CHAPTER 3:
AFFECTED ENVIRONMENT

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Chapter 3
Affected Environment
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3.1 INTRODUCTION

This chapter describes the existing resource conditions, resource uses, special designations, and socioeconomic conditions of lands administered by the Jarbidge Field Office. Resources or resource uses not found in the planning area are not mentioned further. The affected environment serves as the baseline of existing conditions for analyzing the impacts of the alternatives. The purpose of the environmental baseline is to provide a point of reference to measure the effectiveness of management actions proposed within the Environmental Impact Statement (EIS).

3.2 TRIBAL RIGHTS AND INTERESTS

The United States has a unique legal relationship with American Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Since its formation, the United States has recognized Native American tribes as sovereign, domestic, dependent nations under its protection.

All Federally recognized tribes have off-reservation interests in public lands, and many retain pre-existing rights reserved through treaty or Executive Order language and other relevant mandates. The relationship between Federal agencies and sovereign tribes is defined by numerous laws and regulations addressing the requirement of Federal agencies to notify and/or consult with Native American tribes and to consider their rights and interests when planning and implementing Federal undertakings.

The planning area is the homeland of four culturally and linguistically related tribes: the Northern Shoshone, Western Shoshone, Bannock, and Northern Paiute. In the latter half of the 19th century, reservations were established at Fort Hall near Blackfoot in eastern Idaho (ID) and at Duck Valley on the Nevada (NV)/Idaho border west of the Bruneau River. The composite tribes residing on these reservations today actively practice their culture and retain treaty and aboriginal rights and/or interests in the planning area.

The United States government has a trust responsibility to Federally recognized Native American tribes that covers lands, resources, money, or other assets held by the Federal government in trust or restricted against alienation for Native American tribes and Native American individuals. Additionally, the Bureau of Land Management (BLM) must consider and protect off-reservation treaty-reserved fishing, hunting, gathering, and similar unrelinquished rights of access and resource use on the public lands it administers. This includes rights of access and use for ceremonial and other traditional cultural practices. The Shoshone-Bannock Tribes of the Fort Hall Reservation have rights, reserved in the Fort Bridger Treaty of 1868, to hunt, fish, and gather on the unoccupied (i.e., public) lands of the United States. The Shoshone-Paiute Tribes of the Duck Valley Reservation assert aboriginal rights to their traditional homelands as their treaties with the United States were never ratified. Had they been ratified, the Boise Valley Treaty of 1864 and the Bruneau Valley Treaty of 1866 would have extinguished aboriginal title to the lands now Federally administered.

Consultation with the Shoshone-Paiute Tribes of the Duck Valley Reservation and the Shoshone-Bannock Tribes of the Fort Hall Reservation over the years indicates the presence of a wide range of resources related to tribal rights and/or interests and ongoing tribal use in the planning area. These include resources associated with hunting, trapping, fishing, and gathering food, medicinal plants, and other natural products; the availability of clean water and healthy plant and animal populations, as well as aboriginal archaeological sites, sacred sites, and traditional cultural properties. The retention of public land is of particular interest to the tribes, since off-reservation rights and/or interests are linked to Federal ownership.

3.3 RESOURCES

3.3.1 Air and Atmospheric Values

3.3.1.1 Air Quality

Air quality in a given location is described by the concentrations of various pollutants in the atmosphere, expressed in units of parts per million or micrograms per cubic meter (µg/m³). Air quality is determined by several factors, including the types and amounts of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The significance of a pollutant concentration is determined by comparison with Federal and State air quality standards, which represent the maximum allowable concentrations of various pollutants necessary to protect public health and welfare with a reasonable margin of safety (EPA, 2012c). Federal standards were established by the Environmental Protection Agency (EPA) and are referred to as the National Ambient Air Quality Standards (NAAQS).

The EPA Office of Air Quality Planning and Standards set NAAQS for six specific pollutants, called criteria pollutants: carbon monoxide, lead, nitrogen dioxide, particulate pollution (PM_{10} and $PM_{2.5}$), ozone, and sulfur oxides (EPA, 2012c). Within the planning area, the Idaho Department of Environmental Quality adopted the NAAQS to regulate these pollutants.

According to EPA regulations (42 USC §7407), an area with air quality better than the NAAQS is designated as an attainment area, while an area with air quality worse than the NAAQS is classified as a non-attainment area. An unclassifiable area is one in which insufficient air quality monitoring data has been collected to justify formal classification. Many rural areas of Idaho and Nevada, including the four counties of the planning area, are designated unclassifiable and are generally accepted by the EPA as being in attainment of the NAAQS due to an absence of recognized or criteria national ambient air quality pollutants that would cause significant pollution.

The two main factors affecting air quality in the planning area are smoke and particulate matter, such as dust and pollen. These are a result of wildland fires, BLM's fire management activities, wind effects on exposed soils, dirt roads, and small disturbed areas, and vehicle emissions. Visibility may be impacted for short periods of time, from several hours to several days. The only outside influences on the air resources of the planning area are adjacent private farming operations, which may contribute to a decline in air quality on a periodic basis as soils are tilled, plowed, and planted. The amount of smoke and particulate matter present depends on the time of year. Generally, the highest levels occur during the summer and early fall, when soils are dry and wildland fire activity is high. During the other times of the year, precipitation helps keep soils and particulate matter in place; additionally, cooler temperatures lessen the conditions suitable for wildland fires.

There are few, if any, other activities, such as major industrial, mining or commercial activities, that degrade the air quality of the area. The planning area's lack of developments and relative remoteness lead to an absence of other recognized or criteria national ambient air quality pollutants such as carbon monoxide[1], lead, nitrogen dioxide, ozone, and sulfur oxides. None of these pollutants are known to occur in significant quantities or contribute to any air quality or atmospheric deposition problems in the planning area. This region of the State and country is known to have relatively clean air (DEQ, 2012a).

Currently, the only monitored pollutant in the area is $PM_{2.5}$. Monitoring data from Department of Environmental Quality's (DEQ) Twin Falls monitoring station showed $PM_{2.5}$ to be below the national standard of 15 µg/m³ between 2002 and 2012 with a weighted annual average of 7.03 µg/m³ over that time period (EPA, 2012a). Limited $PM_{2.5}$ monitoring has occurred within the actual planning area; some

[1] Carbon monoxide may exist in very high quantities in localized areas for relatively short durations during wildland fires.

data were collected by DEQ at the House Creek Ranch near Three Creek, Idaho, from 1999 to 2002. This particular sampling, done for baseline readings, found $PM_{2.5}$ concentrations averaged 3.04 µg/m³ for that period (EPA, 2012a), below the standard of 15 µg/m³. In past years, PM_{10} was also monitored by the DEQ in Twin Falls. From 1998 to 2003, PM_{10} was below the national standard of 150 µg/m³ with an average of 24.2 µg/m³ (EPA, 2012a).

Other monitoring data is available from sites located in Boise, Mountain Home, Craters of the Moon, and Pocatello. However, these sites do not represent the planning area due to location, distance, population, or a combination of these factors. The Boise site is located 145 miles to the northwest and upwind from the planning area in an area with a high population and amount of commercial activity. The Mountain Home site is 50 miles northwest and upwind of the planning area in an area with a moderate population and amount of commercial activity. The site in Craters of the Moon National Monument is 110 miles northeast of the planning area in a remote and unpopulated area. The Pocatello site is located 92 miles east of the planning area with a moderate population and amount of commercial activity. Air and atmospheric values within the planning area are not expected to be affected by activities in these areas.

Air quality impacts from wildland fire are more prevalent than from other sources within the planning area. These air quality impacts include not only immediate impacts from smoke, but also impacts from the movement of soil particles from high winds after the fire and Emergency Stabilization and Burned Area Recovery treatments.

The Clean Air Act assigned airshed classes to indicate the criteria for pollutants, with Class I areas given the highest protection to air quality by restricting the level of degradation allowed. All BLM-managed lands in the planning area were designated as Class II airsheds, which allow moderate deterioration associated with moderate, well-controlled industrial and population growth. Although no areas in the planning area are designated as Class I airsheds, Class I air quality concerns and abatement measures are applicable to areas with special designations, including Wilderness, Wilderness Study Areas, and Areas of Critical Environmental Concern.

Other activities that may affect air quality within the planning area include small-scale sand and gravel extraction operations. These operations are typically sporadic and short-lived in nature, operating at one site for days or weeks at a time and often sitting idle for months or years at a time. Operations include truck traffic on dirt and gravel roads, heavy equipment use, and occasionally crushing or blasting operations. Operators are required to comply with any air quality stipulations within their permit, which commonly include dust abatement methods for watering roads, and watering areas near equipment such as crushers and conveyors to reduce impacts to air quality caused by dust.

3.3.1.2 Climate and Meteorology

The planning area has an arid, four-season climate, influenced primarily by prevailing southwesterly winds from the Pacific Ocean. Temperatures and precipitation vary widely depending on latitude, elevation, and topography. Average January low temperatures over the planning area range from 11 degrees Fahrenheit (°F) to 23°F. Average July high temperatures range from 84°F to 96°F over the planning area (Table 3-1). Daily temperatures can fluctuate by more than 40 degrees in the summer and 20 degrees in the winter. Humidity is usually below 25% during the day in the summer, and often 15% or lower. Wind in the planning area is typically from the southwest at an average of 10 miles per hour (WRCC, 2012).

The planning area receives between 7 and 19 inches of precipitation a year, with 4 to 107 inches of snow a year (Table 3-1). To a large extent, the source of precipitation is from the Pacific Ocean. In the summer, there are some exceptions to this when moisture-laden air is brought in from the south at high levels to produce thunderstorm activity (WRCC, 2012). The seasonal distribution of precipitation differs between the northern and southern portions of the planning area. In the north, approximately one-third of the annual precipitation occurs during the six-month period between May and October; further south, thunderstorm activity results in precipitation amounts that are more evenly spread out over the year, with more than half of the precipitation occurring between May and October in some locations. Flash floods occur a few times a year as a result of heavy rains associated with thunderstorms. Windstorms are

common in the planning area and are typically associated with cyclonic systems and their cold fronts; tornadoes rarely, if ever, occur. Windstorms in the summer months are associated with thunderstorms (WRCC, 2012).

Table 3-1. Climate Data for Weather Stations In and Adjacent to the Planning Area

Location[A]	Latitude	Elevation (feet)	Average January Temperatures (°F)		Average July Temperatures (°F)		Average Annual Precipitation (inches)	Average Annual Snowfall (inches)
			High	Low	High	Low		
Bliss	42’57”	3,280	36.5	18.9	92.9	54.8	9.36	20.5
Glenns Ferry	42’56”	2,510	39.3	20.1	96.7	56.5	9.09	13.4
Bruneau	42’53”	2,530	40.9	23.4	93.4	56.9	7.69	4.2
Hagerman	42’48”	2,880	40.8	21.7	94.0	54.9	10.24	10.3
Castleford	42’33”	3,820	37.1	20.3	88.6	54.0	10.04	15.5
Horse Butte	42’25”	4,620	37.5	22.3	86.1	56.3	8.21	NA[B]
Three Creek	42’05”	5,460	39.2	11.5	86.2	42.1	12.93	73.1
Murphy Hot Springs	42’02”	5,160	41.9	18.6	86.1	47.3	13.26	28.4
Jackpot	41’59”	5,290	37.8	16.2	86.6	51.1	9.15	26.8
Jarbidge	41’56”	6,170	37.9	16.3	84.1	46.0	19.28	107.1

[A] Locations are listed from north to south. Weather stations at Horse Butte, Three Creek, and Murphy Hot Springs are located in the planning area; all other stations are located adjacent to the planning area.
[B] Data not available.
Source: (WRCC, 2012).

The amount of precipitation also varies widely from year to year, and periods of drought or excess moisture are not uncommon. Some of the earliest, well-documented droughts in southwest Idaho occurred in the 1920s and 1930s during the Dust Bowl era. These historic records are still used today as a benchmark in evaluating potential problems (IDWR, 2001). Other severe and extreme drought periods, as defined by the Palmer Drought Severity Index (an index of meteorological drought), occurred in southwest Idaho during the following time periods: mid 1950s, 1960s, late 1970s, 1988, early 1990s, and early 2000s (NCDC, 2012). In contrast, moist non-drought periods occurred during the 1910s, mid 1940s, late 1950s, early 1980s, mid to late 1990s, and late 2000s (NCDC, 2012).

3.3.1.3 Climate Change

The temperature of the planet’s atmosphere is regulated by a balance of radiation received from the sun and the amount of that radiation absorbed by the earth and atmosphere. Greenhouse gases (GHG) such as carbon dioxide (CO_2) and methane, as well as water vapor and particulate matter, in the atmosphere keep the planet’s temperature warmer overall than it would be if these gases were absent, allowing the planet to sustain life. Ongoing scientific research has identified the potential impacts of man-made GHG emissions and changes in biological carbon sequestration due to land management activities on the global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon fuels have caused GHG concentrations (represented as CO_2 equivalents or CO_2[e]) to increase. The Intergovernmental Panel on Climate Change (IPCC) recently concluded that “warming of the climate system is unequivocal” and “most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations” (IPCC, 2007).

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24°N) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970. Without additional meteorological monitoring systems, BLM cannot determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.6°F to 10.4°F above 1990 levels (IPCC, 2001). The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Increases in temperatures would increase water vapor in the atmosphere and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events. Although large-scale spatial shifts in precipitation distribution may occur, these changes are uncertain and difficult to predict. Other unevenly distributed effects of climate change include altered sea levels, wildland fire occurrences, desert distribution, and plant and animal distribution.

As with any field of scientific study, there are uncertainties associated with the science of climate change. This does not imply that scientists do not have confidence in many aspects of climate change science. Some aspects of the science are known with virtual certainty, because they are based on well-known physical laws and documented trends (EPA, 2007).

Several activities contribute to the phenomenon of climate change, including emissions of GHGs (especially CO_2 and methane) from fossil fuel development, large wildland fires, and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity. GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of CO_2 can influence climate for 100 years.

BLM cannot discern whether global climate change is already affecting resources within the planning area. There is some information about potential or projected effects of global climate change on resources. Projected changes are likely to occur over several decades to a century. Therefore, many of the projected changes associated with climate change described below may not be measurably discernible within the reasonably foreseeable future.

Regional Impacts and Projections for the Planning Area

The University of Washington Climate Impacts Group has produced future climate scenarios for the Columbia River Basin in the Pacific Northwest, including Washington, Oregon, and Idaho, using global climate models (Mote et al., 2008). However, no climate change models specific to just the State of Idaho or the planning area are available. Because data is unavailable and the means to obtain it is unknown, BLM assumed that similar trends and findings for the Pacific Northwest will also occur in the planning area.

Observed Climate Trends in the Pacific Northwest

Over the20th century, the Pacific Northwest has grown warmer and wetter. Annual average temperature rose 1°F to 3°F over most of the region, with nearly equal warming in summer and winter. Annual precipitation also increased over most of the region by an average of 11% (Parson et al., 2001). Additionally, the Northwest's climate also showed recurrent patterns of multi-year variability. Warm years tended to be relatively dry and cool years tended to be relatively wet with high streamflow and heavy snowpack (Parson et al., 2001).

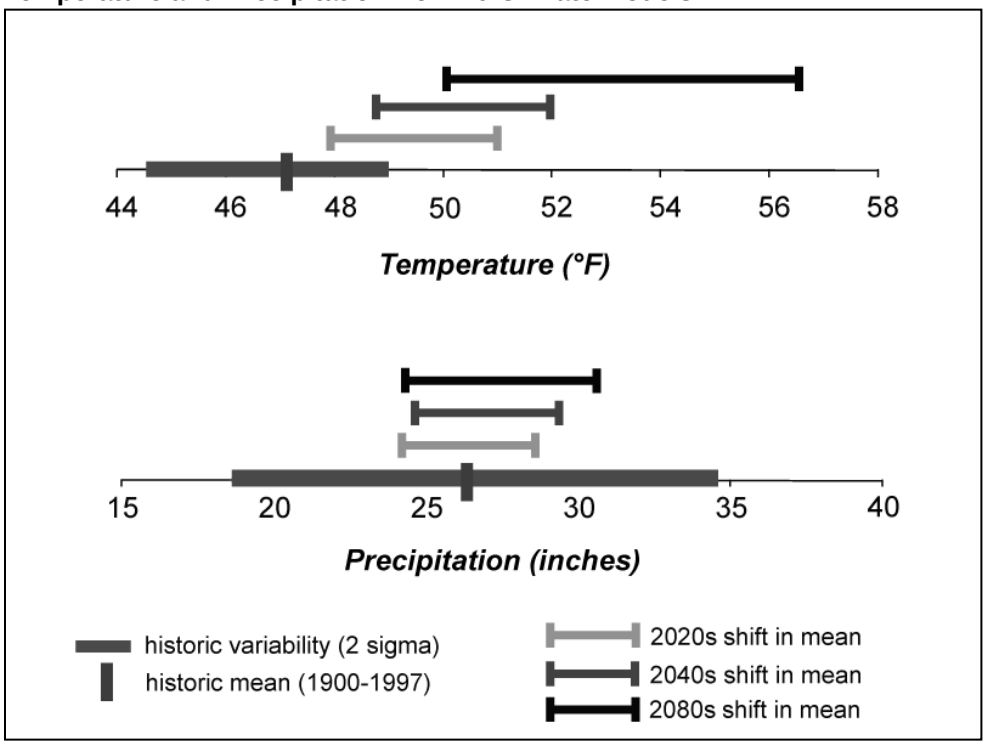
Possible Future Climate in the Pacific Northwest

The rate of warming in the Pacific Northwest over the next 50 years is projected to be approximately 0.5°F per decade, compared to 0.4°F per decade in the second half of the 20th Century (Mote et al.,

2008). The increase in temperature is expected to occur across all seasons, with greater increases in the summer. These increases in temperature are likely to exceed the range of variability observed during the 20th Century (Figure 3-1).

Projections of changes in precipitation in the Pacific Northwest are less certain than estimates of changes in temperature. Climate models predict a wide range of change; as a result, annual precipitation levels will likely stay within the range of variability observed during the 20th Century (Figure 3-1). The seasonal patterns of precipitation could change and a larger proportion of winter precipitation is expected to occur as rain rather than snow due to the warmer winter temperatures. An increase in winter precipitation seems more certain, but summer precipitation either may increase or decrease (Mote et al., 2008).

Figure 3-1. Comparison of Observed Year-to-Year Variability and Projected Shifts in Average Temperature and Precipitation from 20 Climate Models



Source: (Climate Impacts Group, 2008).

Overall, year-to-year variability is expected to continue. Extreme events (i.e., floods, droughts, heat waves, cold snaps) will continue to play a pivotal role in the Pacific Northwest climate (Climate Impacts Group and University of Washington, 2000).

3.3.2 Geologic Features

The topography of the planning area varies from the deep river canyons of the Bruneau and Jarbidge Rivers, to the foothills of the Jarbidge Mountains, to the broad plateaus of the Snake River Plain. The Snake River Plain covers an area of more than 10,000 square miles, and the underlying aquifer supplies the needs of 200 Idaho cities and towns while providing more than one and a half billion gallons of irrigation water per day (McLeod and Welhan, 1991).

The planning area contains numerous lava flows, including the Dorsey Creek, Poison Creek, Long Draw, Bruneau Jasper, and Sheep Creek flows. Geologic features related to these lava flows include the deep river canyons, rhyolite hoodoos within the river canyons, and a natural arch known simply as The Arch.

An important geologic formation, the Glenns Ferry Formation, lies in the northern part of the planning area (Malde, 1987). This formation consists of a Plio-Pleistocene (5.3 million years ago to 11,700 years ago) body of lake and stream deposits several thousand feet thick. This formation is important from a paleontological standpoint and is discussed further in the *Paleontological Resources* section.

Geologic features also include caves. A cave is defined in the Federal Cave Resources Protection Act of 1988 as any naturally occurring void, cavity, recess, or system of interconnected passages occurring beneath the surface of the Earth or within a cliff or ledge large enough to permit an individual to enter, whether or not the entrance is naturally formed or man-made. Cave resources are fragile due to their association with other resources such as groundwater hydrologic systems and biological communities (Moore and Sullivan, 1997). They may also be considered non-renewable due to paleontological and archaeological deposits, speleothems (formations inside caves), and biological resources.

In the planning area, caves are most commonly formed by the weathering of rock through water and wind erosion (erosional caves) or through the solidification of lava over and around a still-flowing lava stream, which results in a long, hollow channel (lava tube).

A quantitative inventory of caves in the planning area, compiled by the BLM Boise District in 1990, revealed the location of approximately 19 caves identified as lava or erosional caves and approximately 80 others in need of further documentation. Two of the known caves are lava tubes, but erosional caves make up the majority of cave resources within the planning area. These typically occur at the base of rock outcrops and canyon walls. BLM sensitive spotted bat sightings in the canyons suggest that these and other bat species likely utilize the caves for shelter. None of the known caves have been formally determined to be significant under the Cave Resources Protection Act of 1988.

3.3.3 Soil Resources

Soil information and classification for the planning area is obtained from the Natural Resource Conservation Service (NRCS) by means of four third-order soil surveys for southern Idaho and northern Nevada. These surveys consist of the following publications by the NRCS:

- Soil Survey of Elmore County Area, Idaho (1991);
- Soil Survey of Owyhee County Area, Part 1 (2003);
- Soil Survey of Jerome County and Part of Twin Falls County (2003); and
- Soil Survey of Elko County, Northeast Part (1999).

These soil surveys were georeferenced and digitized as part of the NRCS Soil Survey Geographic Database (NRCS, 2012a).

The soils of the planning area are diverse, variable, and complex. As with all soils, their makeup and composition are dependent on parent material, climate, location, topography, aspect, elevation, and time and age in place. The soils of the planning area range from very sandy and deep in the northern portion of the planning area to very shallow and rocky, heavy with silts and clays in the southern foothills region. In general terms, the soils in the planning area may be separated into three physiographic units: the Snake River Sediments, the Basalt Plain/Plateau, and the Jarbidge Upland/Foothills.

The Snake River Sediments are those soils formed in association with the Snake River drainage resulting from wind and water deposits. These soils are located in the northern portion of the planning area and are sandy to silty textured with high calcareous and/or saline contents, and can be shallow to very deep and well drained. These soils may have a restrictive cement layer in their profile (hardpan) which limits plant root penetration and water infiltration. These soils have been formed under an aridic or aridic-xeric (dry) moisture regime and a mesic soil temperature regime over time. The elevation range for these particular soils in the planning area is from 2,450 feet to 3,700 feet. The erosion potential of this physiographic soil unit ranges from moderate to high (Table 3-2), depending on current weather conditions and their location upon the landscape. Major limiting factors for management of these types of soils include low precipitation, depth to hardpan, available water capacity, risk of seepage, permeability, and wind erosion (NRCS, 1991; 1998; 2003b; 2003c).

Table 3-2. Common Soils of the Snake River Sediment Physiographic Unit Located in the Planning Area

Soil Name	Soil Number[A]	Soil Slope (%)	Site Type	Vegetation Type	Water Erosion	Wind Erosion
Arbidge-Buko	5	1-8	Loamy 8-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Moderate	Moderate
Bluegulch	19	2-12	Loamy 8-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Moderate	NA
Davey-Buko	46	1-12	Sandy Loam 8-12”	Wyoming Sagebrush – Indian Ricegrass	Slight	Severe
Elijah	54	0-4	Silt Loam 8-10”	Wyoming Sagebrush – Thurber’s needlegrass	Slight	Moderate
Jacquith-Quincy	86	0-12	Sand 8-12”	Basin Big Sagebrush – Indian Ricegrass	Slight	Severe
Owsel-Purdam	113	1-12	Loamy 8-10”	Wyoming Sagebrush – Thurber’s Needelgrass	Moderate	Moderate
Purdam	121	4-8	Silt Loamy 8-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Slight	Moderate
Quincy	124	0-12	Fine Sand 8-12”	Basin Big Sagebrush – Indian Ricegrass	Slight	Severe
Royal	133	0-4	Fine Sandy Loam 8-12”	Wyoming Sagebrush – Indian Ricegrass	Slight	Moderate
Royal-Davey	136	12-40	Sandy loam 8-12”	Wyoming Sagebrush – Indian Ricegrass	Moderate	Severe
Shano-Truesdale	145	0-12	Fine Sandy loam 8-12”	Wyoming Sagebrush – Indian Ricegrass	Moderate	Moderate
Truesdale	161	0-4	Fine Sandy loam 8-12”	Wyoming Sagebrush – Indian Ricegrass	Slight	Moderate
Xeric Torriorthents – Xerollic Camborthids	172	20-70	Fine Sandy loam 8-12”	Wyoming Sagebrush – Indian Ricegrass	Moderate	Moderate
Badlands-Kudlac	9	30-90	Loamy 8-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Very Severe	Moderate

[A] Because each soil survey is numbered individually, soils with different soil names may be listed for the same number.
Source: (NRCS, 1991; 1998; 2003a; 2003b).

The Basalt Plain/Plateau soils were mainly formed under an aridic/xeric soil moisture regime and a mesic or frigid soil temperature regime as elevation increases from north to south. These soils are characteristically shallow to deep in nature and are well drained. Textures can range from silt loams to clay loams with varying amounts of rock fragments either on the surface or in the profile. These soils can also have a restrictive cemented sub-layer (hardpan) in their profile at various depths. The elevation range for these soils in the planning area occurs between 3,700 feet to 5,600 feet. In the Basalt Plain/Plateau soils, water has a more erosive effect than the wind, and subsequently can have high sheet and/or rill erosion potential (Table 3-3). Major limiting factors for management of these types of soils include low precipitation, depth to hardpan, available water capacity, and both wind and water erosion (NRCS, 1991; 1998; 2003a; 2003b).

