agriculture manages an apiary program. Registered apiaries are located within the Montana study area.

The USDA Natural Resource Conservation Service (NRCS) classifies important farmland according to physical characteristics of the soil (moisture, temperature, pH, erodibility, permeability, etc.) Using these critieria, a Montana state-wide Land Evaluation and Site Assessment (LESA) system classifies important farmland as prime, unique, of statewide importance, or of local importance. Important Farmland (prime farmland if irrigated, farmland of statewide importance, and farmland of local importance) is also located in the study area.

The CRP, administered by the Farm Service Agency (FSA), develops contracts to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as native grasses, wildlife planting, trees, or riparian buffers in return for an annual rental payment. CRP is located within the study area.

Some timber in the study area has been classified as suitable for timber management by the BDNF. This classification includes both lands suitable for timber production and lands where timber harvest is allowed. Productivity on the BDNF is considered low to moderate.

Military

Military facilities identified in the Montana study area include the Montana Army National Guard (MTARNG) Limestone Hills Training Area (LHTA). The LHTA is located about 23 miles south of Helena, Montana and about two miles southwest of Townsend on the west side of the Townsend Valley, in Broadwater County. The LHTA is composed of approximately 18,715 acres of federal land that encloses 2,666 additional acres of state and private land for a total of about 21,381 acres within the outer withdrawal boundary. The site is used for maneuver and live fire training for infantry, armor, artillery, engineer, aviation, and special operations units

Two Military Training Routes IR 301 and IR 307 are approximately eight miles west from the western edge of the Clark Canyon Reservoir. They run along the same pattern and cannot be flown at the same time. IR 301 has a north heading flight pattern and has a route width ranging from 8 nautical miles to 5 nautical miles (approximately 9 to 6 miles wide from centerline). IR 307 has a south heading flight pattern and has a route width ranging from 5 nautical miles to 8 nautical miles (approximately 6 to 9 miles wide from centerline). Operating procedures include avoiding all airports by 1,500 feet vertically, avoiding all sensitive areas by 1,000 feet vertically, which include the Bannack and Peterson noise sensitive areas (north of Clark Canyon Reservoir).

Air Facilities

Air facilities include public and private use airports identified from recent FAA Sectional Aeronautical Charts and the 2005 Montana Aeronautical Chart. Airports registered with the FAA in the study area and vicinity can also be found in Land Use Technical Report, Volume II. Public airports are located near the communities of Anaconda (Bowman), Boulder (Boulder), Butte (Bert Mooney Airport), Canyon Ferry (Canyon Ferry), Dell (Dell Flight Strip), Dillon (Dillon), Three Forks (Three Forks), and Townsend (Townsend). Private airports identified from the Montana 2005 Aeronautical Chart, within or near the study area, include Neslund, Stanfill, Riverside, Cazier, Flying Arrow, Jefco Skypark, Smithfield, Galen, Hassnamp, Ferris, and Gaasch. Private airstrips are also located throughout the study area and serve property owners, ranching and farming operations, and aerial applicators associated with agricultural producers.

One unauthorized airstrip is located on BLM administered lands (Dillon Field Office) within the study area. The airstrip is located on Erickson Creek in the upper Medicine Lodge drainage, T12S R12W S14, NW1/4NW1/4. It consists of two intersecting runways of approximately 1,200 feet each. The runways are natural unimproved surfaces, and are suitable only for light aircraft.

Currently no backcountry airstrips are located in southwest Montana on USDA Forest Service lands. The Montana Pilots Association has asked the USDA Forest Service to consider several sites on the BDNF, one of which is located near Whitetail Reservoir. The proposed airstrip would be approximately 2,500 feet long by 30 feet wide with a tie down area, totaling two acres. The surface would be native grasses. The airstrip would likely receive light use (estimate 20 planes/year) from private, single-engine airplanes. The airstrip surface and weather conditions would restrict season of use to approximately early July through September.

In addition to established airports and fixed wing traffic, helicopters and other aircraft may be utilized in the study area and *vicinity* thereof. An active wildfire season increases spotting and suppression activities by air and heliports may be set up in many locations. Other locations, such as hospitals, have frequent helicopter traffic conducting medical transports. There may also be private rotor wing services and residents that have their own personal aircraft operating to and from their property.

Superfund Sites

Some previous mining operations in the Butte-Anaconda and Basin areas have led to environmental contamination problems. As a result, some areas have been designated as Superfund sites. Federal Superfund sites (NPL Sites) situated in the study area and vicinity include: Anaconda Co. Smelter, Basin Mining Area, Montana Pole and Treating, and Silver Bow Creek/Butte Area. The Environmental Protection Agency (EPA) and State of MDEQ are actively working in some of these areas to remediate the contamination.

In addition, one actively (as of January 30, 2008) managed Comprehensive Environmental Cleanup and Responsibility Act (CECRA) site (Rhodia Maiden Rock Mine), was identified in the study area.

Historical waste disposal activities at this site caused contamination of air, surface water, groundwater, sediments, and /or soils with hazardous or deleterious substances.

Parks, Recreation, and Preservation Areas

Outdoor recreation and tourism is a major component of the economy in the region. Southwestern Montana is nationally known for its high quality fishing, hunting, camping, hiking, river floating, skiing, snowmobiling, wildlife viewing and sightseeing opportunities. Many of these outdoor activities are made possible by public ownership of large tracts of mountainous habitat and additional access provided by many private landowners. According to the Montana Statewide Comprehensive Outdoor Recreation Plan (SCORP 2008 to 2012), Montana households with higher incomes and Montana households with children are more likely to be active in recreation activities. Overall, the SCORP states that the most popular outdoor recreation activities are walking, wildlife watching, attending sporting events, hiking, biking, attending festivals, swimming, picnicking, nature photography, fishing, motorcycling, hunting, camping, golfing, horseback riding and boating. Montana's nonresident visitors enjoy the same outdoor recreation activities as Montana residents, both seasonally and year-round.

The study area and region contain a number of recreational opportunities that vary with seasonal changes, as well as other areas with special management designations. Spring and summer provide opportunities for fishing, hiking, photography, horseback riding, wildlife viewing, spring hunting, water sports (powered and non-powered), off-road vehicle activities, camping, picnicking, and touring (vehicle and bicycle). Winter brings the winter sports of skiing, snowshoeing, snowboarding, and snowmobiling. The Missouri River has developed a reputation as high quality fishery and produces rainbow, brown, brook and cutthroat trout, walleye, whitefish, and perch.

One National Forest, the BDNF, is located in the study area. The BDNF offers a wide variety of recreation activities. Day hikes in non-motorized settings, picnicking, and OHV trails are available to a number of regional population centers. Hunting includes a mix of walk-in and OHV activities. In the winter, people participate in downhill and cross-country skiing as well as snowmobiling when snow conditions are favorable. There are opportunities for backpacking and stock use in wilderness and other primitive areas. Backcountry travel routes in other areas provide off-highway vehicle and bicycle riding opportunities. The Homestake Picnic Area, located approximately 6 miles east of Butte, provides day use activities in the study area. Recreation opportunities within the BDNF are also available through private business operations including skiing and snowmobiling, recreation resorts, outfitters and guides. Partnerships and agreements with local recreation groups provide groomed cross-country skiing and snowmobile trails. Recreation opportunities across the forest are also enhanced by roads, trails, picnic and campgrounds, trailheads, and interpretive sites.

Thompson Park, located in the study area, is a 3,500 acre congressionally designated Municipal Recreation Area co-managed as a non-motorized city park by the City-County of Butte-Silver Bow and USDA Forest Service. Thompson Park is located approximately 10 miles south of Butte. The Park was designated by Congress in 1922 and consists of public lands owned by the USDA Forest Service and the City-County of Butte-Silver Bow. The Continental Divide National Scenic Trail (CDNST) passes through the south end of the Park. Recreational opportunities include picnicking, fishing, hiking, biking, horseback riding, and frisbee golf at several developed recreation sites and non-motorized trails. The Milwaukee Railroad, an abandoned railroad right-of-way within the Park, is popular with hikers, horsemen, and mountain bike riders. The USDA Forest Service is proposing to reestablish historic recreation activities that include day use and trail opportunities in and adjacent to

Thompson Park to provide natural resource based recreation opportunities. The project proposes to relocate roads to access recreation sites, to complete required safety and stabilization work on the abandoned Milwaukee Railroad, and to provide trail opportunities to connect existing and new trails.

The BLM also has land holdings in the study area. The majority of this land is not contiguous; it is fragmented and many times isolated by private holdings. BLM land along the Big Hole, Madison, Jefferson, and Missouri rivers, offer some of the most outstanding sport fishing opportunities in the United States. Fishing and floating uses are also major recreational activities, particularly along the Big Hole and Beaverhead Rivers. An undeveloped BLM boat ramp (Dillon Field Office) is available on the Big Hole River. The ramp, located at the Maidenrock Fishing Access Site, is a single width ramp of native material surface suitable for white water boats, small boats and inflatable rafts

The BLM 30,000-acre Pipestone Travel Management Area is located approximately 15 miles east of Butte and just north of I-90. It is a popular area for motorcycle and ATV riding enthusiasts. Mountain bikers also use the trails. There are about 75 miles of developed riding trails. The most intensive recreational use area-wide occurs during the big game hunting season. Commercial outfitters are also authorized under Special Recreation Use Permits to conduct big game hunting in the study area. BLM Outfitter Permit Areas (OPAs) have been designated to help manage outfitted big game hunting. Special Recreation Use Permits are also issued for rock climbing, folfing, horseback riding, OHV group riding events, mountain biking events, and other social gatherings.

The Reclamation administered Clark Canyon Reservoir is also located in the study area (south of Dillon). This reservoir, with 4,935 surface acres and 17 miles of shoreline, offers fishing, boating, picnicking, camping, and swimming. An overlook, picnic site, and campgrounds have been developed above the shoreline, along I-15.

State-owned lands checkerboard the study area. Much of this land is surrounded by private or federal land. Recreational opportunities include hunting, fishing, wildlife viewing, hiking, snowmobiling, and skiing. State parks offer outdoor activities such as Native American history, geological sites, wildlife preserves, water sports, photography, hiking, camping, and fishing. State Wildlife Management Areas (WMAs) and Fishing Access Sites (FASs), managed by MFWP, provide additional recreational opportunities.

Some communities offer museums, parks, baseball fields, rodeo grounds/fairgrounds, walking/hiking/bicycle trails, water sports, outdoor sports activities at schools, and other opportunities. Undeveloped parks and a proposed trail system associated with Butte-Silver Bow County are located in the study area. Butte-Silver Bow Parks and Recreation and Planning Departments are currently working to complete a countywide comprehensive master park plan. The Lima Town Park is also located in the study area.

Recreational opportunities also exist on privately owned lands, including private campgrounds, RV Parks, resorts, and dude ranches. Activities such as hunting and backcountry trips may be permitted on privately owned land with landowner consent. Hunting opportunities also arise on private and publicly owned lands as a result of MFWP actions, such as through the block management program and conservation easements. A block management area is either a privately or publicly owned land area that is managed by the MFWP, private landowners, or public land management agencies to provide free public hunting access.

Special Management Area Designations

These designations are intended to enhance or protect specific qualities over time, and to feature recreation opportunities, ecosystem protection, or historic preservation.

Wilderness Area

No wilderness areas are located in the Montana study area. The closest wilderness area (Anaconda Pintler Wilderness) is located approximately seventeen miles to the west of the study area. Created by an act of Congress in 1964, the Anaconda Pintler Wilderness Area straddles the Continental Divide in the Anaconda mountain range and is managed by the BDNF. The Red Rock Lakes National Wildlife Wilderness is also located approximately eighteen miles to the east of the study area. The Red Rock Lakes National Wildlife Wilderness is managed by the United States Fish and Wildlife Service.

Recommended Wilderness

Two areas (Italian Peak and Garfield Mountain) have been recommended for wilderness designation within the study area. Both of these areas are located in the BDNF. These areas provide semi-primitive non-motorized settings and offer opportunities for foot, stock, ski, and snowshoe travel; dispersed camping; and other activities.

National Historic Trail

The Lewis and Clark National Historic Trail (LCNHT) was identified in the Montana study area. The LCNHT and its related sites are managed according to the 1979 LCNHT Comprehensive Plan. The LCNHT has begun the process to update and revise its Comprehensive Management Plan.

National Scenic Trail

The CDNST was identified in the Montana study area. The CDNST is managed according to the National Trails Act and CDNST Comprehensive Plan. Recreational activities associated with the CDNST include hiking, horseback riding, camping, hunting, and photography.

National Wild and Scenic River

There are currently no Wild and Scenic Rivers or congressionally designated study rivers within the Montana study area. Under Preferred Alternative B of the Butte BLM Field Office RMP revision, Muskrat Creek (2.6 miles) has been recommended as suitable for inclusion into the National Wild and Scenic River System. The creek contains outstanding remarkable values of recreational and scenic with a tentative classification of scenic. A segment of Deadman Creek within the study area has been classified by the BDNF as an eligible Wild and Scenic River. The stream contains outstandingly remarkable recreation, wildlife, and historic values.

Wilderness Study Area

The following BLM wilderness study areas (WSAs) were identified in the Montana study area: Humbug Spires, Black Sage, Elkhorn Tack-on, Bell/Limekiln Canyon, Henneberry Ridge, and Hidden Pasture Creek (see Volume I-C, Appendix H, Table 3.6-2).

BLM Area of Critical Environmental Concern (ACEC)

Existing BLM ACECs within the Montana study area are described below and are listed in Volume I-C, Appendix H, Table 3.6-3.

The Muddy Creek/Big Sheep Creek ACEC lies four miles southwest of Dell, including portions of the Muddy Creek drainage and continuing upstream along the Big Sheep Creek drainage to its confluence with Deadman Creek. The area contains public land with relevant and important scenic values along Big Sheep Creek and the cultural resource values throughout. Portions of the ACEC fall within the Hidden Pasture WSA.

The Block Mountain ACEC is located fifteen miles northeast of Dillon. There are approximately 8,661 acres of public land in this area. The area contains exceptional fold and thrust belt structure that is easily visible, making it a premier location to teach geologic field mapping.

Also, located in the Montana study area are three potential ACECs (Elkhorns, Humbug Spires and Ringing Rocks). These ACECs are being proposed in Preferred Alternative B of the Butte BLM Field Office Draft RMP. Table 3.6-4 in Volume I-C, Appendix H, provides information on the relevant and important values for each of the potential ACECs.

Inventoried Roadless Areas

The following IRAs, located in the BDNF, are situated in the Montana study area:

- No. 1-010 Cattle Gulch (18,865 acres)
- No. 1-011 Fleecer (35,825 acres)
- No. 1-609 Electric Peak (21,686 acres)
- No. 1-018 Timber Butte (5,278 acres)
- No. 1-961 Garfield Mountain (48,935 acres)
- No. 1-945 Italian Peak (91,260 acres)
- No. 1-016 Mckenzie Canyon (34, 063 acres)
- No. 1-017 Sourdough Mountain (16, 883 acres)

Research Natural Area

One USDA Forest Service managed RNA, Bernice Experimental Forest, was identified in the Montana study area. The Northern Region Status and Needs Assessment for Research Natural Areas of October 1996 has assigned communities and or habitat types to each national forest in Region 1 so the entire range of vegetative types in the Northern region is represented by one or more RNAs. The Bernice Experimental Forest meets one or more of the assigned communities, habitat types, or other features assigned to the BDNF (see Volume I-C, Appendix H, Table 3.6-5).

Scenic Back Country Byway

One BLM Backcountry Byway (Big Sheep Creek Back Country Byway) was identified in the Montana study area. The Byway is approximately 50 miles in length. The road is mostly two-lane gravel with a few side roads that lead to the foot of the Rocky Mountains and provide many opportunities for solitude and exploration. Recreational activities associated with the Byway include sightseeing, wildlife viewing, camping, fishing, and pleasure-driving.

Recreation Management Area

Two existing BLM (Dillon Field Office) state recreation management areas (Lower Big Hole and South Pioneers) and three existing BLM (Butte Field Office) SRMAs (Lewis and Clark Trail, Upper Big Hole River, and Humbug Spires) are present in the study area. Within the Dillon Field Office, the Rocky Hills area would also be designated as a state recreation management area (SRMA), including lands within the Henneberry Ridge WSA, if the WSA is released from further consideration as wilderness. Recreational opportunities provided by the five existing SRMAs are specified in Volume I-C, Appendix H, Table 3.6-6. Remaining public lands in the study area are managed as an extensive recreation management area (ERMA).

Preferred Alternative B of the Draft Butte Field Office RMP would also establish one new SRMA in the study area (Pipestone); and replace the Lewis and Clark Trail SMRA with two priority areas (Hauser Lake/Lower Missouri River SMRA and Toston Reservoir/Missouri River SMRA. Table 3.6-7 in Volume I-C, Appendix H, indicates the primary recreational management strategy (primary recreation tourism market, needed recreation management zones, recreation opportunity spectrum (ROS) and primary recreation opportunities) for these areas. Portions of the Lewis and Clark Trail would not be designated as a SRMA, but would be managed within the Butte ERMA.

Developed recreation sites are relatively small, distinctly defined areas where facilities are provided for concentrated public use (i.e., campgrounds, picnic areas). Developed BLM Recreation sites within the Montana study area include:

- Ney Ranch Recreation Site
- Radersburg OHV Site and Trailhead
- Toston Dam Recreation Site*
- Lower Toston Recreation Site*
- Lombard Recreation Site
- Sheep Camp Recreation Site
- Ringing Rocks Recreation Site**
- Four Corners OHV Trailhead
- Pipestone OHV Trailhead
- Whiskey Gulch OHV Trailhead
- Bridge Campground
- Moose Creek Trailhead
- Divide Bridge Campground
- Divide Bridge Day Use Area
- Sawmill Gulch Trailhead

*This area (Toston Dam Recreation Sites) contains two water-oriented recreation sites, one located just above Toston Dam on the Missouri River Reservoir and one just below the dam on the free-flowing river. This reach of the river is a popular fishery for rainbow and brown trout. Wildlife frequent the area, and waterfowl, eagles, hawks, cormorants, and pelicans are common sites. Motor boats can be used above the dam on the small reservoir. Camping, picnicking, and floating are other recreational pursuits.

**This unique geological formation is located approximately 18 miles east of Butte and north of I-90. The rocks in this unique geologic area chime when tapped with a hammer.

State Park

One Montana state park (Lewis and Clark Caverns State Park) was identified in the study area. The park, consisting of 2,929 acres, is Montana's first state park containing one of the most highly decorated limestone caverns in the Northwest. The park also provides activities which include fishing (limited river access, foot traffic only), camping, picnicking, bicycling, group use, hiking, wildlife viewing, interpretive programs, tours, and photography.

State Wildlife Management Area

Two WMAs (Mount Haggin and Fleecer Mountain) are located in the Montana study area. Mount Haggin WMA provides year-round habitat for wildlife, emphasizing elk, moose, and mule deer, and provides public outdoor recreational opportunities. Recreation activities include fishing, camping, picnicking, bicycling, snowshoeing, hiking, horseback riding, wildlife viewing, Nordic skiing, hunting, and photography. Fleecer Mountain provides year-round habitat for wildlife, emphasizing winter range for elk and mule deer and also provides public outdoor recreational opportunities. Recreational activities include fishing, camping, bicycling, hiking, horseback riding, wildlife viewing, hunting, and photography.

State Fishing Access Site

FASs provide public access to prime fishing streams at a number of river locations. State FASs located in the study area, along with their acreages and associated activities, are presented in Volume I-C, Appendix H, Table 3.6-8.

Land and Water Conservation Site

In Montana, Land and Water Conservation Funds (LWCF) are administered by State Parks, a division of MFWP, with federal oversight and assistance by the NPS. Grants are provided for the acquisition and development of public outdoor recreation areas and outdoor facilities. Any political subdivision of the state, or sovereign Indian Nation, may sponsor a project. This includes incorporated cities/towns, counties, school districts, state agencies, and tribal governments.

The following LWCF Sites (Table 3.6-9) were identified in the study area.

Table 3.6-9 Land and Water Conservation Fund Sites within the Montana Study Area

County	Project Number	Site Name	Sponsor	Sponsor Type	Project Type	Amount
Beaverhead	30-00049	Maidenrock FAS	DFWP	State	Acquisition	$15,081.77
	30-00055	Maidenrock FAS	DFWP	State	Development	$11,761.67
	30-00448	Maidenrock FAS	DFWP	State	Development	$5,951.47
	30-00607	Salmon Fly FAS	DFWP	State	Development	$3,000.00
	30-00125	Clark Canyon Reservoir	DFWP	State	Development	$178.27
	30-0048	Henneberry	DFWP	State	Acquisition	$111,048.47
	30-00051	Henneberry	DFWP	State	Development	$9,285.83
Broadwater	30-00056	Deepdale FAS (Yorks Islands FAS)	DFWP	State	Development	$3,293.54
Gallatin	30-00027	Fairweather FAS	DFWP	State	Development	$8,830.00
	30-00056	Cardwell FAS	DFWP	State	Development	$3,293.53
	30-00181	Fairweather FAS	DFWP	State	Acquisition	$30,744.66
	30-00299	Drouillard FAS	DFWP	State	Acquisition	$3,970.35
	30-00380	Drouillard FAS	DFWP	State	Acquisition	$6,688.99
	30-00424	Fairweather FAS	DFWP	State	Development	$8,831.53
	30-00471	Drouillard FAS	DFWP	State	Development	$17,551.03
Jefferson	30-00002	Lewis & Clark Caverns SP	DFWP	State	Combination	
	30-00070	Lewis & Clark Caverns SP	DFWP	State	Development	$2,728.92
	30-00125	Lewis & Clark Caverns SP	DFWP	State	Combination	
	30-00166	Lewis & Clark Caverns SP	DFWP	State	Development	$1,680.68
	30-00301	Lewis & Clark Caverns SP	DFWP	State	Development	$52,726.50
	30-00554	Lewis & Clark Caverns SP Vista Point	DFWP	State	Development	$8,578.87
	30-00613	Mayflower Bridge FAS	DFWP	State	Development	$7,304.00
	30-00624	Lewis & Clark Caverns SP	DFWP	State	Development	$97,305.00
	30-00654	Lewis & Clark Caverns SP	DFWP	State	Development	$23,331.00
Madison	30-00607	Silver Star FAS	DFWP	State	Development	$12,500.00

Source: Montana Fish, Wildlife & Parks, LWCF Sites by County, 06/27/2007

State Roadside Rest Area

Two existing rest areas were identified in the Montana study area. The Divide rest area is located along I-15 (northbound at milepost 108.5; southbound at milepost 108.6) and is open year around. Another unnamed rest area is located along I-15, approximately 3 miles southeast of Red Rock. A road pullout area with an interpretive sign is also located in the study area along I-15, just south of Barretts. The Anaconda rest area, located in the study area, is currently under construction.

According to the MDT Rest Area Plan (adopted by the Montana Transportation Commission in December 1999 and amended in May 2004), a new rest area (Lima) is planned for construction. The rest area is located along I-15 near Lima (milepost 10).

The Nature Conservancy

The Nature Conservancy is a conservation organization working to protect the most ecologically important lands and waters around the world for nature and people. One Nature Conservancy Macrosite (Sixteenmile) was identified in the Montana study area.

Private

Four conservation easements (CEs) are located within the Montana study area. The WH Ranch and Dragging Y Ranch CEs are held by MFWP, while the Arrigoni and Lowell Hildreth CEs are held by the Montana Land Reliance.

The Fairmont Hot Springs Resort was identified in the study area. The Resort has the largest hot springs pools in Montana. Other recreation includes a golf course, tennis courts, children's playground, wildlife zoo, lawn games, volleyball, and basketball.

Private campgrounds and RV Parks (Willis Station RV Park, Barretts Park Campground, Armstead Campground, Lima View RV Park, Fairmont RV Park, Cardwell Store & RV Park, and Whitetail Creek RV Park) are also located in the study area.

Transportation and Access

Existing Roadway Network

Highways and roads in the Montana study area include interstate highways (I-15, I-90) U.S. Highways (US 287), Montana State Routes (MT 1, MT 2, MT 41, MT 43 and MT 69), Montana Secondary State Routes (MT 278 and MT 324), county roads, and other roads.

There are a number of county roads in the study area and vicinity. These roads include an extensive network of local roads that are under the jurisdiction of the county. Improved county roads are primarily gravel roadways that serve rural residents. Unimproved roadways are those two-track roads that generally provide access to and within owned or leased land. In addition to local roads that are maintained by the county, there are also roads that are the responsibility of the BLM, USFS, and Reclamation. These roads provide public access to and across lands managed by the federal agencies and serve the needs of recreation and commerce. These roads are primarily accessed from the county system and are typically kept open on a seasonal basis.

Other roads in the study area and vicinity range from asphalt surfaced urban sections with curb and gutter, to gravel surfaced rural sections with borrow ditches. Maintenance of these roads may be performed through the county, Rural Improvement Districts (administered through the county), private homeowner associations, or in some cases, private individuals. Most of these routes are not paved and most are unimproved in nature; they are of native surface (dirt, gravel, or sand).

Planned Roadway Improvement Projects

Major highway projects involving reconstruction or rehabilitation efforts in the Montana study area included Butte District 2 Project 1420, Townsend-South, US 287 re-construction (FISCAL YEAR 2009).

Railroad Facilities

Four railroads (BNSF, UPRR, Montana Rail Link, and Rarus Railway) are located within the Montana study area and vicinity. There are several railroad lines that pass through the Butte-Silver Bow area. The BNSF serves as a freight carrier on track between the UPRR in Butte-Silver Bow and BNSF in Garrison. Rarus Railway, a local railroad, operates a short line operation between Butte and Anaconda and primarily hauls scrap, copper slag, and copper concentrates. This railroad is also capable of hauling freight and provides connections to the UPRR and BNSF. The UPRR has a rail line within the study area that runs from the Port of Montana at Silver Bow to the Idaho Border (along I-15) and on to Salt Lake City via Idaho Falls and Pocatello. This is part of UPRR's Montana Subdivision. One of the BNSF Railway lines is out of service, or abandoned, between Butte and Spire Rock. Montana Rail Link, a regional Class II railroad, currently operates freight service on the old Northern Pacific Line near Whitehall. The railroad spur through Whitehall is currently utilized only for transportation railroad ballast materials and rarely coal products. The Montana Rail Link also has a main railroad generally situated between Trident and Townsend. The Montana Rail Link leases railroad track from BNSF.

Minerals and Energy

Leasable Fluid Minerals

Oil and Gas

There are no producing oil and gas wells in the Montana study area. Portions of the federal mineral estate and subsurface state trust land within the study area have been leased for oil and gas. Fueled by a jump in oil prices and new technology, the oil and gas industry has generated a renewed interest in oil and gas leases on moderate potential areas in southwest Montana.

Coal Bed Natural Gas

Coal bed natural gas resources are sources of natural gas that are intimately associated with coal deposits. There are very few significant coal deposits within the study area and therefore little potential for exploration or development of coal bed natural gas resources.

Geothermal Resources

Southwest Montana is an active geothermal region and numerous hot springs and warm springs are found throughout its valleys.

No high temperature geothermal resources have been identified in Montana. Although there are many known geothermal springs in the study area, only a small number of them have been developed commercially (i.e., Fairmont Hot Springs, Pipestone Hot Springs, Silver Star, and Biltmore), and none of these are on public land. There is one Known Geothermal Resource Area (KGRA) on public land within the vicinity of the Project area: Boulder Hot Springs. There has been no recent interest in leasing this area.

Fairmont Hot Springs is perhaps the most intensely developed spa and resort in Montana. There are two Olympic-sized swimming pools, two hot pools and room heating for the resort hotel.

Pipestone Hot Springs was a popular resort site around the beginning of the 20th century. Today, the springs and buildings are closed and abandoned.

Barkell's Hot Springs is located in the small community of *Silver Star*. The surface water temperature is the second highest recorded in the state. Hot water was previously tapped by shallow wells and used to fill a commercial swimming pool. The springs are currently unused.

Hot springs rise from river gravels about 300 yards from the Big Hole River. The hot water was previously used to fill a swimming pool and hot plunges at the former *Biltmore* resort. The immediate area surrounding the spring is privately owned.

Leasable Solid Minerals

Coal

Sporadic undeveloped and sub-economic deposits of coal and lignite occur in the Montana study area.

Phosphate

Extensive deposits of the Permian Phosphoria Formation have been historically mined from the Maiden Rock area south of Butte. Mining for phosphate here probably peaked in the early 1950's when the phosphate was used to supply an elemental phosphate plant at Silver Bow, west of Butte. These mines were underground mines and resulted in significant underground development. Activity here ceased in the 1970's. There are phosphate resources remaining both at the Maiden Rock area and south and to the east, north of the Humbug Spires, but the development of the phosphate fields in Idaho, where the mines could be developed as open cut mines, has rendered development of these resources infeasible.

Locatable Minerals

Metals

Mineral deposits of gold, silver, copper, lead, zinc, and molybdenum are present within the study area. A number of predominately small abandoned mines also exist in the Montana study area.

Active metal mines in the study area include the Golden Sunlight Mine and Apex Abrasives Mine. The Golden Sunlight Mine, an open pit gold mine northeast of Whitehall, opened in 1981. The mine has operated continuously since then and is scheduled to close in approximately 2010. The operating permit for Apex Abrasives allows for the reprocessing (recovery of garnets) of the Glen tungsten mill tailings. The site is located between Kambich Springs and Sassman Gulch, about three quarters of a mile west of I-15 and two miles north of the village of Glen. The operational life of the site is approximately 10 to 15 years.

Limestone

Two active limestone mines are located within the Montana study area and vicinity. These mines process high-calcium limestone for chemical and industrial uses.

The Indian Creek Mine is on public land adjacent to and within the Montana Army National Guard's Limestone Hill Training Area, west of Townsend, in Broadwater County. The Trident Mine, another limestone mine, is located north of Three Forks, in Gallatin County.

Marble and Slate

A small marble quarry has been operated intermittently at the south end of the Limestone Hills area and west of Townsend.

Two slate building stone quarries are located in the vicinity of the Montana study area. One is in Soap Gulch area near Melrose and the other quarry, the Gates Stone Quarry, is located in Towhead Gulch. Another series of small open-cut mines or quarries in the Gardiner area have mined travertine for building uses. Operation of these quarries has been intermittent and they often reopen and operate to meet a specific demand.

Aggregates

The Pipestone ballast quarry, located in the Montana study area, provides aggregates (crushed and broken stone) for railroad ballast materials. The quarry, part of the Washington Division of the URS Corporation Conda Mining Operations, is located in the Project area near Butte, Montana (T2N R5W S17SE, S20NE, S21NW). The site includes mining, crushing and loading ballast for railroad tracks and yards and provides materials for the Montana Rail Link and the BNSF.

Mining Claims

Active mining claims (recorded to the nearest quarter section) are scattered throughout much of the study area (refer to Land Use Technical Report, Volume II). An active claim is a pre-existing, legal right to explore for mineral resources, but does not necessarily indicate the existence of active commercial mining operations.

<u>Saleable Minerals</u>

The Montana study area has potential for saleable minerals such as gravel, decorative stone, etc. There are numerous locations where mineral materials have been removed. Most of these sites are relatively small. The study area and vicinity currently has two BLM salable material operations on public land. Two sand and gravel pits are located in the Limestone Hills west of Townsend. One of the pits is inactive and the other pit is used by the Army National Guard for road surfacing material. Other mineral material sites include those found in the Lima Pit, Rochester Pit, Camp Creek and Silver Star (see Volume I-C, Appendix H, Table 3.6-10).

Recently, a Notice of Intent was filed by Green River Energy Resources, Inc. to conduct geophysical operations with the USFS (BDNF), BLM (Dillon Field Office), and the MDNRC for a geophysical project on public, state and private lands within Beaverhead County. The proposed project is located in multiple Sections within Townships T13S R9W, T14S R10W, T14S R9W, T14S R8W and T15S R10W, 6th Principle Meridian directly west of the town of Lima, Montana. This will include about 36 miles of seismic line with shot holes drilled along the line approximately 220 feet apart. Work will likely occur in the summer of 2008. The activity is temporary and will result in little surface disturbance.

MDEQ Opencut, Hard Rock, and Coal and Uranium Operations

MDEQ permitted open cut and hard rock mining operations are located in the Montana study area. No MDEQ permitted coal mines (strip or underground mining operations) were identified in the study area.

Abandoned Mine Lands

Abandoned mine lands (old mine workings) are found throughout Montana on land administered by BLM, USDA Forest Service, and the State of Montana as well as on private land patented under the General Mining Law.

Renewable Energy

In cooperation with the National Renewable Energy Laboratory (NREL), BLM assessed renewable energy resources on public lands in the western U.S. The assessment reviewed the potential for concentrated solar power, photovoltaics, wind, biomass and geothermal on BLM, BIA and NFS lands in the west. The BLM/NREL study identified the Butte and Dillon Field Offices as two of the top 25 BLM planning units having high potential for wind energy development. The study takes into consideration certain screening factors such as wind velocity, proximity to roads and electric transmission facilities, the degree to which state and local policies support wind energy development, and environmental compatibility criteria in the rating of these planning areas.

The BLM/NREL study also identified the Dillon Field Office as on of the top 25 BLM planning units having high potential for biomass resources. To date, utilization of small diameter forest material has been sporadic to non-existent due to long haul distances to pulp facilities and low return pulp markets. Utilization of this material for biomass related energy production has not been a factor.

No proposals for alternative energy development, other than wind power are anticipated to occur in the foreseeable future. One area near Whitehall (Golden Sunlight Mine) is anticipated to have wind energy development in the future.

3.6.3.1 Townsend to Mill Creek (Melrose) Segment

The following discussion describes land use along the three alternative routes in Montana. Discussion, depending on the number of occurrences, is provided in narrative or table format. Specific locations of the land uses are delineated on the following maps located in Volume IV: Existing and Planned Land Use, Parks, Recreation, and Preservation Areas, and Minerals and Energy.

A1: PREFERRED ROUTE

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the Bureau of Land Management (Butte and Dillon Field Offices), United States Department of Agriculture (USDA) Forest Service (Beaverhead-Deerlodge National Forest), Montana Department of Natural Resources and Conservation (MDNRC), and Montana Fish, Wildlife & Parks (MFWP). For purposes of this study, state land is defined as any land surface under the jurisdiction of the MDNRC or MFWP. State lands may also be administered by such agencies as the Department of Transportation (DOT) and Department of Environmental Quality (DEQ). The 4.0-mile-wide study area for the Preferred Route is located in Broadwater, Jefferson, Silver Bow, Deer Lodge, and Beaverhead counties. BLM public land represents 9 percent of the land crossed by the Preferred Route, while National Forest System (NFS) land comprises 6 percent. MFWP land comprises 1 percent of the land crossed while MDNRC land makes up 9 percent. Private land represents 75 percent of the land traversed by this route. Land jurisdiction crossed by the A1: Preferred Route is depicted in Volume I-C, Appendix H, Table 3.6-11.

Existing and Planned Land Use

Platted subdivisions crossed by the Preferred Route are identified in Table 3.6-12 as presented below.

Table 3.6-12 Platted Subdivisions Crossed by the A1: Preferred Route

Link	Name	County	Milepost Begin	Milepost End	Distance (Miles)
3-1	Tebay	Jefferson	29.7	31.0	1.3
7-2	Sunnyslope	Jefferson	4.6	5.0	0.4
	S&C #1, S&C #3	Jefferson	10.7	10.8	0.1
	S&C #3	Jefferson	10.8	11.3	0.5
7-42	Homestake Meadows Phase II	Silverbow	2.2	3.0	0.8
7-5	Homestake Meadows Phase II	Silverbow	0.0	0.3	0.3
	Redfern	Silverbow	0.3	0.8	0.5
	Continental Acres #2, Redfern	Silverbow	0.8	0.9	0.1
	Continental Acres #2, Redfern	Silverbow	0.9	1.1	0.2
	Green Acres (Amend Lot 7, Block 6)	Silverbow	1.3	1.4	0.1
7-8	Fleecer View-Phase II	Silverbow	10.2	10.8	0.6
11-23	Fleecer View-Phase II	Silverbow	0.4	1.0	0.6

One (1) residential dwelling is located within 150 feet of the Preferred Route (Link 7-5 from milepost 0.9 to milepost 1.0). Ninety (90) residential dwellings are located within 1,000 feet of A1.

There are 82 major farm support buildings (and other similar structures) within ½ mile and 150 feet of the centerline of A1 by link (see Volume I-C, Appendix H, Table 3.6-13).

Agricultural land (cropland) and rangeland/native vegetation crossed by A1 is presented in Table 3.6-14.

Table 3.6-14 Agricultural Lands Crossed by the A1: Preferred Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
1	0.0	0.3	0.3	Dry Cropland
	0.3	0.5	0.2	Irrigated Cropland (Mechanized), Dry Cropland
	0.5	1.5	1.0	Dry Cropland
	2.0	3.4	1.4	Irrigated Cropland (Mechanized)
	3.4	7.1	3.7	Rangeland/Native Vegetation
3-1	0.0	11.5	11.5	Rangeland/Native Vegetation
	12.4	13.4	1.0	Dry Cropland
	14.3	19.4	5.1	Rangeland/Native Vegetation
	21.9	22.6	0.7	Dry Cropland
	24.1	29.8	5.7	Rangeland/Native Vegetation
7-2	5.0	6.3	1.3	Rangeland/Native Vegetation
	6.8	7.2	0.4	Irrigated Cropland (Mechanized)
	7.2	8.4	1.2	Rangeland/Native Vegetation
	9.6	10.3	0.7	Dry Cropland
	10.6	12.2	1.6	Rangeland/Native Vegetation
7-41	0.0	5.1	5.1	Rangeland/Native Vegetation
7-9	1.4	1.8	0.4	Irrigated Cropland (Other-Flood)
11-22	4.4	4.7	0.3	Dry Cropland
11-23	5.8	9.4	3.6	Irrigated Cropland (Other-Flood)
	11.3	12.6	1.3	Rangeland/Native Vegetation
	15.0	18.2	3.2	Irrigated Cropland (Mechanized)
	20.6	21.1	0.5	Rangeland/Native Vegetation
	21.6	21.7	0.1	Irrigated Cropland (Other-Flood)
	21.7	21.8	0.1	Irrigated Cropland (Mechanized), Irrigated Cropland (Other-Flood)
	21.8	21.9	0.1	Irrigated Cropland (Mechanized)

*Excludes CRP Land.

Two registered apiaries are crossed by A1. The A1: Preferred Route traverses registered apiaries along Link 3-1 (from milepost 28.5 to milepost 29.1) and Link 11-23 (from milepost 15.0 to milepost 15.6).

Important farmland is also located in the study area. Important farmland crossed by A1 is presented in Table 3.6-15.

Table 3.6-15 Important Farmland Crossed by the A1: Preferred Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
1	0.0	1.5	1.5	Prime Farmland if irrigated
	3.1	3.6	0.5	Prime Farmland if irrigated
	5.2	5.8	0.6	Farmland of Statewide Importance
	6.6	7.1	0.5	Farmland of Statewide Importance
	14.0	14.2	0.2	Farmland of Statewide Importance
	14.6	15.0	0.4	Farmland of Statewide Importance

Table 3.6-15 Important Farmland Crossed by the A1: Preferred Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
3-1	0.0	0.1	0.1	Farmland of Statewide Importance
	2.7	2.9	0.2	Farmland of Statewide Importance
	3.0	3.2	0.2	Prime Farmland if irrigated
	3.2	4.7	1.5	Farmland of Statewide Importance
	12.3	12.7	0.4	Farmland of Statewide Importance
	12.8	13.0	0.2	Prime Farmland if irrigated
	13.0	14.4	1.4	Farmland of Statewide Importance
	14.6	14.8	0.2	Prime Farmland if irrigated
	17.1	17.3	0.2	Farmland of Statewide Importance
	17.4	17.6	0.2	Farmland of Statewide Importance
	19.2	19.8	0.6	Farmland of Statewide Importance
	19.9	20.1	0.2	Farmland of Statewide Importance
	22.1	22.3	0.2	Farmland of Local Importance
	22.4	22.6	0.2	Farmland of Statewide Importance
	23.3	23.6	0.3	Farmland of Local Importance
	23.6	23.8	0.2	Farmland of Statewide Importance
	23.8	24.0	0.2	Farmland of Local Importance
	24.5	24.6	0.1	Farmland of Local Importance
	24.7	24.8	0.1	Prime Farmland if irrigated
	24.8	24.9	0.1	Farmland of Local Importance
	25.3	25.4	0.1	Farmland of Local Importance
	25.4	25.8	0.4	Farmland of Statewide Importance
	25.9	26.1	0.2	Farmland of Statewide Importance
	29.4	29.9	0.5	Farmland of Local Importance
7-2	4.7	4.8	0.1	Prime Farmland if irrigated
	4.8	5.0	0.2	Farmland of Statewide Importance
	5.0	5.4	0.4	Prime Farmland if irrigated
	5.4	5.7	0.3	Farmland of Local Importance
	5.7	5.8	0.1	Farmland of Statewide Importance
	5.8	6.3	0.5	Farmland of Local Importance
	6.3	6.6	0.3	Farmland of Statewide Importance
	7.0	7.2	0.2	Prime Farmland if irrigated
	7.5	8.4	0.9	Farmland of Statewide Importance
	8.5	8.6	0.1	Prime Farmland if irrigated
	8.6	10.4	1.8	Farmland of Statewide Importance
	10.5	11.9	1.4	Farmland of Statewide Importance
7-41	0.0	0.1	0.1	Prime Farmland if irrigated
	0.1	0.2	0.1	Farmland of Local Importance
	0.2	0.5	0.3	Farmland of Statewide Importance
	0.5	0.6	0.1	Farmland of Local Importance
	0.9	1.0	0.1	Prime Farmland if irrigated
	1.0	1.2	0.2	Farmland of Local Importance
	1.3	2.0	0.7	Farmland of Local Importance
7-8	1.9	2.5	0.6	Farmland of Statewide Importance
11-23	20.4	20.6	0.2	Farmland of Local Importance
	21.0	21.4	0.4	Farmland of Local Importance
	21.5	21.7	0.2	Farmland of Local Importance

Source: NRCS Soil Survey Geographic (SSURGO) Database

CRP land is crossed by Link 1 from milepost 0.4 to milepost 0.8.

One Superfund Site (Anaconda Co. Smelter/MTV093291656) is crossed by Link 7-9 from milepost 2.7 to 2.8.

Parks, Recreation, and Preservation Areas

Special Management Areas crossed by A1 are located in Table 3.6-16.

Table 3.6-16 Special Management Areas Crossed by the A1: Preferred Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Special Management Area
1	1.4	2.4	1.0	Toston Reservoir/Missouri River Proposed SRMA
3-1	5.4	5.9	0.5	Elkhorn Mountains Proposed ACEC
	7.9	8.4	0.5	Elkhorn Mountains Proposed ACEC
7-2	11.2	11.8	0.6	Pipestone Proposed ACEC
7-41	0.3	0.7	0.4	Pipestone Proposed ACEC
7-41	1.1	2.3	1.2	Pipestone Proposed ACEC
7-41	2.4	5.4	3.0	Pipestone Proposed ACEC
11-22	1.2	1.6	0.4	Mount Hagen Wildlife Management Area
11-23	18.0	18.3	0.3	Maidenrock Fishing Access Site*
11-23	18.3	18.4	0.1	Lower Big Hole River SRMA, Maiden Rock Fishing Access Site
11-23	18.4	19.0	0.6	Lower Big Hole River SRMA
11-23	19.4	19.5	0.1	Lower Big Hole River SRMA
11-23	20.6	21.1	0.5	Lower Big Hole River SRMA

*Land and Water Conservation Site

The WH Ranch CE is held by MFWP and traverses Link 7-9 (from mileposts 1.0 to 1.8 and 2.7 to 3.2) and Link 11-21 (from milepost 0.0 to 0.2).

Transportation and Access

The A1: Preferred Route would cross I-90 and I-15, U.S. Highway 287, and Montana Primary Routes 2 and 69. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. Railroads crossed by the Preferred Route include Montana Rail Link, BNSF, UPPR, and Rarus Railway. See Volume I-C, Appendix H, Table 3.6-17 for a listing of Montana Highway and Railroad Crossings.

Minerals and Energy

The 10-inch Yellowstone Pipeline (ConocoPhillips) is crossed by Link 1 (from milepost 3.7 to milepost 3.8) and transports oil.

MDEQ permitted opencut and hard rock mines crossed by the Preferred Route are presented in Table 3.6-18.

Table 3.6-18 MDEQ Permitted Opencut and Hard Rock Mines Crossed by the A1: Preferred Route

Link	Milepost Begin	Milepost End	Distance	Opencut Mine/ Company	Hard Rock Mine/ Company	Sec.	T	R
3-1	1.8	3.0	1.2		Ted Roberts	16	5N	1E
	3.0	3.4	0.4	Keating Gulch Mine		20	5N	1E
	31.7	32.3	0.6		Huckaba Pit-LR Huckaba Ranch	34	2N	3W
7-2	0.3	2.1	1.8		Golden Sunlight-Golden Sunlight Mines Inc.	18, 19, 20, 28, 29, 30, 32, 33, 6	2N, 1N	3W
7-41	1.1	2.3	1.2		Pipestone Quarry-URS Group	20	2N	5W
7-9	0.7	1.1	0.4	Bonneville Centennial Concrete-Centennial Concrete		17	4N	10W
11-23	12.0	13.1	1.1	Divide Mine		16, 17	1S	9W

A2: PARALLEL COLSTRIP LINES ROUTE

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Butte and Dillon Field Offices), USDA Forest Service (BDNF), MDNRC, and MFWP. The 4.0-mile-wide study area for the A2: Parallel Colstrip Lines Route is located in Broadwater, Jefferson, Powell, Silver Bow, Deer Lodge, and Beaverhead counties. BLM public land represents 17 percent of the land crossed by the A2: Parallel Colstrip Lines Route, while NFS land comprises 26 percent. MFWP land comprises 1 percent of the land crossed while MDNRC land makes up 2 percent. Private land represents 54 percent of the land traversed by this alternative route. Land jurisdiction crossed by the A2: Parallel Colstrip Lines Route is depicted in Volume I-C, Appendix H, Table 3.6-19.

Existing and Planned Land Use

<u>Residential</u>

Platted subdivisions traversed by the A2: Parallel Colstrip Lines Route are identified in Table 3.6-20 as presented below.

Table 3.16-20 Platted Subdivisions Crossed by the A2: Parallel Colstrip Lines Route

Link	Name	County	Milepost Begin	Milepost End	Distance (Miles)
4-2	Aspen Valley Ranches	Jefferson	15.0	17.9	2.9
	Opportunity Townsite	Deer Lodge	59.8	62.8	3.0
	Ingleside, Millview Addition	Deer Lodge	62.8	62.9	0.1
	Ingleside, Millview Addition	Deer Lodge	62.9	64.0	1.1
11-23	Fleecer View-Phase II	Silver Bow	0.4	1.0	0.6
4-2	Aspen Valley Ranches	Jefferson	15.0	17.9	2.9
	Opportunity Townsite	Deer Lodge	59.8	62.8	3.0
	Ingleside, Millview Addition	Deer Lodge	62.8	62.9	0.1
	Ingleside, Millview Addition	Deer Lodge	62.9	64.0	1.1
11-23	Fleecer View-Phase II	Silver Bow	0.4	1.0	0.6

Thirty two (32) residential dwellings are located within 1,000 feet of the A2: Parallel Colstrip Lines Route.

Agriculture

There are 25 major farm support buildings (and other similar structures) within ½ mile and 150 feet of the centerline of the A2: Parallel Colstrip Lines Route by link (see Volume I-C, Appendix H, Table 3.6-21).

Agricultural land (cropland) and rangeland/native vegetation crossed by the A2: Parallel Colstrip Lines Route is presented in Table 3.6-22.

Table 3.6-22 Agricultural Lands Crossed by the A2: Parallel Colstrip Lines Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
1	0.0	0.3	0.3	Dry Cropland
	0.3	0.5	0.2	Irrigated Cropland (Mechanized), Dry Cropland
	0.5	1.5	1.0	Dry Cropland
	2.0	3.4	1.4	Irrigated Cropland (Mechanized)
	3.4	7.1	3.7	Rangeland/Native Vegetation
4-1	0.0	0.3	0.3	Rangeland/Native Vegetation
	2.7	3.0	0.3	Irrigated Cropland (Mechanized)
	3.1	13.5	10.4	Rangeland/Native Vegetation
4-2	0.0	14.1	14.1	Rangeland/Native Vegetation
	17.4	17.5	0.1	Dry Cropland
	18.2	25.2	7.0	Rangeland/Native Vegetation
7-9	1.4	1.8	0.4	Irrigated Cropland (Other-Flood)
11-22	4.4	4.7	0.3	Dry Cropland
11-23	5.8	9.4	3.6	Irrigated Cropland (Other-Flood)
	11.3	12.6	1.3	Rangeland/Native Vegetation
	15.0	18.2	3.2	Irrigated Cropland (Mechanized)
	20.6	21.1	0.5	Rangeland/Native Vegetation
	21.6	21.7	0.1	Irrigated Cropland (Other-Flood)
	21.7	21.8	0.1	Irrigated Cropland (Mechanized), Irrigated Cropland (Other-Flood)
	21.8	21.9	0.1	Irrigated Cropland (Mechanized)

*Excludes CRP Land

One registered apiary is crossed by the A2: Parallel Colstrip Lines Route along Link 11-23 (from milepost 15.0 to milepost 15.6).

Important Farmland crossed by the A2: Parallel Colstrip Lines Route is presented in Table 3.6-23.

Table 3.6-23 Important Farmland Crossed by the A2: Parallel Colstrip Lines Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
1	0.0	1.5	1.5	Prime Farmland if irrigated
	3.1	3.6	0.5	Prime Farmland if irrigated
	5.2	5.8	0.6	Farmland of Statewide Importance
	6.6	7.1	0.5	Farmland of Statewide Importance
	14.0	14.2	0.2	Farmland of Statewide Importance
	14.6	15.0	0.4	Farmland of Statewide Importance
4-1	0.0	0.1	0.1	Farmland of Statewide Importance
	2.7	3.2	0.5	Prime Farmland if irrigated
	3.3	3.6	0.3	Farmland of Statewide Importance
	5.2	5.5	0.3	Farmland of Statewide Importance
4-2	56.6	57.1	0.5	Farmland of Statewide Importance
	57.2	58.3	1.1	Farmland of Statewide Importance
	58.3	58.8	0.5	Prime Farmland if irrigated
	60.3	60.5	0.2	Prime Farmland if irrigated
	60.6	61.4	0.8	Prime Farmland if irrigated
11-23	20.4	20.6	0.2	Farmland of Local Importance
	21.0	21.4	0.4	Farmland of Local Importance
	21.5	21.7	0.2	Farmland of Local Importance

Source: NRCS Soil Survey Geographic (SSURGO) Database

CRP land is crossed by Link 1 from milepost 0.4 to milepost 0.8.

Superfund Sites crossed by A2: Parallel Colstrip Lines are founding Table 3.6-24.

Table 3.6-24 Superfund Sites Crossed by the A2: Parallel Colstrip Lines Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Name/CERCLIS ID	County
4-2	27.7	29.7	2.0	Basin Mining Area/ MTD982572562	Jefferson
	59.8	60.3	0.5		
7-9	2.7	2.8	0.1	Anaconda Co. Smelter/ MTD093291656	Deer Lodge

Parks, Recreation, and Preservation Areas

Special Management Areas crossed by the A2: Parallel Colstrip Lines Route are found in Table 3.6-25.

Table 3.6-25 Special Management Areas Crossed by the A2: Parallel Colstrip Lines Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Special Management Area
1	1.4	2.4	1.0	Toston Reservoir/Missouri River Proposed SRMA
4-1	3.3	3.6	0.3	Elkhorn Mountains Proposed ACEC
4-1	5.2	5.4	0.2	Elkhorn Mountains Proposed ACEC
4-1	5.5	5.6	0.1	Elkhorn Mountains Proposed ACEC
4-1	6.1	7.3	1.2	Elkhorn Mountains Proposed ACEC
4-1	8.4	10.8	2.4	Elkhorn Mountains Proposed ACEC
4-1	12.5	13.1	0.6	Elkhorn Mountains Proposed ACEC
4-2	0.9	2.6	1.7	Elkhorn Mountains Proposed ACEC
4-2	2.7	3.6	0.9	Elkhorn Mountains Proposed ACEC
4-2	3.8	7.1	3.3	Elkhorn Mountains Proposed ACEC
4-2	13.5	14.1	0.6	Elkhorn Mountains Proposed ACEC
11-21	0.1	1.1	1.0	Mount Hagen Wildlife Management Area
11-22	1.2	1.6	0.4	Mount Hagen Wildlife Management Area
11-23	18.0	18.3	0.3	Maidenrock Fishing Access Site*
11-23	18.3	18.4	0.1	Lower Big Hole River SRMA, Maiden Rock Fishing Access Site
11-23	18.4	19.0	0.6	Lower Big Hole River SRMA
11-23	19.4	19.5	0.1	Lower Big Hole River SRMA
11-23	20.6	21.1	0.5	Lower Big Hole River SRMA

*Land and Water Conservation Site

The WH Ranch CE is held by MFWP and traverses Link 7-9 (from mileposts 1.0 to 1.8 and 2.7 to 3.2) and Link 11-21 (from milepost 0.0 to 0.2).

Transportation and Access

The A2: Parallel Colstrip Lines Route would cross I-90 and I-15, US 287, and Montana Primary Route 1. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. Railroads crossed by the Preferred Route include Montana Rail Link, Burlington Northern and Santa Fe Railway, Union Pacific Railroad, and Rarus Railway Railway (see Volume I-C, Appendix H, Table 3.6-26).