Table 3-3. Common Soils of the Basalt Plain/Plateau Physiographic Unit Located in the Planning Area

Soil Name	Soil Number[A]	Soil Slope (%)	Site Type	Vegetation Type	Water Erosion	Wind Erosion
Arbidge – Buncelvoir – Chilcott	4	2-6	Loamy 7-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Moderate	Moderate
Arbidge – Heckison	6	2-15	Loamy 7-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Moderate to High	Moderate
Bruncan – Snowmore	31	1-8	Loamy 10-13”	Wyoming Sagebrush – Bluebunch Wheatgrass	Moderate	Moderate
Colthrop-Chilcott	32	0-8	Silt Loam 8-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Moderate	Moderate
Elijih – Purdam	56	0-8	Loamy 8-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Moderate	Moderate
Hardtrigger Snowmore - Vickory	75	1-5	Loamy 7-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Slight	Moderate
Heckison – Bigflat	81	1-10	Loamy 10-13”	Wyoming Sagebrush – Bluebunch Wheatgrass	Moderate	Moderate
Minveno – Roseworth	102	1-5	Loamy 7-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Moderate	High
Purdam	120	0-4	Loamy 8-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Slight	Moderate
Purdam – Sebree – Owsel	122	0-8	Loamy 8-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Moderate	Moderate
Shano – Owsel	144	0-12	Loamy 8-10”	Wyoming Sagebrush – Thurber’s needlegrass	Moderate	Moderate
Sidlake - Bruncan	148	1-8	Loamy 8-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Moderate	Moderate
Snowmore – Troughs	159	1-10	Loamy 7-10”	Wyoming Sagebrush – Thurber’s Needlegrass	Slight	Moderate

[A] Because each soil survey is numbered individually, soils with different soil names may be listed for the same number.
Source: (NRCS, 1991; 1998; 2003a; 2003b).

The Jarbidge Upland/Foothills are the highest elevation soils within the planning area, ranging from 5,600 feet to about 7,300 feet. These soils are the oldest and most well developed in the area, as depicted by the thick dark surface horizon. Textures range from loams to clay loams with varying amounts of surface or profile rock fragments. The soils are classified as shallow claypans that contain very restrictive hardpans or bedrock at very shallow depths and are usually associated with low sagebrush vegetation communities that occupy these sites. These soils were formed under a xeric moisture regime and a frigid to cryic soil temperature regime. Wind is not so much an erosional factor here as is water, where it may have a high sheet and/or rill rating depending on soil aspect, location, topography, etc. (Table 3-4). Major limiting factors for management of these types of soils include low precipitation, depth to hardpan, rocky fragments, depth to clayey subsoil, slope, available water capacity, and water erosion (NRCS, 1991; 1998; 2003a; 2003b).

Table 3-4. Common Soils of the Jarbidge Upland/Foothills Physiographic Unit Located in the Planning Area

Soil Name	Soil Number[A]	Soil Slope (%)	Site Type	Vegetation Type	Water Erosion	Wind Erosion
Ackett	1	2-10	Shallow Stony 8-12”	Black Sagebrush – Thurber’s Needlegrass	Slight	NA
Arness	8	2-6	Loamy 11-13”	Basin Big Sagebrush – Bluebunch Wheatgrass	Slight	Moderate
Booford - Blackleg	21	2-12	Loamy 13-16”	Mt. Big Sagebrush – Idaho Fescue	Slight	Moderate
Budlewis	22	2-6	Shallow Claypan 12-16”	Low Sagebrush – Idaho Fescue	Moderate	NA
Chayson - Merlin	36	2-12	Loamy 12-16”	Basin Big Sagebrush - Bluebunch Wheatgrass/Idaho Fescue	Slight	Moderate
Elhina	39	2-6	Shallow Calcareous Loam 10-16”	Black Sagebrush – Bluebunch Wheatgrass	Slight	NA
Cleavage - Rubbleland	41	2-35	Shallow Claypan 12-16”	Low Sagebrush – Idaho Fescue	Slight	Slight
Isknat	54	3-15	Gravelly Loam 13-16”	Mt. Big Sagebrush – Idaho Fescue	Moderate	NA
Iwica - Budlewis	55	2-6	Loamy 13-16”	Mt. Big Sagebrush – Idaho Fescue	Slight	NA
Keman	61	2-35	Gravelly Loam 16+”	Mt. Big Sagebrush – Idaho Fescue	Moderate	NA
Mug	72	2-10	Shallow Claypan 12-16”	Low Sagebrush – Idaho Fescue	Moderate	NA
Player - Player	85	30-75	Shallow Claypan 12-16”	Low Sagebrush – Idaho Fescue	Very Severe	NA
Larioscamp – Dishpan	93	1-12	Loamy 10-13”	Wyoming Sagebrush – Bluebunch Wheatgrass	Slight	Moderate
Lostvalley - Budlewis	98	1-10	Shallow Claypan 12-16”	Low Sagebrush – Idaho Fescue	Moderate	Moderate
Merlin – Lostvalley - Chayson	101	1-12	Shallow Claypan 12-16”	Low Sagebrush – Idaho Fescue	Slight	Moderate
Rutherford	113	2-20	Mountain Ridge 14-18”	Low Sagebrush – Idaho Fescue	Moderate	NA
Sharesnout – Budlewis	152	1-15	Shallow Claypan 12-16”	Low Sage – Fescue	Moderate	Moderate
Tanner – Dishpan	172	1-8	Loamy 10-13”	Wyom. Sage Bluebunch	Moderate	Moderate
Thacker – Cleavage – Bigflat	173	1-12	Shallow Claypan 12-16”	Low Sagebrush – Idaho Fescue	Slight	Moderate
Threek – Blackleg – Hatpeak	177	2-20	Loamy 13-16”	Mt. Big Sagebrush - Idaho Fescue/ Bluebunch Wheatgrass	Slight	Moderate

Soil Name	Soil Number[A]	Soil Slope (%)	Site Type	Vegetation Type	Water Erosion	Wind Erosion
Vitale – Muleshoe – Itca	193	2-40	Stony Loam 13-16”	Mt. Big Sagebrush – Bluebunch Wheatgrass	Slight	Slight

[A] Because each soil survey is numbered individually, soils with different soil names may be listed for the same number.
Source: (NRCS, 1991; 1998; 2003a; 2003b).

Approximately 94% of the planning area contains soils with medium or greater potential for water erosion and another 82% contains soils with moderate or greater potential for wind erosion (Table 3-5; Maps 4 and 5).

Table 3-5. Erosion Potential in the Planning Area

	Acres	% of Planning Area
Water Erosion Potential		
Medium	853,000	62
High	437,000	32
Total	**1,290,000**	**94**
Wind Erosion Potential		
Moderate	904,000	66
Severe	200,000	15
Very Severe	19,000	1
Total	**1,123,000**	**82**

Water erosion is a function of rainfall, snow melt, soil erodibility, length of slope, percent of slope, vegetation cover, soil conditions, and management practices. Bank erosion is accelerated in stream channels as a result of damming practices, improperly functioning riparian systems, and hydrologically unstable streams. Water erosion is also accelerated when it is diverted from its natural channel and captured by continuous flow paths formed by roads, railroads, paths, and trails; and by the change in flow character from sheet flow to channel flow concentrated by roads, railroads, paths, and trails.

Soils are subject to erosion when the vegetation or biologic crust on these soils is removed, such as by surface disturbance, fire, or heavy grazing pressure. Under good vegetation cover, soil loss is less than one ton per acre per year; with poor cover, soil loss can exceed five tons per acre per year. When soils are disturbed, 10 tons per acre per year could be lost (USDA, 1993).

Wind erosion is a function of soil erodibility, ground surface roughness, climate, length of slope, vegetation cover, presence of physical or biological crusts, and soil condition. Soil erodibility by wind is directly related to the percentage of dry, non-erodible soil aggregates greater than 0.84 millimeters in equivalent diameter. The soil erodibility is expressed in terms of soil loss in tons per acre per year (USDA, 1993). Wind erosion can occur following the removal of protective vegetation and is most likely to occur in areas of arid climates, such as those at lower elevations of the planning area. When the vegetative cover or biological crust is removed, soils high in fine-textured material are easily transported by wind. This results in the displacement or loss of topsoil, increased sedimentation, and impacts to ambient air quality from elevated dust levels.

Accelerated erosion exhibited by plant pedestals were documented during assessments for the 2006 Idaho Standards for Rangeland Health and Guidelines for Livestock Management. The planning area has a long history of large and sometimes repeated wildland fires (Map 28) and some of this erosion is a result of the loss of vegetation from wildland fires. Soils that occur on steep slopes without rock and with naturally low vegetation cover are inherently prone to erosion. Erosion in the planning area resulting in rill and gully formation is estimated to be low except on the sandy-alluvial soils of the Snake River Sediments and the clayey-rhyolitic soils of the Jarbidge Upland/Foothills.

Soil compaction results in increased soil bulk density and will occur in areas of concentrated use, including roads, trails, and livestock water and mineral locations. Compacted soils generally support less vegetation, have lower water infiltration rates, and increased erosion potential. Soil compaction can be exacerbated by moist soil conditions. Idaho Standards for Rangeland Health and Guidelines for Livestock Management assessments showed most assessed areas did not exhibit increased soil bulk density.

Biological soil crusts occur throughout the planning area. Detailed information regarding the occurrence of biological soil crusts is presented in the *Upland Vegetation* section.

3.3.4 Water Resources

The Clean Water Act of 1977, as amended in 1987, provides for the protection, restoration, or improvement of water quality; enables states to establish programs for regulating and managing non-point source pollution; and directs Federal agencies to comply with State water quality laws. The Clean Water Act states that water quality standards should provide, wherever attainable, water quality for the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water (fishable and swimmable conditions); and consider the use and value of State waters for public water supplies, propagation of fish and wildlife, recreation, agriculture and industrial purposes, and navigation. Various Executive Orders and Department of the Interior and BLM manuals also direct the BLM to maintain and improve water quality.

In Idaho, the Department of Environmental Quality (DEQ) has responsibility for protecting water quality and enforcing specific water quality standards. The DEQ is a State department created by the Idaho Environmental Protection and Health Act (Idaho Code Title 39) to ensure clean air, water, and land in the State and protect Idaho citizens from the adverse health impacts of pollution. The BLM cooperates with DEQ under the guidelines in the Memorandum of Understanding for Implementing the Nonpoint Source Water Quality Program in the State of Idaho (BLM MOU ID-08-02).

In Nevada, the Division of Environmental Protection (NDEP) is responsible for protecting water quality and enforcing water quality standards. The NDEP was created as a division within the Department of Conservation and Natural Resources in 1977. The Water Quality Standards Branch is responsible for developing and reviewing water quality standards; determining Total Maximum Daily Loads and wasteload allocations for point sources; and determining load allocations for nonpoint sources. Although the organizational structure and terminology varies slightly between Idaho and Nevada, the purpose of both State agencies is the same: to define water quality standards and beneficial uses, collect water quality data to document where water quality is not meeting the identified beneficial uses, develop water quality improvement plans for water bodies that are not meeting their beneficial uses, and prepare an Integrated Water Quality Monitoring and Assessment Report (Integrated Report) for the Environmental Protection Agency (EPA) every two years as one of the requirements of Section 303(d) of the Clean Water Act.

3.3.4.1 Water Quality

In Idaho and Nevada, the water quality standard programs are a joint effort between the States and the EPA. The DEQ and NDEP are responsible for developing and enforcing water quality standards that protect beneficial uses such as drinking water, cold water fisheries, and industrial, recreational, and agricultural water supplies. The EPA develops regulations, policies, and guidance to help Idaho and Nevada implement their water quality programs and ensures the adopted State standards are consistent with the requirements of the Clean Water Act and relevant regulations. The EPA has authority to review and approve or disapprove State water quality standards and promote Federal water quality rules.

Water quality standards are the benchmarks DEQ and NDEP uses to protect and restore surface water in streams, rivers, lakes, and reservoirs within Idaho and Nevada. Both states use the water quality standards to protect public health and welfare, enhance the quality of water, and serve the purposes of the Clean Water Act. The regulations and water quality standards the DEQ uses to maintain and improve water quality are defined in the Idaho Administrative Procedures Act (IDAPA 58.01.02) and can be found at: http://adminrules.idaho.gov/rules/2011/58/0102.pdf. The regulations NDEP uses to maintain and

improve water quality in Nevada are defined in the Nevada Revised Statutes (NRS 444a.420) and can be found at: http://ndep.nv.gov/admin/nrs.htm. The water quality standards are defined under NAC 445A.118-2234; Standards for Water Quality (445A.118; 445A.1332-1352).

Designated Beneficial Uses

Federal water quality standards require states to develop policies to protect existing and designated uses of surface waters. Water quality standards define water quality goals for a water body by designating beneficial uses of the water and by setting criteria necessary to protect the beneficial uses. The assignment of beneficial uses, adoption of narrative and numeric water quality criteria, and development of antidegradation policies are the three required regulatory elements for meeting Federal water quality standards.

The DEQ uses Hydrologic Unit Codes (HUCs) to geographically group all of the watersheds in Idaho into six major drainage basins. The planning area occurs within the Southwest and Upper Snake Basins (IDAPA 58.01.02, page 29). Each of the watersheds within these basins is assigned an individual HUC number and the designated beneficial uses are identified for each of these HUCs. The four HUC numbers within the planning area include: Bruneau (17050102), Salmon Falls (17040213), Upper Snake-Rock (17040212), and C.J. Strike Reservoir (17050101) (IDAPA 58.01.02, page 30-31). These watersheds are displayed on Map 6: Water Quality Impaired Streams. The designated beneficial uses for the HUCs within the planning area include: aquatic life (including sub-classifications for cold water, salmonid spawning, seasonal cold water, warm water, modified water quality), recreation (including sub-classifications for primary and secondary contact recreation), water supply (including sub-classifications for domestic, agricultural, and industrial), wildlife habitats, and aesthetics (IDAPA 58.01.02, page 27). In March 2012, the DEQ revised the designated beneficial uses by removing special resource waters as a designated beneficial use. Other than removing special resource waters as a designated beneficial use for the Bruneau and C.J. Strike Reservoir Basins, there were no other changes made to the designated beneficial uses within the planning area.

Designated beneficial uses in Nevada include: watering of livestock, irrigation, aquatic life, recreation involving contact with the water, recreation not involving contact with the water, municipal or domestic supply, industrial supply, propagation of wildlife, waters of extraordinary ecological or aesthetic value, and enhancement of water quality.

Numeric and Narrative Criteria

Idaho and Nevada present water quality criteria in numeric and narrative form. Although both states use similar indicators for water quality, the numeric values can differ between states. Idaho has numeric criteria for temperature, dissolved oxygen, pH, turbidity, bacteria, ammonia, and a list of 121 toxic substances (both metals [including mercury] and human-made organic chemicals). Nevada has additional numeric criteria for chlorides, sulfates, color, and others. For both states, the numeric values and the applicability of the value depend upon the designated beneficial use specific to the water body. Examples of numeric water quality criteria include dissolved oxygen levels greater than 6.0 milligrams per liter (mg/L), *E. coli* concentrations greater than126 colony forming units/100 milliliters (ml), or mercury concentrations of 0.3 milligrams per kilogram (mg/kg) of fresh weight fish tissue. The narrative water quality criteria are used to describe water quality as being free from pollutants that are difficult to specify with numeric criterion, such as color and odor, or where natural occurrence and variability makes general limits impractical, such as with sediment and nutrients. Idaho and Nevada use narrative criteria for the following pollutants: hazardous materials, toxic substances, deleterious materials, radioactive materials, floating, suspended, or submerged matter, excess nutrients, oxygen-demanding materials, and sediment. An example of a narrative criterion would be water quality that is free from nuisance aquatic growths, or free from toxic substances that impair designated beneficial uses.

Antidegradation Policy

The purpose of the Idaho and Nevada water quality antidegradation policy is to maintain and protect existing uses by reviewing water quality related permits and licenses for their effect on water quality. In general, the anti-degradation policy assigns water bodies one of three levels of protection (IDAPA 58.01.02.051). Tier 1 requires that water quality be maintained such that the existing and designated uses

of the water are supported. Tier 2 consists of making sure any permitted water quality degradation is "necessary to accommodate important economic or social development." Tier 3 is the highest level of protection, reserved for waters of outstanding character, where no degradation of water quality may be permitted. In Nevada, antidegradation requirements are attached to numeric standards and are set when water quality for individual parameters are higher than the criteria necessary to protect the beneficial uses.

Total Maximum Daily Loads

Section 303(d) of the Clean Water Act requires states to develop water quality improvement plans, called Total Maximum Daily Loads (TMDLs), for water bodies that are not meeting their designated beneficial uses. The goal of a TMDL is to set limits on pollutant levels to correct water quality impairments and achieve beneficial uses of the identified water body. Once the EPA has approved a TMDL, the DEQ and NDEP prepare an implementation plan that provides details of the actions needed to achieve load reductions and specifies the monitoring needed to meet water quality standards.

Every two years, the DEQ and NDEP are required by the Clean Water Act (Sections 305[b] and 303[d]) to conduct a comprehensive analysis to determine if State water quality standards and beneficial uses are being met or if additional pollution controls are needed. This analysis is summarized in an Integrated Report. These reports serve as a guide for developing and implementing water quality improvement plans (i.e., TMDLs) to protect water quality and achieve Federal and State water quality standards. The EPA must approve an Integrated Report before it can be used by a State to guide its management decisions. The 2010 Integrated Report is Idaho's most recent EPA approved Integrated Report. A copy of the report can be found at: http://deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report.aspx. For Nevada, the 2008-2010 Water Quality Integrated Report is the most recent EPA approved summary of water quality impaired waters. A copy of this report can be found at: http://ndep.nv.gov/bwqp/303dlist.htm. These reports summarize the current status of all State waters, including those within the planning area, and will guide DEQ's and NDEP's water quality management decisions until subsequent Integrated Reports are approved by the EPA.

The streams identified as meeting or not meeting water quality standards and designated beneficial uses are likely to change with the EPA's approval of future Integrated Reports for Idaho and Nevada. The process of identifying water quality impaired streams is dynamic; incorporating the current list of streams within the Final EIS would likely result in the Final EIS referencing outdated information with each subsequent Integrated Report. For this reason, the links to the most current water quality information available, as displayed on the DEQ and NDEP web sites, are provided. Although DEQ has proposed removing some of the streams from the 303(d) list of water quality impaired streams, no streams have been added to the list within Idaho or Nevada since the printing of the Draft Resource Management Plan (RMP)/EIS. Based on the current Integrated Reports, the planning area contains 172 miles of water quality impaired streams in Idaho and 10 miles of water quality impaired streams in Nevada, as was identified in the Draft RMP/EIS. These miles are discussed in the Chapter 4 analysis for *Water Resources*. The water quality impaired streams are displayed on Map 6 and are a priority for water quality management.3.3.4.2 Surface Water Resources.

Streams and Rivers

The planning area occurs within three primary watersheds: the Bruneau River Watershed, the Salmon Falls Creek Watershed, and the Snake River Watershed (Map 6). All three watersheds contain stream reaches which are water quality impaired (see Idaho DEQ 2010 Integrated Report and the NDEP 2008-2010 Integrated Report). There are 316 miles of perennial streams, 512 miles of intermittent streams, and 3,192 miles of ephemeral streams within the planning area. Additional information on these streams can be found in the *Riparian Areas and Wetlands* section. A majority of the perennial streams are located within the southern portion of the planning area and drain in a northerly direction to the Bruneau River and Salmon Falls Creek. There are limited perennial water sources draining into the Snake River along the northern boundary of the planning area, with the exception of four prominent springs: Coyote Springs, Pilgrim Springs, Ring Springs, and Tuana Springs.

Many of the water courses in the planning area flow through lands not managed by BLM. Land management practices on both BLM and non-BLM lands can affect water quality and quantity. In many cases, BLM can only address water quality issues that arise from activities on BLM-managed land or through cooperative efforts with other Federal, State, and private land owners.

Impounded Waters and Reservoirs

The planning area contains a variety of impounded waters (body of water formed by the construction or excavation of a basin or the obstruction of stream flow in such a manner as to cause the collection of a body of water) which would not have formed under natural conditions. These waters range from small livestock watering systems that encompass less than one acre to large impounded reservoirs such as those used for hydroelectric generation along the Snake River. There are also numerous impoundments which are primarily used as storage basins for irrigation water. The larger impounded waters and reservoirs provide the added benefit of water-based recreational activities such as boating, kayaking, fishing, water-skiing wildlife viewing. Examples of the larger impounded waters commonly used for recreation along the Snake River include waters above Upper Salmon Dam, Lower Salmon Dam, Bliss Dam, and C.J. Strike Dam. There are also numerous reservoirs, such as Salmon Falls Creek Reservoir and Cedar Creek Reservoir, whose primary purpose is to store irrigation water but also provide an opportunity for water-based recreation. The Idaho Department of Fish and Game stocks these waters with a variety of fish species to enhance the local fishery resources. The quantity of water within the larger reservoirs varies annually with peak water levels occurring in the spring runoff periods. During the summer months, reduced water levels often result in reduced water quality as indicated by elevated water temperatures, nutrients, *E. coli* concentrations and other water quality impairments.

Cedar Creek Reservoir

Cedar Creek Reservoir is located south of the town of Castleford, Idaho and is a relatively shallow, open, bowl-shaped reservoir. Cedar Creek and House Creek are the major sources of water for the reservoir. The watershed that drains into the reservoir is an area of approximately129 square miles. The reservoir has a maximum width of 1.7 miles and a maximum depth of 46 feet. At full pool, the reservoir covers approximately 971 acres. The reservoir was constructed in 1910 to provide irrigation water for private farmland.

Water quality data for the reservoir is summarized in the Salmon Falls Creek Subbasin Assessment and Total Maximum Daily Loads (TMDLs) (DEQ, 2007). High water temperatures and low dissolved oxygen characterize the water quality within the reservoir. Sediment and nutrient loading from House Creek and Cedar Creek also influence water quality in the reservoir and contribute to the regular occurrence of aquatic vegetation growths within the reservoir (DEQ, 2007). Designated beneficial uses in Cedar Creek Reservoir for cold water aquatic life and primary contact recreation nutrients are outside the range determined to be supportive of the designated beneficial uses. Flow alteration also impacts the designated beneficial uses within the reservoir.

Salmon Falls Creek Reservoir

Salmon Falls Creek Reservoir is located west of the town of Rogerson, Idaho and is a deep, narrow, meandering reservoir. Salmon Falls Creek is the primary water source for the reservoir with minor contributions from a few small, perennial streams such as China Creek as well as intermittent streams like Brown’s Creek and Cottonwood Creek in Nevada. The watershed that drains into the reservoir is an area of approximately 1,626 square miles. The reservoir has a maximum width of one mile and a maximum depth of approximately 200 feet. The reservoir is approximately12.7 miles long. At full pool, the reservoir covers approximately 2,532 acres. The reservoir was constructed in 1910 to provide irrigation water for private farmland.

Water quality data for the Salmon Falls Creek reservoir is summarized in Salmon Falls Creek Subbasin Assessment and TDMLs (DEQ, 2007). Similar to Cedar Creek Reservoir, sediment, nutrients, and seasonally low dissolved oxygen levels are factors affecting designated beneficial uses within the reservoir. Nuisance aquatic vegetation in the form of algae blooms impacts the upper and middle water column during the summer months. The designated beneficial uses of the Salmon Falls Creek Reservoir,

specifically for cold water aquatic life, is impaired from suspended sediment from in-channel storage and reduced streambank stability in the upper portions of Salmon Falls Creek, Shoshone Creek, and the smaller tributaries to China Creek.

Salmon Falls Creek Reservoir is one of the larger reservoirs in the planning area and is known to contain elevated levels of mercury. In 2005, DEQ began investigating mercury contamination in the reservoir in response to a fish consumption advisory issued by the Idaho Department of Health and Welfare in 2001. In 2008, DEQ completed a risk assessment for the fish-eating public from mercury contamination in Idaho's lakes and reservoirs (Essig and Kosterman, 2008). In Idaho, the highest mercury contamination levels for walleye and smallmouth bass came from Salmon Falls Creek Reservoir. There are large regional sources of air-born mercury emissions in northern Nevada and eastern Oregon that are suspected to be contributing to elevated fish tissue concentrations in southern Idaho (Essig and Kosterman, 2008). Based on fish tissue samples collected from Salmon Falls Creek Reservoir in 2012, Idaho Department of Health and Welfare continues to have a health advisory in effect for the consumption of fish from the reservoir.

Playas

Playas are naturally occurring depressions in the land that seasonally contain pools of water. Playas collect water from small basins and have no external drainage. There are 54 playas totaling 1,411 acres within the planning area. They range in size from 1 acre to 54 acres and are generally located south and west of Clover Creek. The playas provide a water source for livestock and wildlife when water is present. Typically, the playas lack water from late June into December. BLM has no water quality data for any of the playas scattered across the planning area.