Minerals and Energy

The 10-inch Yellowstone Pipeline (ConocoPhillips) is crossed by Link 1 (from milepost 3.7 to milepost 3.8) and transports oil (NRIS, Montana Refined Products and Crude Oil Pipelines, 1999).

MDEQ permitted opencut and hard rock mines crossed by the A2: Parallel Colstrip Lines Route are presented in Table 3.6-27.

Table 3.6-27 MDEQ Permitted Opencut and Hard Rock Mines Crossed by the A2: Parallel Colstrip Lines Route

Link	Milepost Begin	Milepost End	Distance	Opencut Mine/ Company	Hard Rock Mine/ Company	Sec.	T	R
4-1	4.2	4.6	0.4		Peter S. Antonioli	18	5N	1E
	4.6	4.7	0.1		Frank N. Antonioli; Peter S. Antonioli	13	5N	1W
	4.7	5.9	1.2		Frank N. Antonioli	13	5N	1W
4-2	13.5	14.4	0.9		MPM-Caboose Mining Co.	13	6N	4W
	19.1	20.2	1.1		Panfalyee #1, 2; Johnson #1, 2, 3, 4 – Xanadu Mining Co. LLC	28	7N	4W
	25.1	26.2	1.1		Lex 51-060B-Leber Mining Co.	29, 33	7N	5W
	47.5	48.5	1.0		Silver Sleepers, Bear & Moose-Eaton RN	6	5N	8W
	47.5	48.5	1.0		Banker and Princess-Ralph Johnsrud	5	5N	8W
	57.8	58.9	1.1		Opportunity Johnson Quarry-Atlantic Richfield Co.	7	4N	9W
7-9	0.7	1.1	0.4	Bonneville Centennial Concrete-Centennial Concrete		17	4N	10W
11-23	12.0	13.1	1.1	Divide Mine		16, 17	1S	9W

The 10-inch Yellowstone Pipeline (ConocoPhillips) is crossed by Link 1 (from milepost 3.7 to milepost 3.8) and transports oil.

A3: MAXIMIZE UTILITY CORRIDORS

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Butte and Dillon Field Offices), USDA Forest Service (BDNF), Reclamation, MDNRC, and MFWP. The 4.0-mile-wide study area for A3: Maximize Utility Corridors is located in Broadwater, Jefferson, Silver Bow, Deer Lodge, and Beaverhead counties. BLM public land represents eight percent of the land crossed by A3: Maximize Utility Corridors, while NFS land and Reclamation comprise 5 and 1 percent, respectively. MFWP land comprises 2 percent of the land crossed while MDNRC land makes up 6 percent. Private land represents 79 percent of the land traversed by this alternative route. Land jurisdiction crossed by A3: Maximize Utility Corridors is depicted in Volume I-C, Appendix H, Table 3.6-28.

Existing and Planned Land Use

<u>Residential</u>

Platted subdivisions traversed by A3: Maximize Utility Corridors are identified in Table 3.6-29 as presented below.

One (1) residential dwelling is located within 150 feet of the Preferred Route (Link 7-5 from milepost 0.9 to milepost 1.0). One (1) residential dwelling is also located within 150 feet of the Preferred Route (Link 7-61 from milepost 12.8 to milepost 13.0).One hundred and thirty two (132) residential dwellings are located within 1,000 feet of A3: Maximize Utility Corridors.

<u>Agriculture</u>

There 203 major farm support buildings (and other similar structures) within ½ mile and 150 feet of the centerline of A3: Maximize Utility Corridors by link (see Volume I-C, Appendix H, Table 3.6-Agricultural land (cropland) and rangeland/native vegetation crossed by A3: Maximize Utility Corridors is presented in Table 3.6-31.

Table 3.6-29 Platted Subdivisions Crossed by A3: Maximize Utility Corridors

Link	Name	County	Milepost Begin	Milepost End	Distance (Miles)
2-3	Soaring Hills	Broadwater	0.1	0.2	0.1
	Mud Spring Estate, Soaring Hills	Broadwater	0.2	0.3	0.1
	Mud Spring Estate	Broadwater	0.3	0.7	0.4
	George A. Karhl Tracts	Jefferson	4.8	5.4	0.6
	Sharon L. Buckallew Lots and Tract	Jefferson	8.4	9.0	0.6
7-2	Sunnyslope	Jefferson	4.6	5.0	0.4
	S&C #1, S&C #3	Jefferson	10.7	10.8	0.1
	S&C #3	Jefferson	10.8	11.3	0.5
7-42	Homestake Meadow Phase II	Silver Bow	2.2	3.0	0.8
7-5	Homestake Meadow Phase II	Silver Bow	0.0	0.3	0.3
	Redfern	Silver Bow	0.3	0.8	0.5
	Continental Acres #2, Redfern	Silver Bow	0.8	0.9	0.1
	Continental Acres #2, Redfern	Silver Bow	0.9	1.1	0.2
	Green Acres (Amend Lot 7, Block 6)	Silver Bow	1.3	1.4	0.1
7-61	Industrial Park, Butte Industrial Park (Amendment to Lot 6 & 7), Butte Industrial Park (Amendment to Lot 12), Butte Industrial Park (Amendment Lot 10A)	Silver Bow	1.1	1.4	0.3
	Corder No. 2	Silver Bow	3.5	3.7	0.2
	Little Basin	Silver Bow	3.9	4.0	0.1
	Vigilante Estates, Butte Ski Club No. 4	Silver Bow	5.6	5.7	0.1
	Vigilante Estates	Silver Bow	5.7	5.9	0.2
	Butte Ski Club No. 4, Vigilante Estates	Silver Bow	5.9	6.0	0.1
	Butte Ski Club No. 4	Silver Bow	6.0	6.1	0.1
	Butte Ski Club No. 4, Rocky Ridge	Silver Bow	6.1	6.2	0.1
	Whiskey Gulch	Silver Bow	7.3	7.7	0.4
	Ramsay Townsite	Silver Bow	11.1	11.2	0.1
7-72	Greason	Silver Bow	1.0	1.4	0.4
11-23	Fleecer View-Phase II	Silver Bow	0.4	1.0	0.6

Table 3.6-31 Agricultural Lands Crossed by A3: Maximize Utility Corridors

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
2-1	0.0	0.1	0.1	Dry Cropland
	0.1	0.5	0.4	Irrigated Cropland (Mechanized)
	2.8	2.9	0.1	Dry Cropland
	7.3	7.9	0.6	Rangeland/Native Vegetation
	7.9	8.2	0.3	Dry Cropland
	10.3	20.4	10.1	Rangeland/Native Vegetation
2-3	2.2	13.1	10.9	Dry Cropland
	16.5	18.6	2.1	Rangeland/Native Vegetation
	18.6	18.9	0.3	Irrigated Cropland (Other-Flood)
	18.9	19.4	0.5	Rangeland/Native Vegetation
7-2	5.0	6.3	1.3	Rangeland/Native Vegetation
	6.8	7.2	0.4	Irrigated Cropland (Mechanized)
	7.2	8.4	1.2	Rangeland/Native Vegetation
	9.6	10.3	0.7	Dry Cropland
	10.6	12.2	1.6	Rangeland/Native Vegetation
7-41	0.0	5.1	5.1	Rangeland/Native Vegetation
7-72	1.6	2.2	0.6	Irrigated Cropland (Mechanized)
7-9	1.4	1.8	0.4	Irrigated Cropland (Other-Flood)
11-22	4.4	4.7	0.3	Dry Cropland
11-23	5.8	9.4	3.6	Irrigated Cropland (Other-Flood)
	11.3	12.6	1.3	Rangeland/Native Vegetation
	15.0	18.2	3.2	Irrigated Cropland (Mechanized)
	20.6	21.1	0.5	Rangeland/Native Vegetation
	21.6	21.7	0.1	Irrigated Cropland (Other-Flood)
	21.7	21.8	0.1	Irrigated Cropland (Mechanized), Irrigated Cropland (Other-Flood)
	21.8	21.9	0.1	Irrigated Cropland (Mechanized)

*Excludes CRP Land

Four registered apiaries are crossed by A3: Maximize Utility Corridors. The A3: Maximize Utility Corridors route crosses apiaries along Link 2-1 (from milepost 9.1 to milepost 9.5), Link 7-61 (from milepost 12.7 to milepost 13.1), Link 7-72 (from milepost 2.4 to milepost 2.8), and Link 11-23 (from milepost 15.0 to milepost 15.6).

Important Farmland crossed by A3: Maximize Utility Corridors, is presented in Table 3.6-32.

Table 3.6-32 Important Farmland Crossed by A3: Maximize Utility Corridors

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
2-1	0.0	0.4	0.4	Prime Farmland if irrigated
	0.4	1.0	0.6	Farmland of Statewide Importance
	2.8	2.9	0.1	Prime Farmland if irrigated
	7.8	8.1	0.3	Prime Farmland if irrigated
	8.2	8.4	0.2	Prime Farmland if irrigated
	12.7	12.8	0.1	Farmland of Statewide Importance
	14.0	14.2	0.2	Farmland of Statewide Importance
	14.6	15.0	0.4	Farmland of Statewide Importance
	25.6	25.8	0.2	Farmland of Statewide Importance
2-3	0.5	1.4	0.9	Prime Farmland if irrigated
	1.4	1.9	0.5	Farmland of Statewide Importance
	1.9	2.2	0.3	Prime Farmland if irrigated
	2.2	2.4	0.2	Farmland of Statewide Importance
	2.7	3.5	0.8	Farmland of Statewide Importance
	3.6	4.6	1.0	Farmland of Statewide Importance
	5.9	6.3	0.4	Farmland of Statewide Importance
	7.0	7.3	0.3	Farmland of Statewide Importance
	7.8	8.2	0.4	Farmland of Statewide Importance
	9.2	10.1	0.9	Farmland of Statewide Importance
	10.4	10.9	0.5	Farmland of Statewide Importance
	11.8	12.9	1.1	Farmland of Statewide Importance
	13.0	13.1	0.1	Farmland of Statewide Importance
	13.3	13.8	0.5	Farmland of Statewide Importance
	14.6	15.5	0.9	Farmland of Statewide Importance
	17.9	18.4	0.5	Farmland of Statewide Importance
	18.4	18.5	0.1	Farmland of Local Importance
	18.5	18.6	0.1	Farmland of Statewide Importance
	18.6	18.7	0.1	Farmland of Local Importance
	18.7	18.9	0.2	Prime Farmland if irrigated
	19.0	19.1	0.1	Farmland of Local Importance
7-2	4.7	4.8	0.1	Prime Farmland if irrigated
	4.8	5.0	0.2	Farmland of Statewide Importance
	5.0	5.4	0.4	Prime Farmland if irrigated
	5.4	5.7	0.3	Farmland of Local Importance
	5.7	5.8	0.1	Farmland of Statewide Importance
	5.8	6.3	0.5	Farmland of Local Importance
	6.3	6.6	0.3	Farmland of Statewide Importance
	7.0	7.2	0.2	Prime Farmland if irrigated
	7.5	8.4	0.9	Farmland of Statewide Importance
	8.5	8.6	0.1	Prime Farmland if irrigated
	8.6	10.4	1.8	Farmland of Statewide Importance
	10.5	11.9	1.4	Farmland of Statewide Importance
7-41	0.0	0.1	0.1	Prime Farmland if irrigated
	0.1	0.2	0.1	Farmland of Local Importance
	0.2	0.5	0.3	Farmland of Statewide Importance
	0.5	0.6	0.1	Farmland of Local Importance
	0.9	1.0	0.1	Prime Farmland if irrigated

Table 3.6-32 Important Farmland Crossed by A3: Maximize Utility Corridors

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
	1.0	1.2	0.2	Farmland of Local Importance
	1.3	2.0	0.7	Farmland of Local Importance
7-5	1.9	2.5	0.6	Farmland of Statewide Importance
7-61	1.9	2.2	0.3	Farmland of Statewide Importance
11-23	20.4	20.6	0.2	Farmland of Local Importance
	21.0	21.4	0.4	Farmland of Local Importance
	21.5	21.7	0.2	Farmland of Local Importance

Source: NRCS Soil Survey Geographic (SSURGO) Database

CRP land crossed by the A3: Maximize Utility Corridors route can be found in Table 3.6-33.

Table 3.6-33 Conservation Reserve Program Land Crossed by A3: Maximize Utility Corridors

Link	Milepost Begin	Milepost End	Distance (Miles)
2-1	10.3	10.6	0.3
	10.8	10.9	0.1
	11.0	11.8	0.8
	12.4	12.5	0.1
	12.6	12.8	0.2
	13.3	13.6	0.3
	14.0	14.5	0.5
	14.6	15.3	0.7
	25.5	25.8	0.3
2-3	0.0	0.1	0.1
	0.6	1.2	0.6
	2.2	2.8	0.6
	10.9	11.0	0.1
	11.1	11.6	0.5

Source: FSA

Superfund Sites crossed by A3: Maximize Utility Corridors Lines are found in Table 3.6-34.

Table 3.6-34 Superfund Sites Crossed by A3: Maximize Utility Corridors

Link	Milepost Begin	Milepost End	Distance (Miles)	Name/CERCLIS ID	County
7-72	0.7	1.0	0.3	Silver Bow Creek/Butte Area/MTD980502777	Silver Bow, Deer Lodge
	2.9	3.0	0.1		
7-9	2.7	2.8	0.1	Anaconda Co. Smelter/ MTD093291656	Deer Lodge

Parks, Recreation, and Preservation Areas

Special Management Areas crossed by A3: Maximize Utility Corridors are found in Table 3.6-35.

Table 3.6-35 Special Management Areas Crossed by A3: Maximize Utility Corridors

Link	Milepost Begin	Milepost End	Distance (Miles)	Special Management Area
2-1	7.8	8.4	0.6	Toston Reservoir/Missouri River Proposed SRMA
7-2	11.2	11.8	0.6	Pipestone Proposed ACEC
7-41	0.3	0.7	0.4	Pipestone Proposed ACEC
7-41	1.1	2.3	1.2	Pipestone Proposed ACEC
7-41	2.4	5.4	3.0	Pipestone Proposed ACEC
7-72	3.3	3.5	0.2	Mount Hagen Wildlife Management Area
11-21	0.1	1.1	1.0	Mount Hagen Wildlife Management Area
11-22	1.2	1.6	0.4	Mount Hagen Wildlife Management Area
11-23	18.0	18.3	0.3	Maidenrock Fishing Access Site*
11-23	18.3	18.4	0.1	Lower Big Hole River SRMA, Maiden Rock Fishing Access Site
11-23	18.4	19.0	0.6	Lower Big Hole River SRMA
11-23	19.4	19.5	0.1	Lower Big Hole River SRMA
11-23	20.6	21.1	0.5	Lower Big Hole River SRMA

*Land and Water Conservation Site

The WH Ranch CE is held by MFWP and is located along Link 7-72 (from milepost 3.4 to 3.7), 7-9 (from mileposts 1.0 to 1.8 and 2.7 to 3.2) and Link 11-21 (from milepost 0.0 to 0.2).

Transportation and Access

A3: Maximize Utility Corridors would cross I-90 and I-15, US 287, and Montana Primary Routes 2 and 69. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. Railroads crossed by A3: Maximize Utility Corridors include Montana Rail Link, Burlington Northern and Santa Fe Railway, Union Pacific Railroad, and Rarus Railway (see Volume I-C, Appendix H, Table 3.6-36).

Minerals and Energy

The 10-inch Yellowstone Pipeline (ConocoPhillips) is crossed by Link 2-1 (from milepost 14.2 to milepost 14.3) and transports oil.

MDEQ permitted open cut and hard rock mines crossed by A3: Maximize Utility Corridors are presented in Table 3.6-37.

Table 3.6-37 MDEQ Permitted Opencut and Hard Rock Mines Crossed by A3: Maximize Utility Corridors

Link	Milepost Begin	Milepost End	Distance	Opencut Mine/ Company	Hard Rock Mine/ Company	Sec.	T	R
2-3	13.9	15.0	1.1		Jake Stone Co.	33	2N	2W
	18.1	18.3	0.2	Cardwell-Kanta Products		36	2N	3W
	19.3	20.4	1.1		Huckaba Pit-LR Huckaba Ranch	34	2N	3W
7-2	0.3	2.1	1.8		Golden Sunlight-Golden Sunlight Mines Inc.	18, 19, 20, 28, 29, 30, 32, 33, 6	2N, 1N	3W
7-41	1.1	2.3	1.2		Pipestone Quarry-URS Group	20	2N	5W
7-9	0.7	1.1	0.4	Bonneville Centennial Concrete-Centennial Concrete		17	4N	10 W
11-23	12.0	13.1	1.1	Divide Mine		16, 17	1S	9W

3.6.3.2 Mill Creek to State Line Segment

The following discussion describes land use along the three alternative routes. Discussion, depending on the number of occurrences, is provided in narrative or table format. Specific locations of the land uses are located in Volume IV, delineated on the following maps: Existing and Planned Land Use, Parks, Recreation, and Preservation Areas, and Minerals and Energy.

B1: PREFERRED ROUTE

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Dillon Field Office), USDA Forest Service (BDNF), Reclamation, MDNRC, and MFWP. The 4.0-mile-wide study area for the Preferred Route is located in Madison and Beaverhead counties. BLM public land represents 24 percent of the land crossed by the Preferred Route, while MDNRC land makes up 34 percent. Private land represents 42 percent of the land traversed by this route. Land jurisdiction crossed by the B1: Preferred Route is depicted in see Volume I-C, Appendix H, Table 3.6-38.

Existing and Planned Land Use

One platted subdivision is traversed by the preferred route. Dutchman Springs Mountain Estates is crossed by Link 11-3 from milepost 15.4 to milepost 17.0.

Nine (9) residential dwellings are located within 1,000 feet of the B1: Preferred Route.

<u>Agriculture</u>

No major farm support buildings (and other similar structures) were located within ½ mile and 150 feet of the centerline of the B1: Preferred Route.

Agricultural land (cropland) and rangeland/native vegetation crossed by the B1: Preferred Route is presented in Table 3.6-39.

Table 3.6-39 Agricultural Lands Crossed by the B1: Preferred Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
11-3	0.7	6.2	5.5	Rangeland/Native Vegetation
	6.2	7.0	0.8	Irrigated Cropland (Mechanized)
	7.0	7.1	0.1	Dry Cropland
	7.2	7.4	0.2	Irrigated Cropland (Mechanized)
	8.4	10.0	1.6	Rangeland/Native Vegetation
	10.5	10.8	0.3	Irrigated Cropland (Mechanized)
	11.3	12.4	1.1	Rangeland/Native Vegetation
	12.5	12.6	0.1	Dry Cropland
	12.6	12.7	0.1	Irrigated Cropland (Other-Flood), Dry Cropland
	12.7	17.0	4.3	Irrigated Cropland (Other-Flood)
16-1	2.7	7.6	4.9	Rangeland/Native Vegetation
	11.2	12.3	1.1	Irrigated Cropland (Mechanized)
	12.6	12.7	0.1	Dry Cropland
	14.4	27.4	13.0	Rangeland/Native Vegetation
16-2	7.4	16.6	9.2	Rangeland/Native Vegetation
	16.6	17.3	0.7	Irrigated Cropland (Other-Flood)
	18.5	20.6	2.1	Rangeland/Native Vegetation
	20.6	21.2	0.6	Dry Cropland
	21.2	29.1	7.9	Rangeland/Native Vegetation
16-4	8.5	8.7	0.2	Rangeland/Native Vegetation

*Excludes CRP Land.

One registered apiary is crossed by the Preferred Route. B1 traverses the apiary along Link 16-1 (from milepost 10.6 to milepost 10.9).

Important farmland crossed by B1 is presented in Table 3.6-40.

Table 3.6-40 Important Farmland Crossed by the B1: Preferred Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
11-3	3.2	3.4	0.2	Farmland of Local Importance
	4.1	4.5	0.4	Farmland of Local Importance
	5.3	5.5	0.2	Farmland of Local Importance
	5.6	6.0	0.4	Farmland of Local Importance
	6.6	6.7	0.1	Farmland of Local Importance
	6.7	7.0	0.3	Farmland of Statewide Importance
	7.0	7.1	0.1	Farmland of Local Importance
	7.1	7.4	0.3	Farmland of Statewide Importance
	12.4	12.5	0.1	Farmland of Local Importance
	12.8	13.9	1.1	Farmland of Local Importance
	13.9	14.1	0.2	Farmland of Statewide Importance
	14.1	14.7	0.6	Farmland of Local Importance
	14.7	15.0	0.3	Farmland of Statewide Importance
	15.0	16.7	1.7	Farmland of Local Importance
	16.9	17.3	0.4	Farmland of Local Importance
	17.4	18.9	1.5	Farmland of Local Importance
	19.0	19.2	0.2	Farmland of Local Importance
16-1	0.0	1.6	1.6	Farmland of Local Importance
	2.2	2.9	0.7	Farmland of Local Importance
	3.1	3.3	0.2	Farmland of Local Importance
	4.5	4.7	0.2	Farmland of Statewide Importance
	8.7	9.0	0.3	Prime Farmland if irrigated
	9.0	11.0	2.0	Farmland of Local Importance
	11.0	11.3	0.3	Farmland of Statewide Importance
	11.3	11.4	0.1	Prime Farmland if irrigated
	11.4	12.0	0.6	Farmland of Local Importance
	12.0	12.2	0.2	Prime Farmland if irrigated
	12.2	12.8	0.6	Farmland of Statewide Importance
	12.8	12.9	0.1	Farmland of Local Importance
	12.9	13.2	0.3	Farmland of Statewide Importance
	13.2	13.4	0.2	Farmland of Local Importance
	13.9	14.3	0.4	Farmland of Statewide Importance
	14.4	14.6	0.2	Farmland of Statewide Importance

Source: NRCS Soil Survey Geographic (SSURGO) Database

No CRP land was identified in the study area.

Parks, Recreation, and Preservation Areas

Special Management Areas crossed by B1 are found in Table 3.6-41.

Table 3.6-41 Special Management Areas Crossed by the B1: Preferred Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Special Management Area
1	1.4	2.4	1.0	Toston Reservoir/Missouri River Proposed SRMA
2-1	7.8	8.4	0.6	Toston Reservoir/Missouri River Proposed SRMA
3-1	5.4	5.9	0.5	Elkhorn Mountains Proposed ACEC
	7.9	8.4	0.5	Elkhorn Mountains Proposed ACEC
4-1	3.3	3.6	0.3	Elkhorn Mountains Proposed ACEC
	5.2	5.4	0.2	Elkhorn Mountains Proposed ACEC
	5.5	5.6	0.1	Elkhorn Mountains Proposed ACEC
	6.1	7.3	1.2	Elkhorn Mountains Proposed ACEC
	8.4	10.8	2.4	Elkhorn Mountains Proposed ACEC
	12.5	13.1	0.6	Elkhorn Mountains Proposed ACEC
4-2	0.9	2.6	1.7	Elkhorn Mountains Proposed ACEC
	2.7	3.6	0.9	Elkhorn Mountains Proposed ACEC
	3.8	7.1	3.3	Elkhorn Mountains Proposed ACEC
	13.5	14.1	0.6	Elkhorn Mountains Proposed ACEC
7-2	11.2	11.8	0.6	Pipestone Proposed ACEC
7-41	0.3	0.7	0.4	Pipestone Proposed ACEC
	1.1	2.3	1.2	Pipestone Proposed ACEC
	2.4	5.4	3.0	Pipestone Proposed ACEC
7-72	3.3	3.5	0.2	Mount Hagen Wildlife Management Area
8	34.3	34.6	0.3	Lower Big Hole River SRMA
8	35.3	36.4	1.1	Lower Big Hole River SRMA
11-21	0.1	1.1	1.0	Mount Hagen Wildlife Management Area
11-22	1.2	1.6	0.4	Mount Hagen Wildlife Management Area
11-23	18.0	18.3	0.3	Maidenrock Fishing Access Site*
	18.3	18.4	0.1	Lower Big Hole River SRMA, Maiden Rock Fishing Access Site
	18.4	19.0	0.6	Lower Big Hole River SRMA
	19.4	19.5	0.1	Lower Big Hole River SRMA
	20.6	21.1	0.5	Lower Big Hole River SRMA
11-4	20.2	22.8	0.6	South Pioneers SRMA
13	4.0	4.9	0.9	South Pioneers SRMA
16-1	2.7	4.2	1.5	South Pioneers SRMA
	5.5	6.3	0.8	South Pioneers SRMA
	6.5	7.6	1.1	South Pioneers SRMA
18-1	0.0	0.8	0.8	South Pioneers SRMA
	1.2	2.3	1.1	South Pioneers SRMA
	2.6	3.7	1.1	South Pioneers SRMA
	13.9	15.2	1.3	Rocky Hills SRMA
	15.5	20.1	4.6	Rocky Hills SRMA
	62.7	64.2	1.5	Italian Peak Roadless Area

*Land and Water Conservation Site

The Lowell Hildreth CE is held by the Montana Land Reliance and is located along Link 16-1 (from milepost 22.4 to 24.3). The CE constitutes an element of the natural heritage of the Beaverhead Valley and its scenic and aesthetic, open space, and ecological values including flora, fauna, soils, water resources, habitat for diverse species of wildlife such as elk, deer, trout and wildfowl.

Transportation and Access

The B1: Preferred Route would cross I-15 and Montana Secondary Route 278. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. B1 also crosses the UPRR (see Volume I-C, Appendix H, Table 3.6-42).

Minerals and Energy

Federal authorized oil and gas leases cross B1 along Link 16-1 (from milepost 21.8 to milepost 23.2) and Link 16-2 (from milepost 27.5 to milepost 28.6).

One MDEQ permitted hard rock mine (Nelson EE) is crossed by the B1: Preferred Route along Link 11-3 (from milepost 6.6 to 7.8).

B2: SHEEP CREEK ROUTE

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Dillon Field Office), USDA Forest Service (BDNF), Reclamation, MDNRC, and MFWP. The 4.0-mile-wide study area for the B2: Sheep Creek Route is located in Madison and Beaverhead counties. BLM public land represents 52 percent of the land crossed by this alternative route, while NFS land comprises 2 percent. MDNRC land comprises 7 percent of the land crossed. Private land represents 39 percent of the land traversed by this alternative route. Land jurisdiction crossed by the B2: Sheep Creek Route is depicted in Volume I-C, Appendix H, Table 3.6-43.

Existing and Planned Land Use

<u>Residential</u>

No platted subdivisions traverse the B2: Sheep Creek Route.

Eight (8) residential dwellings are located within 1,000 feet of B2.

<u>Agriculture</u>

Seventeen major farm support buildings (and other similar structures) were located within ½ mile and no major farm support buildings (and other similar structures) were located within 150 feet of the centerline along Link 18-1 of B2.

Agricultural land (cropland) and rangeland/native vegetation crossed by B2 is presented in Table 3.6-44.

Table 3.6-44 Agricultural Lands Crossed by the B2: Sheep Creek Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
11-4	0.8	1.9	1.1	Rangeland/Native Vegetation
	2.0	2.1	0.1	Irrigated Cropland (Other-Flood)
	2.1	6.1	4.0	Rangeland/Native Vegetation
	6.1	7.2	1.1	Irrigated Cropland (Mechanized)
	8.5	22.8	14.3	Rangeland/Native Vegetation
18-1	0.0	19.7	19.7	Rangeland/Native Vegetation
	22.8	23.1	0.3	Irrigated Cropland (Other-Flood)
	23.1	23.3	0.2	Dry Cropland
	23.3	23.4	0.1	Irrigated Cropland (Mechanized), Dry Cropland
	23.4	23.6	0.2	Irrigated Cropland (Mechanized)
	23.6	23.7	0.1	Irrigated Cropland (Mechanized), Dry Cropland
	23.7	24.5	0.8	Dry Cropland
	26.3	31.6	5.3	Rangeland/Native Vegetation
	31.7	32.0	0.3	Irrigated Cropland (Other-Flood)
	32.1	32.2	0.1	Dry Cropland
	32.2	43.5	11.3	Rangeland/Native Vegetation
	44.0	44.4	0.4	Irrigated Cropland (Other-Flood)
	45.2	45.7	0.5	Rangeland/Native Vegetation
	45.7	45.8	0.1	Irrigated Cropland (Mechanized)
	45.8	62.2	16.4	Rangeland/Native Vegetation

*Excludes CRP Land.

One registered apiary is crossed by the B2: Sheep Creek Route along Link 11-4 (from milepost 5.7 to milepost 6.2).

Important farmland crossed by B2 is presented in Table 3.6-45.

Table 3.6-45 Important Farmland Crossed by the B2: Sheep Creek Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
11-4	3.3	3.7	0.4	Farmland of Local Importance
	6.1	6.3	0.2	Prime Farmland if irrigated
	6.4	6.5	0.1	Farmland of Local Importance
	6.5	6.7	0.2	Farmland of Statewide Importance
	6.8	7.2	0.4	Farmland of Local Importance
	7.4	7.7	0.3	Farmland of Local Importance
	13.0	13.2	0.2	Farmland of Local Importance
	14.7	15.4	0.7	Farmland of Local Importance
	15.6	16.1	0.5	Farmland of Local Importance
	16.5	17.0	0.5	Farmland of Local Importance
18-1	3.3	3.9	0.6	Farmland of Local Importance
	4.0	4.2	0.2	Farmland of Local Importance
	4.3	4.5	0.2	Farmland of Local Importance

Source: NRCS Soil Survey Geographic (SSURGO) Database

No CRP land was identified in the study area.

Parks, Recreation, and Preservation Areas

Special Management Areas crossed by B2 are found in Table 3.6-46.

Table 3.6-46 Special Management Areas Crossed by the B2: Sheep Creek Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Special Management Area
11-4	20.2	22.8	0.6	South Pioneers SRMA
18-1	0.0	0.8	0.8	South Pioneers SRMA
18-1	1.2	2.3	1.1	South Pioneers SRMA
18-1	2.6	3.7	1.1	South Pioneers SRMA
18-1	13.9	15.2	1.3	Rocky Hills SRMA
18-1	15.5	20.1	4.6	Rocky Hills SRMA
18-1	62.7	64.2	1.5	Italian Peak Roadless Area

*Land and Water Conservation Site

The Dragging Y Ranch CE is held by MFWP and is located along Link 18-1 (from milepost 20.0 to 22.9).

Transportation and Access

The B2: Sheep Creek Route would cross Montana Secondary Routes 278 and 324. In addition, the route would cross a number of county, local, unnamed, and unimproved roads (see Volume I-C, Appendix H, Table 3.6-47).

Minerals and Energy

The 10-inch Yellowstone Pipeline (ConocoPhillips) is crossed by Link 2-1 (from milepost 14.2 to milepost 14.3).

MDEQ permitted opencut and hard rock mines crossed by B2 are presented in Table 3.6-48.

Table 3.6-48 MDEQ Permitted Opencut and Hard Rock Mines Crossed by the B2: Sheep Creek Route

Link	Milepost Begin	Milepost End	Distance	Opencut Mine/ Company	Hard Rock Mine/ Company	Sec.	T	R
11-4	7.6	7.9	0.3		Apex Abrasives Mill Tailings-Apex Abrasives Inc.	4, 5	4S	9W
18-1	13.4	14.5	1.1		Bannack-Robert Back	29, 30	8S	10W

B3: I-15 ROUTE

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Dillon Field Office), USDA Forest Service (BDNF), Reclamation, MDNRC, and MFWP. The 4.0-mile-wide study area for the B3: I-15 Route is located in Madison and Beaverhead counties. BLM public land represents 16 percent of the land crossed by B3, while the MDNRC makes up 32 percent. Private land represents 52 percent of the land traversed by this alternative route. Land jurisdiction crossed by B3 is depicted in Volume I-C, Appendix H, Table 3.6-49.

Existing and Planned Land Use

Residential

Platted subdivisions traversed by B3 are identified in Table 3.6-50 as presented below.

Table 3.6-50 Platted Subdivisions Crossed by the B3: I-15 Route

Link	Name	County	Milepost Begin	Milepost End	Distance (Miles)
11-3	Dutchman Springs Mountain Estates	Beaverhead	15.4	17.0	1.6
16-3	Sunset West	Beaverhead	1.6	1.9	0.3
	Town of Lima		25.7	26.3	0.6

Eleven (11) residential dwellings are located within 1,000 feet of the B3: I-15 Route.

Agriculture

No major farm support buildings (and other similar structures) were located within ½ mile and 150 feet of the centerline of the B3: I-15 Route.

Agricultural land (cropland) and rangeland/native vegetation crossed by B3 is presented in Table 3.6-51.

Table 3.6-51 Agricultural Lands Crossed by the B3: I-15 Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
11-3	0.7	6.2	5.5	Rangeland/Native Vegetation
	6.2	7.0	0.8	Irrigated Cropland Mechanized
	7.0	7.1	0.1	Dry Cropland
	7.2	7.4	0.2	Irrigated Cropland Mechanized
	8.4	10.0	1.6	Rangeland/Native Vegetation
	10.5	10.8	0.3	Irrigated Cropland Mechanized
	11.3	12.4	1.1	Rangeland/Native Vegetation
	12.5	12.6	0.1	Dry Cropland
	12.6	12.7	0.1	Irrigated Cropland (Other-Flood), Dry Cropland
	12.7	17.0	4.3	Irrigated Cropland (Other-Flood)
16-1	2.7	7.6	4.9	Rangeland/Native Vegetation
	11.2	12.3	1.1	Irrigated Cropland Mechanized
	12.6	12.7	0.1	Dry Cropland
	14.4	27.4	13.0	Rangeland/Native Vegetation
16-3	1.8	2.6	0.8	Rangeland/Native Vegetation
	3.0	3.4	0.4	Irrigated Cropland Mechanized
	3.8	8.9	5.1	Rangeland/Native Vegetation
	14.7	15.3	0.6	Dry Cropland
	18.9	20.4	1.5	Irrigated Cropland (Other-Flood)
	20.7	23.1	2.4	Irrigated Cropland Mechanized
	28.3	30.5	2.2	Rangeland/Native Vegetation
16-4	8.5	8.7	0.2	Rangeland/Native Vegetation

*Excludes CRP Land.

One registered apiary is crossed by the B3: I-15 Route. B3 crosses the apiary along Link 16-1 (from milepost 10.6 to milepost 10.9).

Important farmland crossed by B3 is presented in Table 3.6-52.

Table 3.6-52 Important Farmland Crossed by the B3: I-15 Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
11-3	3.2	3.4	0.2	Farmland of Local Importance
	4.1	4.5	0.4	Farmland of Local Importance
	5.3	5.5	0.2	Farmland of Local Importance
	5.6	6.0	0.4	Farmland of Local Importance
	6.6	6.7	0.1	Farmland of Local Importance
	6.7	7.0	0.3	Farmland of Statewide Importance
	7.0	7.1	0.1	Farmland of Local Importance
	7.1	7.4	0.3	Farmland of Statewide Importance
	12.4	12.5	0.1	Farmland of Local Importance
	12.8	13.9	1.1	Farmland of Local Importance
	13.9	14.1	0.2	Farmland of Statewide Importance
	14.1	14.7	0.6	Farmland of Local Importance
	14.7	15.0	0.3	Farmland of Statewide Importance
	15.0	16.7	1.7	Farmland of Local Importance
	16.9	17.3	0.4	Farmland of Local Importance
	17.4	18.9	1.5	Farmland of Local Importance
	19.0	19.2	0.2	Farmland of Local Importance
16-1	0.0	1.6	1.6	Farmland of Local Importance
	2.2	2.9	0.7	Farmland of Local Importance
	3.1	3.3	0.2	Farmland of Local Importance
	4.5	4.7	0.2	Farmland of Statewide Importance
	8.7	9.0	0.3	Prime Farmland if irrigated
	9.0	11.0	2.0	Farmland of Local Importance
	11.0	11.3	0.3	Farmland of Statewide Importance
	11.3	11.4	0.1	Prime Farmland if irrigated
	11.4	12.0	0.6	Farmland of Local Importance
	12.0	12.2	0.2	Prime Farmland if irrigated
	12.2	12.8	0.6	Farmland of Statewide Importance
	12.8	12.9	0.1	Farmland of Local Importance
	12.9	13.2	0.3	Farmland of Statewide Importance
	13.2	13.4	0.2	Farmland of Local Importance
	13.9	14.3	0.4	Farmland of Statewide Importance
	14.4	14.6	0.2	Farmland of Statewide Importance

Source: NRCS Soil Survey Geographic (SSURGO) Database

No CRP land was identified in the study area.

Parks, Recreation, and Preservation Areas

Special Management Areas crossed by the B3: I-15 Route are found in Table 3.6-53.

Table 3.6-53 Special Management Areas Crossed by the B3: I-15 Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Special Management Area
16-1	2.7	4.2	1.5	South Pioneers SRMA
16-1	5.5	6.3	0.8	South Pioneers SRMA
16-1	6.5	7.6	1.1	South Pioneers SRMA

*Land and Water Conservation Site

The Lowell Hildreth CE is held by the Montana Land Reliance and is located along Link 16-1 (from milepost 22.4 to 24.3). The CE constitutes an element of the natural heritage of the Beaverhead Valley and its scenic and aesthetic, open space, and ecological values including flora, fauna, soils, water resources, habitat for diverse species of wildlife such as elk, deer, trout and wildfowl.

Transportation and Access

The preferred route would cross I-15 and Montana Secondary Route 278. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. The B3: I-15 Route also crosses the UPRR (Volume I-C, Appendix H, Table 3.6-54).

Minerals and Energy

Federal authorized oil and gas leases crossed by B3 are presented in Table 3.6-55.

Table 3.6-55 Federal Authorized Oil and Gas Leases Crossed by the B3: I-15 Route

Link	Milepost Begin	Milepost End	Distance	Fluid Mineral
16-1	21.8	23.2	1.4	Oil and Gas
16-3	28.3	29.9	1.6	Oil and Gas

MDEQ permitted opencut and hard rock mines crossed by the B3: I-15 Route are presented in Table 3.6-56.

Table 3.6-56 MDEQ Permitted Opencut and Hard Rock Mines Crossed by the B3: I-15 Route

Link	Milepost Begin	Milepost End	Distance	Opencut Mine/ Company	Hard Rock Mine/ Company	Sec.	T	R
11-3	6.6	7.8	1.2		Nelson EE	4	4S	9W
16-3	24.0	24.5	0.5	Lima South		5	14S	8W

3.6.3.3 AB1: I-15 Jefferson Valley Route

The following discussion describes land use along the AB1: Jefferson Valley Route. Discussion, depending on the number of occurrences, is provided in narrative or table format. Specific locations of the land uses are delineated on the following maps located in Volume IV: Existing and Planned Land Use, Parks, Recreation, and Preservation Areas, and Minerals and Energy.

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Butte and Dillon Field Offices), USDA Forest Service (BDNF), Reclamation, MDNRC, and MFWP. The 4.0-mile-wide study area for the B3: I-15 Route is located in Broadwater, Jefferson, Silver Bow, Deer Lodge, Madison, and Beaverhead counties. BLM public land represents 20 percent of the land crossed by this alternative route, while NFS land comprises 3 percent. MFWP land comprises 1 percent of the land crossed while the MDNRC land makes up 19 percent. Private land represents 57 percent of the land traversed by this alternative route. Land jurisdiction crossed by the AB1: Jefferson Valley Route is depicted in Volume I-C, Appendix H, Table 3.6-57.

Existing and Planned Land Use

Residential

Platted subdivisions traversed by the AB1: Jefferson Valley Route are identified in Table 3.6-58 as presented below.

Table 3.6-58 Platted Subdivisions Crossed by the AB1: Jefferson Valley Route

Link	Name	County	Milepost Begin	Milepost End	Distance (Miles)
3-1	Tebay	Jefferson	29.7	31.0	1.3
7-2	Sunnyslope	Jefferson	4.6	5.0	0.4
	S&C #1, S&C #3	Jefferson	10.7	10.8	0.1
	S&C #3	Jefferson	10.8	11.3	0.5
7-42	Homestake Meadows Phase II	Silver Bow	2.2	3.0	0.8
7-5	Homestake Meadows Phase II	Silver Bow	0.0	0.3	0.3
	Redfern	Silver Bow	0.3	0.8	0.5
	Continental Acres #2, Redfern	Silver Bow	0.8	0.9	0.1
	Continental Acres #2, Redfern	Silver Bow	0.9	1.1	0.2
	Green Acres (Amend Lot 7, Block 6)	Silver Bow	1.3	1.4	0.1
7-8	Fleecer View-Phase II	Silver Bow	10.2	10.8	0.6
8	Anita Weaver	Jefferson	3.7	3.8	0.1
	Anita Weaver	Jefferson	3.8	3.9	0.1
	Bradford	Jefferson	3.9	4.1	0.2
Total					5.3

One (1) residential dwelling is located within 150 feet of the Preferred Route (Link 8 from milepost 36.9 to milepost 37.0).One hundred and thirty six (136) residential dwellings are located within 1,000 feet of the AB1: Jefferson Valley Route.

Agriculture

Table 3.6-59 provides the number of major farm support buildings (and other similar structures) within ½ mile and 150 feet of the centerline of the AB1: Jefferson Valley Route by link.

Table 3.6-59 Major Farm Support Buildings (and Other Similar Structures) within ½ mile and 150 feet of the Centerline of the AB1: Jefferson Valley Route

Link	Number within ½ Mile	Number within 150 Feet
1	1	---
7-2	4	---
7-41	2	1
7-42	3	---
7-5	13	---
7-8	45	---
11-22	2	---
11-21	3	---
8	14	1
Total	87	2

Agricultural land (cropland) and rangeland/native vegetation crossed by the AB1: Jefferson Valley Route is presented in Table 3.6-60.

Table 3.6-60 Agricultural Lands Crossed by the AB1: Jefferson Valley Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
1	0.0	0.3	0.3	Dry Cropland
	0.3	0.5	0.2	Irrigated Cropland (Mechanized), Dry Cropland
	0.5	1.5	1.0	Dry Cropland
	2.0	3.4	1.4	Irrigated Cropland (Mechanized)
	3.4	7.1	3.7	Rangeland/Native Vegetation
3-1	0.0	11.5	11.5	Rangeland/Native Vegetation
	12.4	13.4	1.0	Dry Cropland
	14.3	19.4	5.1	Rangeland/Native Vegetation
	21.9	22.6	0.7	Dry Cropland
	24.1	29.8	5.7	Rangeland/Native Vegetation
7-2	5.0	6.3	1.3	Rangeland/Native Vegetation
	6.8	7.2	0.4	Irrigated Cropland (Mechanized)
	7.2	8.4	1.2	Rangeland/Native Vegetation
	9.6	10.3	0.7	Dry Cropland
	10.6	12.2	1.6	Rangeland/Native Vegetation
7-41	0.0	5.1	5.1	Rangeland/Native Vegetation
7-9	1.4	1.8	0.4	Irrigated Cropland (Other-Flood)
8	0.0	0.1	0.1	Rangeland/Native Vegetation
	1.1	1.2	0.1	Dry Cropland
	1.2	1.4	0.2	Irrigated Cropland (Mechanized), Dry Cropland
	1.4	1.9	0.5	Dry Cropland
	1.9	2.0	0.1	Irrigated Cropland (Mechanized), Dry Cropland
	2.0	2.2	0.2	Irrigated Cropland (Mechanized)
	9.6	9.8	7.8	Irrigated Cropland (Other-Flood)
	15.1	45.1	30.0	Rangeland/Native Vegetation
	45.1	45.3	0.2	Irrigated Cropland (Mechanized)
	45.3	46.1	0.8	Rangeland/Native Vegetation
16-1	2.7	7.6	4.9	Rangeland/Native Vegetation
	11.2	12.3	1.1	Irrigated Cropland (Mechanized)
	12.6	12.7	0.1	Dry Cropland
	14.4	27.4	13.0	Rangeland/Native Vegetation
16-2	7.4	16.6	9.2	Rangeland/Native Vegetation
	16.6	17.3	0.7	Irrigated Cropland (Other-Flood)
	18.5	20.6	2.1	Rangeland/Native Vegetation
	20.6	21.2	0.6	Dry Cropland
	21.2	29.1	7.9	Rangeland/Native Vegetation
16-4	8.5	8.7	0.2	Rangeland/Native Vegetation
		Subtotal	3.8	Irrigated Cropland (Mechanized)
		Subtotal	8.9	Irrigated Cropland (Other-Flood)
		Subtotal	5.0	Dry Cropland
		Subtotal	193.4	Rangeland/Native Vegetation

*Excludes CRP Land.

Three registered apiaries are crossed by the Jefferson Alternative. Registered apiaries are traversed by the Jefferson Alternative along Link 3-1 (from milepost 28.5 to milepost 29.1), Link 8 (from milepost 3.5 to milepost 4.1), and Link 16-1 (from milepost 10.6 to milepost 10.9).

Important Farmland crossed by the AB1: Jefferson Valley Route, is presented in Table 3.6-61.

Table 3.6-61 Important Farmland Crossed by the AB1: Jefferson Valley Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
1	0.0	1.5	1.5	Prime Farmland if irrigated
	3.1	3.6	0.5	Prime Farmland if irrigated
	5.2	5.8	0.6	Farmland of Statewide Importance
	6.6	7.1	0.5	Farmland of Statewide Importance
	14.0	14.2	0.2	Farmland of Statewide Importance
	14.6	15.0	0.4	Farmland of Statewide Importance
3-1	0.0	0.1	0.1	Farmland of Statewide Importance
	2.7	2.9	0.2	Farmland of Statewide Importance
	3.0	3.2	0.2	Prime Farmland if irrigated
	3.2	4.7	1.5	Farmland of Statewide Importance
	12.3	12.7	0.4	Farmland of Statewide Importance
	12.8	13.0	0.2	Prime Farmland if irrigated
	13.0	14.4	1.4	Farmland of Statewide Importance
	14.6	14.8	0.2	Prime Farmland if irrigated
	17.1	17.3	0.2	Farmland of Statewide Importance
	17.4	17.6	0.2	Farmland of Statewide Importance
	19.2	19.8	0.6	Farmland of Statewide Importance
	19.9	20.1	0.2	Farmland of Statewide Importance
	22.1	22.3	0.2	Farmland of Local Importance
	22.4	22.6	0.2	Farmland of Statewide Importance
	23.3	23.6	0.3	Farmland of Local Importance
	23.6	23.8	0.2	Farmland of Statewide Importance
	23.8	24.0	0.2	Farmland of Local Importance
	24.5	24.6	0.1	Farmland of Local Importance
	24.7	24.8	0.1	Prime Farmland if irrigated
	24.8	24.9	0.1	Farmland of Local Importance
	25.3	25.4	0.1	Farmland of Local Importance
	25.4	25.8	0.4	Farmland of Statewide Importance
	25.9	26.1	0.2	Farmland of Statewide Importance
	29.4	29.9	0.5	Farmland of Local Importance
7-2	4.7	4.8	0.1	Prime Farmland if irrigated
	4.8	5.0	0.2	Farmland of Statewide Importance
	5.0	5.4	0.4	Prime Farmland if irrigated
	5.4	5.7	0.3	Farmland of Local Importance
	5.7	5.8	0.1	Farmland of Statewide Importance
	5.8	6.3	0.5	Farmland of Local Importance
	6.3	6.6	0.3	Farmland of Statewide Importance
	7.0	7.2	0.2	Prime Farmland if irrigated
	7.5	8.4	0.9	Farmland of Statewide Importance
	8.5	8.6	0.1	Prime Farmland if irrigated
	8.6	10.4	1.8	Farmland of Statewide Importance
	10.5	11.9	1.4	Farmland of Statewide Importance
7-41	0.0	0.1	0.1	Prime Farmland if irrigated
	0.1	0.2	0.1	Farmland of Local Importance
	0.2	0.5	0.3	Farmland of Statewide Importance

Table 3.6-61 Important Farmland Crossed by the AB1: Jefferson Valley Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
	0.5	0.6	0.1	Farmland of Local Importance
	0.9	1.0	0.1	Prime Farmland if irrigated
	1.0	1.2	0.2	Farmland of Local Importance
	1.3	2.0	0.7	Farmland of Local Importance
7-8	1.9	2.5	0.6	Farmland of Statewide Importance
8	0.1	0.2	0.1	Prime Farmland if irrigated
	0.2	0.7	0.5	Farmland of Local Importance
	0.9	1.1	0.2	Prime Farmland if irrigated
	1.2	2.0	0.8	Farmland of Statewide Importance
	2.0	2.1	0.1	Prime Farmland if irrigated
	2.1	2.2	0.1	Farmland of Statewide Importance
	2.2	2.3	0.1	Prime Farmland if irrigated
	2.3	3.5	1.2	Farmland of Statewide Importance
	3.9	4.3	0.4	Farmland of Statewide Importance
	4.8	6.5	1.7	Farmland of Statewide Importance
	9.6	9.8	0.2	Prime Farmland if irrigated
	9.9	10.4	0.5	Farmland of Local Importance
	10.8	10.9	0.1	Farmland of Local Importance
	10.9	11.0	0.1	Prime Farmland if irrigated
	11.1	11.4	0.3	Farmland of Statewide Importance
	12.1	12.4	0.3	Farmland of Local Importance
	13.7	14.0	0.3	Farmland of Statewide Importance
	14.4	14.7	0.3	Farmland of Local Importance
	23.7	24.2	0.5	Farmland of Local Importance
	24.4	24.9	0.5	Farmland of Local Importance
	37.0	37.5	0.5	Farmland of Local Importance
	37.5	37.6	0.1	Prime Farmland if irrigated
	37.8	38.2	0.4	Prime Farmland if irrigated
	38.5	38.7	0.2	Prime Farmland if irrigated
	39.0	39.2	0.2	Farmland of Statewide Importance
	39.6	40.1	0.5	Prime Farmland if irrigated
	41.5	42.3	0.8	Farmland of Local Importance
	42.7	42.9	0.2	Prime Farmland if irrigated
	42.9	43.3	0.4	Farmland of Local Importance
	43.3	43.4	0.1	Prime Farmland if irrigated
	43.4	44.2	0.8	Farmland of Statewide Importance
	44.2	45.1	0.9	Prime Farmland if irrigated
	45.1	45.4	0.3	Farmland of Statewide Importance
	45.4	46.1	0.7	Prime Farmland if irrigated
	46.1	47.4	1.3	Farmland of Local Importance
	47.5	47.6	0.1	Farmland of Local Importance
	47.7	48.2	0.5	Prime Farmland if irrigated
	48.2	50.3	2.1	Farmland of Local Importance
16-1	0.0	1.6	1.6	Farmland of Local Importance
	2.2	2.9	0.7	Farmland of Local Importance
	3.1	3.3	0.2	Farmland of Local Importance
	4.5	4.7	0.2	Farmland of Statewide Importance

Table 3.6-61 Important Farmland Crossed by the AB1: Jefferson Valley Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
	8.7	9.0	0.3	Prime Farmland if irrigated
	9.0	11.0	2.0	Farmland of Local Importance
	11.0	11.3	0.3	Farmland of Statewide Importance
	11.3	11.4	0.1	Prime Farmland if irrigated
	11.4	12.0	0.6	Farmland of Local Importance
	12.0	12.2	0.2	Prime Farmland if irrigated
	12.2	12.8	0.6	Farmland of Statewide Importance
	12.8	12.9	0.1	Farmland of Local Importance
	12.9	13.2	0.3	Farmland of Statewide Importance
	13.2	13.4	0.2	Farmland of Local Importance
	13.9	14.3	0.4	Farmland of Statewide Importance
	14.4	14.6	0.2	Farmland of Statewide Importance
		Subtotal	8.7	Prime Farmland if irrigated
		Subtotal	20.6	Farmland of Statewide Importance
		Subtotal	16.7	Farmland of Local Importance

Source: NRCS Soil Survey Geographic (SSURGO) Database

CRP land is crossed by Link 1 from milepost 0.4 to milepost 0.8.

One Superfund Site (Anaconda Co. Smelter/MTV093291656) is crossed by Link 7-9 from milepost 2.7 to 2.8.

Parks, Recreation, and Preservation Areas

Special Management Areas crossed by the AB1: Jefferson Valley Route are found in Table 3.6-62.

Table 3.6-62 Special Management Areas Crossed by the AB1: Jefferson Valley Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Special Management Area
1	1.4	2.4	1.0	Toston Reservoir/Missouri River Proposed SRMA
3-1	5.4	5.9	0.5	Elkhorn Mountains Proposed ACEC
	7.9	8.4	0.5	Elkhorn Mountains Proposed ACEC
7-2	11.2	11.8	0.6	Pipestone Proposed ACEC
7-41	0.3	0.7	0.4	Pipestone Proposed ACEC
7-41	1.1	2.3	1.2	Pipestone Proposed ACEC
7-41	2.4	5.4	3.0	Pipestone Proposed ACEC
8	34.3	34.6	0.3	Lower Big Hole River SRMA
8	35.3	36.4	1.1	Lower Big Hole River SRMA
11-21	0.1	1.1	1.0	Mount Hagen Wildlife Management Area
11-22	1.2	1.6	0.4	Mount Hagen Wildlife Management Area
16-1	2.7	4.2	1.5	South Pioneers SRMA
16-1	5.5	6.3	0.8	South Pioneers SRMA
16-1	6.5	7.6	1.1	South Pioneers SRMA
		Subtotal	6.2	Existing
		Subtotal	7.2	Proposed

*Land and Water Conservation Site

The Arrigoni CE is held by the Montana Land Reliance and is located along Link 8 (from milepost 9.6 to milepost 11.3).

Transportation and Access

The AB1: Jefferson Valley Route would cross I-90 and I-15, U.S. Highway 287, Montana Primary Routes 2 and 69, and Montana Secondary Route 278. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. The AB1: Jefferson Valley Route also crosses the Montana Rail Link, Burlington Northern and Santa Fe Railway, and UPRR (see Volume I-C, Appendix H, Table 3.6-63).

Minerals and Energy

Link 8 crosses BLM's Silver Star Mineral Material Site from milepost 17.3 to milepost 17.7 and BLM's Rochester Pit Mineral Material Site from milepost 26.1 to milepost 26.5.