3.3.4.3 Groundwater Resources

Groundwater resources within the planning area consist of a few government wells and include the following: AEC, Blue Butte, Browns Gulch, Buck Flat, Cheatgrass, Grindstone, Hammett, Notch Butte, Signal Butte, Three Creek, and Twin Butte wells. All of these wells have or currently provide water throughout much of the planning area by means of various storage, pipeline and watering distribution systems. Although a few of these sources are rarely used because they have been replaced with perennial stream water, they are still viable water sources. The other wells are used on a daily basis. The monitoring of groundwater quality is conducted by DEQ, Idaho Department of Water Resources and Idaho State Department of Agriculture, as well as NDEP. Additional information on groundwater resources and groundwater quality for Idaho can be found at: http://www.deq.idaho.gov/water-quality/ground-water.aspx. Additional information on groundwater resources and groundwater quality for Nevada can be found at: http://ndep.nv.gov/admin/nrs.htm.

3.3.4.4 Geothermal Resources

In the northern portion of the planning area, from roughly the Balanced Rock area (i.e., Blue Gulch area) to the Bruneau Hot Springs area, there are several areas containing geothermal springs (Appendix L). Within this general area, there are numerous water wells drilled on private lands with temperatures between 68°F and 122°F (Smith et al., 1980). Most of these are concentrated in the Bruneau area; however, there are 15 to 20 wells on private lands in the Blue Gulch area, located northwest of Balanced Rock, with temperatures between 77°F and 95°F. There is also a cluster of warm wells (approximately 77°F) in the Glenns Ferry area. Most of the wells in the planning area are used for agricultural (irrigation) purposes; however, a few utilize the heat source for direct uses such as heating a greenhouse and in aquaculture. Most of the wells are less than 1,000 feet deep.

3.3.5 Vegetation Communities

3.3.5.1 Upland Vegetation

Vegetation in the planning area was initially mapped in 2006 using field observation, field cover data, and 2004 National Agriculture Imagery Program (NAIP) imagery. The vegetation map was updated in 2012 using 2011 field observations and 2011 NAIP imagery. Fifty-three vegetation communities were classified

and mapped based on dominant plant cover. These vegetation communities were subsequently organized into five classes and six sub-classes (Table 3-6) according to national standards (Grossman et al., 1998), with the exception of evergreen shrublands dominated by sagebrush. In the planning area, these communities were defined as having 10% or more shrub cover rather than the national standard of more than 25% shrub cover. This was done to provide consistency with defined habitat needs (Wisdom et al., 2000) and proposed management objectives for greater sage-grouse (sage-grouse). Areas without vegetation data were classified as “No Data”.

Vegetation communities were mapped using a minimum mapping unit of 20 acres. The 20-acre map units are appropriate for landscape-level planning through aggregation into broader vegetation groups. They can also be useful for finer-scale analysis, such as grazing permit renewals, transportation and travel planning, and land use authorizations.

Vegetation Sub-Groups

Vegetation communities in the planning area are diverse and are primarily influenced by soils, precipitation, wildland fires, post-fire vegetation treatments, weather, livestock grazing, invasive plant introduction and spread, and cross-country motorized vehicle use. For management and analysis purposes, the 53 vegetation communities in the planning area were grouped into seven vegetation sub-groups (VSGs; Table 3-6). Vegetation communities were grouped into VSGs based on dominant vegetation and community structure, since communities with similar dominant vegetation and community structure were expected to have similar management objectives. All the Dwarf Shrubland Class and the Woodland Class were placed into the Native Shrubland VSG. The Shrubland Class was split into Native Shrubland, Non-Native Perennial, Non-Native Understory, and Annual VSGs. The Herbaceous Class was split into Annual, Native Grassland, and Non-Native Perennial VSGs. The Sparse Vegetation Class was put into the Unvegetated VSG.

Table 3-6. Vegetation Communities with Associated Class, Sub-Class, and Vegetation Sub-Group Classifications in the Planning Area

Class	Sub-Class	Vegetation Community	VSGs
Dwarf Shrubland	Evergreen	Black sagebrush/bluebunch wheatgrass	Native Shrubland
		Black sagebrush/bluegrass	
		Low sagebrush/bluebunch-Idaho fescue	
		Low sagebrush/bluegrass	
		Low sagebrush/Idaho fescue	
		Low sagebrush/squirreltail	
		Shadscale	
		Winterfat/Indian ricegrass	
		Black sagebrush/crested wheatgrass	Non-Native Understory
		Low sagebrush/crested wheatgrass	
Herbaceous	Annual-Graminoid or Forb	Annual	Annual
	Perennial Graminoid	Basin wildrye	Native Grassland
		Bluebunch wheatgrass	
		Bluegrass	
		Idaho fescue	
		Needlegrass	
		Semi-wet meadow	
		Thurber’s needlegrass	
		Western wheatgrass	
		Crested wheatgrass	Non-Native Perennial
		Intermediate wheatgrass	
Shrubland	Deciduous	Deciduous mountain brush	Native Shrubland
		Greasewood/basin wildrye	
	Evergreen	Rabbitbrush/annual	Annual

Class	Sub-Class	Vegetation Community	VSGs
Shrubland	Evergreen	Wyoming big sagebrush/annual	Annual
		Basin big sagebrush	Native Shrubland
		Evergreen mountain brush	
		Fourwing saltbush/needlegrass	
		Mountain big sagebrush/bluebunch wheatgrass-Idaho fescue	
		Mountain big sagebrush/Idaho fescue	
		Rabbitbrush/bluebunch wheatgrass	
		Rabbitbrush/bluegrass	
		Rabbitbrush/Idaho fescue	
		Rabbitbrush/Thurber's needlegrass	
		Wyoming big sagebrush/bluebunch wheatgrass	
		Wyoming big sagebrush/bluegrass	
		Wyoming big sagebrush/Idaho fescue	
		Wyoming big sagebrush/Indian ricegrass	
		Wyoming big sagebrush/thickspike wheatgrass	
		Wyoming big sagebrush/Thurber's needlegrass	
		Basin big sagebrush/crested wheatgrass	Non-Native Understory
		Wyoming big sagebrush/crested wheatgrass	
		Wyoming big sagebrush/intermediate wheatgrass	
		Fourwing saltbush/crested wheatgrass	Non-Native Perennial
		Rabbitbrush/crested wheatgrass	
		Rabbitbrush/intermediate wheatgrass	
Sparse Vegetation	Consolidated Rocks	Breaks	Unvegetated
	Unconsolidated Material	Barren	
		Sand Dune	
		Recent Burn	Recent Burn
Woodland	Deciduous	Aspen	Native Shrubland
	Evergreen	Juniper	
		Mountain mahogany	

The Annual VSG includes vegetation communities that are primarily dominated by cheatgrass (*Bromus tectorum*), Russian thistle (*Salsola kali*), tumble mustard (*Sisymbrium altissimum*), or a combination of the three non-native species (Table 3-6). Shrubs, such as rabbitbrush (*Chrysothamnus nauseous* ssp. *consimmilis, C. nauseosus* ssp. *albicaulis, C. viscidiflorus*) and Wyoming big sagebrush *(Artemesia tridentata* ssp. *wyomingensis)*, may be present, but occur at less than 10% canopy cover. The Annual VSG is common in burned and disturbed areas in the planning area but is not a naturally occurring VSG. Though primarily found at elevations less than 3,000 feet in the northern portion of the planning area, the Annual VSG can be found throughout the planning area in burned or otherwise disturbed areas.

The Non-Native Perennial VSG includes five vegetation communities (Table 3-6). These communities are dominated or co-dominated by seeded non-native perennial species, including crested wheatgrass (*Agropyron cristatum*) and intermediate wheatgrass (*Thinopyrum intermedium*). This VSG occurs throughout the planning area, where areas with depleted herbaceous understories and burned or other disturbed areas have been seeded with non-native perennial species. Native or seeded shrubs (e.g., four-wing saltbush [*Atriplex canescens*]) might occur in these communities at less than 10% canopy cover.

The Non-Native Understory VSG includes five vegetation communities (Table 3-6). These communities are dominated by native shrubs in the overstory with non-native species dominating the understory. The overstory species include Wyoming big sagebrush, basin big sagebrush (*A. tridentata* ssp. *tridentata*), black sagebrush (*A. nova*), and low sagebrush (*A. arbuscula*). Understory species are non-native perennial grasses, including crested wheatgrass and intermediate wheatgrass. This VSG occurs throughout the planning area, where native shrubs have re-established in areas that were seeded with non-native perennial grasses following fire or another disturbance.

The Native Grassland VSG includes eight vegetation communities (Table 3-6). Communities in this VSG are dominated by native grasses such as basin wildrye (*Leymus cinereus*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass (*Poa secunda*), Idaho fescue (*Festuca idahoensis*), Indian ricegrass (*Achnatherum hymenoides*), needle-and-thread (*Hesperostipa comata*), Thurber's needlegrass (*Achnatherum thurberianum*), western wheatgrass (*Pascopyrum smithii),* and, in the semi-wet meadow community, herbaceous wetland species. This VSG occurs throughout the planning area, where fire or another disturbance has removed or greatly reduced the shrub canopy cover. The dominant vegetation communities in this VSG are the bluegrass and bluebunch wheatgrass communities. Bluegrass communities are areas where Sandberg bluegrass comprises 50% or greater cover. These may include communities where annual production is dominated by other native or non-native perennial grasses, but their cover is less than 50%. Communities where bluegrass is the dominant cover but non-native perennials dominate the production are referred to as Sandberg/non-native perennial areas, to address livestock forage allocation for the non-native grasses. Communities where bluegrass is the dominant cover but other native perennials dominate the production are managed as native grasslands.

The Native Shrubland VSG includes 28 vegetation communities (Table 3-6). Native Shrubland communities include low and tall shrub-dominated communities, as well as woodland communities. Native Shrubland communities are typically evergreen and either dominated or co-dominated by basin big sagebrush, mountain big sagebrush (*A. tridentata* ssp. *vaseyana*), Wyoming big sagebrush, subalpine sagebrush (*A. tridentata* ssp. *spiciformis*), low sagebrush, black sagebrush, early sagebrush (*A. longiloba*), shadscale (*Atriplex confertifolia*), mountain mahogany (*Cercocarpus ledifolius*), ceanothus (*Ceanothus velutinus*), bud sage (*Picrothamnus desertorum*), bitterbush (*Purshia tridentata*), rabbitbrush, and four-wing saltbush.

Basin big sagebrush communities occur in drainages throughout the planning area and at lower elevation sandy areas in the northern portion of the planning area. Wyoming big sagebrush communities occur throughout the planning area. Shadscale communities are primarily near the canyon rims along the north and west edges of the planning area. Mountain big sagebrush and deciduous mountain brush communities are primarily found at higher elevations in the southern portion of the planning area, though some communities dominated by bitterbrush occur on sandy soils in the northern portion of the planning area. Deciduous shrub communities are often dominated or co-dominated by bitterbrush, snowberry (*Symphoricarpus oreophilus*), chokecherry (*Prunus* spp.), willows (*Salix* spp.), Woods' rose (*Rosa woodsii*), dogwood (*Cornus sericea*), aspen (*Populus tremuloides*), or greasewood (*Sarcobatus vermiculatus*). Deciduous shrub communities include woody riparian communities and mountain shrub communities that occur primarily in the southern end of the resource area. Shrubland communities disturbed by wildland fire may become dominated by rabbitbrush, which will lose dominance to other shrubs, particularly sagebrush, after several decades if there is an available seed source (i.e., adjacent shrub patches or if there area was seeded with shrubs following fire) and in the absence of continued disturbance by fire. Aspen communities require a disturbance, such as fire, to be maintained. Aspen stands have been invaded by juniper (*Juniperus* spp.) in areas where natural disturbance regimes have been altered (e.g., by suppression of wildland fires).

The Unvegetated VSG includes three vegetation communities that have less than 10% vegetation cover (Table 3-6). Recent Burn areas are areas which may be present for up to two years following a fire.

Large wildland fires occurred in 2007 and 2010 following completion of a vegetation mapping effort in 2006, resulting in over 500,000 acres of burned vegetation that were re-mapped as the Recent Burn VSG. In order to facilitate analysis of proposed management on upland vegetation communities, resource staff evaluated pre-burn vegetation conditions, impacts to vegetation resulting from fire and vegetation

treatments, and created a map projecting VSG composition in areas mapped as the Recent Burn VSG to 2016 (Map 10). Vegetation composition following wildland fires through 2011 (post-fire) and the 2016 projected vegetation composition (baseline) of the planning area by VSG are presented in Table 3-7.

Table 3-7. Post-Fire and Baseline Vegetation Composition in the Planning Area by Vegetation Sub-Group

VSG	Post-Fire Vegetation % Composition	Baseline Vegetation % Composition
Annual	9	9
Non-Native Perennial	25	26
Non-Native Understory	5	4
Native Grassland	33	35
Native Shrubland	23	22
Unvegetated Areas	5	4
No Data	< 1	< 1

Data include vegetation as of Fall 2011 and projected vegetation in areas burned through 2011 (baseline).

Vegetation Management Areas

Due to differences in vegetation response to management and disturbance along a north-south gradient, the planning area was divided into vegetation management areas (VMAs; Map 8) based on potential natural community, elevation, and mean annual precipitation (see *Air and Atmospheric Values* section). The VMA boundary lines were further refined using pasture lines to facilitate proposed management of these areas as described in Chapter 2. The number of acres in each VMA is identified in Table 3-8. Table 3-9 identifies the percent of post-fire VSGs in each VMA, while Table 3-10 identifies the percent of baseline VSGs by VMA.

Table 3-8. Size of Vegetation Management Areas

VMA	Acres
A - Wyoming Sagebrush/Indian Ricegrass	222,000
B - Wyoming Sagebrush/Thurber's Needlegrass	630,000
C - Wyoming Sagebrush/Bluebunch Wheatgrass	313,000
D - Idaho Fescue (High Elevation)	207,000

Table 3-9. Post-Fire Vegetation Composition by Vegetation Sub-Group by Vegetation Management Area (%)

VSG	VMA A	VMA B	VMA C	VMA D
Annual	37	6	< 1	< 1
Non-Native Perennial	36	33	14	2
Non-Native Understory	2	3	9	6
Native Grassland	13	32	48	38
Native Shrubland	3	22	25	47
Unvegetated Areas	9	4	4	6
No Data	< 1	< 1	< 1	< 1

Data include vegetation mapped as of fall 2011.

Table 3-10. Baseline Vegetation Composition by Vegetation Sub-Group by Vegetation Management Area (%)

VSG	VMA A	VMA B	VMA C	VMA D
Annual	38	6	1	1
Non-Native Perennial	42	33	14	2
Non-Native Understory	1	3	9	6
Native Grassland	16	34	48	39
Native Shrubland	2	20	25	47

VSG	VMA A	VMA B	VMA C	VMA D
Unvegetated Areas	1	4	3	5
No Data	< 1	< 1	< 1	< 1

Data include projected vegetation in areas burned through 2011.

Biological Soil Crusts

Biological soil crusts are a complex mosaic of mosses, liverworts, lichens, fungi, algae, and cyanobacteria that occur as a thin layer of living organisms on the soil surface. Biological soil crusts are common in arid and semiarid plant communities worldwide. In areas where they occur, they have the potential to cover soil surfaces not occupied by vascular plants, litter, or rock. Biological crusts contribute many functions in semiarid and arid environments. Since they are located within the top 0.2 inches of the soil, they mainly affect processes that occur at the soil-air interface. These include stabilizing the soil and reducing erosion, fixing atmospheric nitrogen, increasing nutrient contribution to plants, holding onto moisture, and aiding in seedling germination and plant growth (NRCS, 1997). In the planning area, biological soil crusts occupy interspaces between shrubs and perennial grasses in native shrubland, non-native understory, native grassland, and non-native perennial communities. In many cases, biological soil crusts create rough topography on the soil surface that contributes to the structural complexity of the plant community.

The potential for biological soil crust cover throughout the majority of the planning area ranges from moderate[2] (15%-25%) in the central and southern portion of the planning area to high (greater than 25%) in the northern portion. Data collected in 2006 and 2007, prior to the 2007 wildland fires, recorded an average biological soil crust cover of 16% throughout the planning area (BLM, 2006c). This is on the low end of the moderate crust cover category and is generally lower than the potential in each plant community sampled. The Non-Native Understory and Native Shrubland VSGs had the highest average biological crust cover (24% and 20%, respectively), while in the Unvegetated and Annual VSGs average crust cover was very low and low (3% and 8%, respectively). The Non-Native Perennial and Native Grassland VSGs had a low average biological crust cover (13% and 11%, respectively).

Shadscale and Wyoming big sagebrush/Thurber's needlegrass vegetation communities had the highest average cover of biological soil crusts with 51% and 47% cover, respectively. Other communities with high crust cover were needlegrass (35%) and Wyoming big sagebrush/bluegrass (28%). Several communities were in the moderate crust cover range including Wyoming big sagebrush/crested wheatgrass, rabbitbrush/bluegrass, Wyoming big sagebrush/bluebunch, western wheatgrass, basin big sagebrush, low sagebrush/Idaho fescue, and low sagebrush/bluegrass. Aspen, greasewood/basin wildrye, and mountain big sagebrush/bluebunch wheatgrass-Idaho fescue had no recorded cover of biological soil crusts. All other communities had low crust cover.

Soil textures with the highest average biological soil crust cover were very fine sandy loam and gravelly silt loam (27% and 25%, respectively). Soil textures with moderate average biological soil crust cover were very stony silt loam, loam, stony silt loam, silt loam, very stony loam, and gravelly loam. No biological soil crust cover was recorded on soils with clay loam, gravelly sandy loam, loamy sand, and sand textures. All other soil textures had low average crust cover.

VMA A in the north, with generally coarse soil textures, had a low average biological soil crust cover (9%). VMA B and VMA C in the middle portion of the planning area generally have loamy soil texture, moderate vascular plant cover, and a moderate average (24% and 19%, respectively) biological soil crust cover. In general, VMAs A, B, and C would be expected to have moderate to high biological soil crust cover in native shrubland communities due to low precipitation and naturally low to moderate vascular plant cover. VMA D at the southern end of the planning area also had a low average biological soil crust cover (10%), which was likely due to dense vascular plant cover resulting from the VMA having the highest precipitation in the planning area.

[2] For comparative purposes within the planning area, the following scale was used: high crust cover = greater than 25%; moderate crust cover = 15-25%; low crust cover = 3-15%; very low crust cover = less than 3% (Rosentreter and Pellant, 2006).

3.3.5.2 Riparian Areas and Wetlands

Riparian areas form a transition between permanently saturated wetlands and uplands. These areas exhibit vegetation or physical characteristics that reflect permanent surface or subsurface water influence. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers, streams, glacial potholes, and shores of lakes and reservoirs with stable water levels (Hansen and Hall, 2002). Riparian areas are important from an ecological standpoint because they provide a transition zone between aquatic and upland areas, as well as cover and food for wildlife and fish (Hansen and Hall, 2002; Prichard et al., 1998a). Riparian areas and wetlands provide water quality benefits by filtering out nutrients from runoff, maintaining stream temperature by providing shade, and controlling erosion (Hansen and Hall, 2002;Prichard et al.,2003). They provide water quality benefits by filtering out nutrients from runoff, maintaining stream temperature by providing shade, and controlling erosion (Prichard et al., 1998; 2003). Within the planning area, riparian areas and wetlands are generally associated with streams, rivers, and springs or seeps. The miles of perennial, intermittent, and ephemeral streams and rivers on BLM-managed lands within the planning area are summarized in Table 3-11. There also are approximately 102 miles of ditches and canals used to convey private water across the planning area.

Table 3-11. Miles of Streams in the Planning Area by Stream Type

Stream Type	Miles	Percent within Planning Area
Perennial	316	8
Intermittent	512	13
Ephemeral	3,192	79
Total	**4,020**	**100**

Riparian areas are classified as being perennial, intermittent/seasonal, or ephemeral and are defined as follows (Meinzer, 1923 *in* Prichard et al., 1998a). These definitions are also included in the Glossary:

- **Perennial** - A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.
- **Intermittent or Seasonal** - A stream that only flows at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. In general, these streams flow continuously for at least 30 days and usually have visible vegetation or physical characteristics reflective of permanent water influence such as the presence of cottonwood.
- **Ephemeral** - A stream that only flows in direct response to precipitation, and whose channel is above the water table at all times. In general, these streams do not flow continuously for 30 days.

Riparian area vegetation can be categorized into three classes of vegetation: woodland, shrubland, or herbaceous. In the planning area, tree species in the woodland class include aspen (*Populus tremuloides*), cottonwood (*Populus trichocarpa*) and juniper (*Juniperus* spp.). Shrubby species in riparian areas include willows (*Salix* spp.), Woods' rose (*Rosa woodsii*), red-osier dogwood (*Cornus sericea*), currant (*Ribes* spp.), chokecherry (*Prunus* spp.), and shrubby aspen. There are numerous herbaceous wetland species that occur in riparian areas, including sedges (*Carex* spp.), rushes, (*Juncus* spp.), bulrush (*Scirpus* spp.), spikerush (*Eleocharis* spp.) and a wide variety of forbs such as mint (*Lamiaceae* spp.), cowparsnip (*Heracleum sphondylium*), and hemlock (*Apiaceae* spp.).

The term wetland is used to describe areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Hansen and Hall, 2002). Typical wetlands include marshes, shallow swamps, sloughs, lake shores, bogs, wet meadows, and riparian areas (Prichard et al., 1993; 1998b). Wetlands are communities that are wet long enough during the growing season to support a prevalence of wetland vegetation and produce wetland soils. In the planning area, wetlands generally consist of wet meadows associated with seeps or springs. These wetlands include approximately 885 acres of playas and man-made ponds, 200 seeps or springs, and an unknown acreage of wet meadows.

Proper functioning condition (PFC) is a qualitative method for assessing the resilience of riparian and wetland areas to disturbance. The PFC assessment is a broad-scale assessment that uses hydrology, vegetation, and erosion/deposition (soil) attributes and processes to qualitatively assess the condition of riparian and wetland areas. PFC determinations include ratings of PFC, functioning at risk with an upward trend (FAR-UP), functioning at risk with no apparent trend (FAR-NA), functioning at risk with a downward trend (FAR-DN), and non-functioning (NF). From 2001 to 2007, PFC assessments were conducted on 225 miles of riparian areas crossing BLM-managed lands within the planning area. Riparian areas on non-BLM lands in the planning area were not assessed.

PFC determinations are validated using site-specific data collected on a variety of stream channel characteristics such as streambank stability, pool frequency and quality, and riparian vegetation. Site-specific instream habitat condition data were collected in 2006 using a condensed version of the R1/R4 (Northern Intermountain Regions) Fish and Fish Habitat Handbook (Overton et al., 1997) on approximately 40 miles (13 streams) of the PFC-assessed riparian areas to validate the PFC determinations. The process used to validate the PFC qualitative ratings using the quantitative fisheries data is described under *Methods and Assumptions* in the *Riparian Areas and Wetlands* section of Chapter 4. The miles of stream with each PFC rating are summarized in Table 3-12. Table 3-13 contains the PFC data for wetlands evaluated as of fall of 2011.

Based on these assessments, 85 miles (38%) of riparian areas in the planning area are at PFC; 128 miles (57%) are functioning at risk (FAR), and 12 miles (5%) are NF. The FAR ratings include 51 miles in FAR-UP (23%), 30 miles in FAR-DN (13%), and 47 miles in FAR-NA (21%). The characteristics of riparian areas within each rating category are discussed in the sections below.

Table 3-12. Proper Functioning Condition Ratings for Riparian Areas

PFC Rating	Miles
PFC	85
FAR-NA	47
FAR-DN	30
FAR-UP	51
NF	12
Total	**225**

Table 3-13. Proper Functioning Condition Ratings for Wetlands

Functional Rating	Number of Wetlands	Acres of Wetlands
PFC	9	65
FAR	3	57
Total	**12**	**122**

The following summary of definitions used for PFC assessments were compiled from the descriptions provided in BLM TR 1737-15 (Prichard et al., 1998a). These descriptions are intended to generally describe each of the rating categories.

Proper Functioning Condition

Riparian and wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to:

- Dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality;
- Filter sediment, capture bedload, and aid floodplain development;
- Improve floodwater retention and groundwater recharge;
- Develop root masses that stabilize streambanks against cutting action;
- Develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and

- Support greater biodiversity.

Based on the PFC assessment forms, riparian reaches at PFC have a floodplain above bankfull that is inundated in relatively frequent events. The stream channel sinuosity (the degree to which a stream channel curves or meanders laterally across the land surface), width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region). The riparian area is widening or has achieved its potential extent and the upland watershed is not contributing to riparian-wetland degradation. The riparian vegetation has a diverse age class distribution and diversity of riparian-wetland vegetation (recruitment for maintenance/recovery). Streambank vegetation is comprised of those plant communities that have root masses capable of withstanding high streamflow events. There is adequate riparian-wetland vegetative cover present to protect streambanks and dissipate energy during high flow events. Where beaver dams are present, the dams are actively maintained and stable. The stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition) and the stream is vertically stable. The floodplain and channel characteristics, such as rocks, overflow channels, coarse and/or large woody material, are adequate to dissipate energy.