MDEQ permitted opencut and hard rock mines crossed by AB1 are presented in Table 3.6-64.

Table 3.6-64 MDEQ Permitted Opencut and Hard Rock Mines Crossed by the AB1: Jefferson Valley Route

Link	Milepost Begin	Milepost End	Distance	Opencut Mine/ Company	Hard Rock Mine/ Company	Sec.	T	R
3-1	1.8	3.0	1.2		Ted Roberts	16	5N	1E
	3.0	3.4	0.4	Keating Gulch Mine		20	5N	1E
	31.7	32.3	0.6		Huckaba Pit-LR Huckaba Ranch	34	2N	3W
7-2	0.3	2.1	1.8		Golden Sunlight-Golden Sunlight Mines Inc.	18, 19, 20, 28, 29, 30, 32, 33, 6	2N, 1N	3W
7-41	1.1	2.3	1.2		Pipestone Quarry-URS Group	20	2N	5W
7-9	0.7	1.1	0.4	Bonneville Centennial Concrete-Centennial Concrete		17	4N	10W
8	15.1	16.3	1.2		Coronado Resources LTD	2	2S	6W
	17.3	17.7	0.4		Antler Chlorite Mine-Luzenac America Inc.	14	2S	6W
	18.4	18.5	0.1		Reef; Bull Dog; Twilight-Golden Rod Mining Co.	22	2S	6W
	37.4	37.6	0.2		RE Miller and Sons	36	4S	8W
Total			7.5					

COMPARISON OF ALTERNATIVE ROUTES

Land use alternative route comparison summaries are provided in Tables 3.6-65 and 3.6-66.

Table 3.6-65 Land Use Summary Comparison (number of miles crossed)

	Townsend – Mill Creek (Melrose)			Mill Creek – State Line		
Land Use Category	**A1: Preferred Route**	**A2: Parallel Colstrip Lines Route**	**A3: Maximize Utility Corridors**	**B1: Preferred Route**	**B2: Sheep Creek Route**	**B3: I-15 Route**
LAND JURISDICTION						
BLM	10.4	20.1	9.9	20.5	44.8	14.4
USDA Forest Service	6.5	32.2	6.5	---	2.3	---
Reclamation	---	---	1.1	---	---	---
MFWP	1.4	1.4	1.5	---	---	---
MDNRC	9.9	1.9	8.0	29.5	6.1	28.4
Private	84.4	66.1	101.5	36.8	33.7	45.4
EXISTING AND PLANNED LAND USE						
Platted Subdivision	5.5	7.7	7.5	1.6	0.0	2.5
Cropland						
Mechanically Irrigated	2.5	2.3	2.6	1.8	1.7	4.6
Other Irrigated-Flood	1.1	1.1	1.4	1.5	1.1	2.3
Dry Cropland	4.1	1.9	4.1	1.0	1.0	1.0
Important Farmland	20.4	8.2	21.4	16.1	4.5	16.1
CRP Land	0.4	0.4	5.2	0.0	0.0	0.0
PARKS, RECREATION, AND PRESERVATION AREAS						
Special Management Area						
Existing	7.2	12.3	5.8	19.1	11.0	4.4
Proposed	2.0	3.0	3.2	19.9	---	---
Conservation Easement	1.5	1.5	1.8	1.9	2.9	1.9
MINERALS AND ENERGY						
Active Mining Claim	4.4	10.1	2.2	0.0	2.2	0.0
MDEQ Permitted Mine	6.7	9.4	6.9	1.2	1.4	1.7

Table 3.6-66 Land Use Summary Comparison (Number of Residential and Major Farm Support Buildings/Other Similar Structures) Occurrences

	Townsend – Mill Creek (Melrose)			Mill Creek – State Line		
Distance	**A1: Preferred Route**	**A2: Parallel Colstrip Lines Route**	**A3: Maximize Utility Corridors**	**B1: Preferred Route**	**B2: Sheep Creek Route**	**B3: I-15 Route**
NUMBER OF RESIDENTIAL DWELLINGS						
Within 1,000 feet of Centerline	90	32	132	9	8	11
Within 150 feet of Centerline	1*	0	2*	0	0	0
NUMBER OF MAJOR FARM SUPPORT BUILDINGS (AND OTHER SIMILAR STRUCTURES)						
Within ½ mile of Centerline	82	25	178	0	17	0
Within 150 feet of Centerline	1**	0	1	0	0	0

***** Residence would require removal if transmission line is not re-routed.

**Potential conflict

3.6.4 DESCRIPTION OF ALTERNATIVE ROUTES - IDAHO

Overview

The alternative routes are located on federal, state, and private lands in portions of Butte, Power, Blaine, Jerome, Lincoln, Minidoka, Clark, Jefferson, Bingham, and Bonneville counties. The study area is generally characterized by forested mountians, lava beds, rolling hills, sagebrush plains, and relatively level farmlands. Regional land uses include livestock ranching, wildlife management, mineral and energy production, crop production, and recreation. Recreation primarily consists of hunting, fishing, winter snow sports, wilderness backpacking and river rafting. Major designated land uses in the area include the INL and Craters of the Moon National Monument and Preserve.

Existing land uses within the study area are diverse (see Volume IV- Maps, Existing and Planned Land Use, Parks, Recreation, and Preservation Areas, and Minerals and Energy), and include residential, commercial, public/quasi public, industrial, linear facilities, agriculture, air facilities, Superfund sites, parks, recreation, and preservation areas, transportation, and mineral extraction uses.

Existing and Planned Land Use

Residential

Residences are dispersed throughout the study area, but are present in greater concentrations along major transportation routes. The communities of Atomic City, Butte City, Dietrich, Hamer and Richfield are the only incorporated communities within the study area. Other population centers include unincorporated communities, as well as large-lot rural residential development and farmsteads. Farmsteads represent isolated residential structures with structures associated with farming or ranching operations. Outside of the communities, residential development is scattered throughout the study area in an open and rural environment. Some recreational cabin and second home development also exists, primarily in the Carey and Picabo areas.

Until recently, subdivision activity in the study area had increased significantly over the past years. Concentrations of subdivided lands primarily occur in and around the communities of Carey and Picabo.

New development in the study area is likely to occur adjacent to previously developed areas in order to minimize the need to expand infrastructure and to avoid urban sprawl. The characteristics that define prime agricultural lands are also attractive to developers for construction purposes.

Commercial, Public/Quasi-Public, Industrial

Commercial, public/quasi-public, and industrial development in the study area is primarily found in or around incorporated and unincorporated communities. Commercial uses include retail, convenience, and service establishments. Commercial uses also exist near the on/off ramps of I-15, state highways and main traffic routes in the communities. Commercial microwave, cellular and radio towers are generally located in and around communities, along major roadways, and on mountain peaks. A communication tower lease site is also located on State of Idaho endowment land (T1N R22E S36). There are three schools within the study area (see Volume I-C, Appendix H, Table 3.6-67).

Industrial use is, for the most part, agriculture-related and includes small manufacturing and processing plants. Processing plants consist of facilities used to process potatoes, sugar beets, and wheat.

In operation since 1949, the INL is a science-based, applied engineering national laboratory dedicated to supporting the U.S. Department of Energy's (DOE) missions in nuclear and energy research, science, and national defense. The INL occupies approximately 890 square miles (570,000 acres) of land and is operated for the DOE by Battelle Energy Alliance and partners. INL operations are performed within the site's primary facility areas (i.e., Central Facilities Area, Test Reactor Area, Idaho Nuclear Technology and Engineering Center, etc.), which occupy 2,032 acres. A 345,000-acre security and safety buffer zone surrounds the developed area.

Linear Facilities

The study area is crossed by electrical transmission lines owned and operated by PacifiCorp, Bonneville Power Administration, and Idaho Power Company; numerous sub-transmission and distribution lines (both aerial lines and buried cable); petroleum pipelines (Intermountain Gas); and other utility features. Other utility features include long distance and local telephone aerial wires; buried copper and fiber optic cables; aerial and buried cable television lines; gas lines, domestic water lines, and water conveyance systems (canals, laterals and ditches). Electrical substations, minor substations, and a number of water pumping stations were also inventoried within the study area. One major canal, Reclamation's Milner-Gooding Canal, is also located in the study area. The canal, a component of the Minidoka Project, irrigates Lincoln, Jerome, Twin Falls, and Gooding Counties. The 70-mile canal extends to the North Gooding Main Canal northwest of Shoshone. The canal and its connecting laterals furnish a water supply for 20,000 acres and a supplemental supply for 78,667 acres. The initial capacity of the canal is 2,700 cubic feet per second.

Agriculture

Agricultural lands (crops and livestock) are present in the study area. Crops include irrigated and non-irrigated (dryland) field crops in the lowlands and pasture land for grazing in the uplands. Where conditions are favorable, wheat, alfalfa, sugar beets, barley, hay, potatoes and other crops (e.g., onions, corn and apples), are grown. Irrigation water diverted from the Snake River and distributed through canals and laterals, along with wells, allow production of potatoes, sugar beets, and wheat. Dryland farming of winter wheat is also evident in the study area. Specific irrigation methods used in the field (sprinkler and flood or sub-irrigated) also vary depending on soil properties, topography, and cost. Most of the new water development in the study area has been sprinkler irrigation (primarily center pivot). Aerial spraying (crop dusting) is used to control insects, weeds, and diseases in some agricultural areas. Crop type at any one location is variable and occasionally in fallow. Irrigated pasture supports a large livestock industry, consisting of beef and dairy cattle.

A large amount of range acreage (rangeland/native vegetation) provides forage for livestock. Livestock grazing occurs in most cover types, especially sagebrush in the plain areas. Livestock is typically grazed on privately owned land and publicly owned grazing allotments. Allotments are primarily managed by the BLM or USDA Forest Service. Resource allocation within an allotment is based on AUMs. Domestic livestock permitted to graze on allotments in the study area consist primarily of cattle and sheep.

Grazing preference is defined as the total number of AUMs within a grazing allotment that the agency has allocated for livestock use, to be used by qualified operators that own or control land suitable as base property. Grazing use in the allotment is authorized through issuance of grazing permits or leases. The permits and leases and attendant activity plans describe the livestock class, intensity, duration, and timing of grazing as well as fences, water developments, and other range improvements to be installed. Livestock use is licensed from seasonal to year-long use. Up to 340,000 acres of the INL are leased for cattle and sheep grazing through the BLM. However, grazing of livestock is prohibited within one-half mile of any primary facility boundary and within 2.0 miles of any nuclear facility.

The USDA Agricultural Research Service, U.S. Sheep Experiment Station, is also located in the study area. The Experiment Station is situated in the upper Snake River Plain at the foothills of the Centennial Mountains, approximately six miles north of Dubois. The mission of the U.S. Sheep Experiment Station is to develop integrated methods for increasing production efficiency of sheep and to simultaneously improve the sustainability of rangeland ecosystems. Lands are used for grazing and rangeland research. Nine hundred acres of the INL, located at the junction of Idaho State Highways 28 and 33, are used by the Experiment Station as a winter feedlot for sheep.

Grazing allotments/pastures crossed by the alternative route links in Idaho are found in Volume II, Land Use Technical Report.

The IDL is responsible for the management of agricultural leasing activities, including cropland and grazing leases, on Idaho state endowment lands. Most leasing on IDL lands in the study area are grazing related.

Important Farmland (prime farmland, prime farmland if irrigated, farmland of statewide importance, and farmland of local importance) designated by the NRCS is located in the study area.

Some land in the study area is also set aside under the CRP. The CRP is administered by the USDA Farm Service Agency (FSA) and encourages farmers to convert highly erodable cropland and other environmentally sensitive acreage to vegetative cover such as native grasses, wildlife plantings, trees, and riparian buffers.

Military

No current military withdrawals, military operating areas or military training routes were identified within the study area.

Air Facilities

Air facilities include public and private use airports were identified from recent FAA Sectional Aeronautical Charts and Idaho Transportation Department (ITD) Maps. Airports registered with the FAA in the study area and vicinity can also be found in Volume II, Land Use Technical Report. Public airports located within or in the vicinity of the study area include Carey, Hollow Top, Coxs Well, Jerome, Bear Trap, American Falls, Aberdeen, Midway, Arco-Butte Co., Dubois, Mud Lake, Howe, Antelope Valley, and Big Southern Butte. The Picabo Airport (private) was also identified in the study area. Other private airports or airstrips may exist within or near the study area. These air facilities may serve property owners, ranching and farming operations, aerial applicators associated with agricultural producers, etc.

In addition to established airports and fixed wing traffic, helicopters and other aircraft may be utilized in the study area and vicinity thereof. An active wildfire season increases spotting and suppression activities by air and heliports may be set up in many locations. Other locations, such as hospitals, have frequent helicopter traffic conducting medical transports.

Superfund Sites

One federal Superfund (NPL) Site, Idaho National Engineering Laboratory, is situated in the study area. INL facilities (test reactor area, central facilities area, and Idaho chemical processing plant) have all contributed contaminants to the Snake River Plain Aquifer. Approximately 17,300 tons of hazardous materials were deposited at the test reactor area via a 560-foot injection well extending 100 feet into the Snake River Plain Aquifer and also into numerous unlined ponds and an earthen ditch. The materials included chromium-contaminated cooling tower blowdown water, waste solvents, sulfuric acid, radionuclides, and laboratory wastes.

In July 1987, the EPA and the Idaho National Engineering Laboratory signed a consent Order and Compliance Agreement under Section 3008(h) of the Resource Conservation and Recovery Act (RCRA) calling for investigation and cleanup.

In accordance with the Federal Facility Agreement and Consent Order (FFA/CO) (DOE-ID 1991a), the INL Site was divided into 10 waste area groups (WAGs) to facilitate remedial design/remedial action (RD/RA). WAGs 1 through 9 correspond to the primary facility areas at the INL Site. WAG 10 corresponds to the portion of the Snake River Aquifer beneath the INL Site and to surface and subsurface areas not included with Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) sites identified in facility-specific Records of Decision (RODs). The

FFA/CO also established OUs for specific remedial activities within the WAGs (WAG 8 was not included).

According to the DOE, Idaho Operations Office 2007 Report "Five-Year Review of CERCLA Response Actions at the INL, Idaho Cleanup Project", remedial actions have been completed at WAGs 2, 4, 5, 6, and 9 and remediation is ongoing at WAGs 3, 7, and 10. WAG 8 was not included in the report, because it does not fall under the jurisdiction of the DOE Idaho Operations Office. Remedial investigations are yet to be completed for OUs 3-14, 7-13/14, and 10-08.

Parks, Recreation, and Preservation Areas

The study area and region contains a number of recreational opportunities that vary with seasonal changes as well as other areas with special management designations (see Parks, Recreation, and Preservation Areas map, Volume III). Recreation and tourist attractions in the surrounding region include Craters of the Moon National Monument and Wilderness Area, Hell's Half Acre Wilderness Study Area, Black Canyon Wilderness Study Area, Camas National Wildlife Refuge, Market Lake Wildlife Management Area, North Lake State Wildlife Management Area, Caribou-Targhee and Salmon-Challis National Forests, and the Snake River. River recreation uses are an extremely important component of the recreation mix, providing opportunities for whitewater rafting and kayaking, floating, canoeing, fishing, picnicking, and other uses. Various reaches of river from Jackson Lake to below American Falls are regionally and nationally recognized for exceptional whitewater and blue ribbon trout fishing, and other waterborne recreation activities. Additional recreation and tourist attractions in the surrounding region include Yellowstone National Park, Grand Teton National Park, the Jackson Hole recreation complex, Sawtooth National Recreation Area, Sawtooth Wilderness Area, and Sawtooth National Forest.

The INL also provides recreational uses in the study area. Recreational uses of the INL include public tours of general facility areas and the Experimental Breeder Reactor-I, a National Historic Landmark. Controlled hunting is also permitted on the INL but is restricted to specific locations. These restricted hunts are intended to assist the Idaho Department of Fish and Game in reducing crop damage on adjacent private agricultural lands caused by wild game. INL is a designated National Environmental Research Park, functioning as a field laboratory set aside for ecological research and evaluation of the environmental impacts from nuclear energy development.

Both the Caribou-Targhee and Salmon-Challis National Forests provide a variety of yearlong, outdoor recreation. Activities on National Forest System (NFS) land includes camping, picnicking, hunting, fishing, float boating, hiking, horseback riding, cross-country skiing, snowmobiling, and sightseeing. Idaho outfitters and guides also provide recreational opportunities on NFS lands such as sightseeing, hunting, fishing, and rafting. Many of these activities are authorized by special use permits.

BLM contains substantial land holdings in the study area. The majority of these lands are in large blocks and managed for multiple uses. Recreational opportunities include both dispersed and developed activities, such as hunting, fishing, sightseeing, wildlife viewing, mountain biking, hang gliding, OHV and snowmobile use, cross country and alpine skiing, snowshoeing, hiking, camping, caving, river running and boating, horseback riding, and picnicking. The BLM administered Baker Caves is also located in the study area and is managed for its cultural resource values. The site represents a prehistoric resource and consists of a lava tube located in the lava fields of southern

Idaho. The cave was occupied for a short time about 1,000 years ago by occupants who apparently trapped a small bison herd consisting of at least 17 animals.

State endowment lands in the study area are generally available for mineral and agricultural leasing, as well as public recreation. A conservation easement on this land was identified southeast of Fish Creek Reservoir (T9N, R33E, S16). Recreational opportunities on this land include hunting, fishing, wildlife viewing, hiking, and snowmobiling.

Some municipalities offer museums, parks, baseball fields, rodeo grounds/fairgrounds, walking/hiking/bicycle trails, water sports, outdoor sports activities at schools, and other opportunities. Dietrich Park, located within the City of Dietrich, is located within the study area.

In addition to public lands, recreational opportunities exist on privately owned lands, including private campgrounds and resorts. Activities such as hunting and backcountry trips also may be permitted on privately owned land with landowner consent.

Special Management Area Designations

National Park

No National Parks are located in the study area. The closest designated National Parks are Yellowstone and Grand Teton, located approximately 40 miles east of the study area.

National Recreation Area

No National Recreation Area is located in the study area. The closest designated National Recreation Area is the Sawtooth National Recreation Area, located in Blaine County, Idaho.

Wilderness Areas

No wilderness areas are located in the Idaho study area. The closest designated wilderness area is the Craters of the Moon Wilderness Area located approximately four miles away. The Craters of the Moon Wilderness, designated on October 23, 1970, is located south of U.S. 93 entirely within the boundaries of the original Craters of the Moon National Monument.

Wilderness Study Areas

The following five WSAs are located in the study area: Hell’s Half Acre WSA, Great Rift WSA, Cedar Butte WSA, Lava WSA, and Shale Butte WSA. One of these WSAs (Great Rift WSA) has been designated within the boundaries of the Craters of the Moon National Monument.

Recommended Wilderness

One area (Italian Peak) within the study area has been recommended for wilderness designation. The Italian Peak area is located in the Caribou-Targhee National Forest.

National Monuments

Craters of the Moon National Monument and Preserve is located within the study area. The Monument encompasses approximately 738,000 acres of BLM- and NPS-administered federal land, 8,000 acres of state land, and 7,000 acres of private land.

On November 9, 2000, Presidential Proclamation 7373 expanded Craters of the Moon National Monument from roughly 54,000 acres to approximately 753,000 acres, including the 738,000 acres of federal land. The President signed this proclamation to ensure protection of the Great Rift volcanic rift zone and its associated features. The Proclamation also placed the lands under the administration of both the NPS and the BLM, with each agency having primary management authority over separate portions. In addition, on August 21, 2002, PL 107-213, 116 Statute [Stat.] 1052 designated the NPS portion of the expanded Monument as a National Preserve.

The Monument Management Plan documents the overall management strategy, developed by the NPS and BLM, for the Craters of the Moon National Monument and Preserve. The Plan applies only to the federal land within the Monument boundary. The Record of Decision was approved by both agencies in September 2006.

National Preserves

The Craters of the Moon National Monument and Preserve is located within the study area. See National Monuments section above.

National Wildlife Refuges

One National Wildlife Refuge (NWR) is located in the study area. The Minidoka NWR extends 25 miles along both shores of the Snake River, upstream from the Minidoka Dam, in south-central Idaho. Over half of the refuge is open water, with small patches of marsh that attract birds. The refuge is an important stopover area in the Pacific Flyway; concentrations of up to 100,000 ducks and geese occur during spring and fall migrations and close to 500 tundra swans can be seen as they migrate through in the spring. Colonial nesting birds, river otters, and mink feed upon the large populations of cold and warm water fish that flourish in shallow beds of submerged vegetation.

While the refuge must protect wildlife first, it does provide recreational opportunities. With minor exceptions, the entire refuge is open to public access and bank fishing, but vehicles are restricted to established roads. Waterfowl and small game hunting are allowed in designated areas. Boating and water sports, except swimming, are allowed April through September. Boat access is through Walcott State Park. Over 230 different species of birds have been seen on the Refuge, providing good opportunities for bird watchers.

National Historic Trails

A portion of the Oregon Trail (Goodale's Cutoff) is located in the study area. The trail, one of the main overland migration routes on the North American continent, was used by pioneers in wagons in order to settle new parts of the U.S. during the nineteenth century. Goodale's cutoff was an alternate route of the Oregon Trail that skirted the northern edge of the Craters of the Moon lava field.

A portion of the Nez Perce National Historic Trail is situated in the study area. The Nez Perce National Trail follows the same journey undertaken by a band of the Nez Perce Indian tribe in 1877 during their attempt to flee the U.S. Cavalry. The 1,170 (1,883 km) trail was created in 1986 as part of the National Trails System Act and is managed by the USDA Forest Service. The trail traverses through portions of Oregon, Idaho, Wyoming and Montana, and connects 38 separate sites across these four states that commemorate significant events which occurred to the Nez Perce during their attempt to escape capture by the U.S. Cavalry who were under orders to move the Indians onto a reservation.

The Forest Service is the lead agency for management of the Nez Perce National Historic trail. The Nez Perce National Historic Trail Compliance Management Plan was published in 1990, and guides management of the trail.

Areas of Critical Environmental Concern

No ACECs were identified in the study area.

Inventoried Roadless Areas

The following IRAs, by National Forest, were identified in the study area:

- Challis National Forest
  - #06-028 Wood Canyon Roadless Area.
- Caribou-Targhee National Forest
  - #961 Garfield Mountain Roadless Area
  - #945 Italian Peak Roadless Area

Each of these is discussed in more detail in the Land Use Technical Report, Volume II.

National Natural Landmarks

Two NNLs, Great Rift System and Hell's Half Acre Lava Field, were identified in the study area. Craters of the Moon National Monument encompasses most of the Great Rift System NNL, which was designated by the Secretary of the Interior in April 1968 for its geological significance and enlarged in 1980 in recognition of its biological significance. Hell's Half Acre Lava Field NNL, designated in January 1976, is a complete, young, unweathered, fully exposed pahoehoe lava flow and is an outstanding example of pioneer vegetation establishing itself on a lava flow. The center of the NNL is 20 miles west of Idaho Falls.

The Twenty Mile Trail is located in the Hell's Half-Acre Lava Field NNL. The trail consists of undeveloped trails, a short 0.5 mile loop trail and a 4.5 mile trail to the main rent of the Hell's Half-Acre flow. Trails are primitive and marked with poles across lava. A fire ring and other amenities are located at the trailhead. The trail is located near mile marker 287 of US 20.

Research Natural Areas

One NPS-managed RNA, Sand Kipuka, is located in the study area. The Sand Kipuka RNA is a 320-acre area surrounding Sand Kipuka, 12 miles east of Minidoka within the Wapi Lava Field. The Kipuka is one of the best remaining examples of native sagebrush steppe for the Snake River Plain. It is an example of a range condition in the absence of domestic livestock, and offers an opportunity to observe climax vegetation, as well as successional processes associated with natural disturbances such as fire. The site was designated for its long-term value as a reference area.

Ecosystem Reserve

On July 17, 1999, the Secretary of Energy and representatives of the U.S. Fish & Wildlife Service, BLM, and Idaho State Fish & Game Department designated 73,263 acres of the INL as the Sagebrush Steppe Ecosystem Reserve (SSER). The sagebrush steppe ecosystem was identified as critically endangered across its entire range by the National Biological Service in 1995. The INL SSER was designated to ensure this portion of the ecosystem receives special consideration. The designated INL SSER is located in the northwest corner of the INL.

The SSER Final Management Plan (2004) identified four management goals which are used as a framework to facilitate long-term health of the ecosystem. A report, Sensitive Animal Species Reserve, was released in November 2007. This report addresses the first goal, which is to "establish a baseline of resource data to identify and prioritize immediate needs for management adjustment." To meet this objective a project was conducted during 2007 to perform an inventory survey for selected sensitive animal species across the SSER.

Scenic Byways

Idaho has had officially recognized scenic routes since June of 1977. In 1991, the USFS, BLM, and the State of Idaho determined to combine the scenic routes and backcountry byways of each agency. The ITD was designated by the Governor as the lead agency responsible for administering the Idaho Scenic Byways Program to meet the requirements of the Surface Transportation Efficiency Act of 1991. Two state scenic byways (Sacajawea Historic Byway and Lost Gold Trails Loop) are located in the study area.

The Sacajawea Historic Byway (132 miles) begins at the intersection of I-15 and Idaho 33 at Exit 143, follows Idaho 33 approximately 12 miles west to its junction with Idaho 28, and follows 28 northwest for 120 miles to Salmon, Idaho. Idaho 28 parallels the Continental Divide for almost 100 miles. Other attractions include Mud Lake WMA, Prehistoric Man, Charcoal Kilns, Meadow Lake, Leadore Ranger Station/Visitor Center, Sacajawea Interpretive Center, and Lemhi County Historical Museum.

The Lost Gold Trails Loop (47.8 miles) begins on County Road A-2 at the "Y" Junction, west of Dubois, routing to Old Highway 91 north of Dubois, to Spencer, and then trailing east on Spencer/Idmon Road connecting to County Road A-2 and the Fort Henry Historic Byway. Special attractions include the Heritage Hall, Civil Defense Cave, Historic Dubois Hotel, U.S. Sheep Experiment Station, Medicine Lodge travertine mines, Wood Livestock Rock House, Beaver Canyon, Nez Perce Trail, and Spencer opal shops and mines.

Recreation Management Areas

One existing BLM (Shoshone Field Office) SRMA is present in the study area. Recreational opportunities provided by the SRMA include fishing.

State Access Areas

In Idaho, access areas consist of real property which is owned or controlled by the IFG to provide public access to public lands and waters. Three access areas (Bear Tracks Williams Sportsman Access, Preacher Bridge Sportsman Access, and Snake River Vista) were identified in the study area in Idaho.

State Roadside Rest Areas

One existing rest area (Dubois) was identified in the study area. The rest area is located along I-15 at milepost 167 and is closed during the winter.

Land and Water Conservation Fund Site

No LWCF sites were identified in the study area:

Private

Lava Lake Land and Livestock Company lands are located within the study area. The company, comprised of ranchers and environmentalists, was formed in 1999. The mission of Lava Lake is to conserve and restore native ecosystems at a landscape scale and to build an economically-viable and environmentally-sound business. The company has holdings of private land and public grazing leases totaling near 1,000,000 acres. In 2001, 7,500 acres of private land was permanently protected by putting it under a conservation easement held by The Nature Conservancy. The easement prevents the lands from being subdivided and is managed to maintain and improve habitat for wildlife.

Transportation and Access

Existing Roadway Network

In general, the transportation system in eastern Idaho connects communities, while facilitating access to farms, ranches, and businesses. These routes also carry residents and travelers to the region's natural attractions such as Craters of the Moon National Monument near Arco, the Salmon River, Land of the Yankee Fork near Challis, and the Sacajawea Center near Salmon.

Surface transportation in the study area and vicinity is provided by a network of federal, state, county, and other roads. As designated by the ITD, roads and highways fall into five main classifications. Principal arterials serve statewide and interstate transport. Minor arterials provide long distance access, mainly within the state. Major collectors serve key transportation routes, largely within the county. Minor collectors link local roads with major collectors or arterials. All other roads in the county are classified as local roads and are intended to service short distances, local traffic in developed areas or among neighboring rural locations. These roadways are typically owned and operated by the ITD, highway districts, and municipalities.

Roadways in the study area and vicinity include Interstates (I-15, I-86); U.S. Highways (US 20, US 26, US 30 and US 93); State Highways (Idaho 22, Idaho 24, Idaho 28, Idaho 29, Idaho 33, Idaho 39, Idaho 46, Idaho 75, and Idaho 87); USDA Forest Service and BLM roads; as well as local roads. USDA Forest Service and BLM roads provide public access to and across lands managed by the federal agencies and serve the needs of recreation and commerce (e.g., recreation, logging, ranching and mining). Reclamation's Milner-Gooding Canal maintenance roads are used for public access on Reclamation, BLM, and some private lands (if the underlying fee owner gives permission). General descriptions of the Interstates, U.S. Highways, and State Highways are provided below:

Interstates

- I-15 is the fourth-longest north-south transcontinental interstate highway in the U.S., traveling through the states of California, Nevada, Arizona, Utah, Idaho, and Montana. Since its inception I-15 has served as a long-haul route for North American commerce. I-15 runs south from the Montana state line through Idaho for nearly 200 miles. The highway passes through Pocatello, Blackfoot, and Idaho Falls.
- I-86 is located entirely within Idaho. It runs 63 miles from an intersection with I-84 to an intersection with I-15 at Pocatello. I-86 connects the major eastern Idaho cities of Pocatello and Idaho Falls with the State's Magic Valley region.

U.S. Highways

- US 20 is an east-west U.S. Highway that runs from the Montana state line at Targhee pass to the Oregon State line northwest of Parma.
- US 26 is an east-west U.S. Highway that runs from the Wyoming state line east of Irwin to the Oregon state line west of Parma.
- US 30 is an east-west U.S. Highway that runs from the Wyoming state line south of Montpelier to the Oregon State line west of Fruitland.
- US 93 is a north-south U.S. Highway that runs from the Montana state line at Lost Trail Pass to the Nevada state line south of Hamilton.

State Highways

- Idaho 22 (Dubois to Butte County)
- Idaho 24 (Burley to Shoshone)
- Idaho 28 (Salmon to I-15)
- Idaho 29 (Leadore to Montana State Line)
- Idaho 33 (Butte County to Wyoming State Line)
- Idaho 39 (Blackfoot to American Falls)
- Idaho 46 (Camas County to Wendell)
- Idaho 75 (Shoshone to Challis)
- Idaho 87 (US 20 to Montana State Line)

The INL also contains an onsite road system of approximately 87 miles of paved surface, including about 18 miles of paved service roads that are closed to the public.

Planned Roadway Improvement Projects

No regionally significant locally funded projects were identified in the study area. Projects which serve regional transportation needs are considered a regionally significant project.

Railroad Facilities

One major long-haul railroad, the Union Pacific Railroad (UPRR) is located in the study area. Farm products are a major commodity originated. Other commodities include lumber and wood products, food products, chemicals and non-metallic minerals.

Union Pacific Railroad's main line to the Pacific Northwest follows the Snake River across southern Idaho. Idaho Falls receives railroad freight service from Butte, Montana, to the north, and from Pocatello, Idaho and Salt Lake City, Utah to the south. The Union Pacific Railroad's Blackfoot-to-Arco Branch, which crosses the southern portion of the INL, provides rail service to the INL. This branch connects with a DOE-owned spur line at Scoville Siding, then links with developed areas within the INL.

Minerals and Energy

The study area has varied geology favorable for the occurrence of several mineral resources. Major mineral resources of interest include the non-energy leasable mineral phosphate; locatable minerals, such as gold, limestone, and zeolites; salable minerals, including sand, stone, gravel, and pumice; and fluid leasable minerals such as oil and gas and geothermal resources.

Leasable Fluid Minerals

Oil and Gas

There are no producing oil or gas fields in Idaho. Oil and gas discoveries in Wyoming and Utah during the 1970s indicate the potential for oil and gas within the Idaho-Wyoming Thrust Belt, but there are no oil fields in Idaho. Portions of the federal mineral estate and subsurface state trust land have been leased for oil and gas.

Coal Bed Methane

The potential for coal gas is very low in the study area.

Geothermal Resources

Geothermal resources occur most often in areas where there is anomalously high heat flow caused by volcanism or near-surface magma or some other exceptionally hot subsurface body. They often occur along fault or fracture zones where fracturing allows groundwater to circulate to depths such that it can be warmed significantly before it circulates back toward the surface.

The study area and vicinity have abundant geothermal resources, including both thermal springs, where warm or hot water comes to the surface naturally, and thermal wells, which must be drilled, developed, and sometimes pumped. These developed uses are "direct" uses, where the hot water is used for space heating, or for the hot water itself, and not primarily to generate electricity. Few of these developed resources exist and the potential for further prospects is unknown.

Leasable Solid Minerals

Coal

There are no federal coal leases within the study area and vicinity, but there is some Cretaceous-aged coal in the Fall Creek area of the Caribou Range. A four-foot interval of the Bear River Formation contains interbedded coal, clay, and limestone. Coal beds also form an outcrop to a minor extent at some other Idaho localities.

Oil Shale

High grade oil shale does not exist within the study area.

Sodium and Nitrate

There are no federal sodium or nitrate leases in the study area and vicinity. Based on current conditions, none are expected. However, there are small occurrences of both sodium and nitrate within the area.

Phosphate

As of 2007, Idaho's phosphate industry had three large open pit mines operating in Caribou County. These facilities mine phosphate rock from the Phosphonia Formation for use in fertilizers, chemicals and consumer products. Three processing plants are located in Pocatello and Soda Springs. Significant phosphate deposits exist in the Centennial Mountains on the Idaho-Montana state line. Much of this area is under the jurisdiction of the USDA Agricultural Research Service, though BLM administers the federal mineral estate.

Mining Claims

Active mining claims (recorded to the nearest quarter section) are scattered throughout much of the study area (refer to Land Use Technical Report, Volume II). An active claim is a pre-existing, legal right to explore for mineral resources, but does not necessarily indicate the existence of active commercial mining operations.

Saleable Minerals

The study area has potential for saleable minerals such as gravel, decorative stone, etc. There are numerous locations where mineral materials have been removed. Most of these sites are relatively small. The primary influencing factors for the location of sand and gravel pits are ease of access and proximity to market. Therefore, many pits are located alongside roads. Data and locations were available for the following mineral material sites within the study area (Table 3.6-68). Combined sales from these sites tend to be relatively low; however, the operations provide a public service by providing mineral material within close proximity to where they are needed.

Table 3.6-68 BLM Mineral Material Sites within the Study Area – Idaho

Material Location	Owner	Expiration Date
T8N R31E, S14	Mud Lake Water Users	04/14/2010
T8N R31E, S9	Birch Creek Power	01/14/2008
T9N R33E, S3	Mud Lake Water Users	09/21/2012
T9N R29E, S5, Lot 1	Community Pit	---
T7S R17E, S13	Community Pit (Mid Point)	---
T6S R20E, S35	Community Pit (Owinza)	---

Note: "Acres" represents acres within the project boundary or collection area and does not represent acres disturbed. Actual acres disturbed is usually much less.

Link 23 crosses a BLM Mineral Material Site (Mud Lake Water Users) from milepost 12.4 to milepost 13.6.

Idaho Department of Lands Permitted Mines

Idaho permitted surface mining operations are located in the study area. Mines may be broken into categories based on mineral type: hardrock (metallic ores such as gold, silver, zinc, and cobalt); agricultural minerals (phosphate, lime); energy minerals (coal); placer deposits (gold, silver, garnets); industrial minerals (limestone, pumice, perlite, clay, sand and gravel); decorative stone (Oakley Stone, limestone), and other miscellaneous materials. Under Idaho law, all surface mines are required to return the land to an acceptable post-closure state. Typically, a post-closure plan addresses water runoff and sediment control, infiltration of water to tailing and waste dumps, reclamation of disturbed lands through land contouring/shaping, seeding and revegetation, etc. These activities are bonded in an effort to ensure completion.

Abandoned Mine Lands

Abandoned mine lands (old mine workings) are found throughout Idaho on land administered by BLM, USDA Forest Service, and the Idaho Department of Lands as well as on private land patented under the General Mining Law. The Idaho Geologic Survey has contracted with land agencies to inventory and characterize mine sites throughout Idaho for health and safety. Sites are rated as high, medium or low risk. After being rated, the sites are prioritized, and remediated by the federal and state agencies as funds allow.

Renewable Energy

In cooperation with the National Renewable Energy Laboratory (NREL), BLM assessed renewable energy resources on public lands in the western U.S. The assessment reviewed the potential for concentrated solar power, photovoltaics, wind, biomass and geothermal on BLM, Bureau of Indian Affairs (BIA) and NFS lands in the west. The BLM/NREL study identified the Upper Snake Field Office as one of the top 25 BLM planning units having high potential for wind energy development. The study takes into consideration certain screening factors such as wind velocity, proximity to roads and electric transmission facilities, the degree to which state and local policies support wind energy development, and environmental compatibility criteria in the rating of these planning areas.

Proposals for renewable energy development in the study area would be considered on a case-by-case basis.

3.6.4.1 Stateline to Midpoint

The following discussion describes land use along the four alternative routes. Discussion, depending on the number of occurrences, is provided in narrative or table format. Specific locations of the land uses are delineated on the following maps located in Volume IV: Existing and Planned Land Use, Parks, Recreation, and Preservation Areas, and Minerals and Energy.

C1: PREFERRED ROUTE

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Upper Snake, Burley, and Shoshone Field Offices), USDA Forest Service (Caribou-Targhee National Forest), USDA Agricultural Research Service (Sheep Experiment Station), DOE (INL), Reclamation, and Idaho Department of Lands (IDL). For purposes of this study, state land is defined as any land surface under the jurisdiction of the IDL or the Idaho Department of Fish and Game (IDFG). State lands may also be administered by such agencies as the ITD.

DOE is the designated federal agency with the responsibility and authority for effectively managing the INL lands in accordance with a series of Land Withdrawal Public Land Orders (PLO), PLO 318, PLO 545, PLO 637, and PLO 691 that include approximately 506,000 acres. In addition, approximately 21,000 acres of state land and 43,000 acres of private land were transferred to DOE ownership and management, for a total of approximately 570,000 acres.

The 4.0 mile wide study area for the C1: Preferred Route is located in Bingham, Blaine, Butte, Clark, Jefferson, Jerome, Lincoln, Minidoka, and Power counties. Land jurisdiction crossed by C1 is depicted in Table 3.6-69.

Table 3.6-69 Land Jurisdiction Crossed by the C1: Preferred Route

Land Jurisdiction	Miles	Percent
Bureau of Land Management	117.9	51
USDA Forest Service	5.5	2
USDA Agricultural Research Service	6.1	3
U.S. Department of Energy	38.5	17
Reclamation	0.3	0+
Idaho Department of Lands	7.9	3
Private	56.5	24

Source: INSIDE Idaho

Existing and Planned Land Use

<u>Residential</u>

One (1) residential dwelling is located within 150 feet of C1 (Preferred Route). The residence is located along Link 20 between milepost 7.1 and milepost 7.2. Six (6) residential dwellings are located within 1,000 feet of C1.

Agriculture

One (1) major farm support building (or other similar structure type) is located within 150 feet of the centerline of C1.

Agricultural land (cropland) and rangeland/native vegetation crossed by C1 is presented in Table 3.6-70.

Table 3.6-70 Agricultural Lands Crossed by the C1: Preferred Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
20	0.0	19.6	19.6	Rangeland/Native Vegetation
22	5.4	5.6	0.2	Non-Irrigated Cropland
	7.4	11.8	4.4	Rangeland/Native Vegetation
	14.7	14.9	0.2	Non-Irrigated Cropland
	14.9	25.3	10.4	Rangeland/Native Vegetation
23	0.0	7.1	7.1	Rangeland/Native Vegetation
	7.7	8.4	0.7	Irrigated Cropland
	8.4	29.0	20.6	Rangeland/Native Vegetation
24	0.0	28.4	28.4	Rangeland/Native Vegetation
26-1	0.0	16.7	16.7	Rangeland/Native Vegetation
26-2	0.0	8.0	8.0	Rangeland/Native Vegetation
	10.4	10.6	0.2	Non-Irrigated Cropland
	10.6	10.8	0.2	Irrigated Cropland, Non-Irrigated Cropland
	10.8	11.4	0.6	Non-Irrigated Cropland
	11.4	27.7	16.3	Irrigated Cropland
	27.7	27.8	0.1	Rangeland/Native Vegetation
26-3	0.0	38.2	38.2	Rangeland/Native Vegetation
26-4	0.0	40.9	40.9	Rangeland/Native Vegetation
	40.9	41.6	0.7	Irrigated Cropland
	41.6	47.1	5.5	Rangeland/Native Vegetation
27	0.0	0.3	0.3	Rangeland/Native Vegetation
		Subtotal	17.9	Irrigated Cropland
		Subtotal	1.2	Non-Irrigated Cropland
		Subtotal	200.2	Rangeland/Native Vegetation

*Excludes CRP Land.

Important farmland is also located in the study area. Important farmland crossed by C1 is presented in Table 3.6-71.

Table 3.6-71 Important Farmland Crossed by the C1: Preferred Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
23	8.3	10.9	2.6	Prime Farmland if irrigated
26-1	13.3	16.7	3.4	Prime Farmland if irrigated
26-2	0.0	1.1	1.1	Prime Farmland if irrigated
	6.9	8.8	1.9	Prime Farmland if irrigated
	9.0	9.2	0.2	Prime Farmland if irrigated
	10.0	13.2	3.2	Prime Farmland if irrigated
	13.3	13.7	0.4	Prime Farmland if irrigated
	13.8	15.5	1.7	Prime Farmland if irrigated
	15.7	16.5	0.8	Prime Farmland if irrigated
	16.6	17.1	0.5	Prime Farmland if irrigated
	17.2	17.7	0.5	Prime Farmland if irrigated
	17.8	18.6	0.8	Prime Farmland if irrigated
	18.8	19.1	0.3	Prime Farmland if irrigated
	19.2	22.9	3.7	Prime Farmland if irrigated
	23.0	23.9	0.9	Prime Farmland if irrigated
	24.0	26.4	2.4	Prime Farmland if irrigated
26-3	27.5	28.0	0.5	Prime Farmland if irrigated
26-4	28.4	28.6	0.2	Prime Farmland if irrigated
	28.8	29.2	0.4	Prime Farmland if irrigated
	29.3	29.4	0.1	Prime Farmland if irrigated
	42.0	42.3	0.3	Prime Farmland if irrigated
	43.9	45.5	1.6	Prime Farmland if irrigated
	46.8	47.1	0.3	Prime Farmland if irrigated
TOTAL			27.8	Prime Farmland if irrigated

Source: NRCS Soil Survey Geographic (SSURGO) Database

CRP land is crossed by Link 22 from milepost 6.3 to milepost 6.5, from milepost 6.6 to 6.7, and from milepost 7.0 to milepost 7.5. Link 26-2 crosses CRP land from milepost 7.9 to milepost 8.9 and from milepost 14.8 to milepost 15.3.

Superfund Sites

One Superfund Site, Idaho National Engineering Lab (USDOE/ID4890008952) is crossed by Link 24 from milepost 19.0 to 21.0.

Parks, Recreation, and Preservation Areas

One Special Management Area, the Great Rift National Natural Landmark, is crossed by C1. Great Rift National Natural Landmark crosses Link 26-3 from milepost 9.6 to milepost 14.9.

Transportation and Access

C1 would cross I-15, US 20/26, and Idaho State Highways 22/33, 24, and 28. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. C1 would also cross the UPPR (see Volume I-C, Appendix H, Table 3.6-72).

Minerals and Energy

Link 23 crosses a BLM Mineral Material Site (Mud Lake Water Users) from milepost 12.4 to milepost 13.6.

C2: EASTERN ROUTE

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Upper Snake, Burley, and Shoshone Field Offices), USDA Forest Service (Caribou-Targhee National Forest), USDA Agricultural Research Service (Sheep Experiment Station), Reclamation, Idaho Department of Lands (IDL), and IDFG.

The 4.0 mile wide study area for the C1: Preferred Route is located in Bingham, Blaine, Butte, Bonneville, Clark, Jefferson, Jerome, Lincoln, Minidoka, and Power counties. Land jurisdiction crossed by the C2: Eastern Route is depicted in Volume I-C, Appendix H, Table 3.6-73.

Existing and Planned Land Use

Residential

One (1) residential dwelling is located within 150 feet of C2. The residence is located along Link 20 between milepost 7.1 and milepost 7.2. Five (5) residential dwellings are located within 1,000 feet of C2.

Agriculture

One (1) major farm support building (or other similar structure type) is located within 150 feet of the centerline of C2.

Agricultural land (cropland) and rangeland/native vegetation crossed by C2 is presented in Table 3.6-74.

Table 3.6-74 Agricultural Lands Crossed by the C2: Eastern Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
20	0.0	19.6	19.6	Rangeland/Native Vegetation
21	7.0	14.6	7.6	Rangeland/Native Vegetation
	14.6	14.9	0.3	Irrigated Cropland
	14.9	15.0	0.1	Rangeland/Native Vegetation
	15.6	15.9	0.3	Irrigated Cropland
	16.0	18.2	2.2	Rangeland/Native Vegetation
	19.7	25.8	6.1	Irrigated Cropland
	26.5	28.1	1.6	Rangeland/Native Vegetation
	28.2	28.9	0.7	Irrigated Cropland
	29.0	34.1	5.1	Rangeland/Native Vegetation
	34.4	35.8	1.4	Irrigated Cropland
	35.8	36.3	0.5	Rangeland/Native Vegetation
	36.3	37.0	0.7	Irrigated Cropland
	37.0	38.8	1.8	Rangeland/Native Vegetation
	38.9	39.3	0.4	Irrigated Cropland
	40.0	51.4	11.4	Rangeland/Native Vegetation
	51.4	51.7	0.3	Non-Irrigated Cropland
	51.8	56.9	5.1	Rangeland/Native Vegetation
	57.9	58.4	0.5	Non-Irrigated Cropland
	58.4	89.4	31.0	Rangeland/Native Vegetation
26-1	0.0	16.7	16.7	Rangeland/Native Vegetation
26-2	0.0	8.0	8.0	Rangeland/Native Vegetation
	10.4	10.6	0.2	Non-Irrigated Cropland
	10.6	10.8	0.2	Irrigated Cropland, Non-Irrigated Cropland
	10.8	11.4	0.6	Non-Irrigated Cropland
	11.4	27.7	16.3	Irrigated Cropland
	27.7	27.8	0.1	Rangeland/Native Vegetation
26-3	0.0	38.2	38.2	Rangeland/Native Vegetation
26-4	0.0	40.9	40.9	Rangeland/Native Vegetation
	40.9	41.6	0.7	Irrigated Cropland
	41.6	47.1	5.5	Rangeland/Native Vegetation
27	0.0	0.3	0.3	Rangeland/Native Vegetation
		Subtotal	27.1	Irrigated Cropland
		Subtotal	1.6	Non-Irrigated Cropland
		Subtotal	195.7	Rangeland/Native Vegetation

*Excludes CRP Land

Important Farmland crossed by C2 is presented in Table 3.6-75.

Table 3.6-75 Important Farmland Crossed by the C2: Eastern Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
21	25.4	25.8	0.4	Prime Farmland if irrigated
	26.0	26.2	0.2	Prime Farmland if irrigated
	26.3	26.4	0.1	Prime Farmland if irrigated
	28.2	29.6	1.4	Prime Farmland if irrigated
	30.8	30.9	0.1	Prime Farmland if irrigated
	33.7	37.5	3.8	Prime Farmland if irrigated
	37.6	37.9	0.3	Prime Farmland if irrigated
	38.4	39.0	0.6	Prime Farmland if irrigated
	39.7	40.3	0.6	Prime Farmland if irrigated
	41.0	41.3	0.3	Prime Farmland if irrigated
	41.4	43.2	1.8	Prime Farmland if irrigated
	43.3	43.4	0.1	Prime Farmland if irrigated
	44.3	44.4	0.1	Prime Farmland if irrigated
	44.8	45.7	0.9	Prime Farmland if irrigated
	46.1	48.9	2.8	Prime Farmland if irrigated
	49.0	51.1	2.1	Prime Farmland if irrigated
	51.5	51.8	0.3	Prime Farmland if irrigated
	52.0	52.3	0.3	Prime Farmland if irrigated
	52.6	54.1	1.5	Prime Farmland if irrigated
	54.5	54.6	0.1	Prime Farmland if irrigated
	55.0	55.2	0.2	Prime Farmland if irrigated
	55.4	55.6	0.2	Prime Farmland if irrigated
	55.8	56.1	0.3	Prime Farmland if irrigated
	56.5	56.8	0.3	Prime Farmland if irrigated
	57.0	57.1	0.1	Prime Farmland if irrigated
	57.2	57.4	0.2	Prime Farmland if irrigated
	57.5	58.3	0.8	Prime Farmland if irrigated
	59.1	59.6	0.5	Prime Farmland if irrigated
	59.9	60.5	0.6	Prime Farmland if irrigated
	60.8	62.3	1.5	Prime Farmland if irrigated
	63.2	64.5	1.3	Prime Farmland if irrigated
	64.7	64.9	0.2	Prime Farmland if irrigated
	65.1	66.0	0.9	Prime Farmland if irrigated
	68.6	68.9	0.3	Prime Farmland if irrigated
	69.1	69.8	0.7	Prime Farmland if irrigated
	71.9	72.1	0.2	Prime Farmland if irrigated
	74.2	74.4	0.2	Prime Farmland if irrigated
	75.7	75.8	0.1	Prime Farmland if irrigated
	76.3	76.6	0.3	Prime Farmland if irrigated
	76.9	77.0	0.1	Prime Farmland if irrigated
	78.3	78.6	0.3	Prime Farmland if irrigated
	82.9	83.2	0.3	Prime Farmland if irrigated
	83.7	84.0	0.3	Prime Farmland if irrigated
	84.2	85.3	1.1	Prime Farmland if irrigated
	85.4	86.8	1.4	Prime Farmland if irrigated
26-1	13.3	16.7	3.4	Prime Farmland if irrigated
26-2	0.0	1.1	1.1	Prime Farmland if irrigated
	6.9	8.8	1.9	Prime Farmland if irrigated

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
	9.0	9.2	0.2	Prime Farmland if irrigated
	10.0	13.2	3.2	Prime Farmland if irrigated
	13.3	13.7	0.4	Prime Farmland if irrigated
	13.8	15.5	1.7	Prime Farmland if irrigated
	15.7	16.5	0.8	Prime Farmland if irrigated
	16.6	17.1	0.5	Prime Farmland if irrigated
	17.2	17.7	0.5	Prime Farmland if irrigated
	17.8	18.6	0.8	Prime Farmland if irrigated
	18.8	19.1	0.3	Prime Farmland if irrigated
	19.2	22.9	3.7	Prime Farmland if irrigated
	23.0	23.9	0.9	Prime Farmland if irrigated
	24.0	26.4	2.4	Prime Farmland if irrigated
26-3	27.5	28.0	0.5	Prime Farmland if irrigated
26-4	28.4	28.6	0.2	Prime Farmland if irrigated
	28.8	29.2	0.4	Prime Farmland if irrigated
	29.3	29.4	0.1	Prime Farmland if irrigated
	42.0	42.3	0.3	Prime Farmland if irrigated
	43.9	45.5	1.6	Prime Farmland if irrigated
	46.8	47.1	0.3	Prime Farmland if irrigated
TOTAL			21.8	Prime Farmland if irrigated

Source: NRCS Soil Survey Geographic (SSURGO) Database

CRP land is crossed by Link 21 from milepost 59.0 to milepost 59.5, from milepost 59.6 to 60.4, from milepost 61.7 to milepost 61.9, and from milepost 62.6 to milepost 63.7. Link 26-2 crosses CRP land from milepost 7.9 to milepost 8.9 and from milepost 14.8 to milepost 15.3.

Parks, Recreation, and Preservation Areas

Two Special Management Areas, Market Lake Wildlife Management Area and Great Rift National Natural Landmark, are crossed by C2. The Market Lake Wildlife Management Area crosses Link 21 from milepost 34.8 to milepost 35.0 while the Great Rift National Natural Landmark crosses Link 26-3 from milepost 9.6 to milepost 14.9.

Transportation and Access

C2 would cross I-15, US 20, US 26, and Idaho State Highways 24 and 33. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. C1 would also cross the UPPR (see Volume I-C, Appendix H, Table 3.6-76).

Minerals and Energy

Active mining claims crossed by C2 are provided in the Land Use Technical Report, Volume II.

C3: Western Route

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Upper Snake and Shoshone Field Offices), USDA Forest Service (Caribou-Targhee National Forest), DOE (INL), Reclamation, and IDL.

The 4.0 mile wide study area for C3 is located in Clark, Butte, Jefferson, Blaine, Lincoln, and Jerome counties. Land jurisdiction crossed by C3 is depicted see Volume I-C, Appendix H, Table 3.6-77.

Existing and Planned Land Use

Residential

One platted subdivision is crossed by C3. Link 25-3 crosses the East Picabo Subdivision from milepost 14.6 to milepost 14.8.

Three (3) residential dwellings are located within 1,000 feet of C3.

Agriculture

Agricultural land (cropland) and rangeland/native vegetation crossed by C3 is presented in Table 3.6-78.