Functioning-At-Risk, Upward Trend

Riparian-wetland areas that are functioning-at-risk are in a functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation. Riparian-wetland areas given a FAR rating possess some or even most of the elements in the PFC definition, but at least one of its attributes and/or processes gives it a high probability of degradation with a relatively high flow event. Streams that are vertically unstable would be rated as FAR regardless of other factors. The FAR-UP rating indicates the riparian-wetland area is recovering or moving toward a rating of PFC. This can occur after management changes have been implemented that are improving the riparian-wetland condition. Vegetation characteristics, such as recruitment and establishment of hydric vegetation species, may also indicate an upward trend in riparian-wetland condition.

Functioning-At-Risk, No Apparent Trend

Riparian-wetland areas that are functioning-at-risk with no apparent trend are in a functional condition, may be susceptible to degradation, and there is insufficient evidence to make a determination that there is a trend toward PFC (upward) or away from PFC (downward). Additional assessment would be required to determine trend for these sites.

Functioning-At-Risk, Downward Trend

Riparian-wetland areas that are functioning-at-risk with a downward trend have an existing soil, water, or vegetation attribute that makes them susceptible to degradation. Riparian-wetland areas given a FAR-DN rating may possess some of the elements in the PFC definition, but several of its attributes and/or processes give it a high probability of degradation with a relatively high flow event. Riparian-wetland areas rated as FAR-DN are in a declining condition and should be further assessed to determine if the factors contributing to the unacceptable conditions are within BLM management control.

Non-Functioning

Non-functional riparian-wetland areas clearly lack the elements listed in the PFC definition. These areas are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associate with high flows, and thus are not reducing erosion, improving water quality, or providing habitat for fish and wildlife values. The conditions that result in a NF rating are often related to lateral or vertical channel instability, a lack of vegetation capable of protecting streambanks, or bedload movement being so far out of balance that channel characteristics are essentially non-functioning.

Riparian areas and wetlands rated for PFC using the definitions provided above also considered the potential and capability of the riparian-wetland area within the assessment reach. The capability and potential of natural riparian-wetland areas are characterized by the interactions of three components: hydrology, vegetation, and erosion/deposition (soils). The following definitions, as described in BLM TR 1737-11 (Prichard et al., 1998b) and TR 1737-15 (Prichard et al., 1998a), were used during PFC assessments when considering the capability and potential of a riparian-wetland area:

- **Potential** - The highest ecological status a riparian-wetland area can attain given no political, social, or economic constraints, and is often referred to as the potential natural community. In general, the higher the ecological status, the closer the site is to potential.
- **Capability** - The highest ecological status a riparian-wetland area can attain given political, social, or economic constraints, which are often referred to as limiting factors. The capability applies to constraints that are not natural limiting factors. Capability only applies to constraints that cannot be eliminated or changed through a management action (e.g., a stream reach with reduced flows or dewatered due to an irrigation dam or hydroelectric dam that diverts water).

3.3.6 Fish and Wildlife

3.3.6.1 Fish

Aquatic species in the planning area can be described in three broad categories:

- Aquatic species Federally listed under the Endangered Species Act of 1973 (ESA),
- Aquatic species identified on the BLM Sensitive Species Lists for Idaho and Nevada, and
- All other native and non-native aquatic species present in the planning area.

Aquatic species included in the first two categories are discussed in the *Special Status Fish and Aquatic Invertebrates* section. Aquatic species included in the third category are discussed below under *Game and Non-Game Fish Species* and *Aquatic Nuisance Species.*

Game and Non-Game Fish Species

A variety of game and non-game fish are broadly distributed throughout the rivers, streams, and reservoirs in the planning area. Game fish populations are managed by the Idaho Department of Fish and Game (IDFG) and the Nevada Department of Wildlife (NDOW) through angler harvest regulations and fish stocking programs. Non-game fish are native fish not managed by angler harvest regulations, but are important as forage fish for other fish and wildlife species.

Game fish commonly pursued by anglers include walleye (*Sander vitreus*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), white crappie (*Pomoxis annularis*), black crappie (*Pomoxis nigromaculatus*), yellow perch (*Perca flavescens*), brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), redband trout (*Oncorhynchus mykiss gairdnerii*), white sturgeon (*Acipenser transmontanus*), kokanee (*Oncorhynchus nerka*), and mountain whitefish (*Prosopium williamsoni*)[3]. Except for mountain whitefish, white sturgeon, and redband trout, these fish are not native to the planning area, but were stocked into reservoirs by IDFG to provide a recreational sport fishery. Historically, hatchery rainbow trout were also stocked by IDFG and NDOW in redband trout and bull trout streams.

Non-native game fish in the planning area primarily occur in larger rivers and reservoirs, which have warmer water temperatures than the smaller stream habitats. On occasion, these fish have migrated to tributary streams where they compete with non-game fish for food and cover (BLM, 2006b). Salmon Falls Reservoir is managed as a multi-resource fishery for game fish species that tolerate both warm and cool water conditions, such as rainbow trout and walleye. Cedar Creek Reservoir is managed by IDFG as a fishery for rainbow trout.

The Snake River and Salmon Falls Reservoir are the primary locations of other game fish in the planning area. Largemouth bass, smallmouth bass, white crappie, black crappie, yellow perch, and other species inhabit the Snake River. Smallmouth bass, yellow perch, walleye, and black crappie are present in Salmon Falls Reservoir.

[3] Redband trout and white sturgeon are also BLM sensitive species and are addressed in detail in the *Special Status Fish and Aquatic Invertebrates* section.

The planning area contains sixteen native non-game fish species which are members of the Cottidae (sculpin), Catostomidae (sucker), and Cyprinidae (minnow) families. These fish generally occur in the lower elevation, warmer water stream habitats. Four species of sculpin (Shoshone sculpin [*Cottus greenei*], mottled sculpin [*Cottus bairdii*], Paiute sculpin [*Cottus beldingii]*, and shorthead sculpin [*Cottus confusus]*) are confirmed present in 14 streams in the planning area and assumed to be present in additional streams. Members of the sculpin family are relatively short-lived, requiring well-oxygenated water with good water quality. These fish require stream substrates with low amounts of fine sediment for successful spawning, egg survival, food, and cover.

Three species of sucker are found in 14 streams in the planning area. One species, the large-scale sucker (*Catostomus macrocheilus*); can tolerate the warmer water temperatures commonly found in larger river systems like the Snake River. The other two species of sucker (mountain sucker [*Catostomus platyrhynchus*] and bridgelip sucker [*Catostomus columbianus*]) are found in cool, fast-moving streams.

The minnow family is one of the most diverse groups in North America and represents the largest component of the native non-game fish resource in the planning area. These species include chiselmouth (*Acrocheilus alutaceus*), redside shiner (*Richardsonius balteatus*), speckled dace (*Rhinichthys osculus*), longnose dace (*Rhinichthys cataractae*), peamouth chub (*Mylocheilus caurinus*), leopard dace (*Rhinichthys falcatus*), northern pikeminnow (*Ptychocheilus oregonensis*), and Utah chub (*Gila atraria*). These species are confirmed to be present in 15 streams in the planning area and assumed to be present in additional streams. They can occupy a variety of habitats and stream conditions and adapt well to different environments and water temperature regimes.

IDFG's Comprehensive Wildlife Conservation Strategy (2005) identified 229 Species of Greatest Conservation Need (SGCN) in Idaho and established an ecological, habitat-based framework to aid in the conservation and management of these species The strategy provides recommendations for actions to improve the population status and habitat conditions of SGCN, describes an approach for long-term monitoring, and complements other conservation strategies, funding sources, planning initiatives, and legally mandated activities. The SGCN includes all Federally listed and Candidate species, as well as the majority of the BLM sensitive and watch species (species appearing to have downward population trends). Species in the Comprehensive Wildlife Conservation Strategy are considered general wildlife unless designated by BLM as sensitive or classified as Endangered, Threatened, Proposed, or Candidate under the ESA by the US Fish and Wildlife Service. IDFG's Comprehensive Wildlife Conservation Strategy (2005) identified leopard dace as a SGCN because of changes in taxonomy, resulting in a lack of essential information (i.e., abundance and population trend) pertaining to its status. The leopard dace is not currently on the BLM Sensitive Species List and is not managed as a special status species.

Aquatic Nuisance Species

Aquatic nuisance species are those plants and animals that are not native to an area, have the potential to spread uncontrollably, and can cause significant ecological or economic harm. The Idaho Invasive Species Council (2007) prepared a supplement to its 2005 Strategic Action Plan for Invasive Species to include an Aquatic Nuisance Species Plan for the State of Idaho. The plan was prepared as a statewide effort to limit the introduction and spread of aquatic nuisance species

The 2007 Aquatic Nuisance Species Plan identified eight high-priority aquatic nuisance species as present in the planning area (Table 3-14). These species are considered by the Idaho Invasive Species Council as likely to have an adverse impact to native aquatic resources, but are still in a potentially containable state with areas of local eradication possible. One additional aquatic nuisance plant species, hydrilla, has been found in the planning area since the Aquatic Nuisance Species Plan was published in 2007.

Table 3-14. Aquatic Nuisance Species Occurring or Potentially Occurring in the Planning Area

Common Name	Scientific Name	General Location by Watershed
Asian clam	*Corbicula fluminea*	Snake River and perennial tributaries
Curly-leaf pondweed	*Potamogeton crispus*	Snake River and perennial tributaries

Common Name	Scientific Name	General Location by Watershed
Eurasian watermilfoil[A]	*Myriophyllum spicatum*	Bruneau River, Jarbidge River, Snake River and perennial tributaries
Hydrilla[B]	*Hydrilla verticallata*	Bruneau River below Hot Creek
New Zealand mudsnail	*Potamopyrgus antipodarum*	Bruneau River, Jarbidge River, Snake River and perennial tributaries, Salmon Falls Creek
Purple loosestrife[C]	*Lythrum salicaria*	Bruneau River, Jarbidge River, Snake River and tributaries, Salmon Falls Creek
Salt cedar (Tamarisk)	*Tamarix ramosissima*	Bruneau River, Jarbidge River, Salmon Falls Creek
Whirling Disease parasite	*Myxobolus cerebralis*	Upper Salmon Falls Creek, Salmon Falls Reservoir
Yellow iris[D]	*Iris pseudacorus*	Snake River, Salmon Falls Creek

[A] Eurasian watermilfoil has not been confirmed present in the planning area.
[B] Hydrilla was found in the lower Bruneau River in January 2008.
[C] Purple loosestrife has not been confirmed present in the Jarbidge River.
[D] Yellow iris is present in Twin Falls County but has not been identified in the planning area.
Note: The Idaho Invasive Species Council report identifies aquatic and invasive species occurrence by county; these species may not occur in all locations in the county.
Source: (IISC, 2007).

The New Zealand mudsnail is a non-native aquatic snail first documented in the Middle Snake River from the C.J. Strike Reservoir upstream to the American Falls Reservoir in 1987. The exact time of arrival and source of the snails are unknown. These snails select river habitats similar to those used by the Snake River special status snails and can rapidly develop high-density colonies that can grow to 500,000 snails per square mile in some locations (FWS, 2007). The continued expansion of the New Zealand mudsnail in the Snake River poses an increased risk for a decline in special status aquatic snails as they can out-compete native snails for food and habitat.

3.3.6.2 Wildlife

Over 300 vertebrate species are present in the planning area. Vertebrates are typically divided into the following general categories: fish (see *Fish* section), amphibians, reptiles, birds, and mammals. The number of species in each of the categories found in the planning area is identified in Table 3-15.

Table 3-15. Number of Vertebrate Wildlife Species Found in the Planning Area by Wildlife Category

Category	Number of Species	Number of Non-Native Species
Amphibians	8	1
Reptiles	18	0
Birds	~ 220	~ 8
Mammals	~ 60	5

Wildlife are classified by the Idaho Department of Fish and Game (IDFG) and the Nevada Department of Wildlife (NDOW) into several broad categories, including big game, upland game, migratory game birds, furbearing animals, protected non-game, and unprotected wildlife. IDFG and NDOW set hunting and trapping seasons, issue tags and licenses, establish methods of harvest, and develop population management and harvest objectives for game animals, upland game, and furbearing animals. States coordinate with the US Fish and Wildlife Service in the management of migratory game birds. The BLM is primarily responsible for habitat management for wildlife species.

Big Game

Big game in the planning area include elk (*Cervus canadensis*), mountain lion (*Felis concolor*), mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), and California bighorn sheep (bighorn sheep[*Ovis canadensis californiana]*). Although a hunted big game species, bighorn sheep are a BLM sensitive species and are discussed in the *Special Status Wildlife* section.

Elk

Elk numbers increased in the planning area after transplants were released on Forest Service land in northern Nevada by NDOW during the 1990s. Forty-seven elk were released in the Jarbidge Mountains in 1990, thirty one in 1991, and fifteen in 1995 (NDOW, 2012a). NDOW is currently managing for a post-harvest herd of 1,200 elk in the Jarbidge Mountains. One hundred sixty-eight elk were introduced in the Bruneau River area between 1994 and 1997 (NDOW, 2012a). Within the Bruneau River drainage, NDOW is managing the herd within the confines of seasonal carrying capacities. As populations expanded, some of these transplanted elk from northern Nevada moved into the planning area. Based on aerial surveys, Martin (2007) estimated 15% to 20% of the Nevada elk spent a portion of the winter in Idaho. Future alterations to habitat quality and quantity may increase or decrease overall carrying capacity of the Bruneau River elk herd. NDOW is currently utilizing harvest to curb herd growth; the agency estimates that current elk numbers are 1,800 for the Jarbidge Mountains and 2,700 for the Bruneau River (NDOW, 2012a).

Habitats used by elk within the planning area include aspen stands, mountain mahogany and mountain shrubland areas, sagebrush steppe, grasslands, riparian areas and canyonlands. Elk diets are diverse, varying with habitat, vegetative abundance and diversity, area, season, and other factors. In an overview of elk ecology, Peek (2003) noted elk diets include a variety of grasses, forbs (herbaceous broadleaf plants), and browse (woody plants). In a review of elk nutritional requirements and food habits, Nelson and Leege (1982) list more than 300 species of forbs, grasses, and woody plants that are eaten by elk. In the aspen and sagebrush habitats of the Jarbidge Mountains, Beck and Peek (2005a) reported elk consumed grasses (18% to 60%), forbs (30% to 55%), and browse (10% to 35%) in spring, but by summer forbs dominated elk diets (59% to 78%). Elk consumed less browse from summer into early fall (0% to 4%) (Beck and Peek, 2005a). Nutritional quality (crude protein and digestible energy) of grasses, forbs, and shrubs declined from early summer through early fall (Beck and Peek, 2005b). In an analysis of 72 studies on elk winter diets in 10 western states including Idaho, Oregon, Utah, and Wyoming, Christianson and Creel (2007) reported that elk preferentially consumed grasses until constrained by other factors. Winter severity (primarily snow depth and hardness) is one factor which constrained foraging conditions shifting elk diets (Christianson and Creel, 2007). The conversion of portions of the planning area from sagebrush steppe to grassland has not hindered the expansion of elk into the northern half of the planning area. The winter period for elk usually runs from November 15 through April 30, whereas calving season occurs from May 1 through June 30.

Mountain Lion

Mountain lions are the largest predator in the planning area. Mountain lions primarily prey on mule deer (Holmes and Laundré, 2006), but may also prey on elk, bighorn sheep, and a variety of smaller mammalian prey (Currier, 1983; Pierce and Bleich, 2003). The majority of mountain lion observations have been associated with canyons. Mountain lions are widespread but occur at low densities in the planning area. Resident mountain lions establish comparatively large territories, with males usually maintaining larger home ranges than females (Pierce and Bleich, 2003). In a radio telemetry mountain lion study in eastern Cassia County, Idaho over a 14-year period, the average summer home range of 20 female mountain lions was 24.7 square miles (Laundré and Loxterman, 2007). Home range size varies seasonally and yearly (Currier, 1983), and may be different in the planning area than in eastern Cassia County. Mountain lions breed year-round. No important seasonal periods are identified for mountain lions.

In Wyoming, Logan and Irwin (1985) found that mountain lions generally avoided sagebrush-grasslands with gentle (less than 20% slope) topography, but preferred areas with steep and rugged topography (greater than 50% slope). In southeastern Idaho, Holmes and Laundré (2006) similarly reported mountain lions avoiding open (sagebrush) habitat. Unlike the study areas in Wyoming and southeastern Idaho, coniferous forests are limited to primarily juniper which is generally limited to a few draws and canyons within the planning area.

IDFG authorizes mountain lion hunting based on a quota system. If the quota is reached for an area before the season ends, the hunt is closed for that area. IDFG manages hunt units 46 and 47, which lie

primarily within the planning area, as areas for the quota. Mountain lion harvest is generally low in these hunt units (Table 3-16).

Table 3-16. Idaho Mountain Lion Harvest in the Planning Area (Units 46 and 47)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Harvest	2	8	6	4	4	2	4	1	1	0	3

Note: Quota harvest information should not be used to imply a population trend.
Source: (IDFG, 2012c).

Mule Deer

Mule deer are the most abundant and widespread big game animal species in the planning area. Substantial numbers of mule deer from Nevada migrate into the eastern part of Owyhee County (IDFG, 2010b), which includes much of the western part of the planning area. The Owyhee population management area contains Idaho hunt units 40, 41, 42, 46, and 47, or all of Owyhee County and the western part of Twin Falls County. Hunt units 46 and 47 lie primarily within the planning area. Mule deer numbers have been increasing since the winter of 1992 (IDFG, 2008a). Mule deer harvest reports for the Owyhee population management unit indicate a total harvest of approximately 2,710 in 1988, which declined to 1,110 in 1993 (IDFG, 2010c). The 2011 total harvest for the Owyhee population management unit was approximately 1,790 (IDFG, 2012d). Some harvest data for hunt units 46 and 47 since 2000 are available, but the harvest data are confusing. Small portions of hunt units 46 and 47 are east of the planning area and most years controlled hunt data included combined harvest for multiple hunt units which lie outside the planning area. The planning area includes only a small portion of Nevada hunt units 71 and 72. Table 3-17 presents the harvest data for hunt units 46 and 47.

Table 3-17. Idaho Mule Deer Harvest in the Planning Area (Units 46 and 47)

Year	Mule Deer Harvest				Total Harvest
	General Hunt		Controlled Hunt[A]		
	Unit 46	Unit 47	Unit 46	Unit 47	
2000	217	9	0[A]	52	278
2001	220	1	0[A]	47	268
2002	208	2	0	35[B]	245[B]
2003	188	0	0	47[B]	235[B]
2004	239	29	0	46[B]	314[B]
2005	239	4	0	55[B]	298[B]
2006	306	4	0	60[B]	370[B]
2007	386	0	0	61[B]	447[B]
2008	271	2	0	55[B]	328[B]
2009	417	2	0	52[B]	471[B]
2010	358	2	0	58[B]	418[B]
2011	374	5	0	58[B]	437[B]

[A] Harvest data for controlled hunts were combined for hunt units 46 and 47 by IDFG.
[B] Harvest data for controlled hunts were combined for hunt units 47, 54, 55, and 57 by IDFG.
Note: Harvest data were used because population data were not available.
Source: (IDFG, 2012d).

The habitat requirements of mule deer in the planning area vary seasonally. Aspen and mountain mahogany stands, mountain shrub communities, and riparian areas are important seasonal habitats for mule deer during fawning, foraging, hiding, and migrating. In the spring, mule deer fawning habitat is characterized by dense stands of deciduous or coniferous trees or shrubs with diverse herbaceous understory. Mule deer winter range is characterized by low elevation, sagebrush steppe with southern exposures and mixed shrub-grasslands. The winter period for mule deer usually runs from November 15 through April 30, whereas fawning season occurs from May 1 through June 30.

Mule deer diets are varied and contain a wide variety of browse, forbs, grasses, sedges, and rushes (Mackie et al., 2003). Mule deer diets shift between seasons, plant communities, and individuals (Mackie

et al., 2003). In the Jarbidge Mountains of northern Nevada, summer mule deer diets were composed of about 30% browse, 64% to 72% forbs, and 2% to 5% grasses (Beck and Peek, 2005a). Mule deer diets consist of some browse year-round, particularly in the fall and winter. Greater amounts of grasses and forbs are consumed in the spring and summer.

Pronghorn

Pronghorn are widely distributed in the planning area. Based on harvest information, pronghorn numbers have had a strong upward trend since 1988 (IDFG, 2010c; 2012f). During this time, harvest fluctuated widely between 1992 and 2011 but has not dropped below 75 since 1991. In 2009, IDFG made all pronghorn hunt opportunities controlled hunts. Pronghorn harvest has more than doubled from 1988 to 2011. Table 3-18 presents the harvest data for hunt units 46 and 47, which are primarily in the planning area.

Pronghorn are adapted for living in open habitats (Byers, 2003) including grassland and sagebrush steppe. Pronghorn prefer open country with unrestricted directions of travel and lines of sight (Byers, 2003). Females breed from mid-September into October and the fawns are born about 250 days later (Byers, 2003), during mid-May to June.

Pronghorn consume a variety of grasses, forbs, and shrubs. When available, forbs are preferred by pronghorn (Yoakum, 2004a), whereas grasses are used less often, even though they are available, indicating that pronghorn are selecting against grasses in their diet (Yoakum, 2004b). Pronghorn are selective feeders; the percent plant species composition of the plant community does not reflect the percent species composition of the diet (Byers, 2003; Yoakum, 2004b). Diets change in response to location, season, weather, and habitat used. When forage is succulent, pronghorn may go without drinking for days even though water is available (Beale and Smith, 1970).

In Idaho, Smyser and others (2005) reported that fecal nitrogen scores (an indirect measure of pronghorn nutrition) were significantly lower in lactating pronghorn populations in Eastern Owyhee and Pahsimeroi areas compared to three other populations in the State. They also found the Eastern Owyhee population was significantly lower in diaminopimelic acid than the other populations. Smyser and others (2005) noted this data supported the hypothesis that nutrition on summer range could limit pronghorn populations, but could not refute other mortality factors or the interaction between nutrition and other factors.

Pronghorn are more likely to crawl under or through fences, but they also occasionally leap fences (Byers, 2003; Kindschy et al., 1982; Yoakum, 1978). One study in a portion of Utah and Colorado reported that 81% of the pronghorn in that area jumped fences (Harrington and Conover, 2006). Harrington and Conover (2006) hypothesized the percentage of antelope observed jumping fences may be attributed to rugged terrain broken by gullies and ravines and a higher density of fences. In Wyoming, pronghorn cross wildlife-friendly fences; however, they cross at half the level expected (Sheldon et al., 2006). Sheldon and others (2006) note that, “Finally, wildlife-friendly fence is not immediately permeable to pronghorn. Wildlife-friendly fence may be a barrier to some pronghorn during unfavorable weather and may require time for others to become familiar with the fence.” Twelve of the 96 observed ungulate mortalities in barbed wire fences were pronghorn in the Utah and Colorado study (Harrington and Conover, 2006). Harrington and Conover (2006) stated, “Regardless of their cause, the high density of carcasses near fences indicate that fences can kill ungulates by methods other than ensnaring them.” Fencing can result in hazards or even barriers to pronghorn movements despite being built to wildlife-friendly specifications. In some instances pronghorn may not be able to negotiate fences due to injury or malnutrition during harsh winters, resulting in death near fences.

Table 3-18. Idaho Pronghorn Harvest for Hunt Units 46 and 47

Year	Total Pronghorn Harvest		
	Unit 46	Unit 47	Total
1988	44	5	49
1989	65	5	70
1990	53	9	62

Year	Total Pronghorn Harvest		
	Unit 46	Unit 47	Total
1991	78	17	95
1992	122	12	134
1993	106	17	123
1994	86	11	97
1995	76	13	89
1996	88	10	98
1997	92	10	102
1998	102	11	113
1999	90	16	106
2000	63	12	75
2001	99	17	116
2002	93	18	111
2003	113	16	129
2004	126	27	153
2005	93	18	111
2006	108	36	144
2007	124	34	158
2008	96	23	119
2009	105	7	112
2010[A]	92	16	108
2011[A]	91	18	109

[A] Harvest data obtained from IDFG (2012f).

Big Game Winter Range

Big game species may be affected by some activities and disturbance during periods when forage, vegetative cover, or environmental conditions can limit production, recruitment, and survival. These periods are commonly associated with winter and reproduction. Mule deer (Anderson and Wallmo, 1984), bighorn sheep (Shackleton, 1985), and elk (Green and Bear, 1990) reduce energy expenditures by resting more and eating less during the winter. For mule deer and elk in the north-temperate region, this usually coincides with natural declines in food availability (Parker et al., 2009). Reducing activity in winter may conserve fat and lean body reserves (Green and Bear, 1990). Unsworth and others (1999) reported that predation and malnutrition were primary sources of winter mortality in southwestern Idaho, Montana and Colorado. Causes of mule deer fawn mortality are difficult to interpret because of the complicated interactions between environmental variation, fawn body mass and condition, population density, predation, and other variables that ultimately determine mortality patterns across locations and years (Unsworth et al., 1999). Survival strategies used by wintering big game include altering behavior (e.g., migrating over either distance or elevation), digging/rooting for food below the snow surface, developing trail systems, selecting locations more conducive for locomotion and foraging, (Telfer and Kelsall, 1984) or minimizing energy loss by laying with legs tucked underneath, the back exposed to sun, and reclining while facing away from the wind (Byers, 2003).