Table 3.6-78 Agricultural Lands Crossed by C3: Western Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
18-2	6.5	27.0	20.5	Rangeland/Native Vegetation
23	0.0	7.1	7.1	Rangeland/Native Vegetation
	7.7	8.4	0.7	Irrigated Cropland
	8.4	29.0	20.6	Rangeland/Native Vegetation
25-11	0.0	25.9	25.9	Rangeland/Native Vegetation
25-12	0.0	8.0	8.0	Rangeland/Native Vegetation
	9.9	11.8	1.9	Non-Irrigated Cropland
	12.2	39.8	27.6	Rangeland/Native Vegetation
25-3	0.0	14.3	14.3	Rangeland/Native Vegetation
	15.2	15.4	0.2	Irrigated Cropland
	15.4	22.3	6.9	Rangeland/Native Vegetation
25-4	0.0	6.3	6.3	Rangeland/Native Vegetation
	7.6	7.8	0.2	Non-Irrigated Cropland
	7.8	26.6	18.8	Rangeland/Native Vegetation
	27.1	27.2	0.1	Non-Irrigated Cropland
	27.2	27.3	0.1	Irrigated Cropland, Non-Irrigated Cropland
	27.3	27.5	0.2	Irrigated Cropland
	27.5	33.7	6.2	Rangeland/Native Vegetation
27	0.0	0.3	0.3	Rangeland/Native Vegetation
		Subtotal	1.2	Irrigated Cropland
		Subtotal	2.2	Non-Irrigated Cropland
		Subtotal	162.5	Rangeland/Native Vegetation

*Excludes CRP Land

Important Farmland crossed by C3 is presented in Table 3.6-79.

Table 3.6-79 Important Farmland Crossed by C3: Western Route

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
23	8.3	10.9	2.6	Prime Farmland if irrigated
25-12	0.6	1.9	1.3	Prime Farmland if irrigated
	4.5	6.5	2.0	Prime Farmland if irrigated
	6.7	7.1	0.4	Prime Farmland if irrigated
	7.5	9.2	1.7	Prime Farmland if irrigated
	9.4	11.6	2.2	Prime Farmland if irrigated
	11.7	12.3	0.6	Prime Farmland if irrigated
	18.8	19.6	0.8	Prime Farmland
	21.7	22.2	0.5	Prime Farmland
	38.4	38.5	0.1	Prime Farmland
	38.7	39.0	0.3	Prime Farmland
25-3	7.6	7.7	0.1	Prime Farmland if irrigated
	7.7	7.8	0.1	Prime Farmland
	14.7	14.8	0.1	Prime Farmland if irrigated
	14.9	15.2	0.3	Prime Farmland
25-4	8.4	9.2	0.8	Prime Farmland if irrigated
	9.4	9.6	0.2	Prime Farmland if irrigated
	9.9	10.4	0.5	Prime Farmland if irrigated
	10.6	10.8	0.2	Prime Farmland if irrigated
	10.9	11.3	0.4	Prime Farmland if irrigated
	23.9	27.5	3.6	Prime Farmland if irrigated
	32.6	32.8	0.2	Prime Farmland if irrigated
	33.0	33.6	0.6	Prime Farmland if irrigated
		Subtotal	2.1	Prime Farmland
		Subtotal	17.5	Prime Farmland if irrigated

Source: NRCS Soil Survey Geographic (SSURGO) Database

Parks, Recreation, and Preservation Areas

One Special Management Area, Italian Peak Roadless Area, is crossed by C3. The Italian Peak Roadless Area crosses Link 18-2 from milepost 0.0 to milepost 0.1.

Transportation and Access

C3 would cross US 20, US 20/26, US 26/93, US 20/26/93 and Idaho State Highways 22, 22/33, 24, and 28. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. C3 would also cross the UPPR (see Volume I-C, Appendix H, Table 3.6-80).

Minerals and Energy

Link 23 crosses a BLM Mineral Material Site (Mud Lake Water Users) from milepost 12.4 to milepost 13.6.

C4: SHEEP CREEK INL/BRIGHAM POINT

Land Jurisdiction

Federal, state, and private lands are found in the study area. Federal and state lands are managed by the BLM (Upper Snake, Burley, and Shoshone Field Offices), USDA Forest Service (Caribou-Targhee National Forest), DOE (INL), Reclamation, and IDL.

The 4.0 mile wide study area for C4: Sheep Creek INL/Brigham Point Route is located in Clark, Butte, Jefferson, Bingham, Blaine, Lincoln, Jerome, Minidoka, and Power counties. Land jurisdiction crossed by C4 is depicted in Volume I-C, Appendix H, Table 3.6-81.

Existing and Planned Land Use

Residential

Four (4) residential dwellings are located within 1,000 feet of C4.

Agriculture

Agricultural land (cropland) and rangeland/native vegetation crossed by C4 is presented in Table 3.6-82.

Table 3.6-82 Agricultural Lands Crossed by the C4: Sheep Creek INL/Brigham Point

Link	Milepost Begin	Milepost End	Distance (Miles)	Description/Classification*
18-2	6.5	27.0	20.5	Rangeland/Native Vegetation
23	0.0	7.1	7.1	Rangeland/Native Vegetation
	7.7	8.4	0.7	Irrigated Cropland
	8.4	29.0	20.6	Rangeland/Native Vegetation
24	0.0	28.4	28.4	Rangeland/Native Vegetation
26-1	0.0	16.7	16.7	Rangeland/Native Vegetation
26-2	0.0	8.0	8.0	Rangeland/Native Vegetation
	10.4	10.6	0.2	Non-Irrigated Cropland
	10.6	10.8	0.2	Irrigated Cropland, Non-Irrigated Cropland
	10.8	11.4	0.6	Non-Irrigated Cropland
	11.4	27.7	16.3	Irrigated Cropland
	27.7	27.8	0.1	Rangeland/Native Vegetation
26-3	0.0	38.2	38.2	Rangeland/Native Vegetation
26-4	0.0	40.9	40.9	Rangeland/Native Vegetation
	40.9	41.6	0.7	Irrigated Cropland
	41.6	47.1	5.5	Rangeland/Native Vegetation
27	0.0	0.3	0.3	Rangeland/Native Vegetation
		Subtotal	17.9	Irrigated Cropland
		Subtotal	0.8	Non-Irrigated Cropland
		Subtotal	186.3	Rangeland/Native Vegetation

*Excludes CRP Land.

Important farmland crossed by C4 is presented in Table 3.6-83.

Table 3.6-83 Important Farmland Crossed by the C4: Sheep Creek INL/Brigham Point

Link	Milepost Begin	Milepost End	Distance (Miles)	Classification
23	8.3	10.9	2.6	Prime Farmland if irrigated
26-1	13.3	16.7	3.4	Prime Farmland if irrigated
26-2	0.0	1.1	1.1	Prime Farmland if irrigated
	6.9	8.8	1.9	Prime Farmland if irrigated
	9.0	9.2	0.2	Prime Farmland if irrigated
	10.0	13.2	3.2	Prime Farmland if irrigated
	13.3	13.7	0.4	Prime Farmland if irrigated
	13.8	15.5	1.7	Prime Farmland if irrigated
	15.7	16.5	0.8	Prime Farmland if irrigated
	16.6	17.1	0.5	Prime Farmland if irrigated
	17.2	17.7	0.5	Prime Farmland if irrigated
	17.8	18.6	0.8	Prime Farmland if irrigated
	18.8	19.1	0.3	Prime Farmland if irrigated
	19.2	22.9	3.7	Prime Farmland if irrigated
	23.0	23.9	0.9	Prime Farmland if irrigated
	24.0	26.4	2.4	Prime Farmland if irrigated
26-3	27.5	28.0	0.5	Prime Farmland if irrigated
26-4	28.4	28.6	0.2	Prime Farmland if irrigated
	28.8	29.2	0.4	Prime Farmland if irrigated
	29.3	29.4	0.1	Prime Farmland if irrigated
	42.0	42.3	0.3	Prime Farmland if irrigated
	43.9	45.5	1.6	Prime Farmland if irrigated
	46.8	47.1	0.3	Prime Farmland if irrigated
TOTAL			27.8	Prime Farmland if irrigated

Source: NRCS Soil Survey Geographic (SSURGO) Database

Link 26-2 crosses CRP land from milepost 7.9 to milepost 8.9 and from milepost 14.8 to milepost 15.3.

Superfund Sites

One Superfund Site, Idaho National Engineering Lab (USDOE/ID4890008952) is crossed by Link 24 from milepost 19.0 to 21.0.

Parks, Recreation, and Preservation Areas

Two Special Management Areas, Italian Peak Roadless Area and Great Rift National Natural Landmark, are crossed by C2. The Italian Peak Roadless Area crosses Link 18-2 from milepost 0.0 to milepost 0.1 while the Great Rift National Natural Landmark crosses Link 26-3 from milepost 9.6 to milepost 14.9.

Transportation and Access

C4 would cross US 20/26, and Idaho State Highways 22, 22/33, 24, and 28. In addition, the route would cross a number of county, local, unnamed, and unimproved roads. C4 would also cross the UPPR (see Volume I-C, Appendix H, Table 3.6-84).

Minerals and Energy

Link 23 crosses a BLM Mineral Material Site (Mud Lake Water Users) from milepost 12.4 to milepost 13.6.

COMPARISON OF ALTERNATIVE ROUTES

Land use alternative route comparison summaries are provided in Tables 3.6-85 and 3.6-86.

Table 3.6-85 Land Use Summary Comparison (number of miles crossed)

	STATELINE TO MIDPOINT			
Land Use Category	**C1: Preferred Route**	**C2: Eastern Route**	**C3: Western Route**	**C4: Sheep Creek INL/ Brigham Point**
LAND JURISDICTION				
BLM	117.9	137.6	101.4	121.4
USDA Forest Service	5.5	5.5	5.0	5.0
USDA Agricultural Research Service	6.1	8.0	---	---
U.S. Department of Energy	38.5	---	28.8	38.5
Reclamation	0.3	0.3	0.2	0.3
Idaho Department of Lands	7.9	19.7	8.9	5.2
Idaho Department of Fish and Game	---	0.1	---	---
Private	56.5	68.2	33.2	43.9
EXISTING AND PLANNED LAND USE				
Platted Subdivision	---	---	0.2	---
Agricultural Land				
Irrigated Cropland	17.9	27.1	1.2	17.9
Non-Irrigated Cropland	1.2	1.6	2.2	0.8
Rangeland/Native Vegetation	200.2	195.7	162.5	186.3
Important Farmland				
Prime Farmland	---	21.8	2.1	---
Prime Farmland if Irrigated	27.8	---	17.5	27.8
CRP Land	2.3	4.1	---	1.5
Superfund Site	2.0	---	---	2.0
PARKS, RECREATION, AND PRESERVATION AREAS				
Special Management Area				
Existing	5.3	5.5	0.1	5.4
MINERALS AND ENERGY				
Active Mining Claim	7.6	3.9	18.0	16.8
BLM Mineral Materials Site	1.2	---	1.2	1.2

Table 3.6-86 Land Use Summary Comparison Occurrences (number of residential and major farm support buildings/or other similar structure type)

	STATELINE TO MIDPOINT			
Distance	**C1: Preferred Route**	**C2: Eastern Route**	**C3: Western Route**	**C4: Sheep Creek INL/Brigham Point**
NUMBER OF RESIDENTIAL DWELLINGS				
Within 1,000 feet of Centerline	6	5	3	4
Within 150 feet of Centerline	1*	1*	0	0
NUMBER OF MAJOR FARM SUPPORT BUILDINGS (OR OTHER SIMILAR STRUCTURE TYPE)				
Within 150 feet of Centerline	1**	1**	0	0

* Residence would require removal if transmission line is not re-routed.
**Potential conflict

3.6.5 SUBSTATIONS

3.6.5.1 New Townsend Substation

The new Townsend 500kV Substation would be located five miles south of Townsend, east of MT 287 in Broadwater County. More specifically, the new Townsend Substation would be located approximately 3,000 feet west of Flynn Lane and 1,500 feet north of Dry Creek Road. The site is currently cropland under center-pivot irrigation. Adjacent land uses are comprised of cropland under center-pivot irrigation, pasture, rangeland/native vegetation, agricultural outbuildings and 2 residences. Both residences are located within 1,000 feet of the substation site. Access to the site would be from Dry Creek Road, and the substation would require additional access road construction. The total size of the new Townsend Substation site would be approximately 80 acres and possibly as much as 100 acres.

3.6.5.2 Mill Creek Substation Addition

The Mill Creek Substation site is dominated by grassland. No residences are located with 1,000 feet of the site.

3.6.5.3 Midpoint Substation Addition

Idaho Power Company’s existing Midpoint Substation, located 10 miles north of I-84 in Jerome County, Idaho, would be modified to accommodate the new MSTI 500kV transmission line. The proposed additions to the substation cannot be completed in the existing fenced area; expansion of the substation yard would be required. Engineering studies will be completed to determine the ultimate modifications required at the Midpoint Substation. One single-family residence is located within 1,000 feet of the substation.

3.6.6 COMMUNICATION SYSTEM

As discussed in Section 2.3.2.1, preliminary locations for microwave facilities along the Preferred Route (Alternatives A1, B1 and C1) have been identified (see Figure 2-4). The microwave site locations in Montana include Mill Creek, Fleecer, Beef Trail, East Ridge, Cardwell Hill, Townsend Substation, and Mauer Mountain, and the locations in Idaho are Humphrey Ridge, Big Grassy Substation, Howe Peak, American Falls SE, Borah Substation, Dietrich Butte, and Midpoint Substation. All 14 microwave site locations are either existing or designated communication sites.

3.7 VISUAL RESOURCES

3.7.1 INTRODUCTION

Visual resources were inventoried and are described in this section for the 500 kV transmission line alternatives, the new Townsend Substation, the Midpoint Substation additions, and the various other facilities. The visual resource inventory describes the aesthetic value of the natural and developed landscape, the public value of viewing the natural landscape, and the visibility of the landscape from sensitive viewpoints (e.g., residences, recreation and preservation areas, and scenic highways).

The study area occupies the Northern Rocky Mountains physiographic province (Fenneman 1931). Within the Northern Rocky Mountains, the study area is located within the Broad Valley Rockies section (USFS n.d.). The Broad Valley Rockies section is an area of somewhat widely spaced mountain ranges separated by broad valleys which occupy up to about 50% of the area. The valleys range from 2 to 15 miles wide and may reach 100 miles in length, often providing a sweeping panorama of the valley floor. Low-lying foothills, buttes, and stream cut terraces provide a transition between the valley floors and the mountain ranges. Mountain ranges appear at very similar elevations, and are typically round-topped and massive. Glaciers are not present and very few permanent snowfields are present. Past glaciation is expressed in cirque and trough walls, U-shaped valleys and morainal debris at higher elevations. Rock fields are not a typical landscape feature, but when cliffs, talus slopes and outcrops do occur, rock is often a dominant feature. Major rivers, such as the Missouri, and the Clark Canyon Reservoir are the dominant water features. The typically wide and flat nature of the valleys causes the rivers to meander, with oxbows, cutoffs and abandoned channels often present. Vegetation serves to unite the region with a strong interplay of texture and color. Valley vegetation is generally grassland, including croplands, hay fields, and sagebrush grasslands with meandering, willow-lined streams. Mountain vegetation consists of conifer forests interspersed with grasslands, aspen groves, and willow-lined streams. Cultural influences are typically concentrated along the river valleys where agriculture and urban development is suitable. Open expanses and visual variety define this region.

The Snake River Plain section of the Columbia Plateau is located in Idaho south of the Broad Valley Rockies, and is characterized by broad, flat, volcanic basaltic lava formations interspersed with buttes and lava cones. The section of the Plain in the study area is flat, nearly 70-miles wide, and generally between 4,400-feet and 5,000-feet above sea level. The high desert environment that defines this section is an open, flat, somewhat irregular plain covered with black volcanic deposits at or near the ground surface. Buttes and rhyolite domes provide vertical punctuation across the stark, horizontal landscape. Foothill scrublands/grasslands and barren mountains define the borders of the section. Shallow lava shields provide other topographical relief. Native vegetation is largely gone in some areas, with irrigated cropland replacing much of the sagebrush and bunchgrass that would otherwise dominate.

Cultural modifications are found scattered throughout the 10-mile wide study area, and include communities, dispersed rural residences and agricultural facilities, agricultural lands, mines, and numerous highways and other roads. Study areas in Montana include communities that range in scale from the moderate-sized city of Butte to small, rural, unincorporated establishments. Communities within the study area include Townsend, Boulder, Anaconda, Butte, Dillon, Lima, Opportunity, Silver Star, Twin Bridges, Three Forks, and Whitehall. Agricultural activity in Montana is concentrated in the valleys, with cultivated and irrigated activity concentrated in the lowest areas near water sources and grazing activities extending into the foothills.

In Idaho, communities within the study area include Spencer, Dubois, Hamer, Roberts, Arco, Butte City, Atomic City, Carey, Richfield, Shoshone, Dietrich, American Falls, and Minidoka. Agricultural activity in Idaho extends across the Snake River Plan, with cultivated and irrigated activity concentrated along the Snake River and near other water sources. Grazing activities extend across the plain and into the foothills to the north. The United States Sheep Experiment Station and the Idaho National Laboratory are also located within the study area.(see Volume II, Land Use Technical Report).

3.7.2 INVENTORY METHODS

For Visual Resources, the MSTI study area extends five miles on either side of the assumed centerlines of the alternative route links and crosses a mosaic of federal, state, and private lands. Federal agencies with jurisdiction over public lands in the study area include the BLM, the USFS, the Department of Energy (Idaho National Laboratory), the USDA (Sheep Experiment Station), and the Bureau of Reclamation. The BLM and the USFS have regulations pertaining to visual resources. BLM lands are administered by BLM Resource Management Plans (RMP) or BLM Management Framework Plans (MFP), while USFS lands are administered by USFS Forest Plans.

The Visual Resource Management (VRM) system utilized by the BLM in the 8400 series VRM Manual (BLM 1984) and the Scenery Management System (SMS) utilized by the USFS in Landscape Aesthetics, A Handbook for Scenery Management (USFS 1995) formed the basis for developing a consistent methodology for the visual resource inventory, and for assessment of visual impacts of the MSTI alternatives. The VRM classes for BLM administered lands and the Visual Quality Objectives (VQO) or Scenic Quality Objectives (SIO) for the USFS lands establish the guidelines for the level of acceptable visual change allowed in the landscape. There are no formal guidelines for managing visual resources for private, state or county-owned lands found within the10-mile wide study area. Therefore, the methodology used in this study for these lands integrates the current BLM VRM system and the USFS SMS, but is modified to better address culturally dominated landscapes outside of public lands administered by the USFS or BLM. This method provided a consistent inventory process across the project area for public and private lands.

The visual resources inventory consisted of the following sequence of tasks:

- Identification of agency management objectives (VRM classes and SIOs/VQOs) and scenic quality classifications if available;
- Inventory of existing regional landform, vegetation and water features (physiography), including a review of existing mapping and aerial photography and a review of landscape setting and character evaluation;
- Development of landscape rating units;
- Inventory of scenic quality and visual integrity within landscape rating units (where not established by agency);

- Identification and mapping of sensitive viewpoints;
- Sensitivity analysis of identified sensitive viewpoints (where not established by agency, i.e. USFS concern levels); and
- And visibility and distance zone mapping.

3.7.2.1 Data Sources

Visual resource data was obtained from a regional study conducted by POWER in 2006-2008 (see Volume IV). Additionally, visual resource data was collected from agency publications and websites, existing POWER files, GIS data sets, aerial photography, and agency contacts. Agency personnel were asked to provide existing visual resource mapping, including VRM/SIO/VQO mapping, scenic quality/attractiveness mapping, visual sensitivity mapping, and locations of sensitive viewpoints/scenic concern sites. . Information was requested from the BLM Idaho State Office; the BLM Dillon, Butte, Upper Snake, Shoshone, and Burley Field Offices; the USFS Beaverhead-Deerlodge National Forest, Caribou-Targhee National Forest, Helena National Forest, and Salmon-Challis National Forest; and the Montana Department of Transportation (MDT).

VRM and VQO/SIO data were collected, where available, from the agencies in the form of GIS shape files. In Montana, VRM data was provided by the BLM Dillon Field Office and the BLM Butte Field Office. VQO data was provided by Helena National Forest. Partial mapping of Minimum SIOs was available from the BDNF. POWER developed SIOs for the areas within the 10-mile wide study area using a Concern Level List and a Scenic Integrity Level Matrix, as outlined in the Beaverhead National Forest FEIS/Land and RMP Revision (USFS 2008).

In Idaho, VRM data was available from the BLM Upper Snake, Shoshone, and Burley Field Offices. VQO mapping was available from the Salmon-Challis National Forest and the Caribou-Targhee National Forest.

Where available, existing scenic quality mapping for the alternative routes was obtained from the BLM and USFS and used in the visual resource inventory. Scenic attractiveness mapping was provided by the BDNF in the form of GIS shape files and used in the visual quality inventory.

In Montana, scenic quality mapping for the alternative route links was digitized from mapping provided by the Butte BLM Field Office. Partial scenic quality mapping was digitized from hard copy maps from the Montana BLM Dillon Field Office and also used in the scenic quality inventory.

In Idaho, hard copy maps of scenic quality mapping for a portion of Idaho BLM Upper Snake Field Office lands were digitized. Due to the broad scale at which the existing scenic quality mapping was done, this mapping was not used in the visual quality inventory. New scenic quality mapping was done by POWER to maintain consistency of scale and detail. Scenic quality mapping was not available from the Shoshone and Burley Field Offices, the Salmon-Challis National Forest, or the Caribou-Targhee National Forest.

Where existing scenic quality mapping was not available, POWER developed scenic quality mapping by rating the homogeneous landscape rating units (scenic quality rating units) mapped from the divisions of landscape character types. BLM and USFS scenic quality criteria were used for all public lands and non-developed private lands.

Potentially sensitive viewpoints that may be impacted by the alternative routes were identified and inventoried based on established criteria. GIS shapefiles of Sensitive Viewpoints/Scenic Concern Sites and Routes were provided by the Butte BLM Field Office and BDNF. The BDNF Revised Draft Forest Plan includes a Scenic Concern Level List that assigns Concern Levels to identified viewpoints. The Concern Levels assigned by BDNF were utilized only for viewpoints and routes within the BDNF boundaries. Additional sensitive viewpoints were identified through consultation with agency contacts, agency websites, land use data, and field investigation.

3.7.2.2 Data Categories

SCENIC QUALITY

The scenic quality of the landscape was determined in several steps, beginning with identifying and mapping dominant landscape character types. Landscape character types are homogeneous landscape units refined from the regional physiographic classifications (refer to 3.7.1 Introduction) which define dominant landforms and features (e.g., mountains, valleys). These landscape character types were divided into smaller homogeneous landscapes and evaluated for their scenic quality and visual integrity.

Scenic quality methods, consistent with VRM methodology, were used as a guideline for the largely natural landscapes under public or private ownership. A system adapted from the VRM methods but sensitive to developed areas, referred to as ‘visual integrity’, was used as the basis for identifying and mapping scenic quality for developed lands. This system has been utilized on similar transmission line projects, throughout the western United States. Details on this adapted system and the VRM system can be found in Volume II, Visual Resources Technical Report Appendix A. While similar to the scenic quality inventory, visual integrity was only used to identify the scenic qualities of developed landscapes.

There are three classes of scenic quality that resulted from field rating landscape areas for diversity and importance. These classes are the following:

Class A – Distinctive: Areas where characteristic features of landform, rock, water and vegetation are distinctive or unique in the context of the surrounding areas. These features exhibit considerable variety in form, line, color and texture and have strong positive attributes of unity and intactness.

Class B – Above Average: Areas in which features provide variety in form, line, color and texture. Although the combinations are not rare in the surrounding region, they provide sufficient visual diversity to be considered moderately distinctive. These features exhibit more common variety in form, line, color and texture and have positive, but more common attributes of unity and intactness.

Class C – Common: Areas where characteristic features have moderate to little variety in form, line, color and texture in relation to the surrounding region.

Class A scenery is located in the Highland Mountains, Pioneer Mountains, Blacktail Mountains, and Beaverhead Mountains; and in riparian areas associated with the Missouri headwaters, the Big Hole River, and the Beaverhead River.

Class B scenery is generally composed of mountainous areas, including most of the ranges located along the 10-mile wide study area. These include the Elkhorn Mountains, Boulder Range, Anaconda Range, Pioneer Mountains, Highland Range, Tendoy Mountains, Beaverhead Range, Blacktail Mountains, and Centennial Mountains. Additional Class B scenery includes riparian corridors such as the Missouri River, the Jefferson River, the Boulder River, the Beaverhead River, Whitetail Creek, and Medicine Lodge Creek. The Clark Canyon Reservoir was also identified as Class B.

Class C scenery is the dominant classification. Included are developed areas, valleys, foothills, and indistinct mountainous areas. These landscapes lack distinctive features and are common within the context of the region.

Refer to Volume III, 100K Map Series, Scenic Quality, for scenic quality mapping within the 6-mile wide visual resources alternative route corridors.

Sensitive Viewpoints

Potentially sensitive viewpoints that may be impacted by the Project were identified and inventoried based on established criteria. Viewpoints considered include:

- Residences/communities – cities, towns and unincorporated communities; residential clusters of 5 or more dwelling units per 20 acres, based on a circle of approximately 1000 feet in diameter; and individual residences not included within an urban or residential cluster.
- Parks, recreation, and preservation areas – national wilderness areas (NWA); wilderness study areas (WSA); national primitive areas (NPA); national parks and monuments; state parks; national recreation areas (NRA); national wildlife refuges and ranges (NWR); corridors of rivers in the national wild and scenic rivers system and rivers eligible for inclusion in the system; roadless areas of 5,000 acres or greater in size; unique habitats and natural areas designated by the National Park Service (NPS), the USFS, the BLM or the State of Montana as national natural landmarks (NNL), natural areas, research natural areas (RNA), areas of critical environmental concern (ACEC), special interest areas, research botanical areas, and outstanding natural areas; national trails; areas where the presence of the facility would be incompatible with published visual management plans adopted by federal, state, or local governments; streams and rivers identified as having a Fishery value Class of I or II by the Montana Department of Fish, Wildlife, and Parks (MFWP); and areas used for camping, picnicking, or other recreational activity.
- Sensitive Travel routes – Proposed or designated scenic or historic highways or byways and recreation destination routes.

National Historic Landmarks, National Register historic districts and sites, and sites nominated to or designated by the State Historic Preservation Office (SHPO), also required by MFSA Circular-2, are addressed in Volume II, Cultural Resources Technical Report.

The visual sensitivity of these identified viewpoints was evaluated and rated as high, moderate, or low, following established BLM criteria. Viewpoints are listed in Volume II, Visual Resources Technical Report Appendix A, Table 8. The locations and visibility of sensitive viewpoints are illustrated in Volume III, 100K Map Series, Sensitive Views.

Photographs were taken from selected viewpoints toward the alternative facility locations. Because these photos were taken for the MFSA application in Montana, the majority of photos are of the Montana segments of the Project. See Volume II, Visual Resources Technical Report, Appendix D for photographs and mapping of the viewpoint locations.

VISUAL SENSITIVITY

Both the BLM and USFS visual systems define visual sensitivity as a measure of viewer concern for the scenic resource and potential changes to the resource. Though the BLM and USFS vary in their individual analysis of visual sensitivity, both systems consider similar criteria in their evaluations. The approach for this study incorporates criteria from both systems and draws from previous experience on visual studies conducted for transmission lines throughout the West. These criteria were condensed into user type/attitude, view duration, and use volume (see Volume II, Visual Resources Technical Report, Table 3.1-1).

Use Volume considers the number of users. As an example, a busy interstate rest area would have a higher volume of users than a remote campground.

User Attitude considers the local, regional or national significance or importance of a viewpoint or viewed area. As an example, national park or wilderness area viewpoints are typically considered more sensitive than an interstate highway.

Duration of view is defined as the length of time that a sensitive viewer would typically encounter a particular view. For example, a view from a residence is considered to be a high duration view because the landscape could be viewed at any time of day and for any length of time. Alternatively, the amount of time the commuter would see an area of landscape from a highway as they drive through the area would be very short, and thus would be considered to be a short duration view.

Using these criteria, views were assigned a final sensitivity level of high, moderate, or low that was subsequently used in the visual analysis and initial impact level. For more detailed descriptions of methods and results, refer to Volume II, Visual Resources Technical Report.

Residences and rural communities make up the majority of the high sensitivity viewpoints in the study area. Included in Montana are the communities of Anaconda, Boulder, Butte, Cardwell, Dillon, Lima, Opportunity, Townsend, Three Forks, Twin Bridges, Whitehall, and additional small communities and dispersed rural residences throughout the corridors. In Idaho, the communities of Spencer, Hamer, Roberts, Atomic City, Dubois, Butte City, Carey, Richfield, Shoshone, Dietrich, American Falls, and Minidoka, are included, in addition to dispersed rural residences located throughout the agricultural areas of the Snake River Plain.

Many recreation and preservation sites were also rated as high sensitivity viewpoints. Viewpoints in Montana rated as highly sensitive include state parks, WSAs, wild and scenic eligible rivers, two ACECs, BLM interpretive sites, the Camp Fortunate Overlook, the Humbug Spires primitive area, Thompson Park, publicly owned campsites and picnic areas, and non-off-road-vehicle (non-ORV) trailheads. Within Idaho, viewpoints within Craters of the Moon National Monument were rated as highly sensitive, as were WSAs, NNLs, publicly owned campsites and picnic areas, and non-ORV trailheads. The Continental Divide National Scenic Trail, which crosses through the study area in both Montana and Idaho, was also rated as highly sensitive.

Highly sensitive travel routes in Montana include the Anaconda-Pintler Scenic Highway, the Big Sheep Creek Back Country Byway, and roads designated by the BDNF as Scenic Concern Level One Routes. Highly sensitive travel routes in Idaho include the Lost Gold Trails Loop Scenic Byway; the Sawtooth Scenic Byway; and the portions of US Hwy 93, US Hwy 20, and State Hwy 75 within Blaine County, designated by Blaine County as scenic corridors. The Sacagawea Historic Byway, also located in Idaho, was considered to be a moderate sensitivity viewpoint.

VISIBILITY AND DISTANCE ZONES

Visibility from sensitive viewpoints was generated by POWER's GIS using digital terrain data from the United States Geological Service (USGS) and the viewpoints mapped for this study and identified as sensitive.

Distance zones were established based upon perception thresholds. Perception of form, texture, color, and other visual elements in the landscape changes with increasing distance from a viewpoint. Landscape elements tend to become less obvious and detailed. Elements of form and line become more dominant than color or texture at longer viewing distances.

For this project, a review of previous studies in similar geographical, topographical, and environmental settings was performed, and relevant visibility thresholds were established. Studies have been conducted (Jones and Jones 1976) on transmission line visibility in the northwestern United States, and visibility threshold trends were uncovered that correlated to tower type, corridor variables, and landscape settings. Distance zones identified for this project are as follows:

- **Immediate Foreground**: 0 feet to 1,000 feet
- **Foreground**: 1,000 feet to 0.75 mile
- **Middleground**: 0.75 mile to 3 miles
- **Background**: 3 miles to 5 miles
- **Seldom Seen**: Beyond 5 miles

VRM/VQO/SIO CLASSES

Visual management objectives (BLM VRM Classes and USFS SIOs/VQOs) are designated in agency management plans for most of the public lands in the study area. These objectives define the acceptable degree of visual change allowed in the natural landscape. Both the BLM and USFS derive visual management objectives for their lands by combining scenic quality (e.g., landscape aesthetics), visual sensitivity, and visibility from sensitive viewpoints.

Visual resources on USFS lands are managed under the SMS (USFS 1995) or under the Visual Management System (VMS) (USFS 1974) if the forest plan for a particular forest has not been updated since 1995. The focus of both the SMS and VMS is to establish standards for landscape management that allow for various levels of change as a result of management activities.

Visual resources on BLM lands are managed under the VRM system. As with the USFS system, the BLM utilizes the VRM system to establish standards on managed lands that allow for various levels of change as typically detailed in the agency resource management plans (RMP).

Although similarities exist between BLM and USFS visual objectives, the combination of components (scenic quality, sensitivity level, and visibility) used to derive these objectives may differ between the two agencies. Consequently, it is possible that lands with similar characteristics may be managed differently across BLM and USFS boundaries.

3.7.3 DESCRIPTION OF ALTERNATIVE ROUTES - MONTANA

3.7.3.1 Townsend to Mill Creek (Melrose) Segments

A1: PREFERRED ROUTE

The A1: Preferred Route is composed of Links 1, 3-1, 7-2, 7-41, 7-42, 7-5, 7-8, 11-22, 11-21, 7-9, and 11-23. Links 1 and 3-1 follow a general southwest alignment from the Townsend substation site to the Highway (Hwy) 69 crossing north of Cardwell. From there, Links 7-2, 7-41, 7-42, 7-5, and 7-8 follow an eastern alignment. The route then follows Links 11-22, 11-21, and 7-9 northwest to the Mill Creek substation and then back again (this portion of the alternative is double-circuited). The route then follows Link 11-23 south. Refer to Table 3.7-1 for a summary of the visual resource inventory for all alternatives.

Scenic Quality -

The majority of the areas crossed by A1 are composed of Class C scenery. A total of 6.1 miles of Class A, 19.6 miles of Class B, and 87.6 miles of Class C scenery are crossed by the A1: Preferred Route. Of the Townsend to Mill Creek (Melrose) Segment, the A1: Preferred Route would cross the greatest length of Class A scenery and the shortest length of Class B scenery.

The Class A scenery areas crossed by the route occur in the Boulder Batholith, southeast of Butte (Links 7-41 and 7-42) and where the route crosses the Big Hole River (Link 11-23).

Several areas of Class B scenery would be crossed by the Preferred Route. These areas occur at the Missouri River crossing (Link 1), in an area of hills northeast of the Black Sage Wilderness Study Area (WSA) (Link 3-1), where the route follows the foot of Doherty Mountain and crosses the Boulder River (Link 3-1), at the mouth of the Boulder Valley (Link 7-2), at the edge of the Boulder Mountains (Link 7-41), at the edge of the Highland Mountains (Link 7-8), and at the edge of the Pioneer Mountains (Links 11-21 and 11-22).

Sensitive Viewpoints and Visibility

Residences

Views from residences were considered highly sensitive. A total of 90 residences would have immediate foreground views of the A1: Preferred Route. A total of 9.8 miles of immediate foreground views, 43.9 miles of foreground views, and 38.7 miles of middleground views would occur along the Preferred Route. The communities of Anaconda, Butte, Opportunity, and Whitehall are located within the route corridor.

Table 3.7-1 Visual Resource Inventory Summary - Montana

		Townsend to Mill Creek (Melrose) Segments			Mill Creek to State Line Segments			
		A1: Preferred Route	A2: Parallel Colstrip Lines Route	A3: Maximize Utility Corridors	B1: Preferred Route	B2: Sheep Creek Route	B3: I-15 Route	AB1: I-15 Jefferson Valley Route
Total Length of Alternative (Miles)		112.9	121.8	128.8	87.1	86.9	88.4	209.2
Number of Residences within Immediate Foreground (1000 feet)		90	32	132	9	8	11	99
Scenic Quality (Miles Crossed)	Class A	6.1	2.6	6.1	4.2	0.9	4.2	6.9
	Class B	19.6	49.6	29.3	7.2	13.8	7.2	34
	Class C	87.6	69.9	94	75.9	72.3	77.2	168.9
Miles of Visibility: Residential Viewpoints	Immediate Foreground	9.8	8.4	15.7	2.2	2.8	2.7	11.8
	Foreground	43.9	37.3	59.1	22.6	19.1	33.9	57.1
	Middleground	38.7	54.9	48.8	3.6	13.2	39.3	104.6
Miles of Visibility: High Sensitivity Recreation, Preservation, and Transportation Viewpoints	Immediate Foreground	2.5	0.8	1.7	0	3.1	0	0.8
	Foreground	6.1	7.4	3.5	0	1.7	0	3.7
	Middleground	16.9	9.4	17.6	14	15.5	22.6	14.9
Miles of Visibility: High Sensitivity Recreation, Preservation, and Transportation Linear Features (Roads, Rivers, Trails)	Immediate Foreground	2.8	1.7	2.8	0	8.5	0.5	2.4
	Foreground	3.6	2.4	3.6	0	14.8	1.4	2.8
	Middleground	6.9	13.6	7.5	1.5	12.2	4.1	5.4
Miles of Visibility: Moderate Sensitivity Recreation, Preservation, and Transportation Viewpoints	Immediate Foreground	0	0	0	0	0	0	0
	Foreground	0	1.4	0	1.6	1.9	1.6	0.5
	Middleground	19.3	16.9	27.8	14.8	22.3	28	42.1
Miles of Visibility: Moderate Sensitivity Recreation, Preservation, and Transportation Linear Features (Roads, Rivers, Trails)	Immediate Foreground	2.5	1.6	2.7	0.6	0.4	0.6	3
	Foreground	10.6	7.6	11.1	8.4	1.2	8.4	18.2
	Middleground	34.3	21.1	57.4	19.5	14.9	19.5	56.5
BLM VRM (Miles Crossed)	Class II	4.5	7.1	4.7	0	0	0	1.5
	Class III	7.5	15.4	7.8	22.5	46.3	15.9	37.7
USFS SIO (Miles Crossed)	High	4	12	4	0	1.5	0	4
	Moderate	3	10.7	3	0	0.8	0	3

No notable clusters of residences with foreground views of the route occur between the Townsend Substation and the Hwy 69 crossing (Links 1 and 3-1).

The heaviest concentrations of residences with immediate foreground or foreground views for any alternative are found along the Preferred Alternative between the Hwy 69 crossing and the end of Link 7-5, in relatively densely populated areas north of Whitehall and south of Butte (Links 7-2, 7-41, 7-42, and 7-5). An additional cluster of rural residences with immediate foreground and foreground views of the route is found in the Pipestone area (Links 7-2 and 7-41).

Along Link 7-8, a number of residences located in the hills south of Butte would have foreground views of the route.

Between the Mill Creek Substation and the end of Link 11-23, a smaller but relatively dense cluster of residences with foreground views is located near the Fairmont Hot Springs resort (Links 11-21 and 11-22). An additional small cluster of residences is located in and around the rural community of Divide (Link 11-23).

For the majority of the length of the Preferred Alternative and all other alternatives, dispersed rural residences with immediate foreground and foreground views are scattered along the route, typically singly or in small groups and in varying concentrations.

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include the Crimson Bluffs interpretive site, the Continental Divide National Scenic Trail, Homestake Lake picnic area, Thompson Park, Black Sage WSA, Humbug Spires WSA, several campgrounds, and Moose Creek, a wild and scenic eligible river located within the Humbug Spires primitive area.

Highly sensitive transportation routes located along the corridor include the Anaconda-Pintler National Scenic Highway and several BDNF Concern Level One roadways.

Moderately sensitive recreation and preservation viewpoints located along the corridor include the Missouri River Class I/II Fishery, the Big Hole River Class I Fishery, the Lewis and Clark National Historic Trail, several sportsman's access locations, the Ringing Rock recreation site, Divide Bridge day use area, Sawmill Gulch trailhead, Anaconda Smoke Stack State Park, the Raidersburg off-road-vehicle (ORV) trailhead, the Four Corner ORV trailhead, Whitetail/Haystack Roadless Area, Basin Creek Roadless Area, Fleecer Roadless Area, Cattle Gulch Roadless Area, and East Pioneer Roadless Area.

One moderately sensitive transportation route, a BDNF Concern Level Two Roadway is located within the corridor. Two existing Montana Department of Transportation (MDT) rest areas and one proposed MDT rest area site are also located within the corridor.

Between the Townsend Substation and the Hwy 69 crossing (Links 1 and 3-1), the Missouri River Class I Fishery and the Lewis and Clark National Historic Trail are crossed by the route, resulting in immediate foreground and foreground views of the route from these viewpoints (Link 1); and Black Sage WSA would have immediate foreground and foreground views of the route (Link 3-1).

Between the Hwy 69 crossing and the end of Link 7-5 (Links 7-2, 7-41, 7-42, and 7-5), a high concentration of sensitive recreation, preservation, and transportation viewpoints with immediate foreground and foreground views of the Preferred Alternative would occur southeast of Butte, where Homestake Lake picnic area would have immediate foreground and foreground views of Link 7-42; the Continental Divide National Scenic Trail would have immediate foreground and foreground views of Links 7-41 and 7-42 and would be crossed three times by the route (once by Link 7-41 and twice by Link 7-42); Interstate 90 would be crossed by Link 7-42 within BDNF, where it is a Concern Level One Roadway and would have immediate foreground and foreground views of the route; and a BDNF Concern Level 2 roadway would be crossed twice by Link 7-41 and would have immediate foreground and foreground views of the route. A total of 5.2 miles of immediate foreground and foreground views occur in this area.

From the end of Link 7-5 to the end of Link 11-23 (Links 7-8, 7-9, 11-21, 11-22, and 11-23), a BDNF Concern Level Two roadway would have foreground views of the route (Link 7-8, 11-22, and 11-23); the Continental Divide National Scenic Trail and the Big Hole River Class I Fishery would each be crossed by the route, resulting in immediate foreground and foreground views (Link 11-23); the Humbug Spires WSA would have immediate foreground and foreground views (Link 11-23); and the Maiden Rock campground/recreation site would have foreground views of the route (Link 11-23).

VRM/VQO/SIO

From the Hwy 69 crossing to the end of Link 7-5, the Preferred Route would encounter BLM VRM Class II areas for 0.6 miles northeast of Pipestone hot spring (Link 7-2) and 0.9 miles south of Pipestone Rock and Spire Rock (Link 7-41). From the end of Link 7-5 to the end of the route, the Preferred Route would encounter BLM VRM Class II areas for 3.0 miles in the foothills above the Big Hole River, west and south of Humbug Spires WSA (Link 11-23).

BLM VRM Class III areas that would be crossed by the Preferred Route include 1.4 miles along Link 1, 0.8 miles along Link 3-1, 0.5 miles along Link 7-2, 3.6 miles along Link 7-41, and 1.2 miles along Link 11-23.

The route would cross USFS SIO High areas for 1.2 miles at the west edge of Coyote Flat (Link 7-41) and for 2.8 miles east of Homestake Lake (Link 7-42). USFS SIO moderate areas that would be crossed along the Preferred Route include 1.9 miles along Link 7-41and 1.1 miles along Link 11-22.

A2: Parallel Colstrip Lines Route

The A2: Parallel Colstrip Lines Route is composed of Links 1, 4-1, 4-2, 7-9, 11-21, 11-22, 7and 11-23. Links 1 and 4-1 follow a general southwest alignment from the Townsend substation site to just east of Devils Fence From there, Link 4-2 extends west across the south edge of the Elkhorn Mountains, the northern edge of the Boulder Valley, and through the Boulder Mountains to its termination east of Anaconda at the Mill Creek substation. From there, Links 7-9, 11-21, 11-22, and 11-23 extend south. Refer to Table 3.7-1 for a summary of the visual resource inventory for all alternatives.

See the A1: Preferred Route effects section for discussion of the visual resources inventory that occur along Link 1 and between the Mill Creek Substation and the end of the route (Links 7-9, 11-21, 11-22, and 11-23). The visual resources inventory from the end of Link 1 to the Mill Creek Substation (Links 4-1 and 4-2) is discussed below.

Scenic Quality

The majority of the areas crossed by the A2: Parallel Colstrip Route are composed of Class B and Class C scenery. A total of 2.6 miles of Class A, 49.5 miles of Class B scenery, and 69.9 miles of

Class C scenery would be crossed by the A2 route. The A2 route would cross the greatest distance of Class B scenery and the shortest distance of Class A scenery. See the scenic quality section of the Preferred Route Description for discussion of areas of Class A and Class B scenery crossed between the Townsend Substation and the end of Link 1 and between the Mill Creek Substation and the end of the route (Links 7-9, 11-21, 11-22, and 11-23). The longest continuous area of Class B scenery (31.5 miles) for all the alternatives would be crossed by this route (Link 4-2) through the Boulder Mountains. Extensive areas of Class B scenery would be crossed by the route through both the Elkhorn Mountains and the Boulder Mountains.

Sensitive Viewpoints and Visibility

Residences

Views from residences were considered highly sensitive. A total of 32 residences would have immediate foreground views of the A2 route. A total of 8.4 miles of immediate foreground views, 37.3 miles of foreground views, and 54.9 miles of middleground views occur along the A2 route. The communities of Anaconda, Boulder, Opportunity, and Raidersburg are located within the route corridor. Residences in Raidersburg would have immediate foreground and foreground views of the route (Link 4-1).

Refer to the A1: Preferred Route for a description of clusters of residences with immediate foreground and foreground views of the route that are located along Link 1 and between the Mill Creek Substation and the end of Link 11-23 (Links 7-9, 11-21, 11-22, and 11-23).

Dispersed rural residences with immediate foreground and foreground views are scattered along the route, typically singly or in small groups and in varying concentrations. The heaviest concentration of residences with foreground views of the A2 route would occur in the community of Opportunity (Link 4-2). A number of residences with immediate foreground and foreground views of the route are located in the foothills of the Elkhorn Mountains and Boulder Mountains north of Boulder.

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include the Crimson Bluffs interpretive site, the Continental Divide National Scenic Trail, Humbug Spires WSA, the Elkhorn WSA, Elkhorn State Park, several campgrounds, and Moose Creek, a wild and scenic eligible river located within the Humbug Spires primitive area.

Highly sensitive transportation routes located along the corridor include the Anaconda-Pintler National Scenic Highway and several BDNF Concern Level One roadways.

Moderately sensitive recreation and preservation viewpoints include the Missouri River Class I/II Fishery, the Big Hole River Class I Fishery, the Lewis and Clark National Historic Trail, several sportsman's access locations, Divide Bridge day use area, Sawmill Gulch trailhead, Anaconda Smoke Stack State Park, the Raidersburg off-road-vehicle (ORV) trailhead, Whitetail/Haystack Roadless Area, Electric Peak Roadless Area, Basin Creek Roadless Area, Fleecer Roadless Area, Cattle Gulch Roadless Area, and East Pioneer Roadless Area.

Several BDNF Concern Level Two Roadways, which are moderately sensitive transportation routes, are located within the corridor. Two existing MDT rest areas and one proposed MDT rest area site are also located within the corridor.

Refer to the Preferred Alternative for a description of sensitive recreation, preservation, and transportation viewpoints with immediate foreground and foreground views of the route along Link 1 and from the Mill Creek Substation to the end of the A2 route (Links 7-9, 11-21, 11-22, and 11-23).

Between the end of Link 1 and the Mill Creek Substation, the Continental Divide National Scenic Trail is crossed and has immediate foreground and foreground views of the route (Link 4-2). A BDNF Scenic Concern Level One Roadway and a BDNF Scenic Concern Level Two Roadway also have foreground views of the route (Link 4-2).

VRM/VQO/SIO

For Link 1 and for the route between Mill Creek Substation and end of the A2 route (Links 7-9, 11-21, 11-22, and 11-23), the descriptions of BLM VRM and USFS SIO areas crossed are the same as those for the Preferred Alternative.

Between the end of Link 1 and the Mill Creek Substation,the A2 route would encounter BLM VRM Class II areas for 1.6 miles south of Frenchman Hill (Link 4-1) and 2.5 miles in and east of the Boulder Hills (Link 4-2). BLM VRM Class III areas that would be crossed along the A2 route include 3.1 miles along Link 4-1 and 9.7 miles along Link 4-2.

The route would affect USFS SIO High areas for 12.0 miles through the Boulder Mountains (Link 4-2). USFS SIO moderate areas that would be crossed along the A2 route include 9.6 miles along Link 4-2.

A3: MAXIMIZE EXISTING CORRIDORS

The A3: Maximize Utility Corridors Route is composed of Links 2-1, 2-3, 7-2, 7-41, 7-42, 7-5, 7-61, 7-62, 7-72, 7-9, 11-21, 11-22, and 11-23. Link 2-1 extends south to just north of Three Forks. From there, Link 2-3, 7-2, 7-41, 7-42, and 7-5 follow an eastern alignment to just south of Butte. The route then follows Links 7-61, 7-62, 7-72, and 7-9 northwest to the Mill Creek substation east of Anaconda. The route then follows Link 7-9, 11-21, 11-22, and 11-23 South. Refer to Table 3.7-1 for a summary of the visual resource inventory for all alternatives.

See the A1: Preferred Route effects section for discussion of the visual resources inventory between the Hwy 69 crossing and the end of Link 7-5 and between the Mill Creek Substation and the end of the route (Links 7-2, 7-41, 7-42, 7-5, 7-9, 11-21, 11-22, and 11-23). The visual resource inventory from the Townsend Substation to the Hwy 69 crossing (Links 2-1and 2-3) and from the end of Link 7-5 to the Mill Creek Substation (Links 7-61, 7-62, and 7-72) is discussed below.

Scenic Quality

The majority of the areas crossed by the A3: Maximize Utility Corridors Route are composed of Class C scenery. A total of 6.1 miles of Class A, 29.3 miles of Class B scenery, and 94.0 miles of Class C scenery are crossed by the A3 route. The location and distance of Class A scenery crossed is the same as that crossed by the A1: Preferred Route. See the scenic quality section of the Preferred Route description for discussion of areas of Class A and Class B scenery crossed by the route between the Hwy 69 crossing to the end of Link 7-5 (Links 7-2, 7-41, 7-42, and 7-5) and between the Mill Creek Substation and the end of the route (Links 7-9, 11-21, 11-22, and 11-23). An extensive area of Class B scenery is crossed by the route at the Missouri River crossing and along the western edge of the Missouri River valley, with a total of 16.4 miles crossed (Link 2-1). An additional Class B area is crossed south of Doherty Mountain and Cottonwood Canyon.

Sensitive Viewpoints and Visibility

Residences

Views from residences were considered highly sensitive. A total of 132 residences would have immediate foreground views of the A3 route. A total of 15.7 miles of immediate foreground views, 59.1 miles of foreground views, and 48.8 miles of middleground views would occur along the A3 route. The communities of Anaconda, Butte, Opportunity, Three Forks and Whitehall are located within the route corridor.

Refer to the A1: Preferred Route for a description of clusters of residences with immediate foreground and foreground views of the route that are located between the Hwy 69 crossing and the end of Link 7-5 (Links 7-2, 7-41, 7-42, and 7-5) and between the Mill Creek Substation and the end of the route (Links 7-9, 11-21, 11-22, and 11-23).

Dispersed rural residences with immediate foreground and foreground views are scattered along the route, typically singly or in small groups and in varying concentrations. A cluster of rural residences with immediate foreground and foreground views of the route is found in north of Three Forks (Link 2-1 and 2-3). Clusters of rural residences located along the route between the end of Link 7-5 and the end of Link 7-72 (Links 7-61, 7-62, and 7-72) have immediate foreground or foreground views of 17.2 miles of the 20.3 mile distance, or almost 85% of this portion of the route.

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include Missouri Headwaters State Park, the Lombard Interpretive Site, Parker Homestead State Park, Lewis and Clark Caverns State Park, the Continental Divide National Scenic Trail, Homestake Lake picnic area, Thompson Park, Humbug Spires WSA, several campgrounds, and Moose Creek, a wild and scenic eligible river located within the Humbug Spires primitive area.

Highly sensitive transportation routes located along the corridor include the Anaconda-Pintler National Scenic Highway and several BDNF Concern Level One roadways.

Moderately sensitive recreation and preservation viewpoints located along the corridor include the Missouri River Class I/II Fishery, the Gallatin River Class II Fishery, the Madison River Class I Fishery, the Nature Conservancy Sixteenmile Creek macrosite, the Toston Dam camping units, the Big Hole River Class I Fishery, the Lewis and Clark National Historic Trail, several sportsman's access locations, the Ringing Rock recreation site, Divide Bridge day use area, Sawmill Gulch trailhead, Anaconda Smoke Stack State Park, the Four Corner ORV trailhead, Whitetail/Haystack

Roadless Area, Basin Creek Roadless Area, Fleecer Roadless Area, Cattle Gulch Roadless Area, and East Pioneer Roadless Area.

One moderately sensitive transportation route, a BDNF Concern Level Two Roadway is located within the corridor. Two existing Montana Department of Transportation (MDT) rest areas and one proposed MDT rest area site are also located within the corridor.

Refer to the A1: Preferred Route for a description of sensitive recreation, preservation, and transportation viewpoints with immediate foreground and foreground views of the route between the Hwy 69 crossing and the end of Link 7-5 (Links 7-2, 7-41, 7-42, and 7-5) and from the Mill Creek Substation to the end of the A3 route (Links 7-9, 11-21, 11-22, and 11-23).

Between the Townsend Substation and the Hwy 69 Crossing, The Lewis and Clark National Historic Trail and the Missouri River Class I Fishery are crossed by the route (Link 2-1). Both the trail and the river have immediate foreground and foreground views of the route.

VRM/VQO/SIO

From the Hwy 69 crossing to the end of Link 7-5 (Links 7-2, 7-41, 7-42, and 7-5) and from the Mill Creek Substation to the end of the A3 route (Links 7-9, 11-21, 11-22, and 11-23), the descriptions of BLM VRM and USFS SIO areas crossed by the A3 route are the same as those for A1.

From the Townsend Substation to the Hwy 69 crossing, The A3 route would encounter BLM VRM Class II areas for 0.2 miles south of High Peak at the edge of the Missouri River valley (Link 2-1). BLM VRM Class III areas that would be crossed by the A3 route include2.5 miles along Link 2-1.

No USFS SIO High or Moderate areas would be affected by this route.

3.7.3.2 Mill Creek to State Line Segments

B1: Preferred Route

The B1: Preferred Route is composed of Links 11-3, 16-1, 16-2, and 16-4. Links 11-3 and 16-1 extend south to just south of the Clark Canyon Reservoir. Links 16-2 and 16-4 then extend southeast to the Montana-Idaho Border. Refer to Table 3.7-1 for a summary of the visual resource inventory for all alternatives.

Scenic Quality

The majority of the areas crossed by the B1: Preferred Route are composed of Class C scenery. A total of 4.2 miles of Class A, 7.2 miles of Class B scenery, and 58.0 miles of Class C scenery are crossed by the preferred route. An area of Class A scenery is crossed by the route at the Coyote Creek crossing, just upstream from where it flows into the Big Hole River, west of McCartney Mountain (Link 11-3), where a total of 1.3 miles of Class A scenery is crossed. An extensive area of Class A and B scenery (2.9 miles of Class A and 6.6 miles of Class B) would be crossed by the route where it crosses the Beaverhead River and then roughly follows the edge of Jim Brown Mountain and Gallagher Mountain above the narrow Beaverhead River valley to Clark Canyon (Link 16-1). An additional area of Class B scenery is crossed by the route at the edge of Lima Peaks in the Bitterroot Range (Link 16-4).