Cover, aspect, and elevation are important elements of winter range, and, during severe weather, can be more important than forage availability. Winter range size is important because it allows flexibility in site selection during differing snow conditions and fluctuations in big game populations between years. Human disturbance of big game on winter ranges can displace animals from favored sites and increase energy expenditures. In mule deer, over-winter survival increased with heavier body weights (Unsworth et al., 1999). Nutrition in summer and fall influences body condition. Parker and others (2009) summarized the influence of diet and timing of nutrition play a role in population dynamics that interact with weather and predation. Snow depth influences the behavior of elk, mule deer, and pronghorn. In mule deer, snow depths of 6 to 12 inches can result in changes in habitat use (Mackie et al., 2003), 10 to 12 inches can impede movements (Mackie et al., 2003), and snow depths greater than 20 inches essentially preclude the use of an area by mule deer (Loveless, 1967 in Mackie et al., 2003). Pronghorn are less adapted to

cope with snow compared to bighorn sheep or elk (Telfer and Kelsall, 1984). When snow depths exceed 12 inches, pronghorn experience difficulty in obtaining forage (Yoakum, 2004a). Snow depth and density increase the energy requirements for mule deer and elk movement (Parker et al., 1984). In south-central Oregon, Yoakum (1978) noted, “The extent of pronghorn travel is related to the amount of snow. The deeper the snow, the further the herd travels to lower elevations with less snow. These travels are not true migrations since pronghorn movements differ each year, but are related to annual snow depth.” He also commented that pronghorn remained in the same general area which routinely had little snow.

IDFG and NDOW updated maps to depict the distribution of big game during the winter in the planning area (Map 17). NDOW used more than 10 years of winter flight information with the locations of elk and mule deer observations. IDFG used locations collected during winter flights that describe elk, mule deer, and pronghorn distributions, as well as field information from their respective staffs. Elk and mule deer are distributed from the Jarbidge Foothills northward. Elk have been seen near the Crows Nest Road in the northern third of the planning area and could be present further north. Mule deer are generally associated with the foothills and uplands near and in canyons. Pronghorn are usually found on plateaus between canyons. In general, elk and mule deer move northward from the Jarbidge Foothills in response to winter snow. Deer and elk have been observed on winter range in close proximity to pronghorn. Generally the northern part of the planning area (lower elevation) receives little snow, whereas snow is deeper and remains longer in the southern portion of the planning area. Because of variation between years and species at times being in relatively close proximity, big game winter range, rather than species-specific winter ranges, was delineated.

Several studies have shown that availability and nutritional quality of forage declines from spring to winter (Short et al., 1966; Hobbs et al., 1983; Torbit et al., 1985; Wagner and Peek, 2006). In Idaho, protein content of grasses (Idaho fescue, bluebunch wheatgrass, and bluegrass) and forbs is highest in the spring and declines into the winter (Wagner and Peek, 2006). Nutrition in forbs maintained higher crude protein levels than grasses (Wagner and Peek, 2006). Crude protein declined in bitterbrush from August through February (Wambolt et al., 1996). In the planning area crude protein in bitterbrush would also be expected to decrease from late summer through mid-winter.

Sagebrush, bitterbrush, serviceberry, chokecherry, and four-wing saltbush are important shrub (browse) species on big game winter ranges within the planning area. Dominant browse species vary among plant communities. Other shrub species such as mountain snowberry, rubber rabbitbrush, green rabbitbrush, spiny hopsage, and shadscale may be important browse species. Rabbitbrush may be eaten by wintering big game. Sagebrush and other important browse species have been reduced or eliminated on portions of the winter range due to wildland fires. Rabbitbrush, which responds by sprouting following burning, is prevalent on some winter ranges (Tirmenstein, 1999a; 1999b). The nutritional value of big sagebrush (Welch and McArthur, 1979) and rubber rabbitbrush (Bhat et al., 1990) varies by subspecies and ascension.

BLM conducted big game winter range evaluations in the southern portion of the planning area in late 2006 and early 2007. The evaluations indicated chokecherry, Utah serviceberry, and four-wing saltbush exhibited the strongest evidence of browsing (Klott et al., 2007). Where present, chokecherry and serviceberry showed higher levels of historic repeated browsing than the other shrubs (Klott et al., 2007). At the time of the winter range evaluation, Wyoming big sagebrush, low sage, and rabbitbrush had minimal current nipping (less than 5% at the time sampled; Klott et al., 2007). Nipping is a term used to indicate the percent of the number of twigs on shrubs which have been partially consumed (Stickney, 1966). However, four-wing saltbush had 52% nipping. The apparently high degree of nipping was noted in areas where four-wing saltbush was seeded with crested wheatgrass as part of wildland fire rehabilitation. It is unknown what portion of this use was attributed to big game or fall and winter livestock grazing (Klott, et al., 2007). Occasionally wildlife nipping of browse can be high in localized areas. Areas of higher localized nipping may shift between years depending on factors such as snow depth and winter severity. The Bench Pasture in 2007 had wildlife nipping as high as 26% at browse monitoring sites prior to livestock entering this pasture. The evaluation also showed moderate hedging within most Wyoming big sagebrush and antelope bitterbrush sites. Moderate hedging is typically expected on big game winter range. The majority of shrubs observed in the winter range evaluations were classified as mature;

however, more than 20% of Wyoming big sagebrush was categorized as decadent or dead in most habitats. Young browse were noted at most sites and should replace the decadent shrubs over time (Klott et al., 2007). This would help maintain a diversity of browse age classes.

For identified big game winter range in 2006 and 2007, 80 random points were sampled to evaluate winter range. Rabbitbrush was the dominant shrub at 6 of the 80 sites, providing 55% to 77% of the shrub cover (Klott et al., 2007). In the remaining 74 sites, rabbitbrush cover averaged 5% to 29% (Klott et al., 2007). Rabbitbrushes are native shrubs that are typically uncommon or are found in small amounts (less than 5% cover). Both green rabbitbrush and rubber rabbitbrush usually increase from buds and seed following wildland fire (Tirmenstein, 1999a; 1999b) or other disturbances. The majority of sites with elevated rabbitbrush cover were within areas burned by wildland fires since the 1970s.

Upland Game

Upland game include mountain cottontail rabbits (*Sylvilagus nuttallii*), gray partridge (also called Hungarian partridge [*Perdix perdix]*), ring-necked pheasant (*Phasianus colchicus*), chukar (*Alectoris chukar*), California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), dusky grouse (formerly blue grouse [*Dendragapus obscurus]*), greater sage-grouse (sage-grouse [*Centrocercus urophasianus]*), Columbian sharp-tailed grouse (sharp-tailed grouse [*Tympanuchus phasianellus]*), and mountain quail (*Oreortyx pictus*). Sage-grouse, sharp-tailed grouse, and mountain quail are BLM sensitive species and are discussed in the *Special Status Wildlife* section.

Mountain Cottontail Rabbits

Mountain cottontail rabbits are habitat generalists widely distributed throughout the planning area. In 2006, mountain cottontails were captured in mountain mahogany and mountain shrub habitats (Klott et al., 2007). Mountain cottontails were also observed in sagebrush habitats and riparian zones in the planning area. Mountain cottontails have occasionally been found near irrigated private land in the northern part of the planning area. Because mountain cottontail harvest was lumped with pygmy rabbit harvest prior to 2004, there are only short-term data for this species (Table 3-19).

Upland Game Birds

Upland game birds are affected by a number of important seasonal periods when forage, vegetation cover, or environmental conditions can limit production, recruitment, and survival. These periods are commonly associated with winter and reproduction. The following estimated upland game harvest data is for the entire Magic Valley area, of which the planning area is only a small portion. Because a number of factors influence harvest numbers, caution must be used when drawing inferences about population trends.

Gray partridge, ring-necked pheasant, chukar, and California quail were introduced in Idaho in the early 1900s. The distributions of gray partridge, pheasant, and California quail in the planning area are generally tied to farmland. Pheasant and, to a lesser extent gray partridge, are found in or near agricultural fields. Chukar are most commonly associated with incised canyons with riparian zones such as Salmon Falls Creek, the Jarbidge River, and the Bruneau River, but also are present in areas with steep topography associated with volcanic buttes such as Notch Butte and Twin Buttes. Gray partridge, quail, and chukar numbers commonly experience population fluctuations between years. Based on estimated harvest data for the Magic Valley obtained through telephone surveys of hunters, the populations of California quail and chukar have increased substantially (577% and 450%, respectively) since 1985. Gray partridge numbers have been generally stable since the mid-1980s despite large annual fluctuations (Table 3-19) (IDFG, 2010d).

Since 2001, ring-necked pheasant numbers have been generally stable, but at lower numbers than the 1980s. During the 1960s, the average number of pheasants per mile was 3.36; in the 1970s the average number of pheasants per mile dropped to 2.10, and from 2000 to 2009 the average number of pheasants per mile was less than 0.25 (IDFG, 2010d). Changes in farming practices (such as the proliferation of sprinkler irrigation and subsequent loss of suitable habitat such as canal and ditch banks and seasonal

wetlands), a reduction in residual grain stubble, and a shift to more alfalfa fields are major factors believed to be associated with the decline of pheasants in southern Idaho (Table 3-19; IDFG, 2010d).

Table 3-19. Estimated Upland Game Harvest for the Magic Valley Region (1985–2009)

Year	Pheasant	California Quail	Chukar	Gray Partridge	Mountain Cottontail[A]
1985	51,330	1,375	2,092	3,644	NA
1986	33,810	4,170	3,125	4,012	NA
1987	25,854	1,599	3,394	4,427	NA
1988	25,278	2,685	1,805	2,578	NA
1989	20,521	2,362	1,546	1,921	NA
1990	36,602	6,446	4,312	9,361	NA
1991	24,411	5,624	3,871	2,805	NA
1992	27,347	3,199	1,487	3,932	NA
1993	24,769	5,195	4,360	6,741	NA
1994	24,629	5,300	3,371	5,188	NA
1995	20,289	14,215	5,788	8,834	NA
1996[B]	17,551	19,003	7,273	22,053	NA
2001	19,368	13,345	7,250	10,133	NA
2002	11,677	4,001	6,966	2,753	NA
2003	13,622	4,706	11,110	7,277	NA
2004	15,317	12,949	11,450	9,272	9,675
2005	20,595	16,647	21,017	11,576	7,550
2006	39,964	38,522	26,076	19,827	9,164
2007	16,247	15,797	7,910	5,904	1,445
2008	16,094	11,049	4,708	6,699	1,091
2009	12,787	7,939	9,420	3,980	3,291

[A] Prior to 2004, pygmy rabbit harvest numbers were combined with mountain cottontail rabbit harvest numbers, making data collected incomparable to mountain cottontail rabbit numbers alone in 2004 and later.
[B] Gap in estimated harvest data.

Mourning doves are found in a variety of habitats, including sagebrush steppe, riparian, grassland, and mountain mahogany/ mountain shrub. In Idaho, over the past 10 years, the mourning dove population was found to be stable; however, the 46-year trend shows a declining population (Seamans et al., 2011). Although a few mourning doves are present in the planning area in the winter, the majority migrate. Mourning dove data specific to the planning area are lacking.

No specific information is available regarding the status of dusky grouse populations in the planning area; however, this species typically occupies coniferous forests at higher elevations, a habitat that is not present within the planning area. While dusky grouse are rare in the planning area, dusky grouse have been observed in the Wilkins Island area. Dusky grouse likely move seasonally to the area from conifer forest associated with the Jarbidge Mountains to the south. Ruffed grouse are not found in the planning area.

Migratory Game Birds, Furbearing Animals, and Protected Non-Game Species

The planning area provides a variety of habitats for migratory gamebirds, furbearers, and non-game wildlife. Migratory game birds in the planning area include mourning doves (*Zenaida macroura*), ducks, geese, cranes, and other waterfowl. Furbearing animals include red fox (*Vulpes vulpes*), mink (*Neovison vison*), river otter (*Lontra canadensis*), badger (*Taxidea taxus*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), weasel (*Mustela* spp.), and bobcat (*Lynx rufus*). The majority of wildlife species in the planning area are classified as protected non-game, including amphibians, reptiles, most birds, and several small mammals. These three categories of wildlife are addressed in the context of habitat groups below.

Several of these species are of conservation concern due to broad changes in habitat, State or regional population declines, or a general lack of information. Wildlife appearing to have downward population trends in other regions may be categorized by Idaho BLM as Watch species[4] (Table 3-20). Watch species do not receive any additional management emphasis by BLM and are considered general wildlife. Nevada does not have a watch wildlife species category.

Table 3-20. Idaho BLM Watch Wildlife Species Observed in the Planning Area

Common Name	Scientific Name	Habitat Group
Reptiles		
Night snake	*Hypsiglenia torquata*	Sagebrush steppe, Canyon/Cliff/Talus
Birds		
Cassin's finch	*Carpodacus cassinii*	Aspen
Cordilleran flycatcher	*Empidonax occidentalis*	Riparian/Wetland, Aspen
Grasshopper sparrow	*Ammodramus savannarum*	Grassland
Green-tailed towhee	*Pipilo chlorurus*	Mountain mahogany/Mountain shrub
Long-billed curlew	*Numenius americanus*	Grassland
Pinyon jay	*Gymnorhinus cyanocephalus*	Mountain mahogany/Mountain shrub
Red-naped sapsucker	*Sphyrapicus nuchalis*	Aspen
Sage thrasher [A]	*Oreoscoptes montanus*	Sagebrush steppe
Short-eared owl	*Asio flammeus*	Sagebrush steppe, Grassland
Swainson's hawk	*Buteo swainsoni*	Sagebrush steppe, Aspen
Virginia's warbler	*Vermivora virginiae*	Riparian/Wetland, Mountain mahogany/Mountain shrub
Western burrowing owl	*Athene cunicularia*	Sagebrush steppe, Grassland
Wilson's phalarope	*Phalaropus tricolor*	Riparian/Wetland
Mammals		
Long-legged myotis	*Myotis volans*	Canyon/Cliff/Talus
Western pipestrelle	*Pipistrellus hesperus*	Canyon/Cliff/Talus
Western small-footed myotis	*Myotis ciliolabrum*	Canyon/Cliff/Talus
Yuma myotis	*Myotis yumanensis*	Canyon/Cliff/Talus

[A] Sage thrasher is also a sensitive species in Nevada and is addressed in the *Special Status Wildlife* section.

Both NDOW and IDFG prepared comprehensive wildlife conservation plans primarily for non-game wildlife categorized as sensitive/Species of Greatest Conservation Need (SGCN). Table 3-21 depicts SGCN wildlife found in the planning area that, for planning purposes, are considered general wildlife (IDFG, 2005). The criteria used by IDFG and NDOW for determining which species were included as SGCN can be found in the methods section of the Idaho Comprehensive Wildlife Conservation Strategy (IDFG, 2005). A partial list of the criteria follows:

- All full species with ranks indicating the species is imperiled throughout their range;
- Taxa Federally listed as Endangered, Threatened, or Candidate species under the Endangered Species Act;
- Taxa listed by the State as endangered or threatened;
- Endemic species;
- Disjunct species; and
- Species with fragmented or isolated populations.

[4]Watch species are also referred to as BLM Type 5 Sensitive species.

Table 3-21. Species of Greatest Conservation Need (Non-Special Status) Observed in the Planning Area

Common Name	Scientific Name	State	Habitat Group
Birds			
American avocet	*Recurvirostra americana*	ID, NV	Riparian/Wetland
Bank swallow	*Riparia riparia*	NV	Various
Black-crowned night heron	*Nycticorax nycticorax*	ID	Riparian/Wetland
Black-necked stilt	*Himantopus mexicanus*	ID	Riparian/Wetland
Canvasback	*Aythya valisineria*	NV	Riparian/Wetland
Cassin's finch	*Carpodacus cassinii*	NV	Aspen
Cattle egret	*Bubulcus ibis*	ID	Riparian/Wetland
Clark's grebe	*Aechmophorus clarkii*	ID	Riparian/Wetland
Common loon	*Gavia immer*	ID, NV	Riparian/Wetland
Common nighthawk	*Chordeiles minor*	NV	Sagebrush Steppe
Dusky grouse	*Dendragapus obscurus*	NV	Aspen
Great egret	*Ardea alba*	ID	Riparian/Wetland
Merlin	*Falco columbarius*	ID	Aspen
Northern pintail	*Anas acuta*	ID, NV	Riparian/Wetland
Redhead	*Aythya americana*	NV	Riparian/Wetland
Sandhill crane	*Grus Canadensis*	ID, NV	Riparian/Wetland
Snowy egret	*Egretta thula*	ID	Riparian/Wetland
Virginia's warbler	*Verimvora virginiae*	ID, NV	Mountain Mahogany/Mountain Shrub, Riparian/Wetland
Western grebe	*Aechmophorus occidentalis*	ID	Riparian/Wetland
Wilson phalarope	*Phalaropus tricolor*	ID, NV	Riparian/Wetland
Mammals			
Merriam's shrew	*Sorex merriami*	ID, NV	Sagebrush Steppe
Sagebrush vole	*Lemmiscus curtatus*	NV	Sagebrush Steppe
Silver-haired bat	*Lasionycteris noctivagans*	NV	Aspen
Water shrew	*Sorex palustris*	NV	Riparian/Wetland
Western jumping mouse	*Zapus princepts*	NV	Riparian/Wetland

Habitat Groups

Habitat Groups Used in Analysis

In order to analyze impacts to protected non-game species, furbearing animals, and migratory game birds, species occurring in similar habitats were grouped and placed into habitat groups. Habitat groups consist of one or more vegetation communities. Although a species may be listed in one group, the species may occur in other habitat groups perhaps in lesser numbers or during brief periods. Grouping wildlife that occur in similar habitats is a useful technique to analyze impacts at larger scales without analyzing each species individually (Wisdom et al., 2000). For example large-scale loss of sagebrush due to wildland fire would have a similar impact to members in the sagebrush group (least chipmunk, sagebrush vole, sage thrasher, etc.).

After reviewing State comprehensive wildlife conservation strategies in Nevada and Idaho and in cooperation with IDFG, seven wildlife groups were identified for analysis of wildlife in the planning area. Table 3-22 provides a crosswalk for habitat groups created for the Final EIS and those in both State wildlife conservation strategies.

Table 3-22. Crosswalk for Habitat Groups

Habitat Groups in Jarbidge RMP/Final EIS	Habitat Groups Listed in the IDFG Plan	Habitats Groups Listed in the NDOW Plan
Aspen	Inter-Mountain Basins Aspen Woodland	Intermountain West Aspen Mixed Conifer Forest and Woodland Complex
Canyonland	Inter-Mountain Basins Cliff and Canyon	Cliffs and Canyons
Duneland	Intermountain Basins Active and Stabilized Dune	Sand Dunes and Badlands
Grassland	Disturbed and Invasive Grass and Forb	Grasslands and Exotic Grasslands and Forblands
Mountain Mahogany/ Mountain Shrub	Inter-Mountain Basins Mountain Mahogany Woodland and Shrublands	Intermountain Basins Mountain Mahogany Woodland and Shrubland
Sagebrush Steppe	Inter-Mountain Basins Big Sagebrush Steppe	Intermountain Basins Big Sagebrush Shrubland
Riparian/Wetland	Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland	Intermountain Rivers and Streams

Sources: (IDFG, 2005; NDOW, 2012b).

Wildlife assigned to habitat groups and the habitat groups used are specific to this planning effort. A plan in a different area such as Idaho Falls would likely identify different groups or assign the same species to a different group. Five wildlife groups are related to vegetation: sagebrush steppe, aspen, riparian/wetland, mountain mahogany/mountain shrub, and grassland. The other two groups are related to non-vegetative components. The duneland group is defined by soil type, and the canyonland group is defined by geologic and topographic features of canyons, cliffs, and talus. The number of acres in each habitat group is identified in Table 3-23.

Table 3-23. Acres of Wildlife Group Habitat within the Planning Area

Habitat Group	Acres
Aspen	3,000
Canyonland	46,000
Duneland	700
Grassland	982,000
Mountain Mahogany/Mountain Shrub	16,000
Sagebrush Steppe	319,000
Riparian/Wetland	No acreage calculated

Some habitat groups, such as aspen, occur primarily on the non-windy side of ridges, draws, basins, and riparian zones at higher (greater than 5,000 feet) elevation in the planning area, whereas other habitat groups, such as mountain mahogany, are generally restricted to higher elevation rocky soils. These sites are naturally patchy due to topographic or soil factors. Grassland habitats are often relatively continuous, occupying large expanses. The sagebrush steppe habitats in the planning area generally occur as islands within grasslands. Deep canyons interrupt grasslands and some sagebrush steppe habitats.

Vegetation provides wildlife with food, cover, and structure. A number of wildlife species are found across multiple habitats and are considered habitat generalists. Habitat generalists include gopher snakes, rattlesnake, deer mouse, pack rat, coyote, badger, red-tailed hawk, and others. However the distribution of other wildlife species within the planning area is closely linked to a single habitat. Woodpeckers, sapsuckers, and nuthatches require trees to excavate cavities for nesting. Compared to shrubs, trees with larger branches provide support for some raptor nests. Tree trunks, branches and foliage provide areas for foraging. Shrubs also provide structure for some nesting birds; however, a number of birds nest on the

ground. A few birds (e.g., common nighthawk and killdeer) prefer open, sparsely vegetated areas for nesting, whereas other species (e.g., short-eared owl, grasshopper sparrow, and waterfowl) nest in tall dense cover. Herbaceous cover is less important for species that nest in shrubs or trees; however, it is important for small mammals and birds that forage and travel on the ground. Thick stands of cheatgrass can be too dense and hinder the movement of some species, such as lizards, making habitat less suitable and potentially increasing predation of lizards in dense cheatgrass-infested areas (Newbold, 2005).

Sagebrush Steppe Group

The sagebrush steppe group includes species such as:

- Black-tailed jackrabbit
- Least chipmunk
- Chisel-tooth kangaroo rat
- Sagebrush lizard
- Sagebrush vole
- Gray flycatcher

The sagebrush steppe group is associated with vegetation communities that typically have a shrub overstory, usually dominated by one or more sagebrush species, including low sagebrush, black sagebrush, Wyoming big sagebrush, mountain big sagebrush, and basin big sagebrush. Spiny hopsage, bitterbrush, rabbitbrush, and other shrub species may be present in varying amounts. Vegetation communities associated with the sagebrush steppe group are shown in Table 3-24.

Table 3-24. Vegetation Communities Associated with the Sagebrush Steppe Group by Vegetation Sub-Group

VSG	Vegetation Community
Native Shrubland	Black sagebrush/bluebunch wheatgrass
	Black sagebrush/bluegrass
	Low sagebrush/bluebunch-Idaho fescue
	Low sagebrush/bluegrass
	Low sagebrush/Idaho fescue
	Low sagebrush/squirreltail
	Shadscale
	Winterfat/Indian ricegrass
	Greasewood/basin wildrye
	Basin big sagebrush
	Fourwing saltbush/needlegrass
	Mountain big sagebrush/bluebunch wheatgrass-Idaho fescue
	Mountain big sagebrush/Idaho fescue
	Rabbitbrush/bluebunch wheatgrass
	Rabbitbrush/bluegrass
	Rabbitbrush/Idaho fescue
	Rabbitbrush/Thurber's needlegrass
	Wyoming big sagebrush/bluebunch wheatgrass
	Wyoming big sagebrush/bluegrass
	Wyoming big sagebrush/Idaho fescue
	Wyoming big sagebrush/Indian ricegrass
	Wyoming big sagebrush/thickspike wheatgrass
	Wyoming big sagebrush/Thurber's needles grass
Non-Native Perennial	Fourwing saltbush/crested wheatgrass
	Rabbitbrush/crested wheatgrass
	Rabbitbrush/intermediate wheatgrass
Non-Native Understory	Black sagebrush/crested wheatgrass
	Low sage/crested wheatgrass
	Basin big sagebrush/crested wheatgrass
	Wyoming big sagebrush/crested wheatgrass
	Wyoming big sagebrush/intermediate wheatgrass

VSG	Vegetation Community
Annual	Rabbitbrush/annual
	Wyoming big sagebrush/annual

These communities occur at elevations ranging from 3,000 feet to over 7,500 feet. Shrub cover in sagebrush steppe vegetation communities ranges from 10% to 30%. Overstory shrub composition may include a variety of shrubs. The amount and composition of grasses and forbs are variable depending on precipitation, soils, elevation, and the amount, type, and degree of past disturbances. Historically, natural fires or fires set by the indigenous people (Native Americans) altered vegetation, creating a mosaic of intermixed shrubland and native grasslands in varying stages of succession. In addition, periodic cycles in jackrabbit numbers or eruptions in vole and insect populations likely contributed to areas of high vegetation utilization or defoliation/girdling of shrubs and the creation of different successional mosaics. Outbreaks of disease likely killed shrubs in patches.

Since 1987, 723,000 acres of sagebrush steppe habitat in the planning area have burned. This has altered the amount and distribution of sagebrush steppe habitat, particularly in the northern and central portions of the planning area. The Murphy Complex Fire burned roughly 500,000 acres in the planning area in 2007. Of this, roughly 200,000 acres were sagebrush steppe, which reduced the total amount of sagebrush habitat and increased the distance between large (greater than 640 acres) blocks of sagebrush habitat. This large fire also eliminated a number of remaining sagebrush islands from previous wildland fires. In 2011, nine areas of sagebrush exceeded 2,500 acres (Table 3-25). The largest sagebrush area is nearly 73,000 acres. Islands of sagebrush steppe less than 20 acres in size were not included because the vegetation mapping units were greater than 20 acres. Sagebrush steppe habitats are further fragmented by roads, trails, fences, water pipelines, and power lines.

Table 3-25. Attributes of Shrublands in the Planning Area 2011

Sagebrush Patch Size Category	Quantity
20 – 160 acres	257 patches
160 – 640 acres	46 patches
640 – 2,500 acres	31 patches
2,500 – 10,000 acres	5 patches
10,000 – 30,000 acres	2 patches
30,000 – 50,000 acres	1 patch
> 50,000 acres	1 patch

Sagebrush provides structure to support the nests of some bird species, overhead cover for a number of ground-dwelling species, and hiding cover for birds and small mammals while foraging. Some wildlife species forage on sagebrush itself, while others forage on insects found on sagebrush stems and leaves. Other wildlife consume grasses and forbs. Sagebrush and other shrubs provide important seasonal browse for big game. Dead brush stems and branches provide material for constructing nests for some raptors such as red-tailed and Swainson's hawks.

Aspen Group

The aspen group includes species such as:

- American robin
- Cassin's finch
- Common flicker
- Cordilleran flycatcher
- Downy woodpecker
- House wren
- White-crowned sparrow
- Red-breasted nuthatch
- Mountain bluebird
- Sharp-shinned hawk
- Mountain chickadee
- Tree swallow
- Yellow-rumped warbler

Aspen plant communities comprise less than 1% of the planning area and are included in the Native Shrubland VSG due to their small size and scattered distribution. Aspen communities have an overstory dominated by quaking aspen. Quaking aspen are generally short- to moderately-lived (50 to 100 years) trees that usually grow as interconnected clones. Aspen patches in the planning area are typically small, ranging from less than 1 acre to 20 acres. Tree size varies from less than 1 inch to 12 inches in diameter. In portions of the planning area, aspen stands are old and have few young trees. Understory shrubs in these communities can include mountain big sagebrush, wood rose, mountain snowberry, chokecherry, and serviceberry. Herbaceous vegetation may include Columbia needlegrass, Idaho fescue, Kentucky bluegrass, geranium, horsemint, and a variety of other species. Junipers are encroaching in some aspen stands; however, the condition of the majority of aspen stands has not been evaluated.

Aspen communities provide important habitats for foraging and fawning big game, and nesting and foraging birds and small mammals.

Riparian/Wetland Group

The riparian/wetland group includes species such as:

- American avocet
- Beaver
- Water shrew
- Great blue heron
- Black-necked stilt
- Red-winged blackbird
- Northern pintail
- Cinnamon teal
- Cordilleran flycatcher
- Mink
- Muskrat
- Western jumping mouse
- Pacific chorus frog
- River otter
- Lazuli bunting
- Belted kingfisher
- Spotted sandpiper
- Fox sparrow

A variety of riparian/wetland plant communities occur in the planning area including semi-wet meadow, willow/graminoid, aspen, black cottonwood, and Rocky mountain juniper. These communities are associated with approximately 320 miles of perennial rivers and streams, 102 miles of ditches and canals, and an unknown acreage of wet meadows, seeps, and springs. The majority of these communities were not mapped in the vegetation mapping process as they were less than the 20-acre minimum mapping unit. Based on the amount of streams, these communities are estimated to occupy 1% of the planning area. Many of the semi-wet meadow communities (Native Grassland VSG) and juniper communities (Native Shrubland VSG) that were mapped are associated with riparian areas and wetlands.

Semi-wet meadow sites are usually dominated by a variety of grasses, rushes, sedges, and some forbs. Willow/graminoid sites may have one to five willow species as well as a variety of forbs, grasses, rushes, and sedges present. Willow heights can vary from 8 to 20 feet depending on species and age. Aspen and black cottonwood riparian zones contain taller trees with diverse understory vegetation. Junipers are replacing aspen and black cottonwood in the overstory at some sites, limiting growth of shrubs and herbaceous species in the understory. Rocky mountain/western juniper riparian areas such as those found along Buck Creek and portions of the East Fork of the Jarbidge River typically possess a less diverse understory. Willows, currant, and dogwood are usually limited to the stream edge when present. If the juniper canopy is closed and the site is minimally disturbed, moss occupies much of the ground surface. Grasses and forbs are limited to openings in the tree canopy in juniper dominated riparian areas.

Riparian/wetland vegetation provides high-value habitat for a majority of wildlife in the planning area. The majority of terrestrial wildlife species may be found in these communities on at least a seasonal basis. For example, riparian communities provide fawning and calving habitat for mule deer and elk. Other wildlife species are found exclusively in these areas (e.g., water shrew, Pacific chorus frog, yellow-breasted chat, Wilson’s phalarope, and cinnamon teal).

Mountain Mahogany/Mountain Shrub Group

The mountain mahogany/ mountain shrub group includes species such as:

- Black-throated gray warbler
- Blue-gray gnatcatcher
- Green-tailed towhee
- White-crowned sparrow
- Spotted towhee
- Virginia's warbler

Mountain mahogany/ mountain shrub communities (deciduous mountain brush, evergreen mountain brush, and mountain mahogany) comprise less than 1% of the planning area; these communities belong to the Native Shrubland VSG due to their naturally small size and scattered distribution. Mountain mahogany is a long-lived, short-statured tree (3 to 35 feet tall) occupying rocky sites (Gucker, 2006) at elevations above 5,000 feet. Associated shrub species may include mountain big sagebrush, mountain snowberry, wild rose, serviceberry, and chokecherry. Native herbaceous species may include bluebunch wheatgrass, Sandberg bluegrass, buckwheat, and geranium. Mountain shrub communities usually occur in small patches (1 to 30 acres) and include chokecherry, serviceberry, rose, and bitterbrush. Scouler willow and bittercherry are present at some sites. Because of shrub density, the herbaceous understory may be diverse but limited.

Although these plant communities cover small areas, they provide important seasonal habitats for certain wildlife species including big game winter range, fawning and calving habitat for mule deer and elk, and nesting and foraging habitat for birds and small mammals.

Grassland Group

The grassland group includes species such as:

- Brewer's blackbird
- Grasshopper sparrow
- Harvest mouse
- Horned lark
- Lark sparrow
- Montane vole
- Savannah sparrow
- Long-billed curlew
- Western burrowing owl
- Western meadowlark

Approximately 70% of the planning area is mapped as some form of grassland. Where present, native grassland represents an earlier seral stage of succession in which the shrub overstory was removed. Whether burned areas return to shrublands depends on a variety of factors. If cheatgrass subsequently dominates the site, the area may remain annual grassland. From the 1960s to the 1980s, areas were treated (burned, sprayed, chained, etc.) to remove sagebrush and planted with non-native perennial grasses. Through the 1990s, many areas burned by wildland fires were often seeded with primarily crested wheatgrass, but some seed mixes in the late 1990s included or were entirely native cultivars. Seeding non-native perennial grasses following wildland fires or as range improvement may alter the successional pathway. Wildland fires and intentional conversion of sagebrush steppe have increased the amount of grassland habitat in the planning area.

Grassland communities are dominated by grasses and typically have low amounts of shrub cover. Shrub cover is less than 2% in most grassland habitats throughout the planning area. Vegetation communities associated with the grassland group are shown in Table 3-26.

Table 3-26. Vegetation Communities Associated with the Grassland Group by Vegetation Sub-Group

VSG	Vegetation Community
Native Grassland	Basin wildrye
	Bluebunch wheatgrass
	Bluegrass
	Idaho fescue
	Needlegrass
	Thurber's needlegrass
	Western wheatgrass

VSG	Vegetation Community
Non-Native Perennial	Crested wheatgrass
	Intermediate wheatgrass
Annual	Annual

Savannah sparrow, grasshopper sparrow, western meadow lark, and short-eared owl prefer taller grassland habitats. Long-billed curlew nest in short grass areas; however, brood rearing occurs in areas with taller grass cover. Horned larks nest in both tall and short grass areas locally. Mosaics in residual herbaceous heights provide suitable habitat for all grassland species.

Canyonland Group

The canyonland group includes species such as:

- Barn swallow
- Canyon mouse
- Canyon wren
- Cliff swallow
- Golden eagle
- Little brown bat
- Long-legged myotis
- Night snake
- Red-tailed hawk
- Rock wren
- Say's phoebe
- Side-blotched lizard
- Spotted skunk
- Western fence lizard
- Western pipestrelle
- Western rattlesnake
- Western small-footed myotis
- White-throated swift
- Yellow-bellied marmot
- Yuma myotis

The canyonland habitat comprises about 4% of the planning area. This habitat is associated with steep rocky slopes, canyons and cliffs in several larger drainages. The majority of the canyon habitats are associated with the Bruneau and Jarbidge Rivers as well as Salmon Falls and Clover Creeks. Other canyon areas include portions of Devil Creek, Sailor Creek, Poison Creek, and Cedar Creek. The steep slopes are frequently interrupted by cliffs, terraces, and benches. Cliff height varies substantially with the planning area; some cliffs can be less than 10 feet high, while others can be up to 900 feet.

Many of the areas mapped as breaks and barren vegetation communities (Unvegetated VSG) include canyonland habitats. Vegetation is present in gaps between rocks, but these areas were not mapped in the vegetation mapping process if they were too small to detect with the 20-acre minimum mapping unit. The presence of native grasses, including bluebunch wheatgrass, basin wildrye, and Sandberg bluegrass, varies with elevation and past disturbance. The shrub component is typically dominated by big sagebrush but may also include wood rose, currant, and limited amounts of rock oceanspray (*Holodiscus dumosus*). Canyons contain the majority of juniper in the planning area. Juniper stands in some locations are dense enough to limit growth of understory vegetation. Cheatgrass is prevalent in some portions of the canyons (Salmon Falls Creek, Clover Creek, Bruneau River, Jarbidge River, and Cedar Creek) that have received past disturbance primarily from wildland fire and, to some extent, livestock.

Cliffs provide nesting habitat for a variety of raptor and other birds and roosting areas for numerous bat species. Some talus slopes are used by reptiles for over wintering. Canyon areas also provide important security and winter habitat for mule deer.

Duneland Group

The dunelands group includes species such as:

- Leopard lizard
- Ord's kangaroo rat
- Western whiptail

Duneland habitat is limited (less than 1%) within the planning area, found only in a few scattered areas at lower elevations (less than 4,000 feet) between the Bruneau Dunes State Park and Hagerman, Idaho.

The dune landform consists of a series of alternating depressions and mounds formed by wind-deposited sand. A number of dunes and dune interspaces are sparsely vegetated. The majority of the dunes are low (3 to 10 feet). Duneland habitats include areas mapped as sand dune (Unvegetated VSG), as well as other vegetation communities that are too small to detect with the 20-acre minimum mapping unit.

The native plant communities in this habitat have been substantially altered by wildland fire. The understory contains varying amounts of cheatgrass and, in some cases, crested wheatgrass. Historically, the duneland understory would have included Indian ricegrass, needle-and-thread grass, and a number of forbs including annual lupine (*Lupinus pusillus*), annual milkvetch (*Astragalus geyeri*), purple nama (*Nama aretioides*), sand lily (*Leucocrinum montanum*), sand penstemon (*Penstemon acuminatus*), pale evening primrose (*Oenothera pallida*), and scurf-pea (*Psoralea lanceolata*). The current shrub overstory is limited (less than 10% cover) or absent and includes basin big sagebrush, bitterbrush, or rabbitbrush. In several areas, the dunelands have been stabilized by plantings of crested wheatgrass. Wildland fires since the mid-1970s and invasion by cheatgrass have reduced native grasses, forbs, and shrubs.

Habitat Groups Considered But Not Analyzed

Open Water

This habitat was not included in the analyses because river flows and reservoir water levels are not managed by the BLM. Flows on some streams are diverted for use on private land. Flows on the Snake River are used for irrigation and to generate hydroelectric power. Reservoir levels are managed according to valid water rights, primarily irrigation and hydroelectric power generation. For information on fish or aquatic habitat and riparian condition see the *Fish* section.

Intermountain Basins Playas

Intermountain Basins Playas are listed in the NDOW (2005b) strategy. Playas in Nevada occur between several mountain ranges and are large in size. IDFG (2005) includes playas with wetlands. Playas within the planning area are generally small (less than 20 acres) and located in the plateaus above the Bruneau and Jarbidge River Canyons.

Wet Meadows, Marshland, Playas, Springs and Spring Brooks

There are numerous small seasonally wet meadows, marshes, seeps, springs and associated wetlands in the planning area. The majority of wetlands in the planning area occur in the Jarbidge Foothills. While the majority of the wetlands are not mapped, national wetlands inventory maps are available for the Snake River corridor. Wet meadows, marshland, springs, and spring brooks all have wetland vegetation similar to riparian areas and were therefore included in the riparian/wetland group.

Unprotected Wildlife

Unprotected wildlife includes the house mouse, Norway rat, feral cat, starling, English sparrow, rock doves, jack rabbits, coyotes, weasels, skunks, and a few rodents. House mouse, Norway rat, feral cats, starlings, English sparrow, and rock doves are introduced species. They are usually associated with private lands and may be considered pests. Unprotected wildlife species are not addressed in detail because these animals are relatively abundant and widespread and are not likely to be affected by management actions in the alternatives.

Wildlife Tracts

From the 1960s into the 1980s, public land was conveyed to private ownership through the Desert Land Entry Act of 1877 and the Carey Act of 1894. To mitigate for the loss of habitat, BLM retained scattered parcels of land to be managed for wildlife. The lands were designated wildlife tracts under the provisions of the Sikes Act of 1960, as amended. In the planning area, 123 tracts were designated in three general areas: Grindstone Farms, Bell Rapids, and Blue Gulch (Table 3-27). Individual tracts ranged from 40 to about 900 acres. The management focus for the tracts was to provide habitat for upland game cooperatively with IDFG.

Table 3-27. Number and Acreage of Wildlife Tracts by Geographic Area

Geographic Area	Number of Tracts	Acreage
Bell Rapids	21	3,000
Blue Gulch	78	7,000
Grindstone	24	3,000
Total	**123**	**13,000**

A habitat management plan outlined management for the tracts and identified various projects for completion (BLM, 1976). Eight guzzlers were installed on the tracts to provide an upland water source. Water for the original guzzlers had to be trucked in to fill the storage tanks. These guzzlers were subsequently modified to collect precipitation to fill the tanks. Approximately 40% of the tracts were fenced. In the early 1980s, grasses and forbs were seeded and shrubs were planted on several of the tracts. Wildland fires in 2006 through 2011 removed most of the shrubs, resulting in new shrub restoration efforts.

Habitat Fragmentation and Infrastructure

Habitat fragmentation occurs when a large, fairly continuous tract of vegetation is converted to other vegetation types such that only scattered fragments of the original type remain (Faaborg et al., 1995). Fragmentation impacts involve the interaction of a number of factors including: pattern (patch size, amount of edge per patch, distance between patches, and distribution of patches across an area); scale (local, regional); kind of habitats or plant communities; and wildlife species.

Routes (paved roads, gravel roads, jeep trails); power lines, telephone lines, pipelines, canals and fences are forms of infrastructure (Knick et al., 2011). Current infrastructure is presented in Table 3-28. Most infrastructure does not create a physical barrier to wildlife movements; however, infrastructure can be a source of mortality. In southern Idaho, mortality was incurred by several snake species struck by vehicle tires while crossing paved roads (Jochimsen, 2006). Locally, dead rattlesnakes, gopher snakes, garter snakes, and whipsnakes have been seen on gravel roads and jeep trails. Wildlife mortalities associated with vehicle collisions include the following: badgers, coyotes, skunks, mule deer, sage-grouse, passerine birds, hawks and owls, rabbits and a number of rodent species. In the planning area some barbed wire fences are a source of mortality to sage-grouse (Stevens et al., 2012) and sharp-tailed grouse (Smith, 2012). Electrical distribution lines (Harness and Wilson, 2001) and transmission lines are known sources of mortality to several raptors and other bird species.

Table 3-28. Amount and Type of Infrastructure on BLM Lands in the Planning Area

Infrastructure Type	Quantity	Density
Interstate	1 mile	< 0.01 miles/mile^2
Paved Roads	55 miles	0.03 miles/mile^2
Other routes[A]	3155 miles	1.47 miles/mile^2
Fences	1879 miles	0.88 miles/mile^2
Electric distribution lines	129 miles	0.06 miles/mile^2
Electric transmission lines	81 miles	0.04 miles/mile^2
Communications sites	14 sites	< 0.01 sites/mile^2

[A] Includes gravel/dirt roads, jeep trails, and trails.

In addition to dividing habitat patches, roads have been implicated as conduits for the establishment and spread of invasive non-native plants, such as cheatgrass, and noxious weeds, such as black henbane (Gelbard and Belnap, 2003). Map 51 displays range infrastructure, including fences. Map 71 displays travel routes.

3.3.7 Special Status Species

Special status species include species listed or proposed for listing as Endangered or Threatened under the Endangered Species Act of 1973 (ESA), candidates for listing as Endangered or Threatened under the ESA (Candidate), and species designated by the BLM State Director as Sensitive. The BLM manages

special status species under the policy established in the BLM Manual 6840, in addition to requirements set forth under the ESA. State laws protecting species apply to BLM programs and actions to the extent that they are consistent with Federal Land Policy and Management Act of 1976.

Endangered or Threatened species are species listed by the Secretary of the Interior under the ESA after a final rule has been published in the Federal Register. Proposed species are species that have been proposed for listing as Endangered or Threatened by the US Fish and Wildlife Service (FWS) or National Marine Fisheries Service (NMFS) and for which a proposed rule has been published in the Federal Register. Candidate species are species designated as candidates for listing as Endangered or Threatened by the FWS or NMFS and are included on a list published in the Federal Register. Candidate status indicates existing information warrants listing of the species, but other species have higher priority for listing.

Other special status species are those species designated as “sensitive” by the Idaho and Nevada BLM State Directors in cooperation with their respective State wildlife agencies (e.g., Idaho Department of Fish and Game and Nevada Department of Wildlife). Species are added to or removed from the BLM Sensitive Lists periodically, typically every five to seven years.

Idaho BLM ranks sensitive plant species into four types:

- **Type 1. Threatened, Endangered, Proposed, and Candidate Species** - These species are listed by the FWS as Threatened or Endangered, or they are Proposed or Candidates for listing under the ESA.
- **Type 2. Range-wide/Globally Imperiled Species - High Endangerment** - These species have a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors.
- **Type 3. Range-wide/Globally Imperiled Species - Moderate Endangerment** - These species are globally rare with moderate endangerment factors. Their global rarity and inherent risks associated with rarity make them imperiled species.
- **Type 4. Species of Concern** - These species are generally rare in Idaho with small populations or localized distribution and currently have low threat levels. However, due to the small populations and habitat area, certain future land uses in close proximity could significantly jeopardize these species.

Idaho BLM ranks sensitive fish and wildlife species into four types:

- **Type 1. Threatened, Endangered, Proposed, and Candidate Species** - These species are listed by FWS or NMFS as Threatened or Endangered, or they are Proposed or Candidates for listing under the ESA.
- **Type 2. Range-wide/Globally Imperiled Species -** These species are experiencing significant declines throughout their range with a high likelihood of being listed in the foreseeable future due to their rarity and/or significant endangerment factors.
- **Type 3. Regional/State Imperiled Species -** These species are experiencing significant declines in population or habitat and are in danger of regional or local extinctions in Idaho in the foreseeable future if factors contributing to their decline continue.
- **Type 4. Peripheral Species -** These are species that are generally rare in Idaho with the majority of the breeding range largely outside the State.

Idaho BLM also added a Type 5 (Watch) category. Watch list species are not considered BLM sensitive species, and associated sensitive species policy guidance does not apply. Watch list species include species that may be added to the Sensitive Species List depending on new information concerning threats, species biology, or statewide trends. Wildlife species presently classified as Watch species are considered general wildlife.

3.3.7.1 Special Status Plants

Table 3-29 identifies the special status plants in the planning area. Because a portion of the planning area is in the State of Nevada, plants listed by the Nevada BLM, in conjunction with the Nevada Natural Heritage Program, as sensitive that occur or may occur in the planning area are also included. These plants are noted as NV in Table 3-29.

Table 3-29. Special Status Plants Occurring or Potentially Occurring in the Planning Area

Common Name	Scientific Name	2012 Status
Annual/Biennial Forbs		
Alkali cleomella	*Cleomella plocasperma*	Type 3
Desert pincushion	*Chaenactis stevioides*	Type 4
Least phacelia	*Phacelia minutissima*	Type 3, NV
Rigid threadbush	*Nemacladus rigidus*	Type 4
Slickspot peppergrass	*Lepidium papilliferum*	Type 1
Spreading gilia	*Ipomopsis polycladon* (syn. *Gilia polycladon*)	Type 3
White eatonella	*Eatonella nivea*	Type 4
White-margin waxplant	*Glyptopleura marginata*	Type 4
Perennial Forbs		
American wood sage	*Teucrium canadense* var. *occidentale*	Type 3
Broadleaf fleabane	*Erigeron latus*	Type NV
Bruneau River phlox	*Linanthus glabrum* (syn. *Leptodactylon glabrum*)	Type 3, NV
Calcareous buckwheat	*Eriogonum ochrocephalum* var. *calcareum*	Type 3
California damasonium	*Damasonium californicum*	Type 4
Chatterbox orchid	*Epipactis gigantean*	Type 3
Cusick's primrose	*Primula cusickiana* var. *cusickiana*	Type 5, NV
Davis peppergrass	*Lepidium davisii*	Type 3, NV
Four-wing milkvetch	*Astragalus tetrapterus*	Type 3
Greeley's wavewing	*Cymopterus acaulis* var. *greeleyorum*	Type 3
Janish penstemon	*Penstemon janishiae*	Type 3
Lewis buckwheat	*Eriogonum lewisii*	Type NV
Matted cowpie buckwheat	*Eriogonum shockleyi* (syn. *Eriogonum shockleyi* var. *shockleyi*)	Type 3
Newberry's milkvetch	*Astragalus newberryi* var. *castoreus*	Type 4
Owyhee milkvetch	*Astragalus yoder-williamsii*	Type 3, NV
Packard's cowpie buckwheat	*Eriogonum shockleyi* (syn. *Eriogonum shockleyi* var. *packardiae*)	Type 3
Simpson's hedgehog cactus	*Pediocactus simpsonii*	Type 4
Snake River milkvetch	*Astragalus purshii* var. *ophiogenes*	Type 4
Spine-node milkvetch	*Peteria thompsoniae*	Type 4
Two-headed onion	*Allium anceps*	Type 3
Non-Vascular Plants		
Earth lichen	*Catapyrenium congestum*	Type 4
Woven-spore lichen	*Texosporium sancti-jacobi*	Type 2

Special status plants can be rare due to associations with specific substrates or plant communities or because human-related disturbance has reduced population numbers, available habitat, or degraded habitat condition. Disturbances include, but are not limited to: construction and maintenance of roads, trails, or other access-related infrastructure; livestock grazing and associated facilities including wells, pipelines, troughs, corrals, and fences; cross-country motorized vehicle use; modification of habitat by noxious weeds or invasive plants; altered fire regimes; and establishment of uncharacteristic vegetation.

Sensitive plant populations are inventoried and monitored for population numbers, viability, and habitat quality following standard guidelines and protocols (IDFG, 2008b; FWS, 2001). Inventory and monitoring for special status plants are on-going and often associated with project planning and grazing permit renewals. Intensive special status plant inventory and monitoring occurred in the planning area between 2003 and 2006. This inventory and monitoring provided information on population status, habitat quality, and threats to special status plants in the planning area (Table 3-30). Inventories were not complete or exhaustive, and some populations and habitat conditions are dynamic. Additional population monitoring of slickspot peppergrass is conducted and reported annually following the Habitat Integrity and Population Monitoring Protocol (Colket, 2005).

Table 3-30. Status of Special Status Plants in the Planning Area

Name	Recent Inventory/ Monitoring	Population Vigor	Habitat Quality	Common Threats in the Planning Area
Annual/Biennial Forbs				
Alkali cleomella	No	No Data	No Data	No Data
Desert pincushion	Yes	No Data	No Data	No Data
Least phacelia	No	No Data	No Data	No Data
Rigid threadbush	Yes	Poor	Good	Invasive plants
Slickspot peppergrass	Yes	Fair	Fair	Livestock, noxious weeds and invasive plants, wildland fire
Spreading gilia	Yes	Poor	Fair	Livestock, invasive plants
White eatonella	Yes	No Data	No Data	No Data
White-margin waxplant	Yes	No Data	Fair to Poor	Livestock, invasive plants, wildland fire
Perennial Forbs				
American wood sage	No	No Data	No Data	No Data
Broadleaf fleabane	Yes	Good	Good	Cross-country motorized vehicle use, invasive plants
Bruneau River phlox	Yes	Good	Good	Recreational activities
Calcareous buckwheat	Yes	Good	Fair to Good	Livestock, noxious weeds and invasive plants, wildland fire
California damasonium	No	No Data	No Data	No Data
Chatterbox orchid	Yes	No Data	No Data	No Data
Cusick's primrose	Yes	Good	Good	Juniper encroachment, wildland fire
Davis peppergrass	Yes	Good	Fair to Good	Livestock, invasive plants
Four-wing milkvetch	No	No Data	No Data	No Data
Greeley's wavewing	Yes	Poor to Fair	Poor to Fair	Livestock, noxious weeds and invasive plants, wildland fire
Janish penstemon	Yes	Good	Poor to Fair	Livestock, invasive plants, wildland fire
Lewis buckwheat	Yes	No Data	No Data	No Data
Matted cowpie buckwheat	Yes	Fair	Fair	Cross-country motorized vehicle use, livestock, noxious weeds and invasive plants, wildland fire

Name	Recent Inventory/ Monitoring	Population Vigor	Habitat Quality	Common Threats in the Planning Area
Perennial Forbs				
Newberry's milkvetch	No	No Data	No Data	No Data
Owyhee milkvetch	Yes	No Data	No Data	No Data
Packard's cowpie buckwheat	Yes	No Data	No Data	No Data
Simpson's hedgehog cactus	Yes	Good	Good	Energy development, livestock
Snake River milkvetch	No	No Data	No Data	No Data
Spine-node milkvetch	Yes	Good to Excellent	Fair	Livestock, noxious weeds and invasive plants, wildland fire
Two-headed onion	No	No Data	No Data	No Data
Non-Vascular Plants				
Earth lichen	No	Good	Fair	Livestock trampling
Woven-spore lichen	No	No Data	No Data	No Data

Note: This table reflects status as of August 2012. Special status plants with the notation of "no data" have past documented occurrences and potential habitat within the planning area, but have not been recently located.