Sensitive Viewpoints and Visibility

Residences

Views from residences were considered highly sensitive. A total of 9 residences would have immediate foreground views of the Preferred Route. A total of 2.2 miles of immediate foreground views, 22.5 miles of foreground views, and 50.7 miles of middleground views occur along the Preferred Route. The communities of Dillon, Glen, and Lima are located within the route corridor.

Along Link 11-3, a small cluster of residences located around Interstate 90 Exit 85, in the vicinity of the Kalista Bridge fishing access site, would have immediate foreground or foreground views of the route.

No notable clusters of residences with foreground views of the route occur between the end of Link 11-3 and the end of the route (Links 16-1, 16-2, 16-4).

For the majority of the length of the B1: Preferred Route and all other alternatives, dispersed rural residences with immediate foreground and foreground views are scattered along the route, typically singly or in small groups and in varying concentrations.

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include the Continental Divide National Scenic Trail, the Henneberry Ridge WSA, Hidden Pasture Creek WSA, the Bell/Limekiln Canyons WSA, several campgrounds, the Camp Fortunate day use area, and the Red Rocks day use area.

Highly sensitive transportation routes located along the corridor include the Big Sheep Creek Country Byway and two BDNF Concern Level One roadways.

Moderately sensitive recreation and preservation viewpoints located along the corridor include the Big Hole River Class I Fishery, the Beaverhead Class I Fishery, the Lewis and Clark National Historic Trail, several sportsman's access locations, the Call Mountain Roadless Area, the East Pioneer Roadless Area, the McKenzie Canyon Roadless Area, the Timber Butte Roadless Area, the Garfield Mountain Roadless Area, and the Ney Homestead recreation site.

One moderately sensitive transportation route, a BDNF Concern Level Two Roadway, is located within the corridor.

Along Link 11-3, the Big Hole River Class I Fishery, a moderately sensitive viewpoint, would have foreground views of the route.

Along Link 16-1, the Lewis and Clark National Historic Trail and the Beaverhead River Class I Fishery would be crossed by the route and have immediate foreground views in the vicinity of the crossing and foreground views elsewhere along the route. The High Bridge sportsman's access would also have foreground views of the route (Link 16-1).

VRM/VQO/SIO

No VRM Class II areas would be affected by this route. BLM VRM Class III areas that would be crossed by the B1: Preferred Route include 4.5 miles along Link 11-3, 7.8 miles along Link 16-1, and 10.2 miles along Link 16-2.

No USFS SIO High or Moderate areas would be crossed by this route.

B2: Sheep Creek Route

The B2: Sheep Creek Route is composed of Links 11-4 and 18-1. Link 11-4 extends south to its termination just east of Dutchman Mountain. From there, Link 18-1 extends south across Argenta Flats, across Horse Prairie, and through the Bitterroot Range to the Montana-Idaho Border. Refer to Table 3.7-1 for a summary of the visual resource inventory for all alternatives.

Scenic Quality

The majority of the areas crossed by the B1: Preferred Route are composed of Class C scenery. A total of 0.9 mile of Class A, 13.8 miles of Class B scenery, and 72.3 miles of Class C scenery are crossed by the B2 route. Class A scenery is crossed by the route at the Coyote Creek crossing, just upstream from where it flows into the Big Hole River, west of McCartney Mountain (Link 11-4). Areas of Class B scenery are crossed by the Route where it follows Medicine Lodge Creek up into the Bitterroot Range (Link 18-1) and at Bannock Pass on the Montana-Idaho border.

Sensitive Viewpoints and Visibility

Residences

Views from residences were considered highly sensitive. A total of 8 residences would have immediate foreground views of the B2 route. A total of 2.8 miles of immediate foreground views, 19.1 miles of foreground views, and 34.1miles of middleground views occur along the B2 route.

Dispersed rural residences with immediate foreground and foreground views are scattered along the route, typically singly or in small groups and in varying concentrations. Along Link 11-4, a small cluster of residences located on Argenta Flats west of Dillon would have immediate foreground or foreground views of the route. No notable clusters of residences with foreground views of the route occur along Link 18-1.

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include the Continental Divide National Scenic Trail, the Henneberry Ridge WSA, one proposed wilderness area, the Bell/Limekiln Canyons WSA, several campgrounds, the Muddy Creek/Big Sheep Creek ACEC, and the Camp Fortunate day use area.

Highly sensitive transportation routes located along the corridor include the Big Sheep Creek Back Country Byway and several BDNF Concern Level One roadways.

Moderately sensitive recreation and preservation viewpoints located along the corridor include the Big Hole River Class I Fishery, the Beaverhead River Class I Fishery, the Lewis and Clark National Historic Trail, the Call Mountain Roadless Area, the East Pioneer Roadless Area, the McKenzie Canyon Roadless Area, the Timber Butte Roadless Area, the Garfield Mountain Roadless Area, and the Ney Homestead recreation site.

Several BDNF Concern Level Two Roadways, which are moderately sensitive transportation routes, are located within the corridor.

Along Link 18-1, the route would follow the east edge of the Henneberry Ridge WSA, resulting in immediate foreground and foreground views of the route. The Lewis and Clark National Historic Trail would be crossed, resulting in immediate foreground and foreground views of the route. The Medicine Lodge - Big Sheep Creek Back Country Byway and the route would both follow Medicine Lodge Creek up into the Bitterroot Range, resulting in a number of crossings and relatively extensive immediate foreground and foreground views of the route. The Continental Divide National Scenic Trail would be crossed by the route at the Montana-Idaho border, resulting in immediate foreground and foreground views.

VRM/VQO/SIO

No VRM Class II areas would be affected by this route. BLM VRM Class III areas that would be crossed by the B2 route include 12.5 miles along Link 11-4 and 33.8 miles along Link 18-1.

Along Link 18-1, the route would encounter USFS SIO High areas for 1.5 miles just north of the Montana-Idaho border and north of Italian Peaks roadless area/proposed wilderness in Idaho. USFS SIO Moderate areas that would be crossed by the B2 route consist of 0.8 mile along Link 18-1.

B3: I-15 ROUTE

The B3: I-15 Route is composed of Links 11-3, 16-1, 16-3, and 16-4. Links 11-3 and 16-1 extend south to just south of the Clark Canyon Reservoir. Links 16-3 and 16-4 then extend southeast to the Montana-Idaho Border. Refer to Table 3.7-1 for a summary of the visual resource inventory for all alternatives.

See the B1: Preferred Route for the visual resources inventory along Links 11-3, 16-1, and 16-4. The visual resource inventory for Link 16-3 is discussed below.

Scenic Quality

The majority of the areas crossed by the B3: I-15 Route are composed of Class C scenery. A total of 4.2 miles of Class A scenery, 7.2 miles of Class B scenery, and 77.2 miles of Class C scenery are crossed by the B3: I-15 Route. See the scenic quality section of the B1: Preferred Route Description for discussion of areas of Class A and Class B scenery crossed by Links 11-3, 16-1, and 16-4.

Sensitive Viewpoints and Visibility

Residences

Views from residences were considered highly sensitive. A total of 11 residences would have immediate foreground views of the B3: I-15 Route. A total of 2.7 miles of immediate foreground views, 33.9 miles of foreground views, and 39.3 miles of middleground views would occur along Alternate 2. The communities of Dillon, Glen, and Lima are located within the route corridor.

Refer to the B1: Preferred Route for a description of clusters of residences with immediate foreground and foreground views of the route that are located along Links 11-3, 16-1, and 16-4. Along Link 16-3, the community of Lima and a notable cluster of residences located to the south of Clark Canyon Reservoir would have foreground views of the route.

Recreation, Preservation, and Transportation Viewpoints

Refer to the B1: Preferred Route for a listing of sensitive viewpoints within the alternative corridor and for a description of sensitive recreation, preservation, and transportation viewpoints with immediate foreground and foreground views of the link along Links 11-3, 16-1, and 16-4. Along Link 16-3, the Big Sheep Creek Back Country Byway would be crossed by the route, resulting in immediate foreground and foreground views.

VRM/VQO/SIO

BLM VRM descriptions for the B3 route are the same as those for the B1: Preferred Route for Links 11-3 and 16-1.

No additional VRM Class II areas would be affected by this route. Along Link 16-3, BLM VRM Class III areas would be crossed for 3.6 miles.

No USFS SIO High or Moderate areas would be affected by this route.

3.7.3.3 AB1: I-15 Jefferson Valley Route

The AB1: I-15 Jefferson Valley Route is composed of Links 1, 3-1, 7-2, 7-41, 7-42, 7-5, 7-8, 11-22, 11-21, 7-9, 8, 16-1, 16-2, and 16-4. Links 1 and 3-1 follow a general southwest alignment from the Townsend substation site to the Highway (Hwy) 69 crossing north of Cardwell. From there, Links 7-2, 7-41, 7-42, 7-5, and 7-8 extend west alignment and Links 11-22, 11-21, and 7-9 extend northwest to the Mill Creek substation and then back again (this portion of the alternative is double-circuited). The route then follows Link 8 southeast to a point east of Dutchman Mountain. Link 16-1 extends south to just south of the Clark Canyon Reservoir. Links 16-3 and 16-4 then extend southeast to the Montana-Idaho Border. Refer to Table 3.7-1 for a summary of the visual resource inventory for all alternatives.

Refer to the A1: Preferred Route visual resources inventory for Links 1, 3-1, and 7-2, 7-41, 7-42, 7-5, 7-8, 11-22, 11-21, and 7-9. Refer to the B1: Preferred Route visual resources inventory for Links 16-1, 16-2, and 16-4. The visual resources inventory for Link 8 is discussed below.

Scenic Quality

A total of 6.9 miles of Class A and 34.0 miles of Class B scenery are crossed by AB1: I-15 Jefferson Valley Route. Refer to the A1: and B1: Preferred Routes for discussion of areas of Class A and Class B scenery crossed by Links 1, 3-1, 7-2, 7-41, 7-42, 7-8, 11-22, 11-21, 16-1, and 16-4. Along Link 8, Class A scenery is crossed where the route crosses the Big Hole River and Class B scenery is crossed by the route where it crosses Hell Canyon and where it traverses the east side of McCartney Mountain, above the Big Hole River.

Sensitive Viewpoints and Visibility

Residences

Views from residences were considered highly sensitive. A total of 99 residences would have immediate foreground views of the AB1: I-15 Jefferson Valley Route. A total of 11.8 miles of immediate foreground views, 57.1 miles of foreground views, and 104.6 miles of middleground views would occur along the AB1: Jefferson Valley Route. The communities of Anaconda, Butte, Dillon, Glen, Lima, Silver Star, Twin Bridges, and Whitehall are located within the route corridor.

Refer to the A1: and B1: Preferred Routes for a description of clusters of residences with immediate foreground and foreground views of the route that are located along Links 1, 3-1, 7-2, 7-41, 7-42, 7-5, 7-8, 11-22, 11-21, 7-9, 16-1, 16-2, and 16-4.

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include the Crimson Bluffs interpretive site, the Continental Divide National Scenic Trail, Homestake Lake picnic area, Thompson Park, Black Sage WSA, several campgrounds, the Camp Fortunate day use area, and the Red Rocks day use area.

Highly sensitive transportation routes located along the corridor include the Anaconda-Pintler National Scenic Highway, the Big Sheep Creek Back Country Byway, and several BDNF Concern Level One roadways.

Moderately sensitive recreation and preservation viewpoints located along the corridor include the Missouri River Class I/II Fishery, the Big Hole River Class I Fishery, the Beaverhead Class I Fishery, the Jefferson River Class II Fishery, the Ruby River Class II Fishery, the Lewis and Clark National Historic Trail, several sportsman's access locations, the Ringing Rock recreation site, Anaconda Smoke Stack State Park, the Raidersburg off-road-vehicle (ORV) trailhead, Whitetail/Haystack Roadless Area, Fleecer Roadless Area, and the Ney Homestead recreation site.

Several moderately sensitive transportation routes, all BDNF Concern Level Two Roadways, are located within the corridor. One proposed MDT rest area site is also located within the corridor.

Refer to the A1: and B1: Preferred Routes for a description of sensitive recreation, preservation, and transportation viewpoints with immediate foreground and foreground views of the along Links 1, 3-1, 7-2, 7-41, 7-42, 7-5, 7-8, 11-22, 11-21, 7-9, 16-1, 16-2, and 16-4. Along Link 8, the Big Hole River

Class I Fishery would be crossed by the route, resulting in immediate foreground and foreground views.

VRM/VQO/SIO

Refer to the A1: and B1: Preferred Routes for a description of BLM VRM Class II and III areas and USFS SIO High and Moderate areas that would occur along the AB1: Jefferson Valley Route Phases 1and 2 for Links 1, 3-1, 7-2, 7-41, 7-42, 7-5, 7-8, 11-22, 11-21, 7-9, 16-1, 16-2, and 16-4. An additional 13.4 miles of VRM Class III would be crossed by Link 8.

3.7.4 DESCRIPTION OF ALTERNATIVE ROUTES – IDAHO

3.7.3.4 State Line to Midpoint Segments

C1: PREFERRED ROUTE

The C1: Preferred Route is composed of Links 20, 22, 23, 24, 26-1, 26-2, 26-3, 26-4, and 27. Link 20 extends east and then south from the Continental Divide through the Beaverhead Mountains to the edge of the Sheep Experiment Station. Link 22 then follows a generally westerly course. Links 23, 24, 26-1 and 26-2 wrap around the edge of the Bitterroot Range and then extend south, through the INL, to a point just north of the Borah substation and west of American Falls. Link 26-3 wraps around Brigham Point and the southern edge of Craters of the Moon National Monument, continuing west along Link 26-4, to the route's termination at Link 27 and the Midpoint substation. Refer to Table 3.7-1 and 3.7-2 for a summary of the visual resource inventory for all alternatives.

Scenic Quality

The majority of the areas crossed by the C1: Preferred Route are composed of Class C scenery. A total of 6.3 miles of Class B, and 226.6 miles of Class C scenery are crossed by the Preferred Route. Of the State Line to Midpoint Alternatives, the C1: Preferred Route would cross the shortest length of Class B scenery.

Several areas of Class B scenery would be crossed by the C1: Preferred Route. These areas occur between Cedar Butte WSA and Big Southern Butte (Links 24 and 26-1) and south of Great Rift WSA (Link 26-3).

Sensitive Viewpoints and Visibility

<u>Residences</u>

Views from residences were considered highly sensitive. A total of 6 residences would have immediate foreground views of the C1: Preferred Route. The C1 route would have the largest number of residences within the immediate foreground of any State Line to Midpoint alternative. A total of 2.2 miles of immediate foreground views, 16.4 miles of foreground views, and 99.8 miles of middleground views would occur along the C1 route. The C1 route would have the greatest distance of immediate foreground views from residences of any State Line to Midpoint alternative. The communities of Spencer, Dubois, American Falls, and Minidoka are located within the route corridor.

Spencer would have immediate foreground and foreground views of the route (Link 20). A small cluster of residences with foreground views of the route occurs to the west of American Falls (Link 26-1). Other residences with immediate foreground or foreground views of the route are scattered along the route and are typically widely dispersed.

Table 3.7-2 Visual Resource Inventory Summary – Idaho

			State Line to Midpoint			
			C1: Preferred Route	C2: Eastern Route	C3: Western Route	C4: Sheep Creek INL Brigham Point
Total Length of Alternative (Miles)			232.5	239.2	177.6	214.2
Number of Residences within Immediate Foreground (1000 feet)			6	5	3	4
Scenic Quality (Miles Crossed)		Class A	0	0	0	0
		Class B	6.3	8.7	10.5	14.9
		Class C	226.6	230.9	167.6	199.7
Miles of Visibility	Residential Viewpoints	Immediate Foreground	2.2	1.7	0.8	1.2
		Foreground	16.4	18.5	14.1	18.1
		Middleground	99.8	111.8	87	78.3
	High Sensitivity Recreation, Preservation, and Transportation Viewpoints	Immediate Foreground	3	3	0	3
		Foreground	9.5	13.2	5	9.5
		Middleground	30.4	43.3	38.1	34.1
	High Sensitivity Recreation, Preservation, and Transportation Linear Features (Roads, Rivers, Trails)	Immediate Foreground	2.4	2.4	0.6	0.2
		Foreground	3	2.7	1.4	0.6
		Middleground	14.1	12	12.7	2
	Moderate Sensitivity Recreation, Preservation, and Transportation Viewpoints	Immediate Foreground	6.1	6.1	0	6.1
		Foreground	2.3	2.3	1.9	1.2
		Middleground	20.7	26.4	36.9	18.6
	Moderate Sensitivity Recreation, Preservation, and Transportation Linear Features (Roads, Rivers, Trails)	Immediate Foreground	5.4	3.2	7.3	4.2
		Foreground	12.5	5.4	15.5	10
		Middleground	46.2	29.2	47.4	22.2
BLM VRM (Miles Crossed)		Class I	0.7	1.6	0	0.7
		Class II	28.4	14.9	28.6	29
		Class III	60.7	55.3	73.8	64.4
USFS SIO (Miles Crossed)		High	6.1	6.1	3.6	3.6
		Moderate	0	0	1.4	1.4

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include the Continental Divide National Scenic Trail, Big Southern Butte NNL, Black Canyon WSA, Cedar Butte WSA, Great Rift WSA, Shale Butte WSA, Goodale's Cutoff Historic Trail, Snake River Vista, Baker Caves, and two campgrounds.

One highly sensitive transportation route, the Lost Gold Trails Loop Scenic Byway, is located along the corridor.

Moderately sensitive recreation and preservation viewpoints located along the corridor include the Nez Perce National Historic Trail, the Garfield Mountain Roadless Area, the Massacre Rocks rest area, an Idaho Transportation Department (ITD) rest area, one sportsman's access site, the Oregon Trail, Great Rift NNL, the Wood Road Kapuka Loop Trail, and Minidoka National Wildlife Refuge.

One moderately sensitive transportation route, the Sacajawea Historic Byway, is located along the corridor.

From the beginning of the C1: Preferred Route to the end of Link 20, the Continental Divide National Scenic Trail would be crossed by the route at the Idaho-Montana border and the Lost Gold Trails Loop Scenic Byway would be crossed further south, resulting in immediate foreground and foreground views of the route (Link 20). The Nez Perce National Historic Trail would also be crossed by the link, resulting in immediate foreground and foreground views (Link 20).

Along Link 22, the Lost Gold Trails Loop Scenic Byway and the Nez Perce National Historic Trail would be crossed by the route, resulting in immediate foreground and foreground views of the route.

From the end of Link 22 to the origin of Link 26-1, south of the INL and east of Big Southern Butte (Links 23 and 24), the Nez Perce Nation Historic Trail (Link 23), the Sacajawea Historic Byway (Link 23), and Goodale's Cutoff Historic Trail (Link 24) would be crossed by the route, resulting in immediate foreground and foreground views of the route.

From the origin of Link 26-1 to the end of the route at the Midpoint Substation, Goodale's Cutoff Historic Trail (Link 26-1) would be crossed by the route, resulting in immediate foreground and foreground views of the route; Great Rift WSA(Link 26-3) would have foreground views of the route; the Great Rift NNL (Link 26-3) would be crossed by the route, resulting in immediate foreground and foreground views of the route, and Shale Butte WSA (Link 26-4) would have immediate foreground and foreground views of the route.

VRM/VQO/SIO

The C1: Preferred Route would encounter BLM VRM Class I areas for 0.7 mile along Link 24 northwest of Cedar Butte WSA.

C1 would encounter BLM VRM Class II areas for 6.2 miles along the west end of Link 22, along 11.3 miles of Link 23 west of the Beaverhead Mountains, along 9.4 miles of Link 24, along 1.5 miles of Link 26-4 south of Shale Butte WSA.

BLM VRM Class III areas that would be crossed by the C1 route include 0.3 mile along Link 20, 3.8 miles along Link 22, 12.5 miles along Link 23, 16.8 miles along Link 24, 15.6 miles along Link 26-1, 7.4 miles along Link 26-2, and 4.3 miles along Link 26-4.

The route would cross USFS VQO Retention for 6.1 miles in the Beaverhead Mountains along Link 20.

C2: EASTERN ROUTE

The C2: Eastern Route is composed of Links 20, 21, 26-1, 26-2, 26-3, 26-4, and 27. Link 20 extends east and then south from the Continental Divide through the Beaverhead Mountains to the edge of the Sheep Experiment Station. Link 21 continues south to near Market Lake WMA, turns southwest and passes between INL and Hell's Half Acre WSA, and then turns due west and passes north of Cedar Butte WSA. Links 26-1 and 26-2 continue due south. Link 26-3 wraps around Bringham Point and the southern edge of Craters of the Moon National Monument, continuing west along Link 26-4, to the route's termination at Link 27 and the Midpoint substation. Refer to Table 3.7-3 for a summary of the visual resource inventory for all alternatives.

Scenic Quality

The majority of the areas crossed by the C2: Eastern Route are composed of Class C scenery. A total of 8.7 miles of Class B, and 230.9 miles of Class C scenery are crossed by the C1: Preferred Route.

Several areas of Class B scenery would be crossed by the C2 route. These areas occur north of the Market Lake WMA (Link 21), between Cedar Butte WSA and Big Southern Butte (Links 21 and 26-1) and south of Great Rift WSA (Link 26-3).

Sensitive Viewpoints and Visibility

Residences

Views from residences were considered highly sensitive. A total of 5 residences would have immediate foreground views of the C2: Eastern Route. A total of 1.7 miles of immediate foreground views, 18.5 miles of foreground views, and 111.8 miles of middleground views would occur along the C2 route. The C2 route would have the greatest distance of foreground and middleground views from residences of any State Line to Midpoint alternative. The communities of Spencer, Hamer, Roberts, Atomic City, American Falls, and Minidoka are located within the route corridor. Spencer would have immediate foreground and foreground views of the route (Link 20). A small cluster of residences with foreground views of the route occurs to the west of American Falls (Link 26-1). Other residences with immediate foreground or foreground views of the route are scattered along the route and are typically widely dispersed.

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include the Continental Divide National Scenic Trail, Hell's Half Acre WSA, Big Southern Butte NNL, Cedar Butte WSA, Great Rift WSA, Shale Butte WSA, Goodale's Cutoff Historic Trail, Snake River Vista, Baker Caves, and two campgrounds.

One highly sensitive transportation route, the Lost Gold Trails Loop Scenic Byway, is located along the corridor.

Moderately sensitive recreation and preservation viewpoints located along the corridor include the Nez Perce National Historic Trail, the Garfield Mountain Roadless Area, the Camas National Wildlife Refuge, two ACECs, the Massacre Rocks rest area, one sportsman's access site, the Oregon Trail, Great Rift NNL, the Wood Road Kapuka Loop Trail, and Minidoka National Wildlife Refuge.

One moderately sensitive transportation route, the Sacajawea Historic Byway, is located along the corridor.

Refer to the C1: Preferred Alternative for a description of sensitive recreation, preservation, and transportation viewpoints with immediate foreground and foreground views of the route along Link 20 and from the beginning of Link 26-1 to the end of the route at the Midpoint Substation (Links 26-1, 26-2, 26-3, 26-4, and 27).

Along Link 21, the Lost Gold Trails Loop Scenic Byway would be crossed once and Goodale's Cutoff Historic Trail would be crossed twice, resulting in immediate foreground and foreground views of the route; and Hell's Half Acre WSA and Cedar Butte WSA would both have foreground views of the route.

VRM/VQO/SIO

Refer to the C1: Preferred Route for a description of BLM VRM Class II and III areas and USFS VQO Retention areas that would occur for Links 20, 26-1, 26-2, 26-3, 26-4, and 27. An additional 1.6 miles of VRM Class I north of Cedar Butte WSA and an additional 13.4 miles of VRM Class II east and southeast of Hamer and Camas National Wildlife Refuge would be crossed by Link 21. Link 21 would also cross 27.7 miles of VRM Class III areas.

C3: Western Route

The C3: Western Route is composed of Links 18-2, 23, 25-11, 25-12, 25-3, 25-4, and 27. Links 18-2 and 23 extend south to just south of Black Canyon WSA where Links 25-11 and 25-12 then generally follow the northwest edge of INL and Craters of the Moon National Monument. Link 25-3 extends west and then south around Carey. Link 25-4 extends southwest to the route's termination at Link 27 and the Midpoint substation. Refer to Table 3.7-3 for a summary of the visual resource inventory for all alternatives.

Scenic Quality

The majority of the areas crossed by the C3: Western Route are composed of Class C scenery. A total of 10.5 miles of Class B, and 167.6 miles of Class C scenery are crossed by the Preferred Route.

Several areas of Class B scenery would be crossed by the C3 route. These areas occur where the route passes through the Beaverhead Mountains (Link 18-2), where the route crosses the Big Lost River Sinks (Link 25-11), and south of Fish Creek Reservoir (Link 25-12).

Sensitive Viewpoints and Visibility

Residences

Views from residences were considered highly sensitive. A total of 3 residences would have immediate foreground views of the C3: Western Route. A total of 0.8 miles of immediate foreground views, 14.1 miles of foreground views, and 87.0 miles of middleground views would occur along the C3 route. The C3 route would have the shortest distance of immediate foreground and foreground views from residences of any State Line to Midpoint alternative. The communities of Butte City, Arco, Carey, Richfield, Shoshone, and Dietrich are located within the route corridor. Richfield would have foreground views of the route (Link 25-4). Residences with immediate foreground or foreground views of the route are scattered along the route and are typically widely dispersed.

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include the Continental Divide National Scenic Trail, Italian Peak roadless area/proposed wilderness area, Muddy Creek/Big Sheep Creek ACEC, Upper and Lower Medicine Lodge Creek recreation sites, Black Canyon WSA, Great Rift WSA, Craters of the Moon National Monument, Craters of the Moon wilderness, Upper and Lower Silver Creek recreation sites, Raven's Eye WSA, Shoshone WSA, and Lava WSA.

Highly sensitive transportation routes within the corridor include the Big Sheep Creek Back Country Byway; the Lost Gold Trails Loop Scenic Byway; US Hwy 20, US Hwy 20/26/93 and US Hwy 26/93, all designated by Blaine County as scenic corridors; and the Sawtooth Scenic Byway.

Moderately sensitive recreation and preservation viewpoints located along the corridor include the Nez Perce National Historic Trail, three roadless areas, Goodale's Cutoff Historic Trail, and two sportsman's access sites.

One moderately sensitive transportation route, the Sacajawea Historic Byway, is located along the corridor.

Refer to the C1: Preferred Alternative for a description of sensitive recreation, preservation, and transportation viewpoints with immediate foreground and foreground views of the route along Link 23.

Along Link 18-2, the Continental Divide National Scenic Trail would be crossed by the route, resulting in immediate foreground and foreground views.

Between the origin of Link 25-11 southeast of Black Canyon WSA and the end of the route at the Midpoint Substation (Links 25-11, 25-12, 25-3, 25-4, and 27), Goodale's Cutoff Historic Trail would be crossed four times, three times by Link 25-12 and once by Link 25-3, resulting in immediate foreground and foreground views of the route; Great Rift WSA would have foreground views of the route (Link 25-12); and US Hwy 20, designated by Blaine County as a scenic corridor, would be crossed, resulting in immediate foreground and foreground views of the route (Link 25-3).

VRM/VQO/SIO

Refer to the C1: Preferred Route for a description of BLM VRM Class II and III that would occur for Links 23. The C3 route would encounter BLM VRM Class II areas for 6.8 miles in the Beaverhead Mountains along Link 18-2 and along 10.5 miles of Link 25-11.

BLM VRM Class III areas that would be crossed by the C1 route include 7.8 miles along Link 18-2, 15.4 miles along Link 25-11, 21.5 miles along Link 25-12, 7.7 miles along Link 25-3, and 8.9 miles along Link 25-4.

The route would cross USFS VQO Retention for 3.6 miles and USFS VQO Retention for 1.4 miles in the Beaverhead Mountains along Link 18-2.

C4: Sheep Creek INL Brigham Point Route

The C4: Sheep Creek INL Brigham Point Route is composed of Links 18-2, 23, 24, 26-1, 26-2, 26-3, 26-4, and 27. Links 18-2 and 23 extend south to just south of Black Canyon WSA where Links 23, 24, 26-1 and 26-2 wrap around the edge of the Bitterroot Range and then extend south, through the INL, to a point just north of the Borah substation and west of American Falls. Link 26-3 wraps around Brigham Point and the southern edge of Craters of the Moon National Monument, continuing west along Link 26-4, to the route's termination at Link 27 and the Midpoint substation. Refer to Table 3.7-3 for a summary of the visual resource inventory for all alternatives.

Scenic Quality

The majority of the areas crossed by the C4: Sheep Creek INL Brigham Point Route are composed of Class C scenery. A total of 14.9 miles of Class B and 199.7 miles of Class C scenery are crossed by the Preferred Route. The C4 route crosses the greatest distance of Class B scenery of any State Line to Midpoint alternative.

Several areas of Class B scenery would be crossed by the C3 route. These areas occur where the route passes through the Beaverhead Mountains (Link 18-2), between Cedar Butte WSA and Big Southern Butte (Links 24 and 26-1) and south of Great Rift WSA (Link 26-3).

Sensitive Viewpoints and Visibility

<u>Residences</u>

Views from residences were considered highly sensitive. A total of 4 residences would have immediate foreground views of the C3: Western Route. A total of 1.2 miles of immediate foreground views, 18.1 miles of foreground views, and 78.3 miles of middleground views would occur along the C4 route. The communities of American Falls and Minidoka are located within the route corridor. Residences with immediate foreground or foreground views of the route are scattered along the route and are typically widely dispersed.

Recreation, Preservation, and Transportation Viewpoints

High sensitivity recreation and preservation viewpoints located along the corridor include the Continental Divide National Scenic Trail, Italian Peak roadless area/proposed wilderness area, Muddy Creek/Big Sheep Creek ACEC, Upper and Lower Medicine Lodge Creek recreation sites, Big Southern Butte NNL, Black Canyon WSA, Cedar Butte WSA, Snake River Vista, Great Rift WSA, Shale Butte WSA, Baker Caves, one campground location, one sportsman's access site, the Wood Road Kapuka Loop Trail, and Minidoka National Wildlife Refuge.

Highly sensitive transportation routes within the corridor include the Big Sheep Creek Back Country Byway and the Lost Gold Trails Loop Scenic Byway.

Moderately sensitive recreation and preservation viewpoints located along the corridor include the Nez Perce National Historic Trail, two roadless areas, Goodale's Cutoff Historic Trail, the Massacre Rocks rest area and an ITD rest area, the Oregon Trail, Great Rift NNL, and one sportsman's access sites.

For a description of sensitive recreation, preservation, and transportation viewpoints with immediate foreground and foreground views of the route, refer to the C3: Western Route for Link 18-2 and to the C1: Preferred Alternative for the beginning of Link 23 to the end of the route at the Midpoint Substation (Links 23, 24, 26-1, 26-2, 26-3, 26-4, and 27).

VRM/VQO/SIO

Refer to the C1: Preferred Route and C3: Western Route for a description of BLM VRM Class I, II, and III areas and USFS VQO Retention areas that would occur for Links 18-2, 23, 24, 26-1, 26-2, 26-3, 26-4, and 27.

3.7.5 SUBSTATIONS

3.7.5.1 New Townsend Substation

Scenic Quality

The Townsend Substation site is located in an area of Class C scenic quality.

Sensitive Viewpoints and Visibility

Residences make up the majority of the high sensitivity viewpoints for the substation. Eight residences are located in the foreground distance zone. The community of Townsend is located in the background distance zone.

The Missouri River Class I Fishery, a moderately sensitive viewpoint, is in the foreground distance zone. The Lewis and Clark Historic Trail, Crimson Bluffs interpretive site, and a sportsman's access site, all moderately sensitive viewpoints, are within the middleground distance zone. No views of the substation site are expected from these viewpoints.

VRM/VQO/SIO

The Townsend Substation site is not located on BLM or USFS lands.

3.7.5.2 Mill Creek Substation Addition

Scenic Quality

The Mill Creek Substation Addition site is located in an area of Class C scenic quality.

Sensitive Viewpoints and Visibility

Residences make up the majority of the high sensitivity viewpoints for the substation. The site is in the foreground for two residences. The community of Anaconda is within the background distance zone.

Anaconda Smoke Stack State Park and a proposed MDT rest area site, both moderately sensitive viewpoints, are within the middleground and background distance zones.

VRM/VQO/SIO

The Mill Creek Substation Addition site is not located on BLM or USFS lands.

3.7.5.3 Midpoint Substation Addition

Scenic Quality

The Midpoint Substation Addition site is located in an area of Class C scenic quality.

Sensitive Viewpoints and Visibility

Residences are the only high sensitivity viewpoints for the substation. Residences occur only in the middleground and background distance zones.

VRM/VQO/SIO

The Midpoint Substation Addition site is not located on BLM or USFS lands.

3.7.6 COMMUNICATION SYSTEM

As discussed in Section 2.3.2.1, preliminary locations for microwave facilities along the Preferred Route (Alternatives A1, B1 and C1) have been identified (see Figure 2-4). The microwave site locations in Montana include Mill Creek, Fleecer, Beef Trail, East Ridge, Cardwell Hill, Townsend Substation, and Mauer Mountain, and the locations in Idaho are Humphrey Ridge, Big Grassy Substation, Howe Peak, American Falls SE, Borah Substation, Dietrich Butte, and Midpoint Substation. All 14 microwave site locations are either existing or designated communication sites.

3.8 SOCIOECONOMICS

3.8.1 INTRODUCTION

The Mountain States Transmission Line Intertie (MSTI) project would be between 400 to 430 miles in length from the northern terminus at Townsend Substation in Broadwater County, Montana to the southern terminus at Midpoint Substation in Jerome County, Idaho. The alternative routes traverse seven counties in Montana and 10 counties in Idaho. Unpopulated public lands, rural agricultural areas, remote residences, and small to medium-sized communities may be affected by the proposed project. A variety of federal and state regulatory frameworks apply to socioeconomic analysis including:

- National Energy Policy Act
- National Environmental Policy Act
- Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (Discussed in Section 3.9)
- Montana Major Facility Siting Act

3.8.2 INVENTORY METHODS

3.8.2.1 Data Sources

Data sources for socioeconomic analysis are organized around communities and political entities within the project's potential economic reach. Because of the broad area covered by the project, a regional approach was taken to obtain relevant data. The analysis area for socioeconomics was defined through examination of the project alternatives' potential effects, in concert with the existing socioeconomic fabric of the area. The proposed project is located in southwest Montana and eastern Idaho. The Idaho/Montana border of the analysis area is formed by the Continental Divide, which in addition to forming a political boundary, has historically been a geographic boundary affecting early social and cultural connectivity between the populaces residing on either side. Historic low population densities in this region have resulted in a distance barrier between population centers in Montana and Idaho, as well.

Today, the Continental Divide is less of an important segregating feature, with the economies of southwestern Montana and Idaho being relatively integrated. Thus, an analysis area incorporating counties both in Idaho and Montana is appropriate. Since the project is likely to be constructed using essentially separate crews on either side of the border, impacts can be viewed as those arising from two related but separate projects.

In identifying the analysis area, two considerations prevailed. First, since beneficial impacts would occur to tax revenues of jurisdictions through which the ultimately-chosen alternative would be routed, all counties in which any alternative could be located were included in the analysis area.

Project alternatives could also have noticeable relationships with a somewhat broader area. The most important of such effects would be in drawing employees to construct and operate its facilities. Thus, in addition to the counties through which project alternatives pass, local employment centers could be sources of noticeable numbers of workers. For Montana, the region's major cities/labor market centers are Helena (Lewis and Clark County) Butte (Silver Bow County) and Bozeman (Gallatin County). For Idaho, the largest labor centers are Idaho Falls (Bonneville County), Pocatello (Bannock County), and Twin Falls (Twin Falls County). Each of these counties was included in the analysis area. Because of their regional socioeconomic importance and proximity to project elements some additional counties were included. These additional counties, all in Idaho, were Fremont County, Cassia County, and Gooding County. The socioeconomic analysis addresses the Montana and Idaho counties listed below (counties with asterisks are those in which one or more alternative routes are located):

Montana Counties

Beaverhead*
Broadwater*
Deer Lodge*
Gallatin
Jefferson*
Lewis and Clark
Madison*
Silver Bow*

Idaho Counties

Bannock
Bingham*
Blaine*
Bonneville*
Butte*
Cassia
Clark*
Fremont
Gooding
Jefferson*
Jerome*
Lincoln*
Madison
Minidoka*
Power*
Twin Falls

Socioeconomic data profile summaries were developed for each county and community from a variety of sources. These included:

- U.S. Census Bureau
- U.S. Department of Labor, Bureau of Labor Statistics
- U.S. Department of Commerce, Bureau of Economic Analysis
- Montana Department of Commerce, Census and Economic Information Center.
- Montana Department of Revenue
- Idaho Department of Labor

3.8.2.2 Data Categories

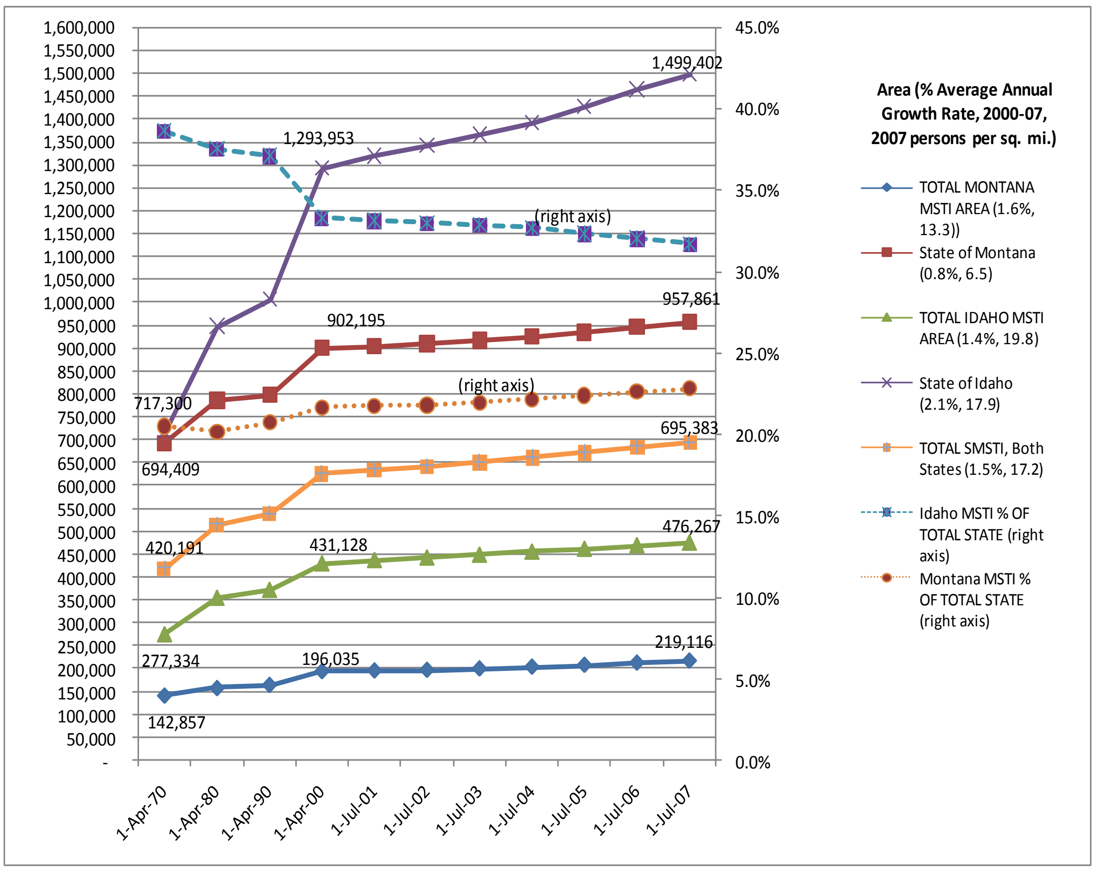
Specific data categories addressed in the socioeconomic analysis include:

- Populations (Regional, County and Community)
- Demographics (Age Distribution, Ethnicity/Race)
- Housing (Ownership and Rental)
- Employment and Economy
- Income

3.8.3 Population, Demographics and Housing

In general, both Montana and Idaho are relatively rural areas. This applies to the MSTI analysis area, as well. In the Montana portion, the primary population centers are Helena, Bozeman, and Butte, while in the Idaho portion, Pocatallo, Idaho Falls, and Twin Falls (and to a lesser extent, Hailey) serve as the primary cities. The remainder of the analysis area is rural, with scattered smaller incorporated areas serving as rural service centers.

The population of the entire two-state analysis area was 695,383 in 2007. After relatively rapid growth of 2% annually from 1970 to 2000 (with a growth spurt in the 1990s in both states), the analysis area's population growth has moderated to a still-rapid 1.5% annually since 2000. Year 2007 population density in the analysis area averaged 17.9 persons per square mile with the Idaho portion being slightly denser at 19.8 persons per square mile, compared to 13.3 in the Montana portion. These trends are depicted in Figure 3.8-1.



Source: Population Division, U.S. Census Bureau, Release Date: March 20, 2008

Figure 3.8-1 Historical Population Summary, MSTI Analysis Area

3.8.3.1 Population

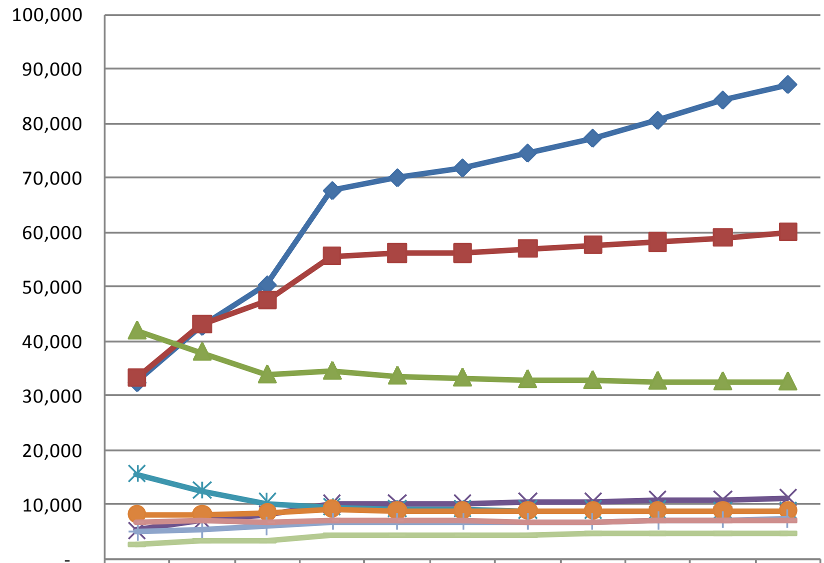
MONTANA

The population of the 9-county Montana portion of the MSTI analysis area was 219,116 persons in 2007, with an average growth rate during the previous 7 years of 1.6% annually (compared to a national average of 1.0%), and a population density of 13.3 persons per square mile (Figure 3.8-1). The population of this area is most concentrated in Gallatin County (county seat: Bozeman) and Lewis and Clark County (county seat and state capitol: Helena), with 87,369 and 59,998 population, respectively, in 2007. None of the preferred or alternative routes would traverse either county, meaning that the chosen route would mostly traverse the more rural areas of the Montana portion of the MSTI analysis area. The Montana analysis area population statistics are tabulated in Table 3.8-1 and graphed in Figure 3.8-2.

Aside from Gallatin and Lewis and Clark counties, the only significant urbanized area is Silver Bow County, with a 2007 population of 32,652. Silver Bow County (county seat: Butte) is only 719 square miles, and its 45.4 persons per square mile is the highest of any analysis area county. Deer Lodge County (county seat: Anaconda) is the next most dense county in the analysis area. Like Silver Bow County, Deer Lodge County is very small in land area (741 square miles); with a 2007 population of 8,852, its density is 11.9 persons per square mile.

The remaining five counties are all sparsely-settled, primarily farming, range, and public-lands areas. Their 2007 county seats and populations were: Beaverhead County (county seat: Dillon), 8,804; Broadwater County (county seat: Townsend), 4,590; Jefferson County (county seat: Boulder), 11,121; Madison County (county seat: Virginia City), 7,426; and Powell County (county seat: Deer Lodge), 7,118. These more rural counties have also lagged in population growth between 2000 and 2007, probably reflecting the nationwide trend toward rural emigration and increasing agricultural consolidation and efficiencies. The populations of Beaverhead, Powell, and Silver Bow counties actually declined.

Projections of the populations of the MSTI analysis area counties call for essentially a continuation of recent trends. Gallatin and Lewis and Clark counties are anticipated to account for nearly all of the increase in population. Overall, the Montana analysis area is projected to grow at a 1.4% average annual rate, from 205,237 in the year 2000 to 310,980 in 2030. Gallatin and Lewis and Clark counties are projected to grow at annual rates of 2.2% and 1.4%, respectively.



County (% avg. annual growth, persons per square mi., 2000-07	1-Apr-70	1-Apr-80	1-Apr-90	1-Apr-00	1-Jul-01	1-Jul-02	1-Jul-03	1-Jul-04	1-Jul-05	1-Jul-06	1-Jul-07
Gallatin County (3.7%, 33.2)	32,505	42,865	50,484	67,831	70,186	71,998	74,733	77,472	80,748	84,489	87,359
Lewis and Clark County (1.1%,17.2)	33,281	43,039	47,495	55,716	56,199	56,147	56,899	57,751	58,150	59,003	59,998
Silver Bow County (-0.8%,6.7)	41,981	38,092	33,941	34,606	33,722	33,365	33,072	32,904	32,781	32,682	32,652
Jefferson County (1.5%,6.7)	5,238	7,029	7,939	10,049	10,126	10,234	10,320	10,584	10,792	10,882	11,121
Deer Lodge County (-0.9%, 11.9)	15,652	12,518	10,356	9,417	9,225	9,101	8,990	9,013	9,005	8,850	8,852
Beaverhead County (-0.6%, 1.6)	8,187	8,186	8,424	9,202	9,019	8,961	8,845	8,819	8,772	8,854	8,804
Madison County (1.2%,2.1)	5,014	5,448	5,989	6,851	6,833	6,889	6,824	6,906	7,094	7,193	7,426
Powell County (-0.1%,3.1)	6,660	6,958	6,620	7,180	7,015	6,964	6,865	6,846	6,955	7,120	7,118
Broadwater County (0.7%, 3.7)	2,526	3,267	3,318	4,385	4,367	4,347	4,365	4,442	4,437	4,505	4,590

Source: U.S. Census Bureau, decennial Census for 1970, 1980, 1990, and 2000. Annual Census estimates, July 1 for each year after 2000.

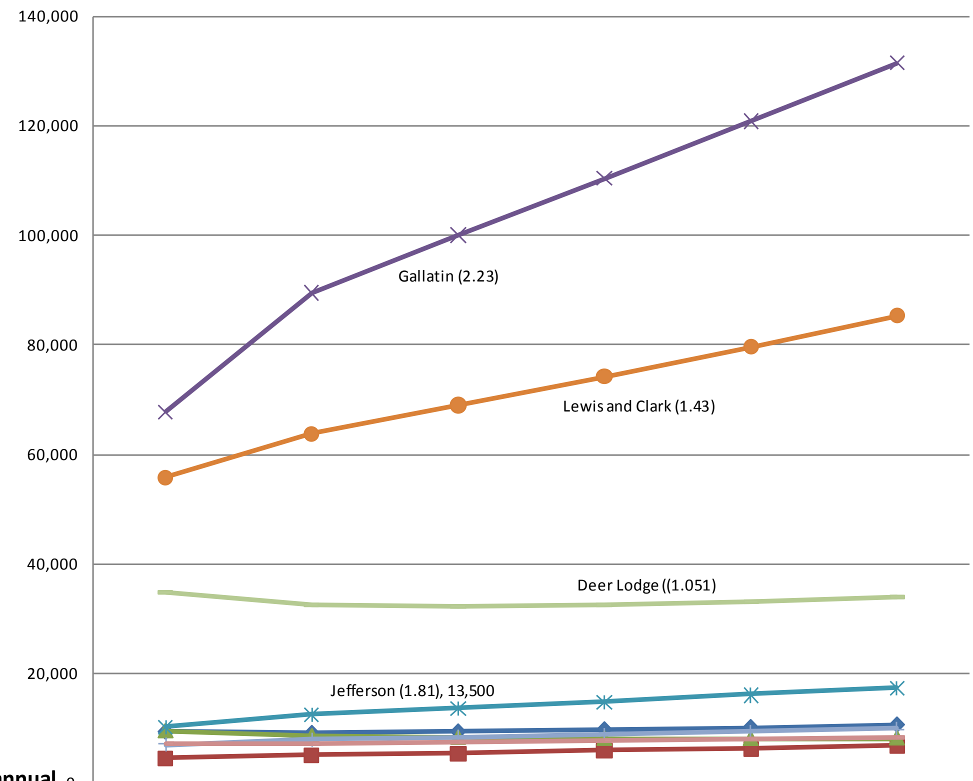
Figure 3.8-2 Historical Population Graph, Montana Counties in the MSTI Analysis Area

Table 3.8-1 Historical Population, Montana Counties, Cities, and Places in the MSTI Analysis Area

City/Place and County	1-Apr-70	1-Apr-80	1-Apr-90	1-Apr-00	1-Jul-01	1-Jul-02	1-Jul-03	1-Jul-04	1-Jul-05	1-Jul-06	1-Jul-07	Land Area	Persons/ Sq. Mi. 2007
Beaverhead County	8,187	8,186	8,424	9,202	9,019	8,961	8,845	8,819	8,772	8,854	8,804	5,572.0	1.6
Dillon city*	4,548	3,976	3,991	3,752	4,189	4,150	4,113	4,084	4,070	4,056			
Lima town	351	272	265	242	238	235	232	230	227	226			
Wisdom CDP	n/a	n/a	n/a	114									
Rest of Beaverhead County													
Broadwater County	2,526	3,267	3,318	4,385	4,367	4,347	4,365	4,442	4,437	4,505	4,590	1,238.9	3.7
Townsend city*	1,371	1,587	1,635	1,867	1,884	1,893	1,902	1,955	1,946	1,974			
Radersburg CDP	n/a	n/a	n/a	70									
Toston CDP	n/a	n/a	n/a	105									
Winston CDP	n/a	n/a	n/a	73									
Rest of Broadwater County													
Deer Lodge County	15,652	12,518	10,356	9,417	9,225	9,101	8,990	9,013	9,005	8,850	8,852	741.2	11.9
Anaconda-Deer Lodge*	9,771	12,518	10,356	9,417	**9203**	**9070**	**8970**	**8976**	**8986**	**8888**			
Rest of Deer Lodge County													
Gallatin County	32,505	42,865	50,484	67,831	70,186	71,998	74,733	77,472	80,748	84,489	87,359	2,631.8	33.2
Bozeman city*	18,670	21,645	22,660	27,509	28,736	29,541	30,876	32,430	33,584	35,061			
Belgrade city	1,307	2,336	3,411	5,728	6,368	6,664	6,911	7,127	7,119	7,323			
Big Sky CDP (part see also	n/a	n/a	n/a	1033									
Four Corners CDP	n/a	n/a	n/a	1828									
Manhattan town	816	988	1,034	1,396	1,417	1,420	1,451	1,483	1,466	1,492			
Three Forks city	1,188	1,247	1,203	1,728	1,749	1,767	1,818	1,874	1,847	1,845			
West Yellowstone town	756	735	913	1,177	1,184	1,202	1,218	1,233	1,224	1,232			
Willow Creek CDP	n/a	n/a	n/a	209									
Rest of Gallatin County													
Jefferson County	5,238	7,029	7,939	10,049	10,126	10,234	10,320	10,584	10,792	10,882	11,121	1,658.8	6.7
Boulder town*	1,342	1,441	1,316	1,300	1,322	1,345	1,360	1,398	1,432	1,445			
Basin CDP	n/a	n/a	n/a	255									
Clancy CDP	n/a	n/a	n/a	1406									
Cardwell CDP	n/a	n/a	n/a	40									
Jefferson City CDP	n/a	n/a	n/a	295									
Montana City CDP	n/a	n/a	n/a	2094									
Whitehall town	1,035	1,030	1,067	1,044	1,068	1,088	1,100	1,134	1,153	1,165			
Rest of Jefferson County													
Lewis and Clark County	33,281	43,039	47,495	55,716	56,199	56,147	56,899	57,751	58,150	59,003	59,998	3,497.6	17.2
Helena City*	22,730	23,938	24,569	25,780	26,218	26,358	26,757	27,154	27,369	27,885			
Augusta CDP	n/a	n/a	n/a	284									
East Helena town	1,651	1,647	1,538	1,642	1,660	1,664	1,700	1,808	1,860	2,068			
Lincoln CDP	n/a	n/a	n/a	1100									
Helena Valley Northeast CDP			1,585	2,122									
Helena Valley Northwest CDP			1,215	2,082									
Helena Valley Southeast CDP			4,601	7,141									
Helena Valley West Central CDP			6,327	6,983									
Helena West Side CDP			1,847	1,711									
Rest of Lewis and Clark County													
Madison County	5,014	5,448	5,989	6,851	6,833	6,889	6,824	6,906	7,094	7,193	7,426	3,602.9	2.1
Virginia City town*	149	192	142	130	130	132	130	132	135	137			
Ennis town	501	660	773	840	848	856	880	921	970	1,005			
Alder CDP	n/a	n/a	n/a	116									
Big Sky CDP (part see also	n/a	n/a	n/a	188									
Harrison CDP	n/a	n/a	n/a	162									
Sheridan town	636	646	652	659	663	669	662	674	687	699			
Twin Bridges town	613	437	374	400	403	407	402	409	417	424			
Rest of Madison County													
Powell County	6,660	6,958	6,620	7,180	7,015	6,964	6,865	6,846	6,955	7,120	7,118	2,332.7	3.1
Deer Lodge City*	4,306	4,023	3,378	3,421	3,349	3,337	3,278	3,255	3,295	3,311			
Avon CDP	n/a	n/a	n/a	124									
Elliston CDP	n/a	n/a	n/a	225									
Garrison CDP	n/a	n/a	n/a	112									
Ovando CDP	n/a	n/a	n/a	71									
Rest of Powell County													
Silver Bow County	41,981	38,092	33,941	34,606	33,722	33,365	33,072	32,904	32,781	32,682	32,652	719.0	45.4
Butte-Silver Bow*	23,368	37,205	33,336	33,892	33,070	32,742	32,505	32,341	32,180	32,110	32,180		
Walkerville town	1,097	887	605	714									
TOTAL MONTANA MSTI ARE	142,857	159,216	166,142	196,035	197,673	199,045	202,068	205,918	209,962	214,724	219,116	16,422.8	13.3
State of Montana	694,409	786,690	799,065	902,195	906,098	910,282	917,453	926,721	935,784	946,795	957,861	147,042.4	6.5
MSTI % OF TOTAL STATE	20.6%	20.2%	20.8%	21.7%	21.8%	21.9%	22.0%	22.2%	22.4%	22.7%	22.9%		

Source: U.S. Census Bureau, decennial Census for 1970, 1980, 1990, and 2000. Annual Census estimates, July 1 for each year after 2000.

Each of the other seven counties is expected to experience lower growth, with only Broadwater County expected to meet the regional average of 1.4% per year. Silver Bow and Deer Lodge counties are expected to decline slightly in population by 2030. These projections are shown in Figure 3.8-3.



Area (projected annual % Growth)	2000 Census	2010	2015	2020	2025	2030
Beaverhead (0.43)	9,202	8,950	9,220	9,600	10,000	10,460
Broadwater (1.39)	4,385	4,920	5,310	5,770	6,170	6,630
Deer Lodge (-0.51)	9,417	8,470	8,180	7,990	7,980	8,070
Gallatin (2.23)	67,831	89,540	100,030	110,430	120,790	131,450
Jefferson (1.81)	10,049	12,280	13,500	14,720	15,960	17,200
Lewis and Clark (1.43)	55,716	63,640	68,950	74,220	79,670	85,370
Madison (1.19)	6,851	7,800	8,250	8,690	9,230	9,780
Powell (0.44)	7,180	7,130	7,310	7,550	7,810	8,180
Silver Bow (-0.08)	34,606	32,360	32,130	32,290	32,890	33,840
Total MSTI Study Area (1.40)	205,237	235,090	252,880	271,260	290,500	310,980
MONTANA (0.99)	902,195	984,000	1,034,470	1,087,740	1,146,050	1,210,960

Source: Demographic Database, Economic Projections Series, NPA Data Services, Inc., Arlington, VA
Processed by: Census and Economic Information Center, Montana Dept. of Commerce, Helena, with permission from NPA Data Services, Inc., 11/07

Figure 3.8-3 Population Projections, Montana MSTI Counties, 2010-2030

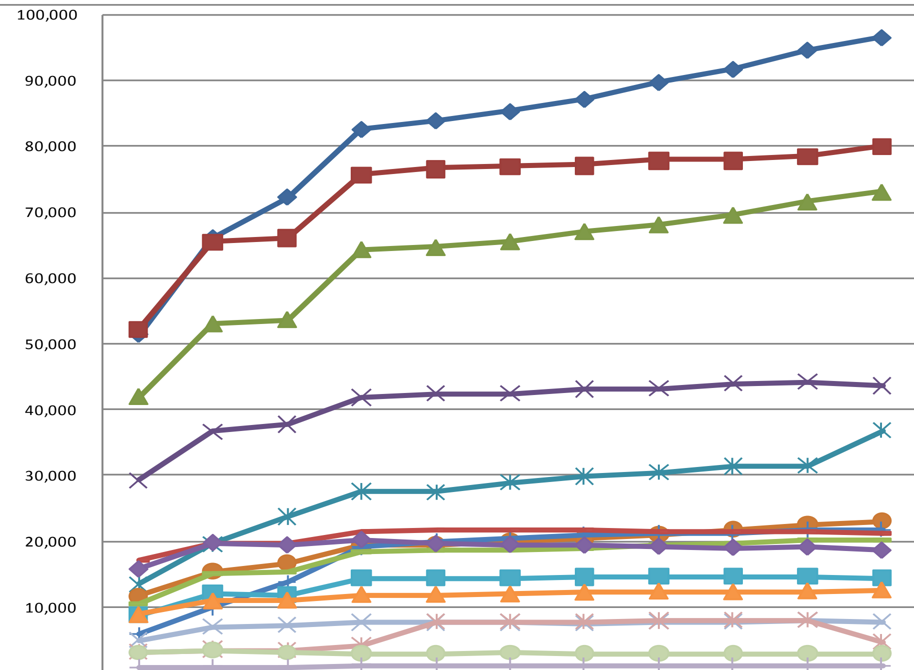
IDAHO

The population of the 16-county Idaho portion of the MSTI analysis area was 476,267 persons in 2007, with an average growth rate during the previous seven years of 1.4% annually (compared to a national average of 1.0%), and a population density of 19.8 persons per square mile (the U.S. average was 83). Thus, the Idaho portion of the MSTI Analysis area has a larger population and somewhat higher population density than the Montana portion, but in recent years has grown at a slightly lower, but still rapid, rate.

The main population (and employment) centers of this area are in Bonneville County (2007 population, 96,545; county seat: Idaho Falls), Bannock County (2007 population, 79,925; county seat: Pocatello), and Twin Falls County (2007 population, 73,058; county seat: Twin Falls). Only Bonneville County would be traversed by any of the project alternatives.

Secondary population and employment centers are in Bingham County (2007 population, 43,436; county seat: Blackfoot), Madison County (2007 population, 36,647; county seat: Rexburg), Jefferson County (2007 population, 22,851; county seat: Rigby) and Blaine County (2007 population, 21,501; county seat: Hailey).

The remaining nine counties are all sparsely-settled, primarily farming, range, and public-lands areas. Their 2007 county seats and populations were: Cassia County (county seat: Burley), 20,906; Jerome County (county seat: Jerome), 20,066; Minidoka County (county seat: Rupert), 18,564; Gooding County (county seat: Gooding), 14,250; Fremont County (county seat: St. Anthony), 12,517; Power County (county seat: American Falls), 7,684; Lincoln County (county seat: Shoshone), 4,497; Butte County (county seat: Arco), 2,771; and Clark County (county seat: Dubois), 906.



County (% average anual Growth, 2000-07, persons per square mile)	1-Apr-70	1-Apr-80	1-Apr-90	1-Apr-00	1-Jul-01	1-Jul-02	1-Jul-03	1-Jul-04	1-Jul-05	1-Jul-06	1-Jul-07
Bonneville County (2.3%, 51.7)	51,250	65,980	72,207	82,522	83,856	85,243	87,118	89,697	91,702	94,630	96,545
Bannock County (0.6%,71.8)	52,200	65,421	66,026	75,565	76,539	76,917	77,023	77,785	77,794	78,443	79,925
Twin Falls County (1.8%, 38.0)	41,807	52,927	53,580	64,284	64,603	65,488	67,044	68,080	69,540	71,575	73,058
Bingham County (0.9%, 20.7)	29,167	36,489	37,583	41,735	42,259	42,362	42,912	43,126	43,775	44,051	43,466
Madison County (2.3%, 77.7)	13,452	19,480	23,674	27,467	27,376	28,836	29,732	30,326	31,207	31,393	36,647
Jefferson County (2.6%, 20.9)	11,619	15,304	16,543	19,155	19,352	19,781	20,217	20,827	21,613	22,350	22,851
Blaine County (2.1%, 8.2)	5,749	9,841	13,552	18,991	19,770	20,295	20,680	21,023	21,173	21,501	21,560
Cassia County (0.0%, 9.4)	17017	19427	19532	21416	21551	21551	21522	21379	21391	21365	20960
Jerome County (1.6%, 33.5)	10,400	14,900	15,138	18,342	18,481	18,698	18,927	19,303	19,677	20,130	20,066
Minidoka County (-1.0%, 24.4)	15,731	19,718	19,361	20,174	19,558	19,443	19,327	19,166	18,996	19,041	18,564
Gooding County (0.3, 19.5)	8,645	11,874	11,633	14,155	14,226	14,236	14,329	14,406	14,424	14,404	14,250
Fremont County (0.8, 6.7)	8,710	10,813	10,937	11,819	11,835	11,890	12,158	12,330	12,224	12,369	12,517
Power County (0.8, 5.5)	4,864	6,844	7,086	7,538	7,564	7,543	7,516	7,724	7,761	7,914	7,684
Lincoln County (11.9%, 3.7)	3,057	3,436	3,308	4,044	7,672	7,749	7,748	7,827	7,868	7,930	4,497
Butte County (-0.7%, 1.2)	2,925	3,342	2,918	2,899	2,861	2,924	2,847	2,819	2,782	2,781	2,771
Clark County (-1.7%, 0.5)	741	798	762	1,022	971	957	910	932	914	920	906

Source: U.S. Census Bureau, decennial Census for 1970, 1980, 1990, and 2000. Annual Census estimates, July 1 for each year after 2000.

Figure 3.8-4 Historical Population Graph, Idaho Counties in the MSTI Analysis Area

These more rural counties have also lagged in population growth between 2000 and 2007, probably reflecting the nationwide trend toward rural outmigration and increasing agricultural consolidation and efficiencies.

Table 3.8-2 Tabulated Historical Population, Idaho Counties in the MSTI Analysis Area

County	1-Apr-70	1-Apr-80	1-Apr-90	1-Jul-95	1-Apr-00	1-Jul-01	1-Jul-02	1-Jul-03	1-Jul-04	1-Jul-05	1-Jul-06	1-Jul-07	Land Area	2007 Persons Per Square Mile
Bannock County	52,200	65,421	66,026	73,603	75,565	76,539	76,917	77,023	77,785	77,794	78,443	79,925	1,113.20	71.80
Arimo	252	338	311		348	350	345	335	331	315	307			
Chubbuck	2,924	7,052	7,791		9,700	9,993	10,099	10,107	10,441	10,562	10,861			
Dow ney	586	645	626		613	621	613	602	597	569	553			
Inkom	522	830	769		738	747	737	718	712	677	668			
Lava Hot Springs	516	467	420		521	533	532	524	519	497	481			
McCammon	623	770	722		805	818	812	796	801	778	777			
Pocatello (pt.)*	40,036	46,340	46,080		51,442	51,845	52,127	52,463	52,885	53,268	53,803			
Balance of Bannock					11,398	11,632	11,652	11,478	11,499	11,128	10,993			
Bingham County	29,167	36,489	37,583	40,648	41,735	42,259	42,362	42,912	43,126	43,775	44,051	43,466	2,094.80	20.75
Aberdeen					1,840	1,845	1,834	1,838	1,824	1,830	1,809			
Atomic	24	34	25		25	25	25	25	25	26	25			
Basalt	349	414	407		419	423	422	426	425	428	427			
Blackfoot*	8,716	10,065	9,646		10,419	10,570	10,591	10,709	10,740	10,877	11,007			
Firth	362	460	429		408	413	412	415	415	417	416			
Shelley	2,614	3,300	3,536		3,813	3,852	3,853	3,910	3,967	4,153	4,195			
Balance of Bingham					24,811	25,131	25,225	25,589	25,730	26,044	26,172			
Blaine County	5,749	9,841	13,552	17,108	18,991	19,770	20,295	20,680	21,023	21,173	21,501	21,560	2,644.90	8.15
Bellevue	537	1,016	1,275		1,876	1,916	1,993	2,093	2,192	2,204	2,190			
Carey					513	516	519	520	519	511	508			
Hailey*	1,425	2,109	3,687		6,200	6,749	7,043	7,244	7,423	7,589	7,751			
Ketchum	1,454	2,200	2,523		3,003	3,064	3,091	3,110	3,130	3,146	3,226			
Sun Valley	180	545	938		1,427	1,450	1,456	1,459	1,453	1,442	1,452			
Balance of Blaine					5,972	6,075	6,193	6,254	6,306	6,281	6,374			
Bonneville County	51,250	65,980	72,207	79,527	82,522	83,856	85,243	87,118	89,697	91,702	94,630	96,545	1,868.60	51.67
Ammon	2,545	4,669	5,002		6,187	6,889	7,769	8,642	9,722	10,876	12,065			
Idaho Falls*	35,776	39,590	43,929		50,730	51,115	51,242	51,675	52,215	52,267	52,786			
Iona	890	1,072	1,049		1,201	1,206	1,211	1,223	1,246	1,254	1,276			
Irw in	228	113	108		157	157	157	156	156	154	156			
Ririe (pt.)	575	555	596		25	25	25	24	24	24	24			
Sw an Valley	235	135	141		213	215	217	220	226	229	235			
Ucon	664	833	895		943	947	951	969	984	1,013	1,066			
Balance of Bonneville					23,066	23,302	23,671	24,209	25,124	25,885	27,022			
Butte County	2,925	3,342	2,918	3,017	2,899	2,861	2,924	2,847	2,819	2,782	2,781	2,771	2,232.90	1.24
Arco*	1,244	1,241	1,016		1,026	1,011	1,033	1,006	994	980	979			
Butte	42	93	59		76	75	77	75	74	73	73			
Moore	156	210	190		196	194	198	193	191	188	188			
Balance of Butte					1,601	1,581	1,616	1,573	1,560	1,541	1,541			
Cassia County	17,017	19,427	19,532	20,996	21,416	21,551	21,551	21,522	21,379	21,391	21,365	20,960	2,232.90	9.39
Albion	229	286	305		262	263	263	262	259	258	257			
Burley (pt.)*	8,279	8,761	8,702		9,074	9,136	9,103	9,073	8,977	8,961	8,930			
Declo	251	276	279		338	339	338	337	334	333	331			
Malta	196	196	171		177	178	177	177	175	175	174			
Oakley	656	663	635		668	725	723	720	713	719	712			
Balance of Cassia					10,897	10,910	10,947	10,953	10,921	10,945	10,961			
Clark County	741	798	762	866	1022	971	957	910	932	914	920	906	1,764.70	0.51
Dubois*	400	413	420		647	671	660	624	638	623	624			
Spencer	45	29	11		38	36	36	34	34	33	34			
Balance of Clark					337	264	261	252	260	258	262			
Fremont County	8,710	10,813	10,937	11,557	11,819	11,835	11,890	12,158	12,330	12,224	12,369	12,517	1,866.80	6.71
Ashton	1,187	1,219	1,114		1,129	1,119	1,112	1,125	1,131	1,100	1,092			
Drummond	13	25	37		15	15	15	15	15	15	15			
Island Park	136	154	159		215	267	268	270	276	273	275			
New dale	267	329	377		358	357	358	361	365	359	355			
Parker	266	262	288		319	318	318	321	324	319	319			
St. Anthony*	2,877	3,212	3,010		3,342	3,325	3,308	3,423	3,431	3,357	3,376			
Teton	390	559	570		569	568	569	575	580	570	565			
Warm River	10	2	9		10	10	10	10	10	10	10			
Balance of Fremont					5,862	5,856	5,932	6,058	6,198	6,221	6,362			
Gooding County	8,645	11,874	11,633	12,987	14,155	14,226	14,236	14,329	14,406	14,424	14,404	14,250	730.8	19.50
Bliss	114	208	185		275	269	266	265	263	259	255			
Gooding*	2,599	2,949	2,820		3,384	3,350	3,326	3,330	3,327	3,312	3,282			
Hagerman	436	602	600		656	761	768	772	774	765	761			
Wendell	1,122	1,974	1,963		2,338	2,359	2,364	2,362	2,379	2,407	2,438			
Balance of Gooding					7,502	7,487	7,512	7,600	7,663	7,681	7,668			
Jefferson County	11,619	15,304	16,543	18,245	19,155	19,352	19,781	20,217	20,827	21,613	22,350	22,851	1,095.10	20.87
Hamer	81	93	79		12	12	12	12	12	12	12			
Lew isville	468	502	471		467	468	475	482	491	498	507			
Menan	545	605	601		707	703	711	716	718	727	719			
Mud Lake	194	243	179		270	267	272	272	270	270	275			
Rigby*	2,324	2,624	2,681		2,998	2,995	3,026	3,059	3,042	3,274	3,291			
Ririe (pt.)	575	555	596		520	514	517	517	514	507	502			
Roberts	393	466	557		647	664	672	672	668	666	655			
Balance of Jefferson					13,534	13,729	14,096	14,487	15,112	15,659	16,389			
Madison County	13,452	19,480	23,674	26,102	27,467	27,376	28,836	29,732	30,326	31,207	31,393	36,647	471.6	77.71
Rexburg*	8,272	11,559	14,302		17,257	17,676	18,847	21,789	24,496	26,068	26,657			
Sugar	617	1,022	1,275		1,242	1,246	1,263	1,345	1,448	1,428	1,458			
Balance of Madison					8,968	8,454	8,726	6,598	4,382	3,711	3,278			
Minidoka County	15,731	19,718	19,361	20,759	20,174	19,558	19,443	19,327	19,166	18,996	19,041	18,564	759.7	24.44
Acequia	107	100	106		144	140	139	138	137	135	135			
Burley (pt.)	8,279	8,761	8,702		242	240	240	240	240	240	244			
Heyburn	1,637	2,889	2,714		2,899	2,831	2,821	2,806	2,788	2,769	2,768			
Minidoka	131	101	67		129	125	124	123	122	121	121			
Paul	911	940	901		998	977	970	961	949	946	945			
Rupert*	4,563	5,476	5,455		5,645	5,453	5,400	5,350	5,288	5,221	5,214			
Balance of Minidoka					10,117	9,792	9,749	9,709	9,642	9,564	9,614			
Power County	4,864	6,844	7,086	7,720	7,538	7,564	7,543	7,516	7,724	7,761	7,914	7,684	1,405.70	5.47
American Falls*	2,769	3,626	3,757		4,111	4,111	4,092	4,067	4,178	4,167	4,225			
Pocatello (pt.)	40,036	46,340	46,080		24	32	36	38	25	72	129			
Rockland	209	283	264		316	315	314	315	329	329	330			
Balance of Pow er					3,087	3,106	3,101	3,096	3,192	3,193	3,230			
Twin Falls County	41,807	52,927	53,580	59,679	64,284	64,603	65,488	67,044	68,080	69,540	71,575	73,058	1,925.10	37.95
Buhl	2,975	3,629	3,516		3,985	3,962	3,971	4,010	3,979	4,024	4,023			
Castleford	174	191	179		277	275	275	277	273	275	273			
Filer	1,173	1,645	1,511		1,620	1,638	1,655	1,695	1,730	1,779	1,880			
Hansen	415	1,078	848		970	968	972	978	966	963	960			
Hollister	57	167	144		237	236	236	238	235	236	235			
Kimberly	1,557	2,307	2,367		2,614	2,621	2,669	2,693	2,679	2,691	2,782			
Murtaugh	124	114	134		139	138	138	140	139	138	140			
Tw in Falls*	21,914	26,209	27,591		34,469	35,087	35,782	36,844	37,812	38,774	40,380			
Balance of Tw in Falls					19,973	19,678	19,790	20,169	20,267	20,660	20,902			
TOTAL IDAHO MSTI AREA	**458,936**	**571,658**	**598,006**	**392,814**	**753,200**	**760,039**	**769,444**	**779,626**	**791,160**	**801,052**	**813,899**	**451,704**	**22,207**	**20.34**
State of Idaho	**717,300**	**948,600**	**1,006,734**	**1,177,322**	**1,293,953**	**1,321,446**	**1,344,266**	**1,367,428**	**1,394,524**	**1,429,367**	**1,466,465**	**1,499,402**	**83,574**	**17.94**

Source: U.S. Census Bureau, decennial Census for 1970, 1980, 1990, and 2000. Annual Census estimates, July 1 for each year after 2000.

3.8.3.2 Demographics

This analysis of demographics focuses on age distribution; race and ethnicity are discussed in Section 3.9, Environmental Justice.

MONTANA

With the exception of Gallatin County, whose county seat, Bozeman, is an employment center with a noticeably different population distribution skewed toward younger working-age persons and few persons of retirement age, the median age among counties in the Montana MSTI analysis area was clustered around 40 years of age in the year 2000 (Gallatin County's median age was 30.7). Year 2000 age distributions are depicted in Figure 3.8-5.

Other county median ages ranged between 37.6 (Beaverhead County) and 43.4 (Madison County). Powell and Lewis and Clark counties also had relatively large (percentage-wise) working-age populations, with Lewis and Clark County also having a numerically-larger working-age population. Deer Lodge and Madison counties had the lowest proportion of working-age populations, consistent with the overall lower total population growth in those counties. These data reflect the typical shrinkage or lack of economic growth in the more rural counties (see section 3.8.4).

Cou y (median age)	Beaverhead (37.6)	Broadwater (41.3)	Deer Lodge (42.3)	Gallatin (30.7)	Jefferson (40.2)	Lewis & Clark (38.0)	Madison (43.4)	Powell (39.7)	Silver Bow (38.9)	Total MSTI	Statewide (37.5)
Under 5 years	5.7	5.3	4.6	5.8	5.2	6.2	4.7	4.6	5.8	5.6	6.1
5 to 9 years	6.4	7	5.7	5.9	7.3	7	5.8	5.5	6.7	6.2	6.9
10 to 14 years	7	7.8	7.2	6.4	9.6	7.6	7	6.7	7.1	6.9	7.7
15 to 19 years	10	6.8	8.1	8.8	8.2	7.7	7.2	6.9	7.2	8.3	7.9
Under 18 years	24.6	25.2	22.5	22	27.8	25.6	22.9	21.2	23.7	23.1	25.5
18 to 64 years	61.9	61.9	58.6	69.5	61.9	62.7	59.9	64.8	60.3	67.1	61.1
55 to 64 years	10	11.5	11	6.8	10.9	9.5	13	10.5	9.8	8.6	9.4
65 years and over	13.6	16.4	18.8	8.5	10.3	11.7	17.2	14	16	12.0	13.4

Source: U.S. Census Bureau, 2000 Census. QT-P1: Age Groups and Sex: 2000. Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

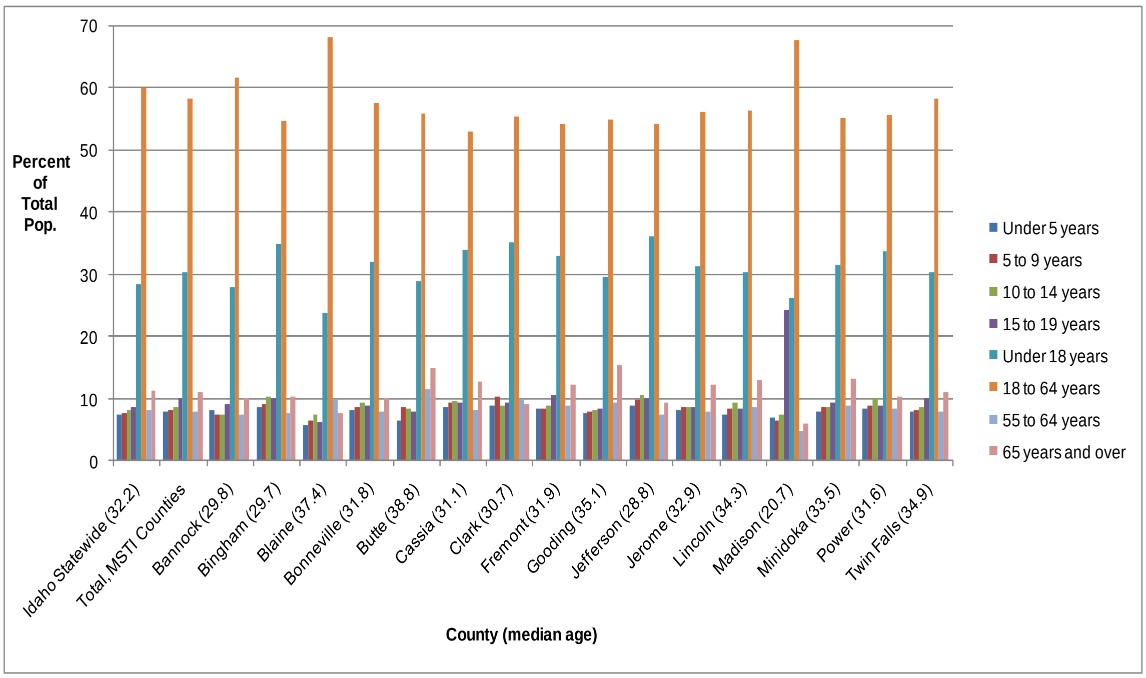
Figure 3.8-5 Age Distribution, Montana Counties in the MSTI Analysis Area

Idaho

The Idaho counties in the MSTI analysis area exhibit generally younger age profiles than in its Montana portion, just as statewide, Idaho is a younger-aged population than Montana.

In particular, Madison County has a median age of only 20.7 years, reflecting both its status as the U.S. county outside Utah with the largest proportion of Mormons (Church of Jesus Christ of the Latter Day Saints, 2005; web link http://www.adherents.com/largecom/com_lds.html), and its large college-aged population. Ricks College, formerly a two-year Mormon college, became (four-year) Brigham Young University-Idaho in the year 2000.

Other Idaho MSTI counties have median ages ranging from 28.8 (Jefferson County) to 38.8 (Butte County). Age distributions are shown in Figure 3.8-6.



Source: U.S. Census Bureau, 2000 Census. QT-P1: Age Groups and Sex: 2000. Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

Figure 3.8-6 Age Distribution, Idaho Counties in the MSTI Analysis Area

3.8.3.3 Housing

MONTANA

The housing market in the MSTI Montana analysis area exhibits varying degrees of tightness. The two most urban and higher-growth counties, Gallatin and Lewis and Clark, had the lowest rental vacancy rates in the year 2000, at slightly under 6% (5% and less is usually regarded as a tight market). In the other counties, substantial excess rental unit capacity existed. Rental vacancy rates ranged from 9.1% in Broadwater County to 12.6% in Silver Bow County. Housing data are summarized in Table 3.8-3.

Table 3.8-3 Housing Data, Montana Counties in the MSTI Analysis Area

					Vacant Housing Units (Percent)			Vacancy Rate	
Montana Counties	Total Housing Units	Occupied Housing Units	Vacant Housing Units	Overall Vacancy Percent	For Sale Only	For Rent	Seas., Rec., or Occ. Use	Home owner	Rental
Beaverhead	4,571	3,684	887	19.4%	6.9	15.6	56.4	2.5	9.3
Broadwater	2,002	1,752	250	12.5%	10	14.4	47.6	1.8	9.1
Deer Lodge	4,958	3,995	963	19.4%	12.6	22.3	28	4	17
Gallatin	29,489	26,323	3,166	10.7%	9.7	18.8	54.4	1.8	5.7
Jefferson	4,199	3,747	452	10.8%	9.3	19.9	41.6	1.3	12.5
Lewis & Clark	25,672	22,850	2,822	11.0%	8.4	14.9	59.6	1.5	5.8
Madison	4,671	2,956	1,715	36.7%	5.7	6.2	66.7	4.5	10.8
Powell	2,930	2,422	508	17.3%	9.1	20.5	42.7	2.6	13
Silver Bow	16,176	14,432	1,744	10.8%	18.4	35.5	10.1	3.1	12.6
TOTAL	94,668	82,161	12,507	13.2%					

Source: U.S. Census Bureau, 2000 Census. GCT-H5: General Housing Characteristics: 2000. Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

IDAHO

The rental housing market in the Idaho portion of the MSTI analysis area varies from somewhat tight to very under-occupied; in general, ample rental housing appeared to exist in the year 2000. Counties exhibiting rental vacancy rates closest to 5%, the threshold at which rental markets are often considered to be tight are Gooding (5.3%), Jerome (5.4%), Bonneville (5.9%), Power (6.1%), and Madison (7.0%). The counties with the highest rental vacancy rates were Fremont (15.2%), Butte (14.7%), Clark (14.2%), Blaine (13.6%), and Cassia (11.3%). For Blaine County, the prevalence of seasonal housing limited the effective amount of actual rental housing availability. Bannock, Bonneville, Fremont, and Twin Falls counties had the largest numbers of available units for rent. Housing data are displayed in Table 3.8-4.

Table 3.8-4 Housing Data, Idaho Counties in the MSTI Analysis area

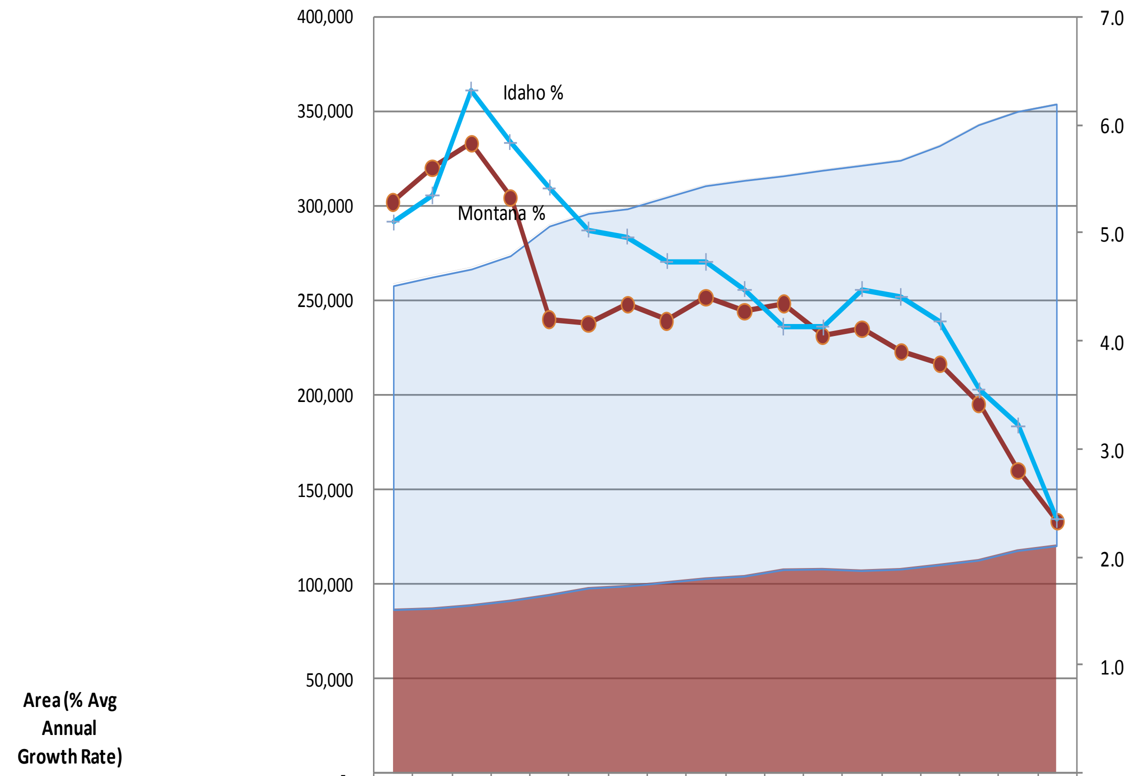
					Vacant housing units				
					Percent			Vacancy rate	
	Total housing units	Occupied housing units	Vacant Housing Units, Total	Overall Vacancy Percent	For sale only	For rent	Seas., rec., or occ. use	Home-owner	Rental
IDAHO COUNTIES									
Bannock	29,102	27,192	1,910	6.6%	21.6	38.1	13.6	2.1	8.4
Bingham	14,303	13,317	986	6.9%	18.5	28.9	10.4	1.7	9.4
Blaine	12,186	7,780	4,406	36.2%	2.5	8.7	84.5	2	13.6
Bonneville	30,484	28,753	1,731	5.7%	20.2	26.2	21.8	1.6	5.9
Butte	1,290	1,089	201	15.6%	19.4	21.4	18.9	4.4	14.7
Cassia	7,862	7,060	802	10.2%	18	30.5	12.6	2.7	11.3
Clark	521	340	181	34.7%	4.4	9.9	69.1	3.3	14.2
Fremont	6,890	3,885	3,005	43.6%	4	3.6	77.7	3.5	15.2
Gooding	5,505	5,046	459	8.3%	16.3	17	19.6	2	5.3
Jefferson	6,287	5,901	386	6.1%	25.6	17.4	13.7	1.9	7
Jerome	6,713	6,298	415	6.2%	20.2	26	11.3	1.9	5.4
Lincoln	1,651	1,447	204	12.4%	17.6	18.1	17.6	3.2	9.2
Madison	7,630	7,129	501	6.6%	14	43.9	14	1.6	7
Minidoka	7,498	6,973	525	7.0%	17.5	37.9	5.9	1.7	11
Power	2,844	2,560	284	10.0%	23.9	14.8	10.2	3.4	6.1
Twin Falls	25,595	23,853	1,742	6.8%	21.9	35.2	12.2	2.3	7.5
MSTI Study Area Total	7,515	5,516	1,999	26.6%					
Idaho Total	166,361	148,623	17,738	10.7%					

Source: U.S. Census Bureau, 2000 Census. GCT-H5: General Housing Characteristics: 2000, Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data.

3.8.4 EMPLOYMENT AND ECONOMY

The MSTI analysis area, as a whole, has experienced healthy economic growth over the past two decades, providing the basis for the relatively rapid rates of population growth previously described. Total employment was 354,652 in 2007, compared to 258,477 in 1990. Average annual employment has grown by 1.63% annually since the year 2000. MSTI analysis area employment is summarized in Figure 3.8-7.

About two-thirds of the total MSTI analysis area employment is in its Idaho portion, which has grown very slightly more rapidly than the Montana portion since the year 2000 (1.66% annually, compared to 1.59% for the Montana portion). The unemployment rate in the Idaho portion, which since 1990 has usually been somewhat higher than the Montana portion, has in recent years declined sufficiently so that in the year 2000, the unemployment rates in the Idaho and Montana analysis areas were essentially equal at 2.3%, a historic low in both areas.



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total MSTI Study Area (1.63%)	258,477	263,077	267,292	274,301	290,032	296,708	299,174	305,296	311,380	314,214	316,634	319,566	322,169	324,863	332,564	343,631	350,685	354,652
MSTI Idaho Part % of Idaho state total	36.7	36.8	36.0	35.4	35.3	34.9	34.3	34.1	33.8	33.7	33.0	32.7	33.2	33.2	33.2	33.1	32.4	31.9
MSTI Montana Part % of MT state total	22.7	22.9	22.9	23.1	23.1	23.6	23.6	23.7	23.8	23.8	24.2	24.2	24.2	24.1	24.2	24.3	24.7	24.9
TOTAL, Idaho MSTI Study Area part (1.66%)	171,444	175,373	177,907	182,521	195,220	198,299	199,638	203,784	207,888	209,457	208,414	211,058	214,473	216,423	221,817	230,452	232,400	233,798
TOTAL, Montana MSTI Study Area part (1.59%)	87,033	87,704	89,385	91,780	94,812	98,409	99,536	101,512	103,492	104,757	108,220	108,508	107,696	108,440	110,747	113,179	118,285	120,854
Unemployment Rate, Montana MSTI Study Area part (right axis)	5.3	5.6	5.8	5.3	4.2	4.2	4.3	4.2	4.4	4.3	4.3	4.1	4.1	3.9	3.8	3.4	2.8	2.3
Unemployment Rate, Idaho MSTI Study Area part (right axis)	5.1	5.3	6.3	5.8	5.4	5.0	5.0	4.7	4.7	4.5	4.1	4.1	4.5	4.4	4.2	3.5	3.2	2.3

Source: U.S. Bureau of Labor Statistics, Local Area Employment Statistics, not seasonally adjusted, downloaded April 6, 2008.

Figure 3.8-7 Employment Summary, MSTI Analysis Area, 1990-2007 (total employment on left axis, percent unemployed on right axis)

This relatively robust overall employment growth has been uneven across counties in the analysis area: The more rural areas generally have experienced slow or even negative economic growth, while the more urbanized areas have thrived. In the following sections, the differences across the state portions of the MSTI analysis area are described in greater detail.

3.8.4.1 Employment

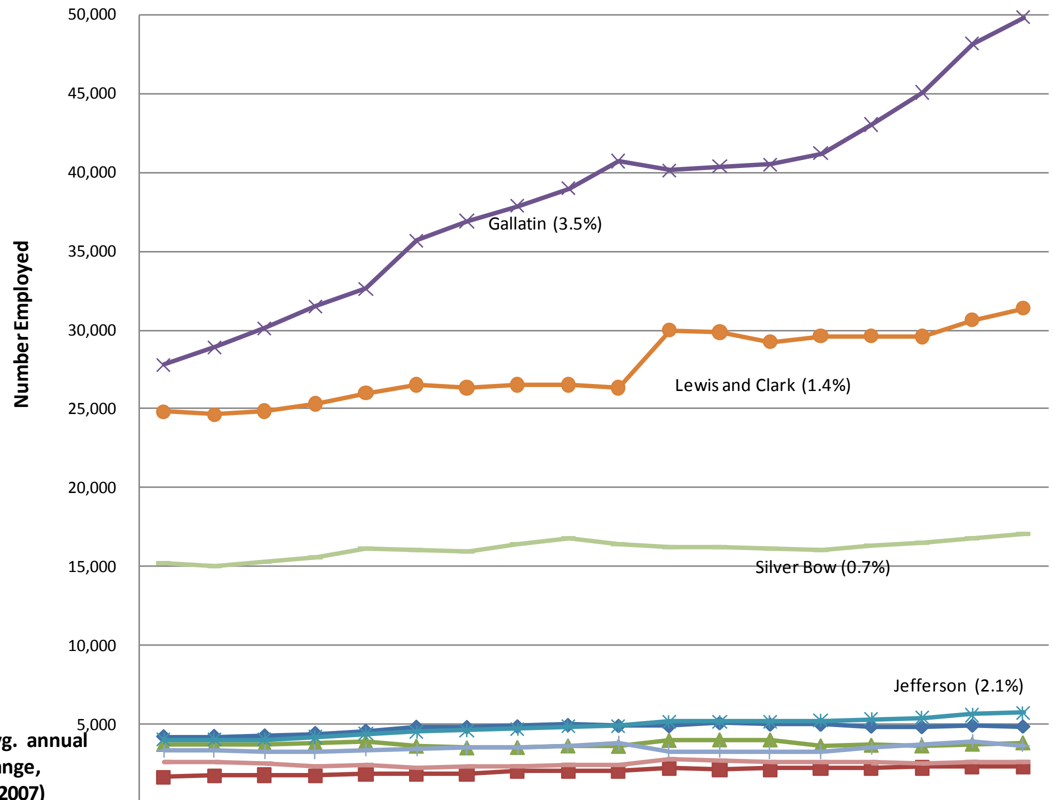
MONTANA

The most recent annual estimate of employment (2007) in the Montana portion of the MSTI analysis area is 120,854, an average annual growth rate of 1.6% since the year 2000. Gallatin County, with total employment 0f 49,824, and Lewis and Clark County, with 31,336, account for about two-thirds of total employment.

Gallatin and Lewis and Clark counties also constitute the primary sources of employment increases in the region. Not including these two counties, the region would have gained only 5,259 jobs from 1990 to 2007, with growth in employment only about 0.6% annually since the year 2000. Historical county employment data are depicted in Figure 3.8-8.

Of the five other Montana MSTI counties, only Silver Bow County had employment above 5,000 in 2007 (17,205 employed). However, over the 1990-2007 period, Silver Bow County's employment increased very little, by an average of 0.7% annually and 1,876 numerically over the 17-year period.

Of the remaining counties, Jefferson and Broadwater experienced noticeable annual growth, at 2.1% and 1.9%, respectively. However, the small size of their economies yielded very small numerical employment gains over the 1990-2007 period. Beaverhead and Madison counties experienced moderate growth, at 0.6% and 0.9% annually. Deer Lodge County employment grew negligibly, and Powell County employment actually fell slightly.

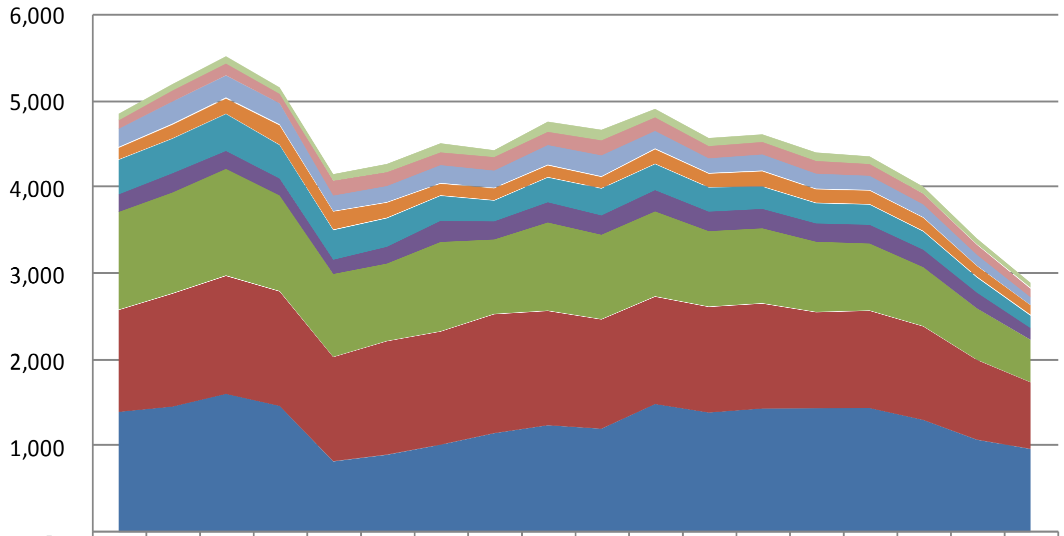


County (avg. annual % change, 1990-2007)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Beaverhead (0.9%)	4,155	4,179	4,209	4,367	4,518	4,781	4,762	4,806	4,894	4,841	4,823	5,021	4,933	4,927	4,802	4,767	4,865	4,803
Broadwater (1.9%)	1,616	1,676	1,736	1,705	1,771	1,791	1,817	1,970	2,007	1,986	2,137	2,102	2,119	2,168	2,165	2,214	2,220	2,236
Deer Lodge (0.2%)	3,700	3,666	3,694	3,756	3,859	3,587	3,482	3,507	3,603	3,576	3,947	3,983	3,979	3,608	3,647	3,605	3,713	3,798
Gallatin (3.5%)	27,776	28,846	30,068	31,492	32,593	35,671	36,889	37,868	38,972	40,687	40,114	40,370	40,497	41,213	43,018	45,075	48,188	49,823
Jefferson (2.1%)	3,990	3,965	3,970	4,102	4,324	4,472	4,565	4,667	4,786	4,824	5,123	5,137	5,105	5,173	5,256	5,350	5,538	5,673
Lewis and Clark (1.4%)	24,821	24,643	24,869	25,306	25,989	26,521	26,326	26,508	26,523	26,328	29,963	29,841	29,212	29,589	29,588	29,553	30,591	31,336
Madison (0.6%)	3,252	3,226	3,194	3,199	3,310	3,365	3,454	3,461	3,577	3,763	3,191	3,209	3,159	3,200	3,435	3,679	3,895	3,613
Powell (-.1%)	2,558	2,532	2,438	2,302	2,352	2,204	2,291	2,301	2,367	2,382	2,720	2,625	2,581	2,521	2,505	2,491	2,537	2,531
Silver Bow (0.7%)	15,165	14,971	15,207	15,551	16,096	16,017	15,950	16,424	16,763	16,370	16,202	16,220	16,111	16,041	16,331	16,445	16,738	17,041
TOTAL, Montana MSTI (2.2%)	87,033	87,704	89,385	91,780	94,812	98,409	99,536	101,512	103,492	104,757	108,220	108,508	107,696	108,440	110,747	113,179	118,285	120,854

Source: U.S. Bureau of Labor Statistics, Local Area Employment Statistics, not seasonally adjusted, downloaded April 6, 2008.

Figure 3.8-8 Total Employment, Montana Counties in the MSTI Analysis Area, 1990-2007

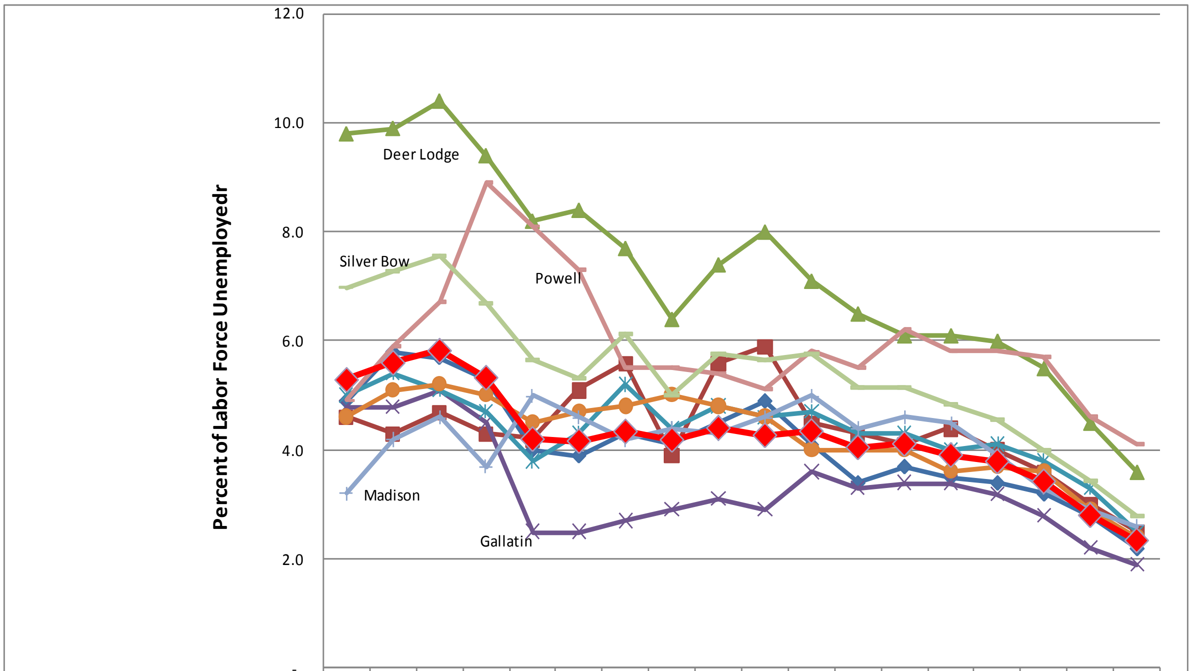
The number of unemployed persons in the labor force in the Montana portion of the MSTI analysis area fell for all counties over the 1990-2007 period, particularly after the year 2000. The average annual unemployed labor force declined from almost 5,000 in 2000 to about 3,000 in 2007. This decline is likely due to the overall rapid rate of employment increases, and migration of workers. Unemployment rates similarly declined for all counties to historic lows in 2007. The highest unemployment rates were in Deer Lodge and Powell counties, at 4.1% and 3.6% respectively. Employment rates below these latter rates can be considered essentially full employment when viewed as average annual figures. Unemployment information is presented in Figure 3.8-9 and 3.8-10 and in the Socioeconomics Technical Report (Vol. II).



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Broadwater	78	76	86	76	78	97	107	81	120	124	100	95	90	100	90	83	68	57
Madison	108	141	154	123	173	163	153	161	161	181	167	148	151	151	140	124	115	98
Beaverhead	213	257	254	244	188	194	213	205	231	247	206	175	192	181	171	158	140	109
Powell	133	158	175	225	207	173	134	135	134	128	166	154	172	154	155	151	123	109
Deer Lodge	401	401	429	388	343	331	290	240	287	311	302	279	257	234	234	211	176	144
Jefferson	209	228	212	201	172	201	251	216	240	230	252	232	231	218	223	209	190	144
Silver Bow	1,13	1,17	1,24	1,11	964	900	1,04	867	1,02	983	990	879	873	818	780	686	596	491
Lewis and Clark	1,18	1,31	1,37	1,33	1,21	1,32	1,31	1,38	1,33	1,27	1,24	1,22	1,22	1,11	1,13	1,08	928	774
Gallatin	1,39	1,45	1,60	1,46	823	900	1,01	1,15	1,24	1,20	1,48	1,39	1,43	1,44	1,44	1,30	1,07	967

Source: U.S. Bureau of Labor Statistics, Local Area Employment Statistics, not seasonally adjusted, downloaded April 6, 2008.

Figure 3.8-9 Total Annual Average Unemployed Labor Force, Montana Counties in the MSTI Analysis Area, 1990-2007



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Beaverhead	4.9	5.8	5.7	5.3	4.0	3.9	4.3	4.1	4.5	4.9	4.1	3.4	3.7	3.5	3.4	3.2	2.8	2.2
Broadwater	4.6	4.3	4.7	4.3	4.2	5.1	5.6	3.9	5.6	5.9	4.5	4.3	4.1	4.4	4.0	3.6	3.0	2.5
Deer Lodge	9.8	9.9	10.4	9.4	8.2	8.4	7.7	6.4	7.4	8.0	7.1	6.5	6.1	6.1	6.0	5.5	4.5	3.6
Gallatin	4.8	4.8	5.1	4.5	2.5	2.5	2.7	2.9	3.1	2.9	3.6	3.3	3.4	3.4	3.2	2.8	2.2	1.9
Jefferson	5.0	5.4	5.1	4.7	3.8	4.3	5.2	4.4	4.8	4.6	4.7	4.3	4.3	4.0	4.1	3.8	3.3	2.5
Lewis and Clark	4.6	5.1	5.2	5.0	4.5	4.7	4.8	5.0	4.8	4.6	4.0	4.0	4.0	3.6	3.7	3.6	2.9	2.4
Madison	3.2	4.2	4.6	3.7	5.0	4.6	4.2	4.4	4.3	4.6	5.0	4.4	4.6	4.5	3.9	3.3	2.9	2.6
Powell	4.9	5.9	6.7	8.9	8.1	7.3	5.5	5.5	5.4	5.1	5.8	5.5	6.2	5.8	5.8	5.7	4.6	4.1
Silver Bow	7.0	7.3	7.6	6.7	5.7	5.3	6.1	5.0	5.8	5.7	5.8	5.1	5.1	4.9	4.6	4.0	3.4	2.8
TOTAL, Montana MSTI Study Area part	5.3	5.6	5.8	5.3	4.2	4.2	4.3	4.2	4.4	4.3	4.3	4.1	4.1	3.9	3.8	3.4	2.8	2.3

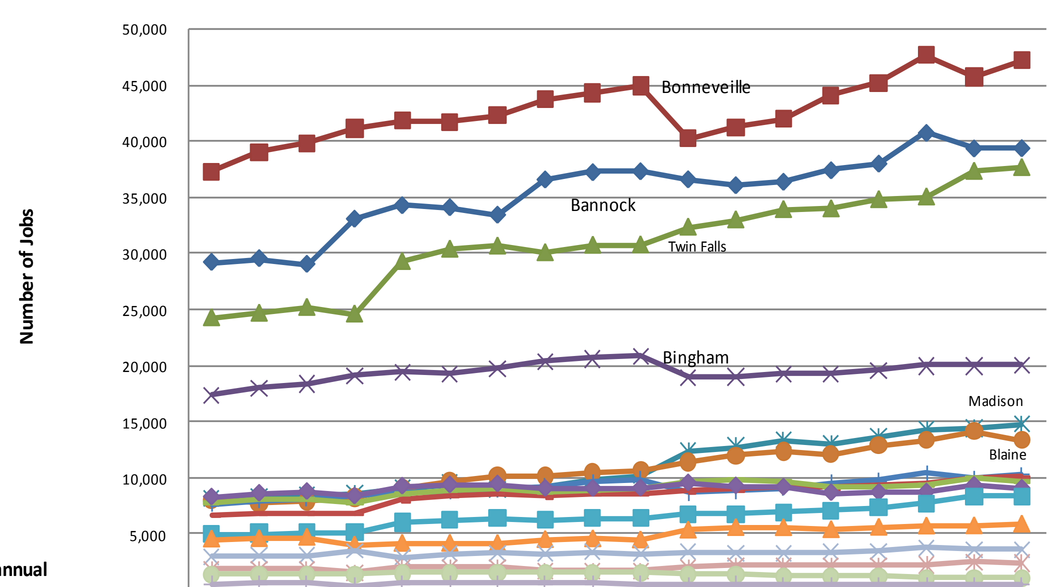
Source: U.S. Bureau of Labor Statistics, Local Area Employment Statistics, not seasonally adjusted, downloaded April 6, 2008.

Figure 3.8-10 Annual Average Unemployment Rates, Montana Counties in the MSTI Analysis Area, 1990-2007

When viewed on a monthly basis, however, there are substantial seasonal swings in the availability of labor across the MSTI analysis area. The harsh winters inhibit some employment, particularly construction. Thus, during the summer construction season, employment peaks noticeably. Similarly, the number of unemployed persons has historically been higher by about 600 to 1,000 in the winter than in summer (see Vol. II, Socioeconomics Technical Report).

IDAHO

Employment in the Idaho portion of the MSTI analysis area averaged 233,738 in 2007, having increased an average of 1.8% annually since 1990. The counties with the largest employment were Bonneville (county seat: Idaho Falls; 47,193 jobs), Bannock (county seat: Pocatello; 39,417 jobs), and Twin Falls (county seat: Twin Falls; 37,631 jobs). These represent the three primary business centers of the region and may be significant supply sources for labor and materials, though the project alternatives only pass through Bonneville County, not Bannock or Twin Falls counties. Employment data are graphed in Figure 3.8-11.