The association of special status plants with specific vegetation communities and vegetation sub-groups (VSGs), the VSGs in which each species is currently found in the planning area, and the location of each species in the planning area by vegetation management area (VMA) are summarized in Table 3-31.

Table 3-31. Native and Current Habitat and Location of Special Status Plants in the Planning Area

Species	Native Habitat		Habitat Currently Occupied (VSG[A])	Location by VMA
	Vegetation Community	VSG		
Annual/Biennial Forbs				
Alkali cleomella[B]	Greasewood/Basin wildrye	Native Shrubland	Annual	A
	Salt desert shrub		Non-Native Perennial	A
Desert pincushion[B]	Salt desert shrub	Native Grassland	No Data	No Data
	Needlegrass with Indian ricegrass	Native Shrubland		
	Wyoming big sagebrush			
Least phacelia	Aspen	Native Shrubland	Native Shrubland	D
	Semi-wet meadow with tall forbs, snow-drift areas			
Rigid threadbush[B]	Salt desert shrub	Native Shrubland	Annual	A
	Wyoming big sagebrush		Native Shrubland	A
Slickspot peppergrass	Wyoming big sagebrush	Native Shrubland	Annual	A[C], B
			Native Grassland	A[C], B, C
			Native Shrubland	A[C], B, C
			Non-Native Perennial	A[C], B, C
			Non-Native Understory	A[C], B, C
Spreading gilia[B]	Salt desert shrub	Native Shrubland	Annual	A
	Low sagebrush		Native Shrubland	A
	Wyoming big sagebrush		Non-Native Perennial	A

Species	Native Habitat		Habitat Currently Occupied (VSG[A])	Location by VMA
	Vegetation Community	VSG		
Annual/Biennial Forbs				
White eatonella[B]	Salt desert shrub	Native Shrubland	No Data	No Data
	Wyoming big sagebrush			
White-margin waxplant[B]	Greasewood/Basin wildrye	Native Shrubland	Annual	A
	Salt desert shrub		Native Shrubland	A, D
American wood sage	Semi-wet meadows, riparian areas, wetlands, or hot springs	Riparian/Wetland	Riparian/Wetland	No Data
Perennial Forbs				
Broadleaf fleabane	Low sagebrush	Native Shrubland	Native Shrubland	D
	Wyoming big sagebrush			
Bruneau River phlox	Rhyolitic canyon walls	NA	NA	B
Calcareous buckwheat	Salt desert shrub	Native Shrubland	Annual	A, B
			Native Grassland	A, B
			Native Shrubland	A, B
			Non-Native Perennial	A
California damasonium	Semi-wet meadows, riparian areas, wetlands, or hot springs	Riparian/Wetland	Riparian/Wetland	No Data
Chatterbox orchid	Semi-wet meadows, riparian areas, wetlands, or hot springs	Riparian/Wetland	Riparian/Wetland	A
Cusick's primrose	Mountain big sagebrush	Native Shrubland	Native Shrubland	D
Davis peppergrass	Large hard-bottomed playas within Wyoming big sagebrush and salt desert shrub	Native Shrubland	Native Grassland	B
			Native Shrubland	B
			Non-Native Perennial	B
Four-wing milkvetch	Wyoming big sagebrush	Native Shrubland	Annual	D
			Native Shrubland	D
Greeley's wavewing	Needlegrass with Indian ricegrass	Native Grassland	Annual	A
	Salt desert shrub	Native Shrubland	Native Grassland	A, B
			Native Shrubland	A
Janish penstemon	Salt desert shrub	Native Shrubland	Annual	A
	Low sagebrush		Native Grassland	A
Lewis buckwheat	Low sagebrush	Native Shrubland	Native Shrubland	D
Matted cowpie buckwheat	Salt desert shrub	Native Shrubland	Annual	A
	Wyoming big sagebrush		Native Grassland	A
			Native Shrubland	A
			Non-Native Perennial	A
			Non-Native Understory	A
Newberry's milkvetch	Salt desert shrub	Native Shrubland	Native Grassland	D
	Wyoming big sagebrush		Native Shrubland	D
			Non-Native Perennial	D
			Non-Native Understory	D
Owyhee milkvetch	Low sagebrush	Native Shrubland	Native Shrubland	D
	Mountain big sagebrush			

Species	Native Habitat		Habitat Currently Occupied (VSG[A])	Location by VMA
	Vegetation Community	VSG		
Perennial Forbs				
Packard's cowpie buckwheat	Salt desert shrub	Native Shrubland	Native Shrubland	A
	Wyoming big sagebrush		Native Shrubland	A, B
Simpson's hedgehog cactus	Low sagebrush, Mountain big sagebrush	Native Shrubland	Native Shrubland	D
Snake River milkvetch	Wyoming big sagebrush	Native Shrubland	No Data	No Data
Spine-node milkvetch	Salt desert shrub	Native Shrubland	Annual	A
			Native Shrubland	A
			Non-Native Perennial	A
Two-headed onion	Low sagebrush	Native Shrubland	Native Shrubland	D
Non-Vascular Plants				
Earth lichen	Salt desert shrub	Native Shrubland	Native Grassland	B
			Native Shrubland	C
Woven-spore lichen	Wyoming big sagebrush	Native Shrubland	No Data	No Data

[A] Based on the 2016 projected vegetation composition (baseline).
[B] Desert Annual Group.
[C] Historic population, known only from collections.
Note: Data are for known current and historical populations. Projected VSG is for the broad vegetation type where populations are documented. Habitat might be present as inclusions within VSGs. Species with no data for projected VSGs and/or VMAs are listed as special status species for the planning area by the Idaho and Nevada State Directors, but there are no known occurrences within the planning area boundary.
Data source: Idaho Department of Fish and Game, Idaho Natural Heritage Program; and BLM field inventory.

Slickspot Peppergrass (Lepidium papilliferum)

Slickspot peppergrass was listed in 2009 as an Endangered Species Act (ESA) Threatened species (74 FR 52014, October 8, 2009). Following the listing, the State of Idaho and others filed a suit in Federal court challenging the listing. On August 8, 2012 the court issued a decision vacating the listing of slickspot peppergrass and remanded the matter back to the US Fish and Wildlife Service (FWS) for further consideration. Until the matter is resolved by the FWS, Idaho BLM will continue to manage slickspot peppergrass as a species proposed for listing under the ESA, BLM Type 1.

Slickspot peppergrass is a branched, tap-rooted plant, averaging 2 to 8 inches tall but occasionally reaching up to 16 inches in height. The species flowers once, then dies, but can have either an annual or biennial life history. The annual form reproduces by flowering and setting seed, and dying in the first year; the biennial form occurs as a vegetative rosette the first year, then flowers, sets seed, and dies the second year. Biennial rosettes must persist through dry summer and cold winter conditions before the reproductive phase; consequently many die before they flower and produce seed. The proportion of annual versus biennial plants can vary widely in populations. However, annuals appear to be more common (Moseley, 1994).

Like many short-lived plants that grow in arid environments, the number of individual slickspot peppergrass plants can vary widely from year to year, depending on seasonal precipitation patterns. Because of this, the majority of a population likely occurs in the seed bank (Meyer et al., 2005). This allows the population to survive periods when conditions are not favorable to its survival.

Slickspot peppergrass is native to the semiarid sagebrush-steppe of southwestern Idaho in areas that are currently or were formerly dominated by Wyoming big sagebrush in association with Thurber's needlegrass or bluebunch wheatgrass. Under undisturbed conditions the understories of these plant

communities have a diversity of native perennial bunchgrasses and forbs with a well-developed biological soil crust. The slickspots where the plants occur are openings in the sagebrush matrix that are characterized by soils with high sodium content and distinct clay layers. The combination of physical and chemical characteristics of the slickspots provide for a unique habitat where few native species occur, with the exception of slickspot peppergrass. However, these conditions can be tolerated by some non-native species that occur in the planning area, including cheatgrass, clasping pepperweed, and desert alyssum, as well as seeded non-native perennials such as crested wheatgrass. Under disturbance conditions, slickspots can become occupied or dominated by non-native plants. Loss of habitat due to wildland fire and invasion by non-native species are the primary causes of slickspot peppergrass population declines throughout the range (74 FR 52014 - 52064, October 8, 2009). These disturbances are evident in the planning area.

Within the planning area, slickspot peppergrass is associated with slickspots that cover a relatively small cumulative area within the larger sagebrush-steppe ecosystem. It is estimated that only 1% to 4% of slickspots are occupied by above-ground slickspot peppergrass plants in the Inside Desert portion of the planning area (Popovich, 2009). Additionally, a thorough field inventory within the Juniper Butte Training Range in 2002 found that of the 11,070 acres surveyed, approximately 1% (109 acres) consisted of slickspot peppergrass habitat, with only 4% of this habitat occupied by slickspot peppergrass (U. S. Air Force, 2002). This makes the total amount of occupied slickspot habitat within this large occurrence approximately four acres at the time it was surveyed.

Slickspot peppergrass habitat types within the planning area consist of occupied habitat and potential habitat. Occupied habitat is habitat known to contain slickspot peppergrass plants plus a half-mile habitat integrity buffer. Potential habitat is an unsurveyed area with soil, elevation, and vegetation parameters that would likely support slickspot microsites, but where the presence of slickspot peppergrass plants is unknown. There are 55,000 BLM-managed acres of occupied habitat and 577,000 BLM-managed acres of potential habitat within the planning area (Map 21). As of August 2012, there have been 70,000 acres of slickspot peppergrass surveys completed within potential habitat in the planning area. No new occurrences of slickspot peppergrass were found during these surveys.

3.3.7.2 Special Status Fish and Aquatic Invertebrates

The planning area contains three primary rivers: the Snake River, Salmon Falls Creek, and the Bruneau River (see the *Water Resources* section and Map 6). These rivers essentially define the north, east, and west boundaries of the planning area, respectively. The southeast portion of the planning area is defined by the headwater tributaries of the North Fork of Salmon Falls Creek and Wilson Creek, both of which drain into Salmon Falls Creek in Nevada. The southwest portion of the planning area is defined by portions of several upper tributary reaches to Clover Creek, the Jarbidge River and its East Fork, and four small tributaries to the Bruneau River, all of which are south of the Nevada State line.

Fish

The planning area contains four special status fish species (Table 3-32). The distribution of these special status fish species and the watersheds in which they occur is described below.

Table 3-32. Special Status Fish in the Planning Area

Common Name	Scientific Name	2012 Status	Watershed
Jarbidge River bull trout	*Salvelinus confluentus*	Type 1, Threatened	Bruneau River, Jarbidge River
Interior Columbia River redband trout	*Oncorhynchus mykiss gairdeneri*	Type 2	Bruneau River, Jarbidge River; Salmon Falls Creek
Snake River white sturgeon	*Acipenser transmontanus*	Type 2	Snake River
Shoshone sculpin	*Cottus greenei*	Type 2	Snake River

Jarbidge River Bull Trout

The Jarbidge River watershed contains migratory, or fluvial, bull trout and six local populations of resident bull trout that occupy the Jarbidge River and its East Fork and West Fork. The Jarbidge River Distinct Population Segment of bull trout is the southern-most population of bull trout across the species range. Bull trout are present in the East Fork of the Jarbidge River, as well as its headwater tributaries of Cougar Creek, Fall Creek, Slide Creek, and Dave Creek. Bull trout are also present in the West Fork of the Jarbidge River, as well as its headwater tributaries of Pine Creek and Jack Creek. Cougar Creek, Fall Creek, Slide Creek, Pine Creek, Jack Creek, and portions of the West Fork and East Fork of the Jarbidge River are managed by the Humbolt-Toyiabe National Forest. All of these streams, as well as the streams managed by BLM, provide spawning, rearing, or overwintering habitat for resident or fluvial bull trout and are essential to the long-term conservation of bull trout in the Jarbidge River and its tributaries. Dave Creek, a western tributary to the East Fork of the Jarbidge River, contains a local population of resident (non-migratory) bull trout and provides spawning and rearing habitat for fluvial bull trout. This local population of bull trout could be a factor in future bull trout recovery efforts because of its suitability for spawning and connectivity to other bull trout streams in the Jarbidge River Watershed.

On October 18, 2010, the US Fish and Wildlife Service (FWS) designated critical habitat for bull trout (75 FR 63898). Designated critical habitat for the Jarbidge River Distinct Population Segment included the Bruneau River from the confluence with the Jarbidge River downstream to the slackwater area for C.J. Strike Reservoir and several of the streams in the upper Jarbidge River Watershed. The tributaries on BLM-managed lands that are designated critical habitat include the Bruneau River, Jarbidge River (canyon), portions of the East Fork Jarbidge River and its tributary Dave Creek, and the West Fork Jarbidge River and its tributary Deer Creek. Designated critical habitat for bull trout also includes several streams on the Humboldt-Toiyabe National Forest such as the East Fork Jarbidge River and its tributaries Dave Creek, Slide Creek (including God's Pocket and two unnamed tributaries), Cougar Creek, Fall Creek (and two unnamed tributaries) and the West Fork Jarbidge River and its tributaries Deer Creek, Pine Creek (and two unnamed tributaries), Fox Creek, Sawmill Creek, Jack Creek, and Jenny Creek. Although these streams are not managed by the BLM, they were considered in the cumulative impacts assessment for bull trout (and redband trout) for the BLM-managed land. In total, there are 152.4 miles of designated bull trout critical habitat within the Bruneau River and Jarbidge River watersheds.

In 2005, BLM completed stream habitat surveys on Dave Creek, the Jarbidge River and its East Fork, Buck Creek, and Deer Creek. These surveys were completed on sections of stream that had not been previously surveyed and were representative of larger stream reaches with similar habitat characteristics such as stream gradient, width, and depth. These data are summarized in Table 3-33. The priorities for maintaining or improving critical habitat for Jarbidge River bull trout are summarized in the Aquatic and Riparian Management Strategy (Appendix D).

Table 3-33. Stream Habitat Data for Streams Containing Bull Trout

Stream	Streambank Stability (%)	Sediment (%)	Embedded Fines (%)	Large Woody Debris (#/mile)	Pools (#/mile)	Large Pools[A, B] (% of pools > 1.6 feet)
Bull Trout Criteria	**80**	**< 12**	**< 20**	**48**	**60**	**60**
Dave Creek	74	37	50-75	97	150	60
East Fork of the Jarbidge River	77	NA	> 31	31	51	45
Jarbidge River	77	> 20	NA	NA	NA	NA
Buck Creek	100	25	50-75	15	170	73
Deer Creek	NA	NA	NA	NA	142	NA

[A] Number is percent of the total number of pools/mile.
[B] Sources: (Overton et al., 1995; USDA, 1995).
NA indicates data not available.

The BLM began monitoring water temperatures in the Jarbidge Watershed with continuous water temperature recorders in 2002. Water temperature data for Dave Creek, the Jarbidge River and its East Fork, and Buck Creek indicate water temperatures in July and August exceed the 55°F mean weekly maximum temperature considered to be functioning properly for bull trout rearing and migration by 1°F to 12°F. The water temperature requirements for bull trout include temperatures ranging from 39°F to 48°F for spawning and 39°F to 53°F for summertime rearing. Generally, bull trout spawning occurs from mid-September through late October as water temperatures decline to 48°F and colder. Adult bull trout have not been found in the lower Jarbidge River when water temperatures exceed 57°F. Streams within the Jarbidge watershed that do not meet bull trout water temperature standards in July and August typically begin meeting the standards by early to mid-September.

In 2006, the US Geological Survey's (USGS's) Columbia River Research Laboratory formed a cooperative agreement with the FWS to collect information on the life history, movements, abundance, and distribution of bull trout in the upper Jarbidge River basin (Allen et al., 2010). The USGS used passive integrated transponder (PIT) tags and strategically placed tag detectors to monitor the connectivity between bull trout streams. Robust bull trout populations were found in the upper portions of the East Fork Jarbidge River, the West Fork Jarbidge River, and in Pine, Jack, Dave, and Fall Creeks. The study found bull trout to be dominant in the upper portions of the East Fork Jarbidge River, and in Fall, Dave, Jack, and Pine Creeks. The relative abundance of bull trout was notably higher at elevations above 6,890 feet. During two years of sampling in the upper Jarbidge River watershed, USGS captured 1,702 bull trout (80% of which were captured in 2007). Eighty-seven percent of the bull trout sampled were found above 6,890 feet.

The USGS used PIT tag detections and electrofishing to predict that four times more bull trout inhabit the Jarbidge River core area than was estimated by the FWS in 2004. PIT tag detections also documented substantial bull trout movements between headwater tributaries within the upper East Fork and West Fork Jarbidge River watersheds. The PIT tag detectors at the confluence of the West Fork Jarbidge River and Pine Creek had more fish detections than the other PIT tag detector locations. Fish tagged in the upper West Fork Jarbidge River had the highest number of detections, with 20 fish detected at the West Fork Jarbidge River/Pine Creek site. Ninety percent of these fish were moving down the West Fork Jarbidge River from September through November. Ten of the fish tagged in the West Fork Jarbidge River were detected or recaptured in Pine Creek, indicating a relatively high degree of connectivity between these watersheds.

The PIT tag detectors were also effective at detecting upstream and downstream bull trout movements and documenting connectivity between headwater and lower mainstream areas. PIT tag detections documented bull trout moving from the upper limit of fish distribution in the West Fork Jarbidge River, Pine Creek, and Jack Creek to the lower West Fork Jarbidge River below the confluence with Jack Creek. Fish from Jack Creek and Dave Creek were detected at the confluence of the East Fork and West Fork Jarbidge River. When the fish detection data were combined through December 2007, they indicated some degree of connectivity between headwater populations and the East Fork Jarbidge River and West Fork Jarbidge River. Some bull trout, particularly from Jack Creek, migrate downstream of the Forks and inhabit the Jarbidge River, but the extent or duration of bull trout use of this habitat remains unclear. Although bull trout showed some downstream movement during the spring and summer, most of their emigration occurred in autumn (September through November). Most of the fish that moved downstream were age two or older, which is typical of bull trout populations in other areas.

The USGS used PIT tag detections to determine the overall mean annual growth rate of bull trout in the East Fork and West Fork Jarbidge River was 1.4 inches. The annual growth rates of bull trout across the upper Jarbidge River watershed ranged from 0.8 inches to 2.4 inches. These growth rates are indicative of good habitat conditions. Bull trout sampling in Deer Creek and Buck Creek found both streams to be very shallow (2.0 inches and 2.8 inches, respectively) and to have limited pool habitats. There are no historical records of bull trout being present in either of these streams.

In 2007, the Murphy Complex Fire burned riparian areas in the Jarbidge River below the confluence with its East Fork and in portions of Columbet, Dorsey, and Cougar Creeks. Approximately 50 miles of stream habitat were affected by wildland fire. Fire severity within the riparian areas was low along the Jarbidge

River and moderate to high in Columbet, Dorsey, and Cougar Creeks. Fire severity in the upland areas adjacent to these streams was moderate to high. The riparian woody vegetation for these burned stream reaches consisted of mature willow and aspen, and some woody vegetation mortality occurred due to the fire. In areas with low fire severity, the willow and aspen re-sprouted and have recovered from the fire.

When the Murphy Complex Fire was actively burning, bull trout were in the East Fork of the Jarbidge River, the Jarbidge River above the confluence with its East Fork, and their suitable headwater tributaries. Therefore, the fire did not directly affect individual bull trout. The impacts to bull trout designated critical habitat in the Jarbidge River canyon were primarily related to short-term increases in sediment inputs, which decreased once the upland and riparian vegetation recovered from the fire. The impacts of this instream sediment on suitable bull trout overwintering habitat in the lower Jarbidge River canyon or Bruneau River are unknown.

Interior Columbia River Redband Trout

Interior Columbia River redband trout, a subspecies of rainbow trout, are a BLM sensitive species. Redband trout are found in the Bruneau River and its tributaries, including the Jarbidge River. Redband trout have been found in the headwater tributaries to Clover Creek; the lower portion of Clover Creek was not surveyed because the stream has been dewatered by private diversions upstream under legal water rights issued by the Idaho Department of Water Resources and the Nevada Division of Environmental Protection. Redband trout are also present in Salmon Falls Creek and several of its tributaries that drain to the Jarbidge Foothills in the southern portion of the planning area. Many of the streams containing redband trout run dry before reaching their confluence with other tributaries, resulting in populations that are locally isolated at certain times of the year.

In 2005 and 2006, the BLM completed 53 miles of stream habitat surveys that encompassed 22 streams containing redband trout. These streams were divided into 64 reaches based on stream gradient, width, and depth. Based on these surveys, the stream habitat conditions consisted of 27 miles of streams (51%) that were properly functioning for redband trout, 23 miles of streams (43%) that were functioning at risk, and 3 miles of streams (6%) that were functioning at an unacceptable risk for redband trout. The habitat data were also used to determine the condition of streambanks for the redband trout occupied streams. Thirty-nine of the 64 stream reaches surveyed had streambank stability ratings of 80%or higher and are functioning properly. The remaining 25 stream reaches had streambank stability ratings of 50% to 80% (21 reaches) or less than 50% (4 reaches).

The stream habitat surveys assessed the number of pools per mile for each reach. Pool frequencies in 58 stream reaches were rated as functioning properly for redband trout, 2 were rated as functioning at risk, and 4 were considered functioning at an unacceptable level for redband trout. The highest pool frequencies were found in the headwaters of Cedar Creek (122 to 127 pools per mile) and the lowest pool frequencies were found in Flat Creek (34 to 41 pools per mile). In general, pool frequencies were higher in the headwater reaches that had boulders and large woody debris to form pools and lower in reaches with low stream gradient and limited boulders and instream woody debris. The standard for large pools, such as those that are three feet deep or more, was met in 36 of the stream reaches. Twenty of the stream reaches were functioning at risk and eight were functioning at an unacceptable risk for redband trout due to their limited occurrence of large pools. Some of these reaches may have limited potential to form large pools due to low stream gradient.

The BLM began monitoring water temperatures in redband trout streams in the Salmon Falls Creek and Clover Creek watersheds with continuous water temperature recorders in 2007. From 2007 to 2012, all 19 of the sites monitored met the State maximum daily average temperature standard for cold water biota in all years, and in some areas with groundwater influence, water temperatures were cold enough to meet the more stringent standards for bull trout rearing and spawning. In 2008, two sites (lower Deer Creek and lower House Creek) exceeded the State maximum daily maximum temperature standard. The lower Deer Creek site exceeded the maximum daily maximum temperature standard for four days, and the lower House Creek site exceeded the standard for nine days. In 2011, the upper House Creek site exceeded the maximum daily maximum temperature standard for 15 days. The other 16 sites met the maximum daily maximum temperature standard in all years.

The 2006 stream survey identified 33 stream reaches containing natural or human-caused migration barriers (e.g., culverts at road crossings, dewatered stream reaches, areas with unstable streambanks devoid of vegetation) that prevent redband trout from moving throughout a stream. The remaining 16 stream reaches did not have barriers that would inhibit or prevent fish movement.

In 2007, the Murphy Complex Fire burned riparian areas in five of the redband trout streams surveyed in 2006; approximately six miles of stream habitat were affected. The streams that burned include: Rocky Canyon (1.2 mi), Bear Creek (0.6 mi), Deer Creek (2.0 mi), Lower Three Creek (0.7 mi), Middle Three Creek (0.3 mi), and Timber Canyon Creek (1.4 mi). Fire severity within the riparian areas was generally low to moderate, with few areas experiencing high fire severity. In the areas where the fire burned through the riparian area, the effects were localized and limited to short sections of streams. The riparian woody vegetation for these burned stream reaches consisted of mature willow and aspen; some vegetation mortality occurred. In areas with low fire severity, the willow and aspen have re-sprouted and are recovering from the fire. The upland areas within many redband trout watersheds experienced moderate to high fire severity. Post-fire emergency stabilization and rehabilitation treatments were overall successful in stabilizing soils and reducing sediment contributions to redband trout streams across the burned area. Stream channel stabilization treatments in Bear Creek were successful in restoring willow along the unstable streambanks and have stabilized the stream channel within the burn area.