County (avg. annual % growth, 1990-2007)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Bannock (1.8%)	29,194	29,529	29,019	33,077	34,289	34,112	33,437	36,606	37,258	37,343	36,618	36,088	36,396	37,430	38,028	40,788	39,392	39,417
Bonneville (1.4%)	37,309	39,003	39,830	41,140	41,808	41,720	42,274	43,727	44,272	44,909	40,238	41,223	41,975	44,082	45,178	47,637	45,674	47,193
Twin Falls (2.6%)	24,325	24,724	25,244	24,656	29,325	30,417	30,693	30,105	30,765	30,799	32,376	33,024	33,938	34,004	34,820	35,060	37,336	37,671
Bingham (0.8%)	17,405	17,993	18,432	19,105	19,509	19,355	19,786	20,397	20,658	20,891	18,927	19,060	19,338	19,291	19,663	20,039	20,037	20,053
Madison (3.6%)	8,145	8,285	8,470	8,593	9,083	9,474	8,862	9,283	9,878	10,199	12,315	12,769	13,358	13,033	13,611	14,311	14,362	14,742
Blaine (3.0%)	8,104	7,819	8,036	8,314	9,121	9,788	10,186	10,189	10,495	10,724	11,445	12,031	12,386	12,141	12,902	13,408	14,152	13,406
Jefferson (1.8%)	7,670	7,933	8,118	8,448	8,768	8,787	9,002	9,223	9,626	9,871	8,700	8,867	9,078	9,537	9,775	10,432	10,002	10,334
Jerome (2.5%)	6,658	6,744	6,860	6,791	8,034	8,414	8,572	8,309	8,592	8,572	8,786	8,948	9,180	9,095	9,350	9,393	10,003	10,092
Cassia (1.3%)	7,835	8,081	8,232	7,861	8,704	8,933	9,171	8,867	8,941	9,053	9,808	9,857	9,785	9,290	9,321	9,418	10,082	9,790
Minidoka (0.5%)	8,303	8,648	8,809	8,391	9,304	9,418	9,502	9,096	9,077	9,120	9,604	9,329	9,206	8,700	8,727	8,761	9,379	9,107
Gooding (3.1%)	5,019	5,086	5,188	5,117	6,049	6,293	6,438	6,318	6,426	6,397	6,842	6,843	6,955	7,105	7,367	7,745	8,387	8,366
Fremont (1.5%)	4,584	4,618	4,743	4,053	4,196	4,202	4,185	4,534	4,604	4,504	5,385	5,615	5,605	5,425	5,641	5,751	5,772	5,925
Power (1.1%)	3,028	3,102	3,084	3,528	2,949	3,268	3,307	3,281	3,435	3,228	3,405	3,332	3,335	3,408	3,521	3,784	3,655	3,657
Lincoln (1.3%)	1,942	1,853	1,826	1,577	2,007	2,018	2,070	1,717	1,751	1,774	2,073	2,143	2,172	2,142	2,198	2,270	2,507	2,428
Butte (-1.3%)	1,387	1,380	1,411	1,464	1,488	1,499	1,539	1,561	1,544	1,537	1,388	1,399	1,292	1,233	1,210	1,146	1,149	1,105
Clark (-0.3%)	536	575	605	406	586	601	614	571	566	536	504	530	474	507	505	509	511	511
TOTAL, Idaho MSTI Study Area part (1.8%)	171,444	175,373	177,907	182,521	195,220	198,299	199,638	203,784	207,888	209,457	208,414	211,058	214,473	216,423	221,817	230,452	232,400	233,798

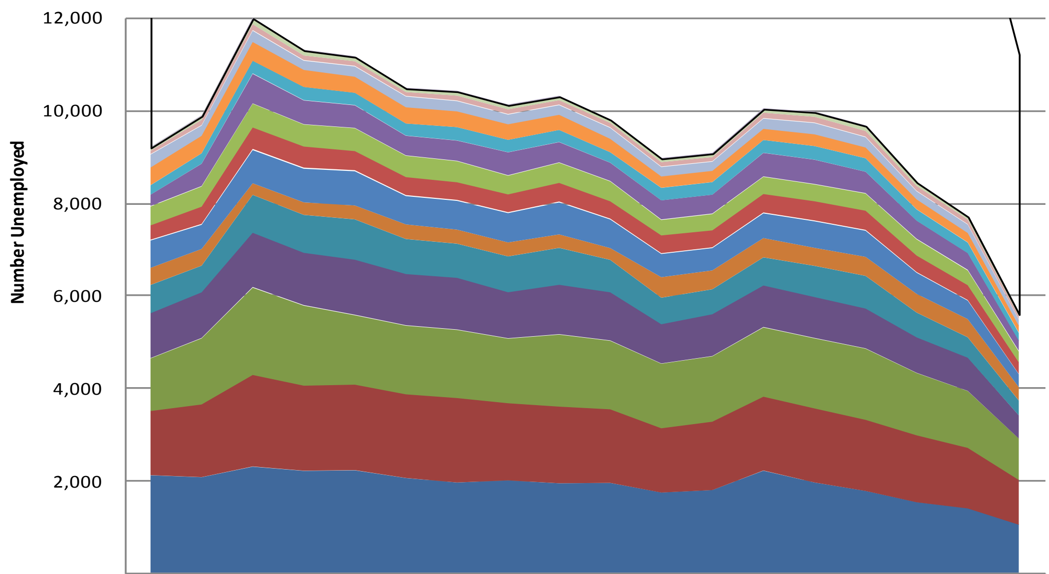
Figure 3.8-11 Average Annual Employment, Idaho Counties in the MSTI, 1990-2007

The second tier of higher-employment counties in the Idaho MSTI area are Bingham (county seat: Blackfoot; 20,055 jobs), Madison (county seat: Rexburg; 14,742 jobs), and Blaine (county seat: Hailey; 15,406 jobs) counties. Blaine and Madison counties experienced the two highest average annual increases in the Idaho MSTI analysis area between 1990 and 2007, but Bingham County's growth rate lagged at 0.8%.

As is the case in the Montana portion of the MSTI analysis area, the healthy rates of total employment growth in the Idaho portion are not spread evenly among counties. Each of the remaining counties in the region had 2007 average employment of about 10,000 or less. These smaller, more rural counties tended to have lower rates of employment growth after 1990, or negative growth in the cases of the two smallest counties, Butte (county seat: Arco; 1,105 jobs) and Clark (county seat: Dubois; 511 jobs). The only exception was Gooding County (county seat: Gooding), which grew by 3.1% annually from 1990 to 2007, to 8,366 jobs.

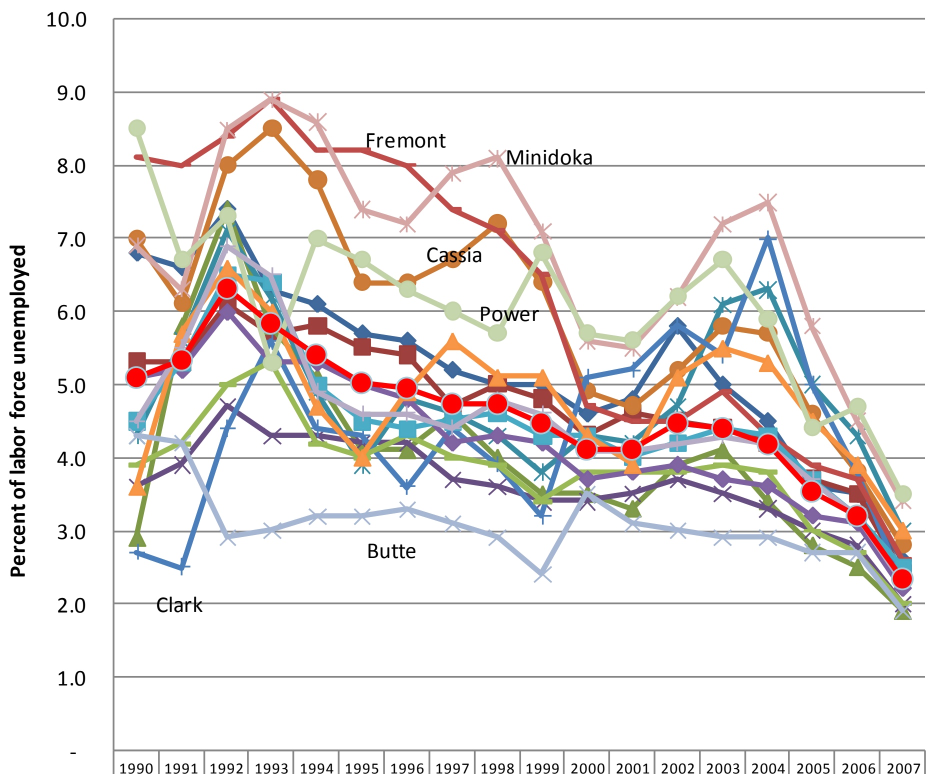
The overall healthy economy of the Idaho portion of the MSTI analysis area is reflected in: (1) the small number of unemployed persons, and (2) the declining and low unemployment rates. Only 5,615 persons in the labor force were unemployed, on average, in the year 2007, for an overall unemployment rate of only 2.3%. The largest numbers of unemployed persons were in the three largest-employment counties of Bannock (1,161 unemployed), Bonneville (972 unemployed), and Twin Falls (896 unemployed). The remaining 13 counties in Idaho portion of the MSTI analysis area had minimal numbers of unemployed due to their small labor forces and low unemployment rates.

Unemployment rates varied little among counties, ranging from a low of 1.9% in Madison County to 3.5% in Power County. Notable also is the universal trend of declining unemployment rates by county: The unemployment rate in every county was lower in 2007 than in 1990. Thus, it appears that uneven rates of employment growth among counties were mitigated somewhat by inter-county commuting, and in- and out- migration. Total unemployment and unemployment rates are shown in Figures 3.8-12 and 3.8-13.



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
TOTAL, Idaho MSTI Study Area part	9,213	9,899	12,006	11,314	11,172	10,491	10,427	10,131	10,319	9,815	8,977	9,088	10,050	9,978	9,681	8,462	7,723	5,615
Clark	15	15	28	24	27	27	23	26	23	18	27	29	29	29	38	27	20	13
Butte	62	82	108	96	77	61	78	75	69	60	62	62	64	80	81	60	51	34
Lincoln	72	111	128	100	98	83	106	101	94	96	94	88	116	124	123	106	102	75
Power	280	222	244	199	223	234	222	210	209	237	204	198	221	243	222	175	182	134
Fremont	404	401	434	396	374	375	366	361	352	313	267	264	265	278	256	235	222	161
Gooding	203	223	275	285	265	261	286	266	260	224	268	270	276	292	289	243	229	168
Blaine	244	481	638	513	487	423	436	495	436	393	414	408	507	524	461	393	365	230
Jefferson	409	436	514	475	493	461	455	404	435	430	333	352	371	363	370	350	318	231
Jerome	317	381	474	466	423	398	390	393	411	382	392	374	407	423	422	363	327	255
Cassia	591	522	717	727	739	612	622	634	690	618	502	482	534	573	565	457	400	280
Madison	369	361	250	270	300	315	303	301	291	254	443	407	416	388	410	403	392	287
Minidoka	612	577	821	821	873	758	739	776	799	702	574	541	609	676	708	537	442	321
Bingham	979	999	1,194	1,149	1,207	1,122	1,131	1,007	1,081	1,053	856	913	912	897	871	773	721	498
Twin Falls	1,136	1,426	1,883	1,726	1,497	1,481	1,470	1,394	1,554	1,478	1,393	1,410	1,494	1,512	1,535	1,344	1,227	896
Bonneville	1,395	1,579	1,986	1,846	1,856	1,815	1,832	1,675	1,664	1,598	1,396	1,485	1,604	1,608	1,544	1,453	1,314	972
Bannock	2,125	2,083	2,312	2,221	2,233	2,065	1,968	2,013	1,951	1,959	1,752	1,805	2,225	1,968	1,786	1,543	1,411	1,061

Figure 3.8-12 Annual Average Unemployment Labor Force, Idaho Counties in the MSTI Analysis Area, 1990-2007



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Bannock	6.8	6.6	7.4	6.3	6.1	5.7	5.6	5.2	5.0	5.0	4.6	4.8	5.8	5.0	4.5	3.6	3.5	2.6
Bingham	5.3	5.3	6.1	5.7	5.8	5.5	5.4	4.7	5.0	4.8	4.3	4.6	4.5	4.4	4.2	3.7	3.5	2.4
Blaine	2.9	5.8	7.4	5.8	5.1	4.1	4.1	4.6	4.0	3.5	3.5	3.3	3.9	4.1	3.4	2.8	2.5	1.9
Bonneville	3.6	3.9	4.7	4.3	4.3	4.2	4.2	3.7	3.6	3.4	3.4	3.5	3.7	3.5	3.3	3.0	2.8	2.0
Butte	4.3	5.6	7.1	6.2	4.9	3.9	4.8	4.6	4.3	3.8	4.3	4.2	4.7	6.1	6.3	5.0	4.3	3.0
Casia	7.0	6.1	8.0	8.5	7.8	6.4	6.4	6.7	7.2	6.4	4.9	4.7	5.2	5.8	5.7	4.6	3.8	2.8
Clark	2.7	2.5	4.4	5.6	4.4	4.3	3.6	4.4	3.9	3.2	5.1	5.2	5.8	5.4	7.0	5.0	3.8	2.3
Fremont	8.1	8.0	8.4	8.9	8.2	8.2	8.0	7.4	7.1	6.5	4.7	4.5	4.5	4.9	4.3	3.9	3.7	2.6
Gooding	3.9	4.2	5.0	5.3	4.2	4.0	4.3	4.0	3.9	3.4	3.8	3.8	3.8	3.9	3.8	3.0	2.7	2.0
Jefferson	5.1	5.2	6.0	5.3	5.3	5.0	4.8	4.2	4.3	4.2	3.7	3.8	3.9	3.7	3.6	3.2	3.1	2.2
Jerome	4.5	5.3	6.5	6.4	5.0	4.5	4.4	4.5	4.6	4.3	4.3	4.0	4.2	4.4	4.3	3.7	3.2	2.5
Lincoln	3.6	5.7	6.6	6.0	4.7	4.0	4.9	5.6	5.1	5.1	4.3	3.9	5.1	5.5	5.3	4.5	3.9	3.0
Madison	4.3	4.2	2.9	3.0	3.2	3.2	3.3	3.1	2.9	2.4	3.5	3.1	3.0	2.9	2.9	2.7	2.7	1.9
Minnidoka	6.9	6.3	8.5	8.9	8.6	7.4	7.2	7.9	8.1	7.1	5.6	5.5	6.2	7.2	7.5	5.8	4.5	3.4
Power	8.5	6.7	7.3	5.3	7.0	6.7	6.3	6.0	5.7	6.8	5.7	5.6	6.2	6.7	5.9	4.4	4.7	3.5
Twin Falls	4.5	5.5	6.9	6.5	4.9	4.6	4.6	4.4	4.8	4.6	4.1	4.1	4.2	4.3	4.2	3.7	3.2	2.3
TOTAL, Idaho MSTI Study Area part	5.1	5.3	6.3	5.8	5.4	5.0	5.0	4.7	4.7	4.5	4.1	4.1	4.5	4.4	4.2	3.5	3.2	2.3

Figure 3.8-13 Average Annual Unemployment Rates, Idaho Counties in the MSTI Analysis Area, 1990-2007

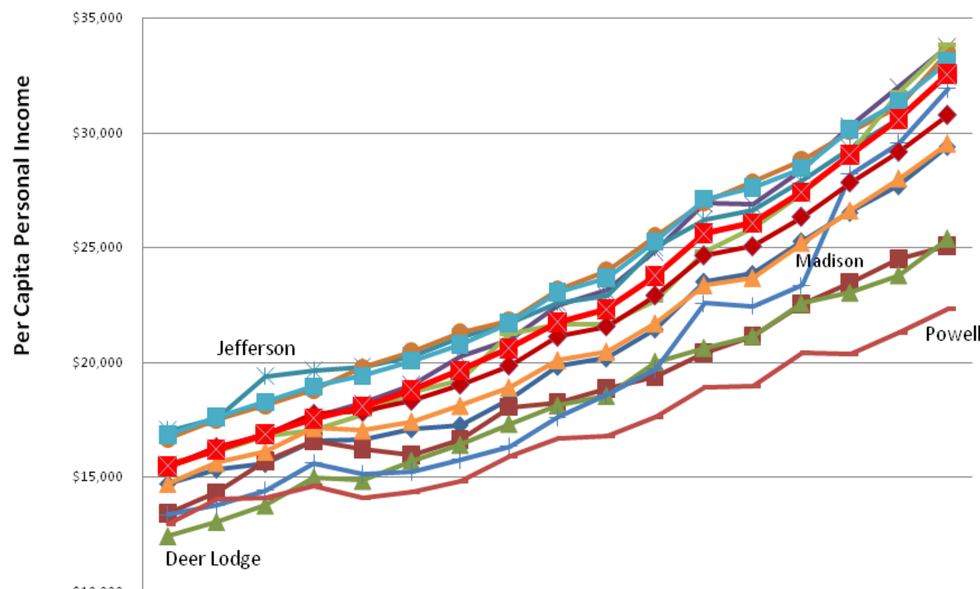
Like the Montana portion of the MSTI analysis area, the Idaho portion exhibits substantial annual swings. This is likely due to both the restrictions on outdoor construction presented by inclement winter weather, and the noticeable agricultural economy, both of which are highly seasonal. Data show that the difference between the low-employment month of January, and the peak-employment month of September or October, has historically been up to 10% (See Socioeconomics Technical Report, Vol. II).

Similarly, the unemployed labor force exhibits seasonal fluctuations, but much more dramatically, than total employment. Monthly employment in the Idaho MSTI analysis area has historically been up to about 50% less in the peak-employment months than in January. In 2007, the summer and early fall unemployed labor force was under 4,000.

3.8.4.2 Income

MONTANA

Per capita personal income trends in the Montana portion of the MSTI analysis area have shown consistent increases since 1990. Average annual growth rates ranged from 4.0% (Broadwater County) to 5.6% (Madison County) between 1990 and 2006. The more urbanized counties of Gallatin, Lewis and Clark, and Silver Bow had slightly higher than average per capita personal incomes (over $33,000 annually) than the less rural counties. Differences in per capita incomes are likely mitigated by differences in the cost of living across counties. Per capita personal income trends are depicted in Figure 3.8-14.



County (average annuall % growth rate)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Beaverhead (4.4%)	$14,698	$15,317	$15,566	$16,568	$16,638	$17,081	$17,258	$18,360	$19,804	$20,164	$21,437	$23,517	$23,857	$25,283	$26,527	$27,681	$29,399
Broadwater (4.0%)	$13,419	$14,326	$15,708	$16,585	$16,225	$15,951	$16,617	$18,044	$18,255	$18,857	$19,344	$20,401	$21,132	$22,505	$23,450	$24,490	$25,061
Deer Lodge (4.6%)	$12,439	$13,060	$13,774	$14,990	$14,856	$15,723	$16,416	$17,331	$18,127	$18,543	$20,022	$20,628	$21,145	$22,564	$23,036	$23,794	$25,386
Gallatin (5.0%)	$15,457	$16,280	$16,840	$17,612	$18,224	$19,028	$20,255	$20,998	$22,473	$23,138	$24,854	$26,959	$26,889	$28,386	$30,311	$31,983	$33,758
Jefferson (4.1%)	$17,021	$17,596	$19,401	$19,640	$19,816	$20,269	$21,108	$21,707	$22,604	$22,929	$25,004	$26,221	$26,615	$27,900	$29,320	$30,609	$32,511
Lewis and Clark (4.5%)	$16,670	$17,477	$18,099	$18,796	$19,759	$20,459	$21,306	$21,827	$23,174	$23,986	$25,489	$26,994	$27,846	$28,826	$30,060	$31,138	$33,523
Madison (5.6%)	$13,380	$13,777	$14,436	$15,631	$15,160	$15,266	$15,779	$16,340	$17,602	$18,587	$19,705	$22,570	$22,460	$23,352	$28,197	$29,545	$31,915
Powell (3.5%)	$12,954	$14,036	$14,082	$14,598	$14,081	$14,357	$14,799	$15,905	$16,700	$16,795	$17,620	$18,908	$18,944	$20,395	$20,339	$21,293	$22,315
Silver Bow (5.0%)	$15,584	$16,122	$16,774	$17,053	$17,699	$18,702	$19,219	$21,238	$21,652	$21,648	$22,696	$24,816	$25,834	$27,356	$29,138	$31,772	$33,835
Montana (4.4%)	$15,448	$16,318	$16,867	$17,770	$17,861	$18,349	$19,047	$19,877	$21,130	$21,585	$22,933	$24,676	$25,068	$26,353	$27,854	$29,183	$30,790
Montana Metropolitan Portion (4.3%)	$16,819	$17,609	$18,258	$18,934	$19,384	$20,054	$20,775	$21,686	$23,051	$23,662	$25,239	$27,090	$27,606	$28,447	$30,118	$31,335	$33,086
Montana Nonmetropolitan Portion (4.5%)	$14,715	$15,624	$16,114	$17,139	$17,037	$17,430	$18,116	$18,908	$20,099	$20,469	$21,696	$23,371	$23,685	$25,210	$26,620	$28,008	$29,540
MTSI average (4.8%)	$15,463	$16,198	$16,852	$17,538	$18,076	$18,796	$19,641	$20,592	$21,736	$22,287	$23,758	$25,593	$26,050	$27,396	$29,026	$30,578	$32,544

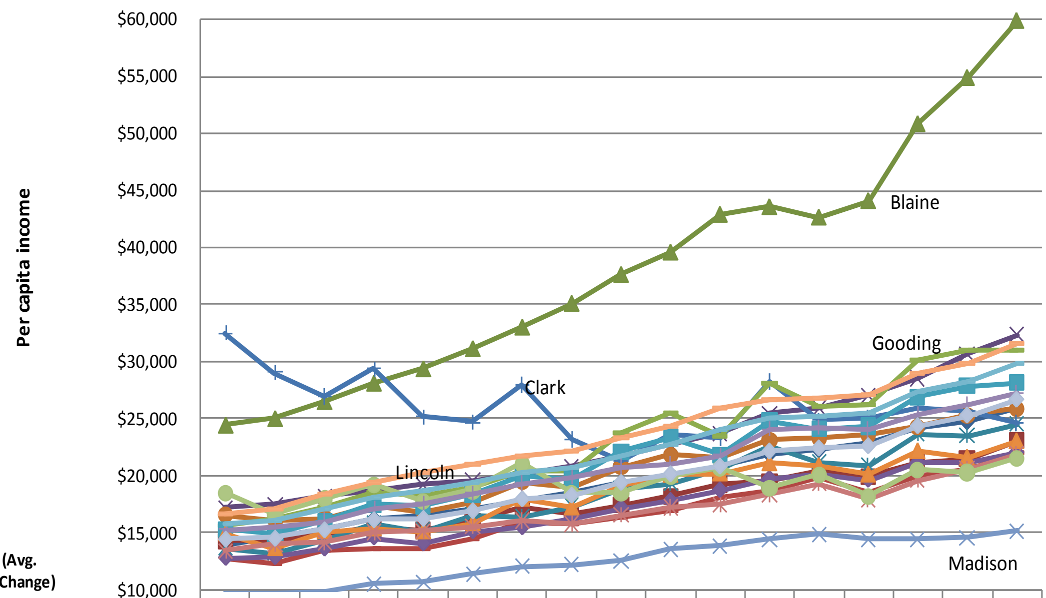
Source: U.S. Department of Labor, Bureau of Labor Statistics, May, 2008. State and Area Employment, Hours, and Earnings.

Figure 3.8-14 Per Capita Annual Income, Montana Counties in the MSTI Analysis Area, 1990-2007

IDAHO

With the exception of two counties in the Idaho MSTI analysis area, per capita incomes have generally tracked closely with the statewide non-metropolitan average, which was $26,698 in the year 2006. The exceptions were Blaine County, where per capita income was $59,939 (making it one of the highest-income counties in the U.S.), and Madison County, where per capita income was only $15,166. Figure 3.8-15 shows per capita income trends by county.

All counties exhibited strong annual rates of growth except Power County (at an average annual growth rate of only 0.9%), and Clark County, where per capita income actually declined by 1.7% annually, between 1990 and 2006. The largest urban center counties generally reaped larger proportional gains during this period, with the more rural counties experiencing lower per capita income gains.



County (Avg. Annual % Change)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Bannock (3.9%)	$13,957	$14,671	$15,421	$16,185	$16,550	$17,063	$17,854	$18,501	$19,411	$19,915	$20,833	$21,903	$22,284	$22,805	$24,101	$24,749	$25,871
Bingham (3.0%)	$14,320	$14,357	$14,925	$15,496	$15,241	$16,010	$17,190	$16,679	$17,444	$18,233	$19,298	$19,552	$20,412	$19,976	$21,219	$21,554	$23,105
Blaine (5.7%)	$24,505	$25,082	$26,573	$28,182	$29,443	$31,209	$33,091	$35,174	$37,703	$39,658	$42,965	$43,634	$42,722	$44,165	$50,902	$54,945	$59,939
Bonneville (4.0%)	$17,160	$17,441	$18,145	$18,655	$19,162	$19,541	$20,107	$20,744	$21,643	$22,641	$23,663	$25,448	$25,930	$27,021	$28,528	$30,670	$32,348
Butte (3.7%)	$13,699	$13,204	$14,417	$15,795	$15,149	$16,539	$16,402	$17,313	$18,811	$19,315	$20,603	$22,615	$21,131	$20,894	$23,669	$23,514	$24,472
Cassia (2.9%)	$16,497	$16,127	$16,272	$17,403	$16,897	$17,712	$19,499	$18,986	$20,744	$21,845	$21,595	$23,178	$23,301	$23,581	$24,256	$25,286	$25,894
Clark (-1.7%)	$32,443	$29,026	$26,925	$29,330	$25,178	$24,700	$27,964	$23,201	$21,283	$23,598	$23,322	$28,241	$24,886	$25,074	$25,939	$25,571	$24,649
Fremont (3.4%)	$12,829	$12,329	$13,532	$13,678	$13,618	$14,456	$15,903	$15,811	$16,403	$16,942	$18,074	$18,632	$19,840	$18,474	$19,888	$20,495	$21,959
Gooding (4.4%)	$15,654	$16,236	$17,296	$18,610	$18,332	$19,007	$20,433	$20,502	$23,756	$25,484	$23,466	$28,185	$26,089	$26,214	$30,153	$31,028	$31,069
Jefferson (3.5%)	$12,802	$12,875	$13,622	$14,601	$14,075	$15,148	$15,491	$16,271	$17,201	$17,818	$18,754	$19,764	$20,146	$19,670	$21,157	$21,234	$22,063
Jerome (3.9%)	$15,286	$14,876	$15,970	$17,420	$17,330	$18,380	$19,918	$19,697	$22,065	$23,341	$21,797	$24,816	$24,064	$24,311	$26,859	$27,847	$28,092
Lincoln (2.7%)	$14,933	$13,642	$15,134	$15,372	$15,113	$15,829	$17,975	$17,206	$19,122	$20,074	$20,193	$21,085	$20,853	$20,097	$22,154	$21,576	$23,031
Madison (2.9%)	$9,626	$9,664	$9,803	$10,437	$10,613	$11,303	$11,999	$12,167	$12,471	$13,499	$13,854	$14,438	$14,922	$14,456	$14,469	$14,638	$15,166
Minidoka (3.1%)	$13,390	$13,936	$14,125	$15,051	$15,084	$15,504	$16,051	$15,763	$16,520	$17,207	$17,452	$18,390	$19,287	$17,912	$19,606	$20,582	$21,904
Power (0.9%)	$18,523	$16,613	$17,970	$19,201	$17,727	$18,714	$21,052	$18,505	$18,505	$19,980	$20,673	$18,967	$20,071	$18,236	$20,519	$20,301	$21,535
Twin Falls (3.7%)	$15,244	$15,553	$16,012	$17,074	$17,584	$18,422	$19,365	$19,844	$20,800	$21,073	$21,783	$24,048	$24,264	$24,004	$25,356	$26,205	$27,259
Idaho Statewide (4.1%)	$15,724	$16,030	$17,093	$18,103	$18,707	$19,426	$20,248	$20,648	$21,789	$22,786	$24,077	$25,024	$25,221	$25,524	$27,361	$28,301	$29,920
Idaho Metropolitan Portion (4.1%)	$16,598	$17,046	$18,313	$19,397	$20,303	$21,033	$21,697	$22,129	$23,262	$24,387	$26,011	$26,696	$26,825	$27,174	$29,038	$29,947	$31,655
Idaho Nonmetropolitan Portion (3.9%)	$14,459	$14,536	$15,277	$16,152	$16,268	$16,948	$17,987	$18,312	$19,424	$20,170	$20,851	$22,168	$22,437	$22,630	$24,377	$25,308	$26,698

Figure 3.8-15 Per Capita Personal Income, Idaho Counties of the MSTI Analysis Area, 1990-2006

3.8.4.3 Employment by Industry

MONTANA

The economy of the Montana portion of the MSTI analysis area is based on agriculture, mining, and tourism-related industries, in general. Measured in terms of overall growth in employment, and personal income, the economy has been very healthy and growing.

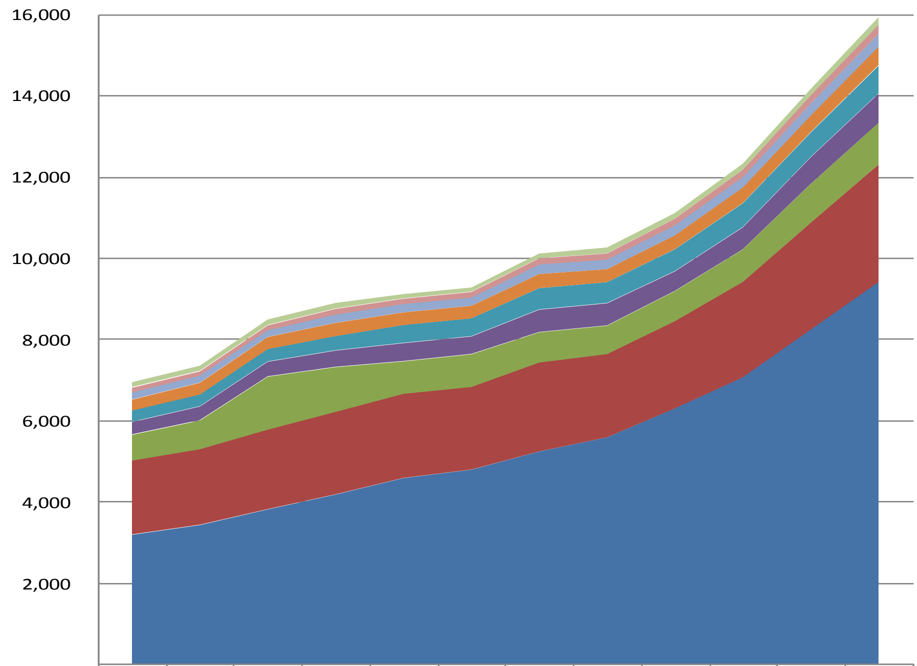
Both Gallatin and Lewis and Clark counties serve as regional centers, with comparatively diversified economies, and have led in growth, being less exposed to fluctuations in the agricultural and mining industries than the more rural counties. Lewis and Clark County, being home of the State Capitol (Helena) focuses on government services in a rapidly-growing state. Gallatin County has benefited as a regional center for tourism, through which many tourists visiting Yellowstone National Park pass or use hotels or RV parks.

This health and growth has been somewhat uneven at the county level. Aside from Gallatin and Lewis and Clark counties, the other Montana MSTI analysis area counties rely on agriculture, mining, and varying levels of outdoor-related tourism.

Some counties have depended more on mining industries, and have experienced boom-and-bust cycles: Deer Lodge County has experienced essentially no employment growth, while Powell and Silver Bow counties have had negative growth over recent years. Beaverhead County, while attracting some tourism, remains highly dependent on farming. Broadwater and Powell counties are almost solely dependent upon farming. Jefferson County is heavily dependent on mining but has not suffered employment contraction in recent years. Madison County is heavily dependent on agriculture, and secondarily on mining.

The construction industry in the MSTI analysis area is of particular interest, because MSTI project construction would add to demand for skilled and, to a lesser extent, unskilled, construction labor. Gallatin County had by far the largest construction employment in 2006, at 9,433 jobs, serving as the primary regional provider of construction labor. Lewis and Clark County was second at 2,901 jobs. Among the counties through which the project alternatives would be located, Silver Bow County had the highest construction employment, at 1,027. Total construction employment in the Montana portion of the MSTI analysis area was estimated at 15,966. Annual construction employment trends are shown in Figure 3.8-16.

Average annual construction employment figures do not reflect the presence of significant seasonality in construction employment, largely due to inclement winter weather in the MSTI analysis area. During the peak summer construction season, when demand is at its highest, significant tightening of the market for construction labor occurs. Conversely, in winter, it is likely that there is available labor in the analysis area due to relatively low demand.



County (Avg. Annual % Growth Rate)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Broadwater (4.3%)	119	122	134	136	104	102	113	142	138	153	162	189
Powell (6.8%)	116	105	118	141	131	139	152	154	167	185	212	239
Deer Lodge (4.8%)	192	190	180	216	218	212	246	245	254	262	298	321
Beaverhead (5.1%)	266	289	298	326	311	310	348	319	342	385	413	460
Jefferson (8.2%)	284	292	306	350	439	439	522	512	535	584	599	675
Madison (8.4%)	298	332	356	397	439	427	547	543	478	538	654	721
Siver Bow (4.5%)	635	707	1,306	1,102	799	807	745	700	742	801	957	1,027
Lewis and Clark (4.3%)%)	1,835	1,876	1,973	2,046	2,087	2,049	2,204	2,063	2,161	2,360	2,639	2,901
Gallatin (10.3%)	3,201	3,440	3,825	4,191	4,595	4,801	5,249	5,598	6,311	7,079	8,258	9,433

Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce CA25N. http://www.bea.gov/regional/reis/CA25Nfn.cfm

Figure 3.8-16 Annual Construction Employment, Montana Counties in the MSTI Analysis Area, 1995-2007

Recent seasonal construction employment data specific to the Montana MSTI analysis area do not exist. However, monthly Montana statewide data are available (see Socioeconomics Technical Report, Vol. II). It is likely that the seasonal swings that occur statewide resemble those that occur in the MSTI analysis area due to similar weather, with the analysis area swings likely being somewhat more evident than statewide because of the higher altitudes, and hence more difficulty, of winter construction than is average statewide. Montana's peak-month construction employment has historically been about one-third higher than the low-month construction employment.

IDAHO

The industry bases of the Idaho portion of the MSTI analysis area are primarily agriculture, forestry, fishing and related services, and, in some areas, mining and tourism -- the same industries that form the base of the Montana MSTI analysis area. These are the same industries that form the statewide export base, although tourism is more prominent in the analysis area than statewide. Unlike the Montana portion of the MSTI analysis area, the Idaho MSTI area lacks a state capitol and therefore heavy concentration of government services.

The three main urban centers (Pocatello, Idaho Springs, and Twin Falls) are essentially business service centers related to the regions basic industries. The following is a description of the economic structure of each county; data are graphed and tabulated in Exhibit 3-18. Appendix B contains the detailed employment-by-industry data analysis, including location quotients as backup to the graphics in Figure 3.8-17.

By far the most prominent industry sector, throughout the Idaho portion of the MSTI analysis area, is farming. Every county in the Analysis area except Blaine County had a higher proportion of its total employment in farming than the U.S. average of 1.6% in 2006 (the Idaho statewide average was 4.3%), indicating that farming is an export industry in every Idaho MSTI county except Blaine. The counties with the lowest proportion of farming employment are Blaine, Bannock and Bonneville, at 1.5% (making Blaine the only county with a farming location quotient below 1.0), 1.7%, and 2.1% respectively.

The remaining counties are highly dependent upon farming. Overall, the Idaho portion of the analysis area had over four times the proportion of its work force than the U.S. average. The statewide average was 2.7 times the national average proportion.

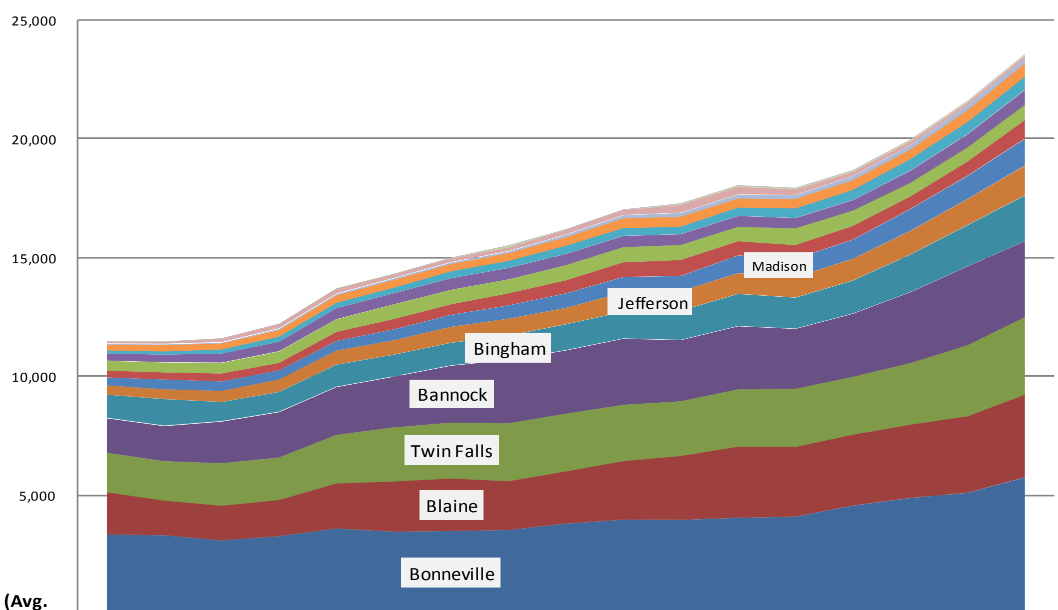
Forestry, fishing, and related services are also prominent in many of the Idaho MSTI analysis area counties. Employment in these industries is often related to eastern Idaho's status as a popular recreational fishing area, and the presence of national forests and reserve areas. Twin Falls County, in terms of sheer size, is by far the leading center for forestry, fisheries, and related employment, with 1,155 jobs in 2006.

Mining is another of the Idaho MSTI analysis area's export industries. However, mining is concentrated only in Cassia and Clark counties, and in Clark County is so small in numerical size as to be unimportant.

Finally, tourism is important to some Idaho MSTI analysis area counties. Tourism in the Idaho MSTI area is overwhelmingly for outdoor recreation such as fishing, rafting, hiking, snowmobiling, and camping. The only county with a very high concentration of tourism-related employment is Blaine County; however, in other counties there may be tourism activities that are not reflected in employment data.

The construction industry, while not an export industry for the Idaho MSTI analysis area as a whole, is important to this analysis because the chosen alternative will constitute a noticeable increase in construction employment, particularly in more rural counties. The centers for construction employment in the region (in order of total employment in 2006) are Idaho Falls (Bonneville County; 5,726 jobs), Hailey (Blaine County; 3,506 jobs), Twin Falls (Twin Falls County; 3,286 jobs), and Pocatello (Bannock County; 3,195 jobs). Bingham County (1,925 jobs), Jefferson County (1,249 jobs), and Madison County (1,115 jobs) were the second-tier counties for construction employment. Figure 3.8-17 shows trends in annual construction employment.

Figure 3.8-17 also shows that construction employment has grown rapidly in the Idaho MSTI analysis area since 1990 – to 23,627 in 2006, 4.6% annual average, compared to total employment growth of 1.8% annually. Because construction employment is closely related to general rates of growth in an area, the relatively high regional 1.8% growth rate typically engenders higher construction employment growth rates to service local growth. All of the principal construction-employment counties above experienced very high growth rates in recent years. The implication of this high growth is that the construction labor force is likely nearly fully-employed, on average, and that immigration of construction workers, either temporarily to meet the needs of specific projects, or long-term for those who decide to remain, is common.



County (Avg. Annual % Change)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total MSTI (4.6%)	11,484	11,482	11,617	12,234	13,729	14,344	15,025	15,551	16,228	17,063	17,320	18,085	17,975	18,722	20,007	21,648	23,627
Clark (-0.4%)	15	17	15	16	18	19	19	20	21	22	22	23	23	24	26	23	14
Butte (3.2%)	27	27	27	29	32	34	35	97	28	32	63	66	65	68	64	53	45
Power (3.0%)	84	92	158	190	206	160	163	158	202	207	335	320	233	178	158	129	135
Lincoln (14.1%)	26	32	32	53	59	65	68	77	103	133	157	164	163	170	181	196	214
Gooding (5.1%)	256	281	265	287	323	339	316	335	373	422	437	396	411	425	417	518	565
Fremont (9.4%)	137	143	184	230	239	246	306	313	359	341	329	367	419	440	503	527	578
Minidoka (4.7%)	301	318	380	393	462	465	485	479	471	474	453	459	431	441	513	552	626
Cassia (3.2%)	407	419	447	484	532	615	609	588	640	644	639	614	712	656	587	616	671
Jerome (6.4%)	289	301	336	314	379	437	443	509	549	617	667	599	571	578	524	598	777
Madison (7.7%)	339	410	398	384	407	456	503	554	609	641	639	737	770	798	914	968	1,115
Jefferson (7.6%)	389	416	469	526	589	604	668	708	682	810	819	866	858	906	986	1,086	1,249
Bingham (4.4%)	972	1,114	802	826	925	909	948	1,004	1,087	1,122	1,221	1,350	1,303	1,386	1,577	1,733	1,925
Bannock (5.0%)	1,454	1,473	1,755	1,910	2,014	2,134	2,398	2,675	2,664	2,782	2,574	2,659	2,526	2,658	2,985	3,323	3,195
Twin Falls (4.3%)	1,663	1,668	1,791	1,793	2,047	2,283	2,356	2,445	2,436	2,380	2,312	2,420	2,453	2,446	2,601	3,000	3,286
Blaine (4.2%)	1,810	1,488	1,492	1,554	1,928	2,143	2,244	2,083	2,229	2,492	2,722	3,024	2,968	3,014	3,113	3,252	3,506
Bonneville (3.5%)	3,315	3,283	3,065	3,245	3,569	3,436	3,463	3,506	3,775	3,944	3,931	4,021	4,068	4,534	4,858	5,074	5,726

Figure 3.8-17 Annual Construction Employment, Idaho Counties in the MSTI Analysis Area, 1990-2006

As with the Montana portion of the MSTI analysis area, the Idaho portion experiences large seasonal swings in construction employment, although not by as large a percentage between annual peaks and lows.

Construction employment data for the three primary labor market areas in the Idaho MSTI data from the Idaho Department of Labor show that the summer peak employment has historically been about 25% greater than the low-employment months of January and February. Thus, there may be some appreciable construction labor availability during the slower months of about December to March in a typical year (see Socioeconomics Technical Report, Volume II).

3.9 ENVIRONMENTAL JUSTICE

3.9.1 REGULATORY FRAMEWORK

Executive Order 12898 (EO 12898), issued on February 11, 1994, *Federal Actions to Address Environmental Justice in Minority Population and Low Income Populations*, was implemented to specifically address human health and environmental conditions in disadvantaged populations. The order recognizes and addresses, in an accompanying memorandum to department and agency heads issued with EO 12898, NEPA procedures for identifying and addressing Environmental Justice concerns. A fundamental provision within the order states that all federal agencies must address and identify, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies and activities on minority and low-income populations in the United States.

The CEQ, in consultation with the EPA and other affected agencies, has developed procedures so that Environmental Justice concerns are adequately addressed when developing programs or activities. In December of 1997, the CEQ issued *Environmental Justice: Guidance Under the National Environmental Policy Act* (CEQ 1997), a document that provides general principles for considering Environmental Justice in specific phases of the NEPA process.

Methods

According to the CEQ (1997), there is not a standard formula for how Environmental Justice concerns should be addressed or identified. However, the use of demographic data available from the Bureau of Census (BOC), and consideration of distinctive cultural practices such as possible subsistence on fish, vegetation, or wildlife is suggested. The CEQ provides Environmental Justice assessment guidelines in a three-part process:

- Description of the geographic distribution of low-income and minority populations in the affected area;
- Assessment of whether construction and operation impacts would produce high and adverse impacts; and
- Determination of whether the impacts would disproportionately impact low-income or minority populations if the impacts identified are high and adverse.

Existing socioeconomic data, including low income and minority population groups is based on demographic data from the 2000 Census.

The following definitions of individuals were used to define low income and minority populations. The definitions were taken from the BLM's *Draft Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* (BLM 2004).

• Minority. Persons are included in the minority category if they classify themselves as belonging to any of the following racial groups: Hispanic, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander. The term minority includes all persons, including those classifying themselves in multiple racial categories, except those who classify themselves as not of Hispanic origin and as White or "Other Race".

• Low-Income. Low-income individuals are defined as individuals who fall below the poverty line. The poverty line takes into account family size and age of individuals in the family. In 1999, for example, the poverty line for a family of five with three children below the age of 18 was $19,882. For any given family below the poverty line, all family members are considered as being below the poverty line for the purposes of analysis.

The analysis area for Environmental Justice effects is the MSTI study area composed of the following counties: Beaverhead, Broadwater, Deerlodge, Gallatin, Jefferson, Lewis and Clark, Madison, Powell and Silver Bow counties. Demographic data for the State of Montana was used for comparison with county demographic data.

3.9.2 PROJECT AREA OVERVIEW

MONTANA

As with the U.S. as a whole, Montana statewide and MSTI analysis area populations are predominantly White (Table 3.9-1). Statewide, 92% of the population was classified as White in the 2000 Census. In the Montana MSTI analysis area as a whole, the%percentage of White persons is even higher at 97%. Among the nine counties in this area, the proportion of White persons varied little between 96.7 and 98.3%.

Among minority groups, the largest group represented in the Montana MSTI analysis area is Native American (2.4% of the total population), followed by "Hispanic or Latino" (1.8% of the total).

Table 3.9-1 Tabulated Ethnicity and Race, Montana Counties in the MSTI analysis area

	Montana		Beaverhead		Broadwater		Deer Lodge		Gallatin		Jefferson		Lewis and Clark		Madison		Powell		Silver Bow		Total Study Area	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total population (all races)	902,195	100	9,202	100	4,385	100	9,417	100	67,831	100	10,049	100	55,716	100	6,851	100	7,180	100	34,606	100	205,237	100
White alone or in combination1	831,978	92.2	8,926	97	4,298	98	9,180	97.5	65,999	97.3	9,819	97.7	53,918	96.8	6,737	98.3	6,798	94.7	33,458	96.7	199,133	97.0
Black or African American alone or in combination1	4,441	0.5	22	0.2	15	0.3	28	0.3	253	0.4	23	0.2	193	0.3	8	0.1	45	0.6	88	0.3	675	0.3
American Indian and Alaska Native alone or in combina	66,320	7.4	198	2.2	89	2	281	3	967	1.4	242	2.4	1,703	3.1	107	1.6	377	5.3	1,021	3	4,985	2.4
Asian alone or in combination1	7,101	0.8	44	0.5	6	0.1	50	0.5	837	1.2	62	0.6	447	0.8	29	0.4	61	0.8	230	0.7	1,766	0.9
Native Hawaiian and Other Pacific Islander alone or in	1,077	0.1	8	0.1	4	0.1	5	0.1	113	0.2	17	0.2	62	0.1	3	0	6	0.1	35	0.1	253	0.1
Some other race alone or in combination1	7,834	0.9	116	1.3	18	0.4	35	0.4	537	0.8	56	0.6	326	0.6	68	1	66	0.9	266	0.8	1,488	0.7
Hispanic or Latino (of any race)	18,081	2	246	2.7	58	1.3	155	1.6	1,047	1.5	149	1.5	843	1.5	130	1.9	140	1.9	950	2.7	3,718	1.8

Source: U.S. Census Bureau, QT-P5: Race Alone or in Combination: 2000
Data Set: Census 2000 Summary File 1 (SF 1) 100-% Data

IDAHO

Like the Montana portion of the MSTI analysis area, the population in the Idaho portion is predominantly White, (89.7%). Madison County had 95.2% of the population classified as White in the year 2000, the highest proportion of any Idaho MSTI county. Clark County had the lowest proportion at 74.2%.

The second most prevalent racial/ethnic group is “Hispanic or Latino (of any race),” as defined in the year 2000 Census. These persons comprised 10.3 of the total MSTI population in Idaho (some Hispanics/Latinos also classified themselves as White). Counties with the highest proportion of Hispanics or Latinos, in order, were Clark (34.2%), Minidoka (24%), Power (21.7%), Cassia (18.7%), Jerome (17.2%), and Gooding (17.1%).

Next in proportion in the Idaho MSTI Analysis area was “some other race,” with 5.8% of the population. The “American Indian or Native Alaskan” category was fourth with 1.7%. Bingham County had the highest proportion of these persons, at 6.7%, and Blaine and Madison counties had the lowest proportions of American Indian or Native Alaskans, at 0.3% (see foldout Table 3.9-2).

3.9.2.2 Low-Income Population

MONTANA

The most recent information on the distribution of income within counties in Montana is the 2000 Census, for which personal income data from 1999 were reported. According to poverty statistics for 2000, the state on Montana had a low-income population of 128,355; 14.6% of individuals were classified as having incomes below the poverty level for the total state population. Montana counties within the MSTI Analysis area had a low-income population of 25,113 or 11.5%, which is below the Montana statewide proporation of 14.6% (Table 3.9-3)

Montana counties with the lowest proportions of individuals with incomes below the poverty level are Jefferson County (9%) and Broadwater County (10.8%). Counties with the highest proportion of individuals with incomes below the poverty level are Beaverhead (17.1%) and Deer Lodge (15.8%). More details on poverty status and income status are presented in Socioeconomics Technical Report (Vol. II).

Median incomes for the MSTI counties are comparable to the state as a whole except for Beaverhead and Deer Lodge counties, which are somewhat lower. The per capita income for the state of Montana compared to the MSTI counties is shown in Table 3.9-3

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Table 3.9-3 Income and Poverty Status, State of Montana and MSTI Counties

State/County	Number Persons Below Poverty Level	Percent Below Poverty Level	Per Capita Income	Percent Above or Below State Per Capita Income
MONTANA	128,355	14.6	$17,151	
Beaverhead	1,491	17.1	$15,621	-8.9
Broadwater	466	10.8	$16,237	-5.3
Deer Lodge	1,451	15.8	$15,580	-9.2
Gallatin	8,319	12.8	$19,074	+11.2
Jefferson	882	9.0	$18,250	+0.5
Lewis & Clark	5,960	10.9	$18,763	+9.4
Madison	821	12.1	$16,944	-1.2
Powell	719	12.6	$13,816	-19.5
Silverbow	5005	14.9	$17,009	-0.8

IDAHO

The distribution of incomes in the Idaho Portion of the analysis area shows pockets of relative poverty. Overall, 12.8% of the Idaho MSTI population lived in poverty in 1999, according to the 2000 Census, slightly above the state average of 11.8%. The counties with the largest proportion of persons in poverty were Madison (30.5%), Clark (19.9%), Butte (18.2%), and Power (16.1%). Franklin, Blaine and Jefferson counties had very low poverty rates, at 7.4%, 7.8%, and 10.4%, respectively. Poverty status by county is shown in foldout Table 3.9-4.

3.10 CULTURAL RESOURCES

3.10.1 INTRODUCTION

Cultural resources are defined as any prehistoric or historic site, district, building, structure, or object considered to be important to a culture, subculture, or community for scientific, traditional, religious or any other reason. In this document, cultural resources are divided into two broad categories – archaeological sites and architectural resources.

This document was prepared to comply with MFSA, but data collection for cultural resources is also consistent with the requirements of the National Historic Preservation Act (NHPA) and the Montana Antiquities Act. Because the MSTI alternative routes in Montana cross lands administered by the BLM, USFS, and Bureau of Reclamation (BOR), the proposed project must ultimately comply with Section 106 of the National Historic Preservation Act (NHPA). The federal agencies have responsibilities under Section 106 of the NHPA to assess the effects federal undertakings may have on significant cultural resources (i.e., those eligible for listing in the National Register of Historic Places [NRHP]) and, when feasible, mitigate adverse effects to these resources. These agencies are also responsible for protecting cultural resources under their jurisdiction according to the requirements set forth in the Archaeological Resources Protection Act (ARPA) and the Federal Land Policy and Management Act (FLPMA). It is anticipated that later in 2008, a Section 106 Programmatic Agreement (PA) will be prepared setting forth the criteria for identifying and managing cultural resources on federal land. Federal agencies will also be required to initiate government-to-government consultation with Native American groups claiming historical affiliation with the lands crossed by the proposed transmission line.

The State of Montana also administers land crossed by the MSTI alternative routes. MDNRC is responsible for ensuring the protection of cultural resources on State lands as required by the Montana Antiquities Act and the Montana Environmental Policy Act (MEPA).

The Montana State Historic Preservation Officer (SHPO) at the Montana Historical Society (MHS) has responsibilities for protecting cultural resources under the Montana Antiquities Act and MEPA as well as a significant role in the Section 106 compliance process.

3.10.2 INVENTORY METHODS

For the analysis of cultural resources, two study corridors were used. One MSTI study corridor extends to 0.5 mile of either side of the assumed centerlines of the alternative routes for assessing potential visual impacts on cultural resources (e.g., a change in visual setting). The other study corridor extends to only 250 feet to either side of the assumed centerline for assessing potential physical impacts (e.g., ground disturbance) of the proposed transmission line on cultural resources.

3.10.2.1 Data Sources

Primary baseline cultural resource data were collected from the Montana and Idaho SHPOs in 2006, 2007, and 2008. Data were also collected from the Idaho State BLM office in 2007 .These data included information for previously conducted cultural resource investigations and previously recorded cultural resources within 0.5 mile of each side of the centerlines of the alternative routes. It is estimated that between 85 and 90 percent of all reports housed at these repositories and summarizing previous cultural resource investigations within this distance were reviewed. National Register eligibility status was not confirmed for the previously recorded sites in Idaho.

Cultural resource sensitivity zones were established using data from GIS data sets, aerial photography, and federal and state agencies. Agencies contacted included the Montana and Idaho SHPOs, BLM Butte, Dillon, Shoshone, and Upper Snake River field offices, the Beaverhead-Deerlodge National Forest, the MDNRC, and the INL. Agency personnel were asked to provide information about areas of known or potential sensitivity for archaeological and architectural resources.

No on-the-ground field survey was performed for this analysis. However, an aerial (i.e. helicopter) reconnaissance of the alternative routes in Montana was performed in June 2008 to identify potential architectural resources within 0.5 mile of the centerlines and any archaeological sites visible from the air within 250 feet of the centerlines.

NWE has initiated the consultation process with the seven federally recognized tribes in Montana by sending each tribe a letter describing the MSTI project, a map of the Preferred Route and alternatives, and a request for information. Once the final alternatives have been selected, and the NEPA process formally initiated, the appropriate federal agencies will also be required to initiate government-to-government consultation with Native American groups claiming historic affiliation with the lands crossed by the proposed transmission line in Montana and Idaho.

3.10.2.2 Data Categories

In this document, cultural resources are divided into two broad categories – archaeological sites and architectural resources. It should be noted that the vast majority of land within each of the alternative routes has not been systematically or intensively surveyed for cultural resources. For this reason, each alternative may contain hundreds of cultural resources that have not yet been identified. Furthermore, most of the previously documented cultural resources in the study area have not been evaluated for NRHP eligibility.

3.10.3 DESCRIPTION OF ALTERNATIVE ROUTES - MONTANA

3.10.3.1 Townsend to Mill Creek (Melrose) Segment

A1: Preferred Route

A total of 90 sites have been documented within 0.5 mile of the A1: Preferred Route including 42 historical sites, 26 prehistoric sites, 14 architectural sites, 3 sites with both historical and prehistoric components, and 5 sites where a specific age could not be determined (Table 3.10-1). Most of the historical sites are related to mining or early homesteading in the region, some are trash dumps or transportation corridors. Prehistoric sites are almost exclusively lithic scatters (i.e., surface scatters of Native American stone tools and flakes), but a few consist of quarries or tipi rings. Seven of the documented sites have been determined eligible to the NRHP and one historical resource, the Butte to Anaconda Railway District, is listed on the NRHP.

The Pipestone Mining District is also located along Link 7-2 of the A1: Preferred Route. Although it lacks an official designation as an archaeological district and is not listed on the NRHP, it has been identified by BLM Butte Field Office archaeologist as an area that is particularly sensitive for cultural resources (Kiely, personal communication 2008).

Table 3.10-1 Cultural Resources Along MSTI Alternative Routes - Montana

	Resources within 0.5 Mile			Resources within 250 feet		
Alternative	Total Resources	NRHP- Eligible Resources	NRHP-Listed Resources	Total Resources	NRHP- Eligible Resources	NRHP-Listed Resources
TOWNSEND TO MILL CREEK (MELROSE)						
A1: Preferred Route	90	12	1	6		
A2: Parallel Colstrip Route	109	12	1	12		
A3: Maximize Utility Corridors	72	9	1	11		
MILL CREEK TO STATE LINE						
B1:Preferred Route	34	1		3		
B2: Sheep Creek Route	42	3		3		
B3: I-15 Dell Route	38	1		3		
TOWNSEND TO PIPESTONE / MILL CREEK TO STATE LINE						
AB1: I-15 Jefferson Valley Route	135	12	1	15	1	

A2: Parallel Colstrip Lines Route

There are 109 cultural resources that have been documented within 0.5 mile of the A2: Parallel Colstrip Lines Route and include 66 historical sites, 17 prehistoric sites, 23 architectural sites, and 3 sites with unknown cultural affiliation. Most sites dating to the historical period are related to early mining and homesteading activities and the majority of prehistoric sites are lithic scatters. Architectural sites are represented by log structures and building foundations. There are 12 sites that are eligible to the NRHP within 0.5 mile of the A2 Route centerlines and one historic district that is listed on the Register.

A3: Maximize Utility Corridors Route

There are 72 sites within 0.5 mile of the centerline of A3 including 30 historic sites, 27 prehistoric sites, 9 architectural resources, two sites with both historic and prehistoric artifacts, and 4 sites where a specific age could not be determined. Historic sites consist of homesteads, trash dumps, irrigation systems, unspecified mining sites, bridges, mines, the Burlington Northern Santa Fe Railroad, the Crackerville Cemetery and the Butte-Anaconda Historic Railway District. Prehistoric sites include tipi rings, lithic scatters, and quarry sites. Architectural sites have standing buildings. Nine sites have been determined eligible to the NRHP including three homesteads, two lithic scatters, tipi ring, the Burlington Northern Railroad, a placer mine, and a bridge. The Butte-Anaconda Historic Railway District is listed on the NRHP.

3.10.3.2 Mill Creek to State Line

B1: Preferred Route

A total of 34 sites have been recorded within 0.5 mile of the centerline of this route, including five historic sites, 16 prehistoric sites, four architectural sites, one site with both prehistoric and historic components, and eight sites for which an age could not be determined. Historic sites include an unspecified type of mining site, a bridge, a building foundation, and some historic-era graves. Prehistoric sites consist of lithic scatters, tipi rings and quarry sites. The architectural sites are a homestead with a log cabin and a second log cabin site. One rock alignment along Link 16-1 is eligible to the NRHP, the eligibility remains unresolved at three cairn or rock alignment sites and one prehistoric quarry, and the remaining sites have not been evaluated. The historic graves have been determined not eligible to the Register.

B2: Sheep Creek Route

There are 42 cultural resources that have been identified along this route within 0.5 mile of the centerline; three historic, 21 prehistoric, 13 architectural, 3 multi-component, and 2 sites that the age is unknown. Historic sites include a bridge, coal mine, and a homestead. Prehistoric sites are almost exclusively lithic scatters, but there are also tipi rings. The architectural sites consist of two log structures. Multi component sites are lithic scatters located on Euroamerican sites, and the site with an unknown age is a series of rock alignments without associated artifacts. Two lithic scatters and the homestead site are eligible to the NRHP.

B3: I-15 Route

There are 38 archaeological and architectural sites that have been previously recorded within 0.5 mile of the centerline of the alternative and include 5 historic sites, 16 prehistoric sites, 5 architectural sites, 1 site with both historic and prehistoric components, and 11 sites for which an age cannot be definitively assigned. The historic sites include a bridge, and unspecified mining site, and some historic graves. Prehistoric sites are represented by lithic scatters, quarries, and tipi rings. The architectural site is a homestead with a log structure and the multi-component site is a lithic scatter located on an unspecified type of historic site. One rock alignment located along Link 16-1 is eligible to the NRHP, eligibility remains unresolved at four rock cairn or alignment sites and one lithic scatter. The historic graves are not eligible to the Register and the remaining sites have not been evaluated.

3.10.3.3 AB1: I-15 Jefferson Valley Route

There are 135 previously recorded cultural resources located within 0.5 mile of the AB1: Jefferson Valley Route centerline. Prehistoric sites are represented mostly by lithic scatters many of which have associated tools, groundstone, or pottery. Historic sites include segments of historic railroads, trails, canals, or irrigation systems as well as trash scatters, homesteads, mining-related sites, and a few cemeteries and grave sites. Architectural sites include many unspecified types of buildings or structures and log cabins. The sites that cannot be assigned a definitive age are almost equally split between those for which no information was available and rock cairn or alignment sites where diagnostic artifacts were not noted.

3.10.4 DESCRIPTION OF ALTERNATIVE ROUTES - IDAHO

3.10.4.1 Idaho Routes Stateline to Midpoint

C1: Preferred Route

A total of 238 sites have been documented within 0.5 mile of the Preferred Route including 173 prehistoric sites, 22 historic sites, 17 architectural sites, 7 sites that have both historic and prehistoric artifacts and/or features, and 19 sites where a definitive age could not be established. Prehistoric sites are almost exclusively lithic scatters. Two of the lithic scatters are located in either a collapsed lava tube or rock overhang, and one scatter was found in association with a tipi ring and possible fire hearths. Other prehistoric sites include a campsite and a rockshelter. Historic sites include trash scatters, segments of historic canals, railroads, and sections of the historic Goodale’s Cuttoff trail with visible ruts. One fence, some building foundations, and State Highway 28 have also been documented as historic sites along the preferred route. Architectural resources consist of six buildings associated with the Reno Ranch Complex, one consists of a well house, water tank, and chicken coop south of the Midpoint substation, two are unspecified building types, one is a storage structure, one is the dosimetry calibration laboratory on the INL, one is a cabin, and one is the Beaver Canyon Stage Station. All of the multi-component sites consist of intermingled prehistoric lithic scatters and historic trash scatters. Three of the multi-component sites are also associated with rock alignments. Sites for which an age could not be established include seven cairns without any noted associated artifacts and 11 sites that were missing site forms at the Idaho SHPO.

Eligibility status for these sites has not been confirmed.

Links 23 and 24 of the preferred alternative cross the INL. More than half of all of the cultural resources documented along the Preferred Route are located within 0.5 mile of the centerline of these two links. Twenty-five of these sites are located within 250 feet of the centerline. Prominent buttes, which are topographic features commonly identified by Native American groups as sacred or traditional areas, are also located near these routes.

Table 3.10-2 Cultural Resources Along MSTI Alternative Routes - Idaho

	Resources within 0.5 Mile			Resources within 250 feet		
Alternative	Total Resources	NRHP- Eligible Resources	NRHP-Listed Resources	Total Resources	NRHP- Eligible Resources	NRHP-Listed Resources
STATELINE TO MIDPOINT						
C1: Preferred Route	238	TBD	TBD	41	TBD	TBD
C2: Eastern Route	131	TBD	TBD	18	TBD	TBD
C3: Western Route	144	TBD	TBD	30	TBD	TBD
C4: Sheep Creek INL/Brigham Point Route	233	TBD	TBD	39	TBD	TBD

C2: Eastern Route

A total of 131 cultural resources have been documented within 0.5 mile of the Eastern Route centerline. These resources include 83 prehistoric sites consisting almost entirely of lithic scatters. Other sites include lithic scatters in association with a collapsed lava tube, one under a rock overhang, and one associated with a tipi ring and possible fire hearths. Twenty historic resources include trash scatters and segments of historic railroads, canals, trails, and county roads. Architectural sites include a cabin, the Beaver Canyon Stage Station, the Pleasant Valley Bridge, an unspecified type of building, and a site consisting of a water tank, well house, and chicken coop. All of the seven multi-component sites are prehistoric lithic scatters intermingled with historic trash scatters. Seven of the sites for which an age could not be established are cairns without noted associated artifacts and the remaining eight are unspecified buildings and structures.

National Register eligibility status has not been confirmed for any of the Idaho sites.

C3: Western Route

A total of 144 cultural resources have been documented within 0.5 mile of the Western Route. Of these, 86 are prehistoric, 34 are historic, 18 are architectural resources, 1 has both prehistoric and historic artifacts in the assemblage, and a specific age could not be established for five of the sites. Prehistoric sites are almost exclusively lithic scatters. However, two campsites, a rockshelter, and a site with four rock features and associated projectile points have also been documented. Historic sites include segments of seven canals and ditches, three railroads, State Highway 28, and Goodale's Cutoff trail. Two mining-related sites and multiple trash scatters have also been documented along the route. Architectural sites include six buildings associated with the Reno Ranch Complex, a lava rock building, a wooden bridge, a Little Wood River Irrigation District diversion structure, a wood pump house, two unspecified types of buildings, a site with two log cabins, a site with a well house, water tank, and chicken coop, a residence and associated well house and water tank, the Edie Townsite. The only multi-component site documented along the route is a historic trash scatter intermixed with a prehistoric lithic scatter. Of the five sites for which an age could not be determined, four did not have sites forms in the Idaho SHPO records and one has been simply identified as a campsite. It is unknown if it is a prehistoric or historic camp.

National Register eligibility status has not been confirmed for any of the Idaho sites.

C4: Sheep Creek INL Brigham Point

A total of 233 cultural resources have been previously documented within 0.5 mile of the Sheep Creek INL Brigham Point centerline. There are 174 prehistoric sites, 17 historic sites, 18 architectural resources, six sites with both prehistoric and historic resources and 18 sites for which a date could not be determined from the SHPO records provided. Prehistoric sites are dominated by lithic scatters. Historic sites include trash scatters, a fence, a campsite, and segments of Goodale's Cutoff trail, two canals, two railroads, and rock features associated with a historic trash scatter. Architectural resources consist of three sites that were documented as architectural resources but no site forms were available, a septic tank pump house, a site with two cabins, one site consisting of a water tank, well house, and chicken coop, a wood span bridge, a storage structure, the Dosimetry Calibration Laboratory at the INL, and six buildings associated with the Reno Ranch Complex. Multi-component sites consist of trash scatters intermixed with prehistoric lithic scatters. Of the sites without a definitive age, seven are cairns without associated, temporally diagnostic artifacts, and the remaining 11 sites did not have site forms available at the Idaho SHPO.

National Register eligibility status has not been confirmed for any of the Idaho sites.

3.10.5 Substations

3.10.5.1 New Townsend Substation

The proposed Townsend Substation site has not been surveyed for cultural resources. Given it's location within a cultivated field, it is anticipated that the site would have relatively low sensitivity for containing National Register-eligible cultural resources.

3.10.5.2 Mill Creek Substation Addition

One homestead and one residence have been noted located within 0.5 mile of the Mill Creek Substation. Neither building has been recorded as a cultural resource and neither is within 250 feet of the facility which could have subjected the properties to ground disturbing activities.

3.10.5.3 Midpoint Substation Addition

One architectural resource has been previously documented.25 mile south of the Midpoint Substation. It is the A.J. and Lela Newman water tank, well house, and chicken house.

3.10.6 Communication Systems

As discussed in Section 2.3.2.1, preliminary locations for microwave facilities along the Preferred Route (Alternatives A1, B1 and C1) have been identified (see Figure 2-4). The microwave site locations in Montana include Mill Creek, Fleecer, Beef Trail, East Ridge, Cardwell Hill, Townsend Substation, and Mauer Mountain, and the locations in Idaho are Humphrey Ridge, Big Grassy Substation, Howe Peak, American Falls SE, Borah Substation, Dietrich Butte, and Midpoint Substation. All 14 microwave site locations are either existing or designated communication sites.

3.11 CLIMATE AND AIR QUALITY

3.11.1 INTRODUCTION

The purpose of the air quality inventory is to identify and describe in sufficient detail the existing climatological conditions, the existing ambient air quality standards, and any available air pollutant monitoring data available in the Project Area.

Because of the regional nature of air quality, the following discussion includes general, relevant data from the surrounding region. Also, given the proximity of the different alternative routes and the regional level of analysis, differences in the existing air quality along the alternative routes are not considered.

Applicable Laws and Regulations:

Federal Clean Air Act (CAA).

Under the Clean Air Act of 1970, as amended in 1990, the U.S. Environmental Protection Agency (EPA)is authorized to establish air quality standards for six "criteria" air pollutants: ozone, carbon monoxide(CO), lead, nitrogen dioxide, particulate matter (PM-2.5, PM-10), and sulfur dioxide. The EPA uses these six criteria pollutants as indicators of air quality. For each of these pollutants, the EPA has determined a maximum concentration above which adverse effects on human health could occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS); when an area exceeds these standards, it is designated as a non-attainment area. Pollution control measures are mandated for federal actions in non-attainment areas.

A non-attainment area can be listed for any one or more of the criteria pollutants. An area that was once a non-attainment area, but has since improved its air quality enough so that it now meets the EPA established air quality standards and has an EPA-approved redesignation plan, is upgraded to a maintenance area designation. Maintenance areas also have pollution controls, but because the air quality is not as poor as in non-attainment areas, the control standards are not as strict. All other areas not listed by the EPA for air quality degradation are considered attainment areas or not classified.

Of the six criteria air pollutants, particulate matter, or PM, is the main concern when transmission lines are constructed or improved. PM-10 are particles with a diameter smaller than 10 micrometers and include: "dust, dirt, soot, smoke and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, fires, and natural windblown dust" (EPA 2003). PM- 2.5 are "fine particles" with a diameter smaller than 2.5 micrometers. PM-2.5 particles can be "directly emitted from sources such as forest fires or they can form when gases emitted from power plants, industry and automobiles react in the air" (EPA 2006b). Fugitive dust emissions would result from dust caused by road building, on-site travel on unpaved surfaces, and soil disrupting operations. Wind erosion of disturbed areas would also contribute to fugitive dust.

Sec. 107 of the Clean Air Act as amended in 1990 states:

> Each State shall have the primary responsibility for assuring air quality within the entire geographic area comprising such State by submitting an implementation plan for such State which will specify the manner in which national primary and secondary ambient air quality standards will be achieved and maintained within each air quality

control region in such State.

Clean Air Act of Montana. The Clean Air Act of Montana allows the development of local air pollution control programs. With DEQ assistance, these programs handle the development of control strategies for nonattainment areas that need State Implementation Plans (SIPs), as well as permitting of smaller sources. Montana's state government still issues permits to large air pollutant sources located within the jurisdiction of local air pollution control programs.

Clean Air Act of Idaho.

Under the authority of the CAA, the U.S. EPA has developed and promulgated health-based air quality standards that limit the maximum levels of certain pollutants in outdoor air. Idaho has adopted most of these standards into the state rules for the control of air pollution in Idaho (IDAPA 58.01.01) and has been delegated authority to issue air quality permits and enforce air quality regulations in the state. The State of Idaho is authorized to develop plans demonstrating how they will achieve, maintain, and enforce the standards. Jointly, the state rules and these plans are known as Idaho's State Implementation Plan (SIP).

3.11.2 INVENTORY METHODS

3.11.2.1 Data Sources

Climatological Data:

Data on climate in the region was obtained from online sources, primarily state narratives made available by the Western Regional Climate Center (WRCC n.d.a, n.d.b).

MDEQ Air Monitoring Sites:

The number of air quality monitors required by regulation in an area is based on population density and air quality. No area of Montana has sufficient population to require more than one monitoring station for any pollutant where air quality is poor or to require any monitoring where air quality is adequate. MDEQ has monitors in place where there are known air quality issues (MDEQ 2007).

One air quality monitoring station is located in the vicinity of the MSTI alternative routes. The Butte-Greeley School, site 30-093-0005, is a neighborhood scale site located at an elementary school in a residential neighborhood on the north side of Butte near the current mining activity. The site monitors population exposure to particulate. Continuous PM_{10} monitoring provides response capability for the burning control program and monitors compliance with the National Ambient Air Quality Standards (NAAQS). $PM_{2.5}$ compliance is measured with a Federal reference method (FRM) sampler. Butte was designated nonattainment for PM_{10} in 1990 (MDEQ 2007).

IDEQ Air Monitoring Sites:

IDEQ's regional offices operate a monitoring network that collects real-time measurements of ambient levels of air contaminants at more than 20 sites throughout the state and secures laboratory analysis of these air samples. IDEQ's Monitoring, Modeling, and Emission Inventory (MMEI)

Program in the agency's state office oversees and coordinates operation of the statewide air quality monitoring network and emissions inventory projects and ensures data quality and integrity.

Four air quality monitoring stations are located within the larger project area: Idaho National Laboratory, surrounded by and crossed by each of the three alternative routes; Idaho Falls, approximately 22 miles east of the nearest proposed alternative route; Fort Hall, approximately 25 miles east of the nearest proposed alternative route; Pocatello and Chubbuck (Portneuf Valley), approximately 25 miles east of the nearest proposed alternative route; and Twin Falls, approximately 17 miles south of the Midpoint Substation. Of these three sites, the Portneuf Valley and Fort Hall are the only non-attainment areas (NAA).

The Portneuf Valley includes 96.6 square miles of Pocatello, Chubbuck, and surrounding areas. The Portneuf Valley is a Maintenance Area for PM_{10} (coarse particulate matter). Formerly the Power/Bannock County PM_{10} area; split into Portneuf Valley and federal Fort Hall PM_{10} areas, includes federal land managed by the Bureau of Land Management and the Caribou National Forest, as well as privately owned land in the cities of Pocatello and Chubbuck (IDEQ 2004).

The Fort Hall non-attainment area falls under the jurisdiction of the Tribes and EPA. EPA promulgated a Federal Implementation Plan (FIP) for the Astaris-Idaho LLC facility (formerly FMC Corporation) in the Fort Hall non-attainment area. The FIP covers only the Ataris facility and does not take into consideration any other sources on the non-attainment area. EPA's ultimate goal was to ensure that all persons in the Fort Hall non-attainment area can breathe air that meets the PM_{10} NAAQS. The FIP contains emission limits, work practice requirements, and monitoring, recordkeeping, and reporting requirements that EPA believes represent reasonably available control technology (IDEQ 2004).

The Astaris facility announced in late 2001 they would cease operations by December 31, 2001; the actual date of closure was December 11, 2001. The plant is no longer in operation and is presently going through the process of decontamination and decommissioning (IDEQ 2004).

3.11.2.2 Data Categories

Data categories consisted of general climatological data, mainly related to precipitation and temperature, air quality standards, and available air pollutant monitoring data. Air quality data considered for this analysis included air pollutants for which the EPA and MDEQ have established ambient air quality standards. These include carbon monoxide (CO), lead (Pb), sulfur dioxide (SO_2), particulate matter smaller than 10 microns (PM_{10}) and 2.5 microns ($PM_{2.5}$), ozone, and nitrogen oxides (NO_x).

3.11.3 DESCRIPTION OF ALTERNATIVE ROUTES - MONTANA

Climatological Conditions

Climate in the Montana portion of the MSTI project area is influenced by the major physiographic features of the region, consisting of the plains of eastern Montana and the mountain ranges of western Montana. The MSTI project traverses the Continental Divide in several locations. The Divide exerts a marked influence on the climate of adjacent areas. The west side of the Divide has a generally milder climate, with precipitation more evenly distributed throughout the year, cooler summers, more moderate winds, more cloudiness, and generally higher humidity than the area to the east.

The regional climate is characterized by average annual high and low temperatures in the upper 50s and upper 20s (°F), respectively. Temperatures of over 100°F in lower elevation areas occur throughout much of western Montana. However, in areas with elevations above 4,000 feet, extremely hot weather is almost unknown. Winters, while usually cold with temperatures that average 0 or below, have few extended cold spells. Between cold waves there are extended periods of mild but often windy weather. These warm, windy winter periods occur almost entirely along the eastern slopes of the Divide and are popularly known as "Chinook" weather, with wind speeds frequently reaching 25 to 50 mph that can be sustained for several days.

There are a few valleys in western Montana that are relatively dry. Areas adjacent to mountain ranges in general are the wettest. The regions of western Montana see precipitation of about 10 inches annually in the summer months, and average 50 inches of snow in the winter months. Typically, almost half the average annual precipitation occurs from May to July.

Temperatures and Precipitation

Historical temperatures and precipitation were obtained form the Western Regional Climatic Center (WRCC) (WRCC 2008). Several monitoring sites are located in the proximity of the Project Area, including Anaconda (period of record: 1982 through 2005), Boulder (period of record: 1948 through 2005), Butte (period of record: 1894 through 2005), Dillon (period of record: 1895 though 2005), Lima (period of record: 1898 through 2005), Townsend, (period of record: 1948 through 2005), and Twin Bridges (period of record: 1950 through 2005).

These sites are dispersed throughout the Project Area, both north to south and east to west, and are generally representative of the average conditions for temperature and precipitation in the valleys within the Project Area. Detailed temperature and precipitation data for the mountainous, high elevation areas within the Project Area was not available. For all monitoring sites, the highest average temperatures occur in July and the lowest average temperatures occur in January. Refer to Table 3.11-1 for annual averages for the monitoring sites.

Table 3.11-1 WRCC Monitoring Site Annual Averages

Location	Average Annual Maximum Temperature (°F)	Average Annual Minimum Temperature (°F)	Average Annual Total Precipitation (inches)	Average Annual Snowfall (inches)
Anaconda	57.1	29.6	14.0	72.3
Boulder	56.7	28.0	11.0	31.2
Butte	53.2	27.1	12.8	56.8
Dillon	56.1	29.4	9.7	38.0
Lima	53.4	25.1	11.0	51.7
Townsend	58.0	30.4	10.8	23.1
Twin Bridges	58.3	27.9	9.6	9.1

Air Quality Standards

The EPA and MDEQ have established ambient air quality standards for criteria air pollutants, including CO, Pb, SO_2, PM_{10}, $PM_{2.5}$, ozone, and NO_x.

Table 3.11-2 lists Federal and Montana air quality standards. National primary standards are levels of air quality necessary, with an adequate margin of safety, to protect public health. National secondary standards are levels of air quality necessary to protect public welfare from known or anticipated adverse effects of a regulated air pollutant.

Table 3.11-2 State of Montana and National Ambient Air Quality Standards

Pollutant	Averaging Time	Air Quality Standard Concentration	
		Montana	National
Ozone	1 hour	196 µg/m³ (0.10 ppm)	235 µg/m³ (0.12 ppm)
	8 hour	--	157 µg/m³ (0.08 ppm)
Carbon Monoxide	1 hour	26450 µg/m³ (23 ppm)	40000 µg/m³ (35 ppm)
	8 hour	10000 µg/m³ (9.0 ppm)	10000 µg/m³ (9.0 ppm)
Nitrogen Oxides	Annual	94 µg/m³ (0.02ppm)	100 µg/m³ (0.053 ppm)
Sulfur Dioxide	1 hour	1300 µg/m³ (0.50 ppm)	--
	3 hour	--	1300 µg/m³ (0.50 ppm)
	24 hour	262 µg/m³ (0.10 ppm)	365 µg/m³ (0.14 ppm)
	Annual	52 µg/m³ (0.05 ppm)	80 µg/m³ (0.03 ppm)
Sulfur Oxides	3 hour	--	--
	24 hour	--	--
	Annual	--	1300 µg/m³ (0.5 ppm)
Particulate Matter (PM_{10})	24 hour	150 µg/m³	150 µg/m³
	Annual	50 µg/m³	--
Particulate Matter ($PM_{2.5}$)	24 hour	--	35 µg/m³
	Annual	--	15 µg/m³
Lead	Quarterly	*90-day avg:* 1.5 µg/m³	1.5 µg/m³

Note: mg/m³= milligrams per cubic meter; µg/m³= micrograms per cubic meter; ppm= parts per million; PM_{10}= particulate matter smaller than 10 microns; $PM_{2.5}$= particulate matter smaller than 2.5 microns

Source: Administrative Rules of Montana 17.8; CFR Part 50, National Ambient Air Quality Standards

The attainment status for pollutants within the project area is determined by monitoring levels of criteria pollutants for which national and/or Montana standards exist. The attainment designation means that no violations of either the national or state air quality standards have been documented in the area. Air quality in the analysis area is designated as attainment for all criteria pollutants. Non-attainment status within the MSTI project area is given for Butte, Montana, which has a status for particulate matters (PM_{10}).

PSD Classification

The analysis area and vicinity are designated Class II, as defined by the Federal Prevention of Significant Deterioration (PSD) of the Clean Air Act. The PSD Class II designation allows for moderate growth or degradation of air quality within certain limits above baseline air quality. Industrial emission sources proposed in construction or modifications will demonstrate that the proposed emissions would not cause major deterioration of air quality in all areas.

The standards for Class I are more stringent, in regards to air quality deterioration, than Class II. Federal and state Class I located near the MSTI project area include Anaconda-Pintler National Wilderness Area, and Craters of the Moon National Park.

Existing Sources

There are multiple air emission sources in the regions that MSTI traverses. Some of the permitted facilities include crude oil pumps and natural gas compressor stations, crematoriums, concrete mix plants, asphalt mix plants, and gravel crushers, along with their associated portable processing equipment. Several of these facilities operate under specific permit limits for criteria pollutants such as PM_{10}, $PM_{2.5}$, CO, Pb, and SO_2. Other potential sources include fugitive dust, generally due to farming activities and travel on non-paved roads, and smoke due to field/forest burning.

Air Quality Permitting

Industrial air quality permitting is part of the Montana State Implementation Plan (SIP) process. The Montana DEQ uses air quality permit conditions to help ensure compliance with applicable Montana Ambient Air Quality Standards and PSD increments. Work conducted under the proposed project would be subject to ARM Title 17, Chapter 8 (Air Quality). Both states require compliance with the National Ambient Air Quality Standards and PSD increments.

3.11.4 DESCRIPTION OF ALTERNATIVE ROUTES - IDAHO

Climatological Conditions

Climate in the MSTI Idaho project area is influenced by major physiographic features, including the mountain ranges of eastern Idaho and the Snake River Plain of Idaho. The MSTI project traverses the Continental Divide at the Montana and Idaho Border. The Divide exerts a marked influence on the climate of adjacent areas. To the east, climatic characteristics are decidedly more continental with drier, windy conditions and colder winters than to the west. However, the Snake River Plain has a climate more consistent with much of the region west of the Divide, a maritime effect from the Columbia Gorge, with higher precipitation and humidity, and cooler summers.

The regional climate is characterized by average annual high and low temperatures in the upper 50s and upper 20s (°F), respectively. Much of the Upper Snake River Plain of eastern Idaho sometimes sees temperatures of over 100 degrees in lower elevation areas. In areas with elevations above 4,000 feet, extremely hot weather is almost unknown. Winters, while usually cold with temperatures that average 0 or below, have few extended cold spells. Between cold waves there are extended periods of mild but often windy weather. These warm, windy winter periods occur almost entirely along the eastern slopes of the Divide and are popularly known as "Chinook" weather, which frequently reach speeds of 25 to 50 mph and can sustain for several days.

In the Snake River Plain, temperatures in the winter average 32 degrees or lower. Due to the more maritime influence, there is a greater difference between the winter and summer temperature ranges. The Upper Snake River Plains see an average precipitation of about 14 inches in the summer, while the Central Snake River Plain sees around 10 inches on average. Snow fall in the Upper Snake River Plain averages between 40 to 50 inches, while the Central Plain sees a much lower annual average of 30 inches of snow.

Temperatures and Precipitation

Historical temperatures and precipitation were obtained form the Western Regional Climatic Center (WRCC 2008). Several monitoring sites are located in the proximity of the Project Area, including Spencer Ranger Station (period of record: 1948 through 2007), Hamer (period of record: 1948 through 2007), Arco (period of record: 1948 through 2007), Idaho Falls (period of record: 1952 though 2007), Picabo (period of record: 1958 through 2007), Shoshone (period of record: 1931 through 2007), and American Falls (period of record: 1948 through 2007).

These sites are dispersed throughout the Project Area, both north to south and east to west, and are generally representative of the average conditions for temperature and precipitation in the valleys and at the edge of the continental divide within the Project Area. For all monitoring sites, the highest average temperatures occur in July and the lowest average temperatures occur in January. Refer to Table 3.11-3 for annual averages for the monitoring sites.

Table 3.11-3 WRCC Monitoring Site Annual Averages

Location	Average Annual Maximum Temperature (°F)	Average Annual Minimum Temperature (°F)	Average Annual Total Precipitation (inches)	Average Annual Snowfall (inches)
Spencer Ranger Station	53.1	25.1	16.24	96.8
Hamer	58.5	26.7	8.89	27.1
Arco	57.4	27.5	9.56	30.6
Idaho Falls	58.7	32.4	12.19	26.8
Picabo	57.9	27.5	12.87	42.7
Shoshone	62.4	34.6	10.25	28.6
American Falls	59.8	35.0	11.11	30.7

Air Quality Standards

The EPA and IDEQ have established ambient air quality standards for criteria air pollutants, including CO, Pb, NO_2, SO_2, PM_{10}, $PM_{2.5}$, ozone, and NO_x.

Table 3.11-4 lists Federal and Idaho air quality standards. National primary standards are levels of air quality necessary, with an adequate margin of safety, to protect public health. National secondary standards are levels of air quality necessary to protect public welfare from known or anticipated adverse effects of a regulated air pollutant.

Table 3.11-4 State of Idaho and National Ambient Air Quality Standards

Pollutant	Averaging Time	Air Quality Standard Concentration	
		Idaho	National
Ozone	1 hour	0.12 ppm	235 μg/m³ (0.12 ppm)
	8 hour	0.075 ppm	157 μg/m³ (0.08 ppm)
Carbon Monoxide	1 hour	40 mg/m³ (35 ppm)	40,000 μg/m³ (35 ppm)
	8 hour	10 mg/m³ (9.0 ppm)	10,000 μg/m³ (9.0 ppm)
Nitrogen Dioxide	Annual	100 mg/m³ (0.053 ppm)	100 μg/m³ (0.053 ppm)
Sulfur Oxides	3 hour	--	--
	24 hour	0.14 ppm	--
	Annual	0.03 ppm	1,300 μg/m³ (0.5 ppm)
Particulate Matter (PM_{10})	24 hour	150 μg/m³	150 μg/m³
	Annual	--	--
Particulate Matter ($PM_{2.5}$)	24 hour	35 μg/m³	35 μg/m³
	Annual	15.0 μg/m³	15 μg/m³
Lead	Quarterly	1.5 μg/m³	1.5 μg/m³
Sulfur Dioxides	1 hour	--	--
	3 hour	--	1,300 μg/m³ (0.5 ppm)
	24 hour	--	365 μg/m³ (0.14 ppm)
	Annual	--	80 μg/m³ (0.03 ppm)

Note: mg/m³= milligrams per cubic meter; μg/m³= micrograms per cubic meter; ppm= parts per million; PM_{10}= particulate matter smaller than 10 microns; $PM_{2.5}$= particulate matter smaller than 2.5 microns

Source: IDEQ and National Ambient Air Quality Standards

The attainment status for pollutants within the project area is determined by monitoring levels of criteria pollutants for which national and/or Idaho standards exist. The attainment designation means that no violations of either the national or state air quality standards have been documented in the area. Air quality in the analysis area is designated as attainment for all criteria pollutants. Non-attainment status within the MSTI project area is given for Fort Hall and Portneuf Valley, which have a status for particulate matters (PM_{10}) (IDEQ 2004).

PSD Classification

The analysis area and vicinity are designated Class II, as defined by the Federal Prevention of Significant Deterioration (PSD) of the Clean Air Act. The PSD Class II designation allows for moderate growth or degradation of air quality within certain limits above baseline air quality. Industrial emission sources proposed in construction or modifications will demonstrate that the proposed emissions would not cause major deterioration of air quality in all areas.

The standards for Class I are more stringent, in regards to air quality deterioration, than Class II. Federal and state Class I located near the MSTI project area include the Craters of the Moon National Park.

Existing Sources

There are multiple air emission sources in the regions that MSTI traverses. Some of the permitted facilities include crude oil pumps and natural gas compressor stations, crematoriums, concrete mix plants, asphalt mix plants, and gravel crushers, along with their associated portable processing equipment, as well as the Idaho National Laboratory. Several of these facilities operate under specific permit limits for criteria pollutants such as PM_{10}, $PM_{2.5}$, CO, Pb, and SO_2. Other potential sources include fugitive dust, generally due to farming activities and travel on non-paved roads, and smoke due to field/forest burning.

Air Quality Permitting

Industrial air quality permitting is part of the Idaho State Implementation Plan (SIP) process. The Idaho DEQ uses air quality permit conditions to help ensure compliance with applicable Idaho Ambient Air Quality Standards and PSD increments. Work conducted under the proposed project would be subject to the rules for control of air pollution in Idaho (IDAPA 58.01.01). Idaho requires compliance with the National Ambient Air Quality Standards and PSD increments.

3.11.4.1 Stateline to Midpoint Routes

C1: Preferred Route

The C1: Preferred Route is approximately 232.6 miles in length. Air quality standards for the 500kV transmission line are under the jurisdiction of IDEQ. Refer to Section 3.11.3 above for more details on inventory methods and results.

C2: Eastern Route

The C2: Eastern Route is approximately 239.3 miles in length. Air quality standards for the 500kV transmission line are under the jurisdiction of IDEQ. Refer to Section 3.11.3 above for more details on inventory methods and results.

C3: Western Route

The C3: Western Route is approximately 177.6 miles in length. Air quality standards for the 500kV transmission line are under the jurisdiction of IDEQ. Refer to Section 3.11.3 above for more details on inventory methods and results.

C4: Sheep Creek INL/Brigham Point Route

The C4: Sheep Creek INL/Brigham Point Route is approximately 214.3 miles in length. Air quality standards for the 500kV transmission line are under the jurisdiction of IDEQ. Refer to Section 3.11.4 above for more details on inventory methods and results.

3.11.5 Substations

3.11.5.1 New Townsend Substation

Air quality standards for the Townsend Substation are under the jurisdiction of MDEQ. Refer to Section 3.11.3 above for more details on inventory methods and results.

3.11.5.2 Mill Creek Substation Addition

Air quality standards for the Mill Creek Substation are under the jurisdiction of MDEQ. Refer to Section 3.11.3 above for more details on inventory methods and results.

3.11.5.3 Midpoint Substation Addition

The Midpoint Substation Additions cannot be completed in the existing fenced area; expansion of the substation yard would be required. Air quality standards for the 500 kV transmission line and substation additions are under the jurisdiction of IDEQ. Refer to Section 3.11.3 above for more details on inventory methods and results.

3.11.6 COMMUNICATION SYSTEM

As discussed in Section 2.3.2.1, preliminary locations for microwave facilities along the Preferred Route (Alternatives A1, B1 and C1) have been identified (see Figure 2-4). The microwave site locations in Montana include Mill Creek, Fleecer, Beef Trail, East Ridge, Cardwell Hill, Townsend Substation, and Mauer Mountain, and the locations in Idaho are Humphrey Ridge, Big Grassy Substation, Howe Peak, American Falls SE, Borah Substation, Dietrich Butte, and Midpoint Substation. All 14 microwave site locations are either existing or designated communication sites.

3.12 NOISE

3.12.1 INTRODUCTION

Noise is defined as unwanted sound. The unit used to describe the intensity of sound is the decibel (dB). The A-weight scale, or dB(A), approximates the range of human hearing by filtering out low frequency noises and correlates well with human perceptions of the annoying aspects of noise. Table 3.12-1 lists A-weight noise levels for typical noise sources.

Table 3.12-1 Comparison of Noise Sources

Noise Source	Typical dB(A)
Threshold of pain	130-140
Chain Saw	100-120
Diesel Locomotive at 50 feet	85-105
Motorcycle	80-110
Average street traffic	70-80
Automobile at 50 feet	60-90
Vacuum cleaner	60-85
Normal conversation	60-70
Typical business office	50-60
Background noise in rural environment	38-48
Typical living room	40-50
Library	30-40
Bedroom at night	20-30
Threshold of hearing	0-10

Source: EPA 1978; BLM 2005

For a rural environment, background noise is typically about 40 dB(A) during the day and 30 dB(A) at night (BLM 2005). As a comparison, conversational speech is about 60 dB(A), and a jet aircraft taking off can reach 120 dB(A). No background noise measurements have been made for the MSTI project, but measurements from other locations suggest that the background noise levels in the rural environment can be 38 to 48 dB(A). Noise levels generated by farm machinery, wildlife, and the wind can reach 55 dB(A).

3.12.2 INVENTORY METHODS

3.12.2.1 Data Sources

A systematic inventory of existing noise sources and sensitive receptors was not performed for the Environmental Report. Instead, these data were compiled from information in the Land Use Technical Report, Volume II. No measurements of existing noise levels were made in the study area as part of the MSTI environmental investigations.

3.12.2.2 Data Categories

Based on data presented in the Land Use Technical Report (see Volume II), existing noise sources in the MSTI project vicinity in Montana and Idaho include, but are not limited to:

- Vehicular traffic on interstate highways, U.S. highways, state highways and secondary roads
- Railroads
- Urban, developed, and industrial areas

Based on data presented in the Land Use Technical Report (see Volume II), existing noise sensitive resources within 10 miles of MSTI alternative route link centerlines in Montana and Idaho include, but are not limited to:

- Residences
- Schools
- Parks and Recreation Areas

In addition, as discussed in Sections 3.2 and 4.2, wildlife, particularly some species of birds, in the MSTI project area may be sensitive to construction noise.

3.12.3 DESCRIPTION OF ALTERNATIVE ROUTES - MONTANA

The alternative route links in Montana all pass primarily through rural environments with few existing major noise sources other than nearby highways and railroads. Table 3.12-2 summarizes highway and railroad corridors that cross or parallel the routes. Based on data presented in the Land Use Technical Report (see Volume II), existing noise sources in the MSTI project vicinity in Montana are primarily related to transportation corridors and include:

- Roads
  - Interstate Highways (I-15, I-90)
  - U.S. Highway 287

  - Montana State Highways and Secondary Roads (MT 1, MT 2, MT 41, MT 43, MT 69, MT 278, MT 324)
- Railroads
  - Burlington Northern and Santa Fe (BNSF), Union Pacific Railroad (UPRR), Montana Rail Link, Rarus Railway.
- Urban, Developed, and Industrial Areas
  - Along I-15, I-90 and U.S. and Montana state highways

There are also 36 airports within the MSTI study area in Montana.

Table 3.12-2 Existing Major Noise Sources (Transportation Corridors) by Alternative in Montana

Alternative	Residences within 1,000 Feet	I-15	I-90	U.S. Highway 287	Montana State Highways	Railroads
TOWNSEND TO MILL CREEK (MELROSE) SEGMENT						
A1: Preferred Route	106	X		X	X	X
A2: Parallel Colstrip Lines Route	24	X		X	X	X
A3: Maximize Utility Corridors	180	X		X	X	X
MILL CREEK TO STATE LINE SEGMENT						
B1: Preferred Route	9	X			X	X
B2: Sheep Creek Route	8				X	
B3: I-15 Route	11	X			X	X
TOWNSEND TO PIPESTONE / MILL CREEK TO STATE LINE						
AB1: Jefferson Valley Route	119	X	X	X	X	X

Some classes of noise sensitive receptors in MSTI project area are summarized in Table 3.12-3. Based on data presented in Volume II, Land Use Technical Report, existing noise sensitive resources within 1.0 mile of MSTI alternative route link centerlines in Montana include, but are not limited to:

- Residences
- Parks and Recreation Areas
  - Recreation facilities managed by the BLM, Beaverhead-Deerlodge National Forest (BDNF), and State of Montana.
  - Special Recreation Management Areas (SRMAs), Areas of Critical Environmental Concern (ACECs), Roadless Areas, Wildlife Management Areas (WMAs), and Fishing Access Sites.

There are also 14 schools in the MSTI study area in Montana.

Table 3.12-3 Residences and Recreation Areas within 1.0 Mile of Centerline by Alternative in Montana

Alternative	Residences within 1,000 Feet	SRMAs	ACECs	WMAs	Fishing Access Sites	Roadless Areas
TOWNSEND TO MILL CREEK (MELROSE) SEGMENT						
A1: Preferred Route	106	X	X	X	X	
A2: Parallel Colstrip Lines Route	24	X	X	X	X	
A3: Maximize Utility Corridors	180	X	X	X	X	
MILL CREEK TO STATE LINE SEGMENT						
B1: Preferred Route	9	X				
B2: Sheep Creek Route	8	X				
B3: I-15 Route	11	X				X
TOWNSEND TO PIPESTONE / MILL CREEK TO STATE LINE						
AB1: Jefferson Valley Route	119	X	X	X		

3.12.3.1 Townsend to Mill Creek (Melrose) Segment

A1: Preferred Route

Existing noise sources along the A1: Preferred Route along the Townsend to Mill Creek (Melrose) segment are related to traffic or development along I-15, I-90, US 287, various Montana highways and roads, and railroads.

Sensitive noise receptors include 106 residences within 1,000 feet of the centerline as well as several existing or proposed recreation areas within 1.0 mile of the centerline:

- Lower Big Hole River SRMA (BLM)
- Toston Reservoir/Missouri River Proposed SRMA (BLM)
- Elkhorn Mountains Proposed ACEC (BLM)
- Mount Hagen WMA (State)
- Maidenrock Fishing Access Site

While no measurements of existing noise levels were made for the MSTI project, information presented in Table 3.12-1 and Section 3.12.1 suggest that noise levels near residences would usually be below 55 dB(A) and that noise levels at recreation areas would typically be 38 to 48 dB(A). Traffic noise would typically be higher (60 to 90 dB(A)).

A2: Parallel Colstrip Lines Route

Existing noise sources along the A2: Parallel Colstrip Lines Route from Townsend to Mill Creek are related to traffic or development along I-15, I-90, US 287, various Montana highways and roads, and railroads.

Sensitive noise receptors include 24 residences within 1,000 feet of the centerline as well as several existing or proposed recreation areas within 1.0 mile of the centerline:

- Lower Big Hole River SRMA (BLM)
- Toston Reservoir/Missouri River Proposed SRMA (BLM)
- Elkhorn Mountains Proposed ACEC (BLM)
- Mount Hagen WMA (State)
- Maidenrock Fishing Access Site

Existing noise levels would generally be similar to those for the Preferred Route.

A3: MAXIMIZE UTILITY CORRIDORS ROUTE

Existing noise sources along the A3: Maximize Utility Corridors from Townsend to Mill Creek are related to traffic or development along I-15, I-90, US 287, various Montana highways and roads, and railroads.

Sensitive noise receptors include 180 residences within 1,000 feet of the centerline as well as several existing or proposed recreation areas within 1.0 mile of the centerline:

- Lower Big Hole River SRMA (BLM)
- Toston Reservoir/Missouri River Proposed SRMA (BLM)
- Pipestone Proposed ACEC (BLM)
- Mount Hagen WMA (State)
- Maidenrock Fishing Access Site

Existing noise levels would generally be similar to those for the Preferred Route.

3.12.3.2 Mill Creek to State Line Segment

B1: PREFERRED ROUTE

Existing noise sources along the B1: Preferred Route from Mill Creek to State Line are related to traffic or development along I-15 and various Montana state highways and secondary roads.

Sensitive noise receptors include nine residences within 1,000 feet of the centerline as well as one existing recreation areas within 1.0 mile of the centerline:

- South Pioneers SRMA (BLM)

While no measurements of existing noise levels were made for the MSTI project, information presented in Table 3.12-1 and Section 3.12.1 suggest that noise levels near residences would usually be below 55 dB(A) and that noise levels at recreation areas would typically be 38 to 48 dB(A). Traffic noise would typically be higher (60 to 90 dB(A)).

B2: Sheep Creek Route

Existing noise sources along the B2: Sheep Creek Route from Mill Creek to State Line are related to traffic or development along various Montana state highways and secondary roads.

Sensitive noise receptors include eight residences within 1,000 feet of the centerline as well as three existing recreation areas within 1.0 mile of the centerline:

- South Pioneers SRMA (BLM)
- Rocky Hills SRMA (BLM)
- Italian Peaks Roadless Area

Existing noise levels would generally be similar to those for the Preferred Route.

B3: I-15 Route

Existing noise sources along the B3: I-15 Route from Mill Creek to State Line are related to traffic or development along I-15 and various Montana state highways and secondary roads. Also, the incorporated town of Lima is within the study area.

Sensitive noise receptors include 11 residences within 1,000 feet of the centerline as well as one existing recreation area within 1.0 mile of the centerline:

- South Pioneers SRMA (BLM)

Existing noise levels would generally be similar to those for the Preferred Route.

3.12.3.3 AB1: Jefferson Valley Route

Existing noise sources along the AB1: Jefferson Valley Route are related to traffic or development along I-15, I-90, US 287, various Montana highways and roads, and railroads.

Sensitive noise receptors include 119 residences within 1,000 feet of the centerline as well as several existing recreation areas within 1.0 mile of the centerline:

- Lower Big Hole South Pioneers SRMA (BLM)
- River SRMA (BLM)
- Toston Reservoir/Missouri River Proposed SRMA (BLM)
- Elkhorn Mountains Proposed ACEC (BLM)
- Pipestone Proposed ACEC (BLM)
- Mount Hagen WMA (State of Montana)

While no measurements of existing noise levels were made for the MSTI project, information presented in Table 3.12-1 and Section 3.12.1 suggest that noise levels near residences would usually be below 55 dB(A) and that noise levels at recreation areas would typically be 38 to 48 dB(A). Traffic noise would typically be higher (60 to 90 dB(A)).

3.12.4 DESCRIPTION OF ALTERNATIVE ROUTES – IDAHO

The alternative route links in Idaho all pass primarily through rural environments with few existing major noise sources other than nearby highways and railroads. Table 3.12-4 summarizes highway and railroad corridors that cross or parallel the routes. Based on data presented in the Land Use Technical Report (Vol. II), existing noise sources in the MSTI project vicinity in Idaho are primarily related to transportation corridors and include:

- Roads
  - Interstate Highways (I-15, I-86)
  - U.S. Highways 20, 26, 30, 93)
  - Idaho State Highways (Idaho 22, 24, 28, 29, 39, 46, 75, 87))
- Railroads
  - UPRR
- Urban, Developed, and Industrial Areas
  - Along I-15 and I-86 and major highways

There are also 25 airports within the MSTI study area in Idaho.

Table 3.12-4 Existing Major Noise Sources (Transportation Corridors) by Alternative in Idaho

Alternative	I-15	I-86	U.S. Highways	Idaho State Highways	Railroads
STATE LINE TO MIDPOINT SEGMENT					
C1: Preferred Route	X		X	X	X
C2: Eastern Route	X		X	X	X
C3: Western Rooute			X	X	X
C4: Sheep Creek INL Brigham Point Route			X	X	X

Some classes of noise sensitive receptors in MSTI project area are summarized in Table 3.12-5. Based on data presented in the Land Use Technical Report (Vol. II), existing noise sensitive resources within 1.0 mile of MSTI alternative route link centerlines in Idaho include, but are not limited to:

- Residences
- Parks and Recreation Areas
  - Great Rift National Natural Landmark
  - Market Lake Wildlife Management Area
  - Italian Peak Roadless Area

There are also three schools in the MSTI study area in Idaho.

Table 3.12-5 Residences and Recreation Areas within 1.0 Mile of Centerline by Alternative in Idaho

Alternative	Residences within 1,000 Feet	NNLs	WMAs	Roadless Areas
STATE LINE TO MIDPOINT SEGMENT				
C1: Preferred Route	6	X		
C2: Eastern Route	5	X	X	
C3: Western Route	3			X
C4: Sheep Creek INL Brigham Point Route	4	X		X

3.12.4.1 State Line to Midpoint Segment

C1: Preferred Route

Existing noise sources along the C1: Preferred Route of the State Line to Midpoint segment are related to traffic or development along I-15, U.S. 20/26 and Idaho state highways 22/33, 24, and 28. The line would also cross the UPRR.

Sensitive noise receptors include six residences within 1,000 feet of the centerline as well as one existing recreation area within 1.0 mile of the centerline:

- Great Rift National Natural Landmark (NPS)

While no measurements of existing noise levels were made for the MSTI project, information presented in Table 3.12-1 and Section 3.12.1 suggest that noise levels near residences would usually be below 55 dB(A) and that noise levels at recreation areas would typically be 38 to 48 dB(A). Traffic noise would typically be higher (60 to 90 dB(A)).

C2: Eastern Route

Existing noise sources along the C2: Eastern Route of the State Line to Midpoint segment are related to traffic or development along I-15, U.S. 20 and 26, and Idaho state highways 24 and 33. The line would also cross the UPRR.

Sensitive noise receptors include five residences within 1,000 feet of the centerline as well as two existing recreation areas within 1.0 mile of the centerline:

- Great Rift National Natural Landmark (NPS)
- Market Lake WMA (IDFG)

Existing noise levels would generally be similar to those for the Preferred Route.

C3: Western Route

Existing noise sources along the C3: Western Route of the State Line to Midpoint segment are related to traffic or development along U.S. 20, 20/26, 26/93, and 20/26/93 and 26, and Idaho state highways 22, 22/33, 24, and 28. The line would also cross the UPRR.

Sensitive noise receptors include three residences within 1,000 feet of the centerline as well as one existing recreation area within 1.0 mile of the centerline:

- Italian Peaks Roadless Area (USFS)

Existing noise levels would generally be similar to those for the Preferred Route.

C4: Sheep Creek INL/Brigham Point Route

Existing noise sources along the C3: Sheep Creek INL/Brigham Point Route of the State Line to Midpoint segment are related to traffic or development along U.S. 20/26 and Idaho state highways 22, 22/33, 24, and 28. The line would also cross the UPRR.

Sensitive noise receptors include four residences within 1,000 feet of the centerline as well as two existing recreation areas within 1.0 mile of the centerline:

- Italian Peaks Roadless Area (USFS)
- Great Rift National Natural Landmark (NPS)

Existing noise levels would generally be similar to those for the Preferred Route.

3.12.5 Substations

3.12.5.1 New Townsend Substation

The only major noise source near the new Townsend Substation site is US 287.

There are no residences within 1,000 feet of the proposed substation. The only recreation area within 1.0 mile of the proposed substation is the:

- Lewis and Clark National Historic Trail (NPS).

No measurements of existing noise levels were made for the MSTI project. Table 3.12-1 and Section 3.12.1 indicate that that noise levels at recreation areas would typically be 38 to 48 dB(A).

3.12.5.2 Mill Creek Substation Addition

The only major noises source near the existing Mill Creek Substation site is Montana Highway 1 (MT 1) and railroads.

There are no residences within 1,000 feet and no recreation areas within 1 mile of the existing Mill Creek Substation.

3.12.4.3 Midpoint Substation Addition

The only major noises source near the existing Midpoint Substation site is U.S. 93.

There is one residence within 1,000 feet and no recreation areas within 1.0 mile of the existing Midpoint Substation.