Snake River White Sturgeon

White sturgeon are the largest and longest lived of the freshwater and anadromous fish in North America and are highly adapted to the large river systems in which they evolved. White sturgeon are found in the Snake River in fragmented sub-populations between the Upper Salmon Falls Dam, Lower Salmon Falls Dam, Bliss Dam, and the Bliss rapids (Idaho Power Company, 2005). The current population of white sturgeon between Upper Salmon Falls Dam and Lower Salmon Falls Dam consists of potentially remnant non-game fish stocks and hatchery-reared fish. This population of fish is not self-supporting and relies on the reproduction of hatchery-stocked white sturgeon. The Snake River reaches above the Bliss Dam Reservoir have small populations of white sturgeon with few or no detectable naturally spawned offspring reaching sexual maturity. The portions of the Snake River downstream from the Bliss Dam are free-flowing; this segment contains the best habitat in the upper Snake River. Because of the free-flowing nature of this reach, white sturgeon are able to reproduce naturally and do not require hatchery supplementation to sustain the population; this is the upper-most reach of the Snake River with a self-sustaining population of white sturgeon.

Factors that have played a role in the decline of white sturgeon in the Snake River include habitat alteration, reduction in water quality, historic exploitation by humans, and population fragmentation by hydroelectric dams. The construction of hydroelectric dams has blocked the movements of and restricted white sturgeon to river fragments that may no longer provide the full spectrum of habitats necessary for them to complete their lifecycle. Hydroelectric system operations result in daily flow fluctuation for power production. This flow fluctuation affects recruitment of juveniles by reducing the availability of spawning, incubation, and larval habitats for white sturgeon, particularly during low water years when peak operations can result in the scouring of eggs and embryos from the riverbed. White sturgeon are also sensitive to a variety of water quality concerns, including changes in water temperature, decreases in dissolved oxygen, additions of nutrients, and the presence of contaminants. All of these water quality concerns occur in the Snake River reaches within the planning area.

Shoshone Sculpin

Shoshone sculpin are found in 52 locations within 26 springs and streams in the Hagerman Valley (FWS, 1995); however, they have only been documented in one location upstream of the Bliss Bridge within the planning area. The number of Shoshone sculpin captured during fisheries surveys by Idaho Power from 1986 to 1990 varied by reach in the Upper Salmon Falls Reservoir, below the Upper Salmon Falls Reservoir, the Lower Salmon Reservoir, below the Lower Salmon Falls Reservoir, and the Bliss Reservoir (Lepla and Chandler, 1995).

Shoshone sculpin are only found in association with groundwater outflows or upwelling from stream bottoms. The occurrence of this fish decreases when there is less influence of spring water on water quality (Wallace and Griffith, 1982). They are normally associated with cover, either in the form of rocks, cobble, gravel, and/or submerged vegetation. Young Shoshone sculpin less than 0.5 to 0.6 inches in total length are often found on sand or mud substrate as long as vegetation is present. Shoshone sculpin use rocky substrates for spawning during a prolonged breeding season from May through July, possibly into August. There is evidence that female Shoshone sculpin can spawn more than once a year.

Aquatic Invertebrates

The planning area contains seven special status mollusk species (Table 3-34). The Bruneau hot springsnail occurs in the lower Bruneau River; the other special status mollusks all occur in the Snake River.

Table 3-34. Special Status Aquatic Mollusks in the Planning Area

Common Name	Scientific Name	2012 Status
Bliss Rapids snail	*Taylorconcha serpenticola*	Type 1, Threatened
Bruneau hot springsnail	*Pyrgulopsis bruneauensis*	Type 1, Endangered
California floater	*Anodonta californiensis*	Type 3
Columbia pebblesnail	*Fluminicola columbianus*	Type 3
Short-face lanx	*Fisherola nuttalli*	Type 2
Snake River physa snail	*Physa natricina*	Type 1, Endangered
Utah valvata snail	*Valvata utahensis*	Type 2

In general, the habitat requirements for Snake River snails include cold, clean, well-oxygenated, flowing water of low turbidity, although each species has slightly different habitat preferences. With the arrival of the early European settlers in Idaho and the development of hydroelectric power, the Snake River ecosystem has undergone significant transformation from a primarily free-flowing, cold water system to a slower moving, warmer water system. The special status aquatic mollusks identified above occur mainly in the remaining free-flowing reaches or in spring alcove habitats of the Snake River. The fauna dependent on the free-flowing reaches of the middle Snake River have been declining since the early 1900s due to fragmentation of the remaining free-flowing habitats and deteriorating water quality.

Bliss Rapids Snail

Currently, the Bliss Rapids snail is found in a few discontinuous areas in the tailwaters of the Bliss Dam and the Lower Salmon Falls Dam and in a few spring habitats in the Hagerman Valley (Thousand Springs, Banbury Springs, Box Canyon Springs, and Niagara Springs). The Bliss Rapids snail is discontinuously distributed in the Snake River and is associated with spring tributaries between Clover Creek and Twin Falls. The Bliss Rapids snail prefers gravel to boulder-sized substrates. This species can be abundant, especially on smooth rock surfaces covered with red algae. In 2009, the FWS completed a 12-month finding on a petition to remove the Bliss Rapids snail from the list of Endangered and Threatened wildlife (74 FR 47536). The FWS found removing the Bliss Rapids snail from the list was not warranted because the species continues to be restricted to a small geographic area in the middle Snake River and groundwater depletion and impaired water quality still threaten the Bliss Rapids snail.

Bruneau Hot Springsnail

The Bruneau hot springsnail is only found in warm water springs and seeps along a five-mile reach of the lower Bruneau River near Hot Creek. This snail is small (less than 0.25 inches) and reproduces best in water between 75°F to 95°F. The primary threat to this species is the declining thermal water table due to groundwater pumping on private land, which has reduced the number of geothermal springs on which this species depends. Invasive plant species (e.g., reed canary grass and reed) and non-native fish are also threats.

California Floater

The California floater, a freshwater mussel, is found in the Snake River in scattered locations between the town of Bliss, Idaho and Alkali Creek. The California floater prefers habitats immediately upstream or downstream of rapids in mud-sand substrates with good water quality. Although there is some information on the distribution of this species in Idaho, little is known about the life cycle of the California floater.

Columbia Pebblesnail

The Columbia pebblesnail is found in the Snake River below Lower Salmon Falls Dam and in the tailwaters of the Bliss Dam. The pebblesnail lives in flowing waters and uses gravel- to boulder-sized substrate at the edges or downstream of rapids and whitewater areas (FWS, 1995). Life cycle and habitat requirements for this species are not well understood.

Short-Face Lanx

The short-face lanx is a flat, cone-like, freshwater mollusk that is found in the Snake River from the Rupert, Idaho area downstream to near King Hill. The short-face lanx lives in steady to strong currents on the underside of large rocks (Taylor, 1985). The numerous dams on the Snake River have altered the natural flow regime of the Snake River, fragmenting the fast-water habitats used by this mollusk. In general, there is little information on the life cycle or habitat requirements for this species.

Snake River Physa Snail

In 1995, the FWS reported that the Snake River physa snail's modern range extended from Grandview to the Hagerman Reach of the Snake River. Recently identified specimens collected by the Bureau of Reclamation (Gates and Kerans, 2008) and Idaho Power Company from 1995 to 2003 (Keebaugh, 2009) confirm its distribution to as far upstream as Minidoka Dam and as far downstream as Ontario, Oregon, some 128 miles downstream of its previously recognized downstream range (Grandview). Two specimens were recovered from the Bruneau River arm (RM 4, Rkm 6.4) of C.J. Strike Reservoir (Keebaugh, 2009) representing the only tributary of the Snake River from which the species has been recorded. The Snake River physa snails are found on the underside of gravel- to boulder-sized rocks in swift current at the margins of rapids. Live specimens have been found on boulders in the deepest part of the river, accessible to divers, at the margins of rapids. Other life cycle information (e.g., reproduction, food habits) are largely unknown for this species.

Utah Valvata Snail

The current distribution for the Utah valvata snail includes sites in the Hagerman Valley and scattered locations from American Falls Reservoir to King Hill Creek. These snails are found in mud, silt, and fine sand substrates in shallow shoreline water and in pools adjacent to rapids or perennial-flowing waters associated with large spring complexes. The FWS recently completed a 12-month finding on a petition to remove the Utah valvata snail from the list of Endangered and Threatened wildlife. They found this species is more widespread and occurs in a greater number of habitats than was known at the time of listing in 1992. As a result, the FWS removed Utah valvata snail from the list of Endangered and Threatened species on August 25, 2010 (75 FR 52272).

3.3.7.3 Special Status Wildlife

Amphibians, reptiles, birds, and mammals designated as sensitive species that occur in the planning area are listed in Table 3-35. American white pelican, bald eagle, trumpeter swan, and white-faced ibis are not known to breed within the planning area. Because public land in the planning area lacks suitable nesting habitat for these species, and the numbers present in the planning area are low at other times, these species are not addressed further.

Table 3-35. Special Status Wildlife in the Planning Area

Common Name	Scientific Name	Current Status
Invertebrates (Terrestrial)		
Bruneau Dunes tiger beetle	*Cicindela waynei*	Type 2

Common Name	Scientific Name	Current Status
Amphibians		
Columbia spotted frog[A]	*Rana luteiventris*	Type 1, NV; Candidate
Northern leopard frog	*Rana pipiens*	Type 2, NV
Western toad	*Bufo boreas*	Type 3
Woodhouse's toad	*Bufo woodhousii*	Type 3
Reptiles		
Great Basin collared lizard	*Crotaphytus bicinctores*	Type 3
Longnose snake	*Rhinocheilus lecontei*	Type 3
Western groundsnake	*Sonora semiannulata*	Type 3
Short-horned lizard	*Phrynosoma douglassii*	NV
Birds		
American white pelican	*Pelecanus erythrorhynchos*	Type 2
Bald eagle[B]	*Haliaeetus leucocephalus*	Type 2, NV
Black-throated sparrow	*Amphispiza bilineata*	Type 4
Bobolink	*Dolichonyx oryzivorus*	NV
Brewer's sparrow	*Spizella breweri*	Type 3, NV
Calliope hummingbird	*Stellula calliope*	Type 3
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	Type 3, NV
Ferruginous hawk	*Buteo regalis*	Type 3
Golden eagle	*Aquila chrysaetos*	NV
Greater sage-grouse[B]	*Centrocercus urophasianus*	Type 1, Candidate
Juniper titmouse	*Baeolophus ridgwayi*	NV
Lewis's woodpecker	*Melanerpes lewis*	Type 3, NV
Loggerhead shrike	*Lanius ludovicianus*	Type 3, NV
Long-billed curlew	*Numenius americanus*	NV
Long-eared owl	*Asio otis*	NV
Mountain quail	*Oreortyx pictus*	Type 3, NV
Northern goshawk	*Accipiter gentilis*	Type 3, NV
Olive-sided flycatcher	*Contopus borealis*	Type 3
Peregrine falcon	*Falco peregrinus*	Type 3, NV
Prairie falcon	*Falco mexicanus*	Type 3, NV
Red-naped sapsucker	*Sphyrapicus nuchalis*	NV
Sage sparrow	*Amphispiza belli*	Type 3
Sage thrasher	*Oreoscoptes montanus*	NV
Sandhill crane	*Grus canadensis*	NV
Short-eared owl	*Asio flammeus*	NV
Swainson's hawk	*Buteo swainsoni*	NV
Trumpeter swan	*Cygnus buccinator*	Type 3
Vesper sparrow	*Pooecetus gramineus*	NV
Western burrowing owl	*Speotyto cunicularia*	NV
Willow flycatcher	*Empidonax traillii*	Type 3
White-faced ibis	*Plegadis chihi*	Type 4
Yellow-billed cuckoo[B]	*Coccyzus americanus*	Type 1, Candidate
Yellow-breasted chat	*Icteria virens*	NV
Mammals		
Big brown bat	*Eptesicus fuscus*	NV
Brazilian free-tailed bat	*Tadaridia braziliensis*	NV
California bighorn sheep	*Ovis canadensis californiana*	Type 3
California myotis	*Myotis californicus*	Type 4, NV
Fringed myotis	*Myotis thysanodes*	Type 3, NV
Kit fox	*Vulpes macrotis*	Type 4
Little brown bat	*Myotis lucifugus*	NV

Common Name	Scientific Name	Current Status
Mammals		
Long-eared myotis	*Myotis evotis*	NV
Long-legged myotis	*Myotis volans*	NV
Pallid bat	*Antrozous pallidus*	NV
Piute (Great Basin) ground squirrel	*Spermophilus mollis*	Type 3
Pygmy rabbit	*Brachylagus idahoensis*	Type 2, NV
River otter	*Lontra canadensis*	NV
Western small-footed myotis	*Myotis ciliolabrum*	NV
Spotted bat	*Euderma maculatum*	Type 3, NV
Townsend's big-eared bat	*Corynorhinus townsendii*	Type 3, NV
Western pipistrelle	*Pipistrellus hesperus*	NV
Wyoming ground squirrel	*Spermophilus elegans*	Type 4
Yuma myotis	*Myotis yumanensis*	NV

[A] Species for which the US Fish and Wildlife Service (FWS) received a petition to list the species as Threatened or Endangered, conducted a status review, but determined listing was warranted but precluded.
[B] The bald eagle was delisted by the FWS in July 2007 (Federal Register 72 [130]: 37346-37372) and will be treated as a type 2 species until further notice.

Habitat Groups

In order to analyze impacts to the diverse number of special status wildlife, species were placed into groups by habitat. Although a species may be listed in one group, the species may occur in other habitats on a seasonal basis or in lesser numbers. For example, Columbian sharp-tailed grouse (sharp-tailed grouse) are found across multiple habitats during nesting including sagebrush steppe and grassland; however, they concentrate in deciduous mountain shrub, aspen, and riparian areas during the winter.

The *Wildlife* section in this chapter contains descriptions of vegetation communities for each habitat group (i.e., sagebrush steppe, aspen, grassland, riparian/wetland, mountain mahogany/ mountain shrub, canyonland, and duneland). Special status wildlife species within each group are presented below.

Sagebrush Steppe Group

Special status wildlife in the sagebrush steppe group includes:

- Greater sage-grouse
- Ferruginous hawk
- Swainson's hawk
- Kit fox
- Pygmy rabbit
- Piute ground squirrel
- Wyoming ground squirrel
- Short-horned lizard
- Black-throated sparrow
- Brewer's sparrow
- Sage sparrow
- Loggerhead shrike
- Sage thrasher
- Longnose snake
- Western ground snake

There are some longer-term monitoring data on greater sage-grouse (sage-grouse) and to some extent ferruginous hawk. For other sensitive species wildlife in the sagebrush steppe limited local data are available. A breeding bird survey route (Hot Spring 33224) has been periodically surveyed from the southern portion of the Bruneau Valley south to near Winter Camp in the northwestern portion of the planning area. Existing data for the remaining special status wildlife in the sagebrush steppe group consist primarily of anecdotal presence observations.

Sagebrush habitat for black-throated sparrow, Brewer's sparrow, loggerhead shrike, and sage sparrow has been reduced by wildland fire by about 460,000 acres between 1987 and 2011, compared to a reduction of approximately 135,000 acres between 1957 and 1987. Currently about 319,000 acres of sagebrush steppe remain in the planning area.

Sage-grouse

Sage-grouse in the planning area are part of the Western Association of Fish and Wildlife Agencies (WAFWA) Management Zone IV Snake River Plain (Knick and Connelly, 2011b). The Snake River Plain Management Zone extends from southwestern Montana to northwestern Utah, northern Nevada, eastern Oregon and southern Idaho (Knick and Connelly, 2011b). This area was categorized as Great Basin sagebrush (Miller et al., 2011).

The Diamond A, Inside Desert, Devil Creek, and Browns Bench sub-units from the Jarbidge Sage-Grouse Conservation Plan (Jarbidge Local Sage-Grouse Working Group, 2007) define the sage-grouse management area. These sub-units contain the majority of the key sage-grouse habitat (key habitat) in the planning area. Key habitat are areas of generally intact sagebrush that provide sage-grouse habitat during some portion of the year. The sage-grouse management area is approximately 990,000 acres; key habitat is approximately 311,000 acres. Map 25 displays both the sage-grouse management area and key habitat.

In the Warranted but Precluded finding for Greater Sage-grouse, the FWS says "…two strongholds of contiguous sagebrush habitat (the southwest Wyoming Basin and the Great Basin area straddling the States of Oregon, Nevada and Idaho) contain the highest densities of males in the range of the species (Federal Register Vol. 75 No. 55 page 12962, citing Wisdom et al., [2011]; and Knick and Hanser, [2011])." Also in the Federal Register Notice, the FWS concludes that the Northern Great Basin sage-grouse population (of which the planning area is a part) is projected to decrease in carrying capacity for sage-grouse by 73% between 2007 and 2037 "if current trends and habitat activities continue" (page 13960, Table 10, and page 13961, citing Garton et al., [2011]).

The majority of sage-grouse leks in the planning area are located within key sage-grouse habitat. Male sage-grouse gather in an area (lek) to display (strut) and mate during the spring breeding season (Connelly et al., 2004). Leks usually have sparse cover and are located near nesting habitat (Connelly et al., 2000). The same area is frequently used year after year, although leks may shift for a variety of reasons (Connelly et al., 2011a). Female sage-grouse attend leks to breed. Following breeding, the females move from the lek to nesting areas. Nesting habitat generally contains 15% to 25% shrub cover with adequate grass and forb cover for nest concealment (Connelly et al., 2011a). Sage-grouse with broods usually select sagebrush habitat that contains a greater diversity and abundance of forbs (Connelly et al., 2011b), which support a variety of insects needed by recently hatched sage-grouse chicks. The hen and chicks also consume forbs from the late spring through summer. Sagebrush at less than 15% cover may be chosen by hens for brood rearing habitat (Connelly et al., 2011b). Locally, many sage-grouse move to higher elevations or to wetland and meadow areas where forbs remain succulent in the summer. Sage-grouse winter in areas where the sagebrush vegetation remains above the snow level (Connelly et al., 2011b).

Sage-grouse were once relatively wide spread over the planning area. In the early 1990s, one occupied lek was southeast of Twin Buttes and other occupied leks were along the road to the Bruneau Scenic Overlook. During a study in the Browns Bench area in the early 1990s, 75% of the hens nested within three miles of the lek of capture, and 25% nested further than five miles from the lek of capture (Klott et al., 1993). In the northwestern portion of the planning area in 2010, female sage-grouse averaged 4.4 miles from the lek of capture to nest and 25% nested more than 10 miles from the lek of capture.

Garton and others (2011) found counting breeding male sage-grouse at leks provides a useful index to the minimum number of breeding males within a local area because males usually concentrate at open to sparsely vegetated leks. Data for the Antelope Pocket, Browns Bench, Clover/Crows Nest, Roseworth, and Winter Camp routes seem to indicate no population trends (Table 3-36) but high variance may mask changes. Numbers of active leks on Kinyon Road, Roseworth, and Clover/Crows Nest routes have declined in recent years. The only lek routes not burned by large wildland fires in the last 10 years are Antelope Pocket and Browns Bench. Numbers of male sage-grouse have declined on the Jarbidge/Dishpan route and numbers of leks and male sage-grouse have declined on the Kinyon Road route.

Table 3-36. Male Sage-Grouse Observed on Established Lek Routes in the Planning Area (1991-2012)

Year	Lek Route Name								
	Antelope Pocket	Browns Bench	Clover/ Crows Nest	Grassy Hills	Jarbidge/ Dishpan	Kinyon Road	Rose worth	Winter Camp	Yellow Sign Road
1991				111					
1992		110		71					
1993		126		57					
1994		86		24					
1995		82		26					
1996		87		13					
1997		55		26					
1998		61		55					
1999		99		63					
2000	60	121		45					
2001	39	71		21					
2002	32	68		14				37	
2003	33	87		34				33	
2004	32	104	29	47				22	
2005	57	156	25	49		24	18	30	48
2006	91	146	10	52	84	27		37	54
2007	63	106	38	72	46	38	20	41	43
2008	65	93	27	18	39	39	18	31	20
2009	48	70	10	28	20	15	13	24	14
2010	14	60	22	24	10	20	10	22	13
2011	51	85	0	32	13	13	13	23	8
2012	47	72	24	44	11	10	16	24	7

Note: Blank cells denote years of data from an obsolete counting protocol and those data are not consistent with current count protocol numbers.
Source: (IDFG, 2012e).

The Idaho Department of Fish and Game (IDFG) lek database (2011) includes about 230 records of sage-grouse leks in the Idaho portion of the planning area. No male sage-grouse have been observed on 62 of the historic lek locations since 1987. The database contains records of 51 sage-grouse leks that had males present only once. Of the 51 sage-grouse leks, 21 leks were not subsequently checked. The other 30 leks had no male sage-grouse present when checked in later years. Seventy-three sage-grouse leks have data for multiple counts spread over a period of 10 or more years. Of these leks, 31 are considered stable or increasing, whereas 42 leks are declining. Of the 42 declining leks, 29 were no longer active as of 2011. At some point, no male sage-grouse were observed on 55 of the 73 leks. However, male sage-grouse attended 26 of the leks in subsequent years.

Between 2005 and 2007, 33 previously unknown sage-grouse leks were documented within the planning area. Twenty-six of the leks were visited in subsequent years. Of these leks, 14 leks were still being used by sage-grouse when last checked, but numbers of sage grouse had declined on 10 of the 14 leks. A downward trend was considered when sage-grouse numbers were less than 50% of the initial count.

The Murphy Complex Fire burned roughly 30% of the remaining key habitat in the summer of 2007. Since the spring of 2008, surveys have detected male sage-grouse strutting in 15 previously unknown sites. Ten of the sage-grouse leks have been checked two or more years. Numbers of male sage-grouse declined by more than 50% on three leks, increased more than 50% on two leks, and varied less than 50% on the remaining five leks. It is not known if any of the new leks were being used by sage-grouse prior to the year they were found.

Ferruginous Hawk

All but one of the known ferruginous hawk nest sites within the planning area are north of the Three Creek Highway. There are records of approximately 20 ferruginous hawk nests on the ground primarily in the northern part of planning area. Nearly all the ground nests are on the upper slope near the rim of breaks: three nest sites on cliffs and one nest on a rock point. A number of ferruginous hawk nests are monitored annually from mid-June into early July. Adults are not likely to abandon nests at this time and the young are generally large enough to be observed in the nest. In most years approximately half of the nests are checked to determine if they are active and how many young reached fledging age. Although some ground nesting ferruginous hawk eggs hatch, they seldom successfully fledge young (of 32 known attempts based on local observations). Nearly all of the successful ferruginous hawk nests (about 45 nest territories) are in isolated junipers or narrow bands of juniper in draws in the central part of the planning area. When a nest site is in a juniper stringer, there are usually alternate nests in one or more junipers.

Over the years, seven nest trees were destroyed by wildland fires and no ferruginous hawks have been observed in those areas, unless other junipers were present. Wildland fires also decrease the structure provided by the shrub component of the habitat which is important as cover and food for some ferruginous hawk prey species (Olendorff, 1993). The number of young produced per active nest varies between years from 1.0 to 2.1 (BLM unpublished nest data; Table 3-37). If the nest tree is not destroyed by fire, its skeleton may be used for nesting in subsequent years. Not all the nests are used annually, and some nests are used by other species (red-tailed hawk, Swainson's hawk, great horned owl, barn owl, long-eared owl, and raven) when unoccupied. Wildland fires have also altered the habitat used by some of the common mammalian prey, including jackrabbits, rabbits, and ground squirrels.

Table 3-37. Ferruginous Hawk Nest Monitoring in the Planning Area (2002-2012)

Year	2002	2006[A]	2007	2008	2009	2010	2011	2012
Number of nests checked	18	16	35	23	25	35	33	29
Number of young	16	12	11	8	15	31	32	26
Average number young per active nest	1.3	1.7	1.0	2.0	1.7	2.1	1.6	2.0

[A] No data collected from 2003 - 2005.

Locally, ferruginous hawks arrive in late February and early March. Nests are maintained and eggs are usually laid from late April to early May. Young ferruginous hawks are generally visible in the nests in mid to late June and the young fledge in July. Ferruginous hawks primarily consume small mammals, jackrabbits, and ground squirrels, but they occasionally take reptiles and small fledgling birds (Bechard and Schmutz, 1995).

Swainson's Hawk

Swainson's hawks readily nest in trees at the edge of agricultural fields, grasslands, and sagebrush steppe (Bechard et al., 2010). Locally, Swainson's hawks primarily nest in juniper stringers or isolated juniper in sagebrush steppe habitat. They may also nest in grassland habitat with juniper skeletons or scattered juniper, but are not known to nest on the ground. Swainson's hawks use nests that have previously been used by ferruginous hawks or ravens. Like other raptors, Swainson's hawks produce one brood per year and migrate to Argentina for the winter (Bechard et al., 2010).

Kit Fox

In 1992, a kit fox was seen during an Idaho Power survey west of Bliss Dam. In 2004, a kit fox was observed in the general vicinity of the Juniper Butte Training Range by an Air Force contractor. The same year one set of tracks and an audible call were reported to the IDFG from west of the training range in the Inside Desert area. No systematic surveys have been conducted by BLM for kit fox in the planning area.

Pygmy Rabbit

In the planning area pygmy rabbits have been observed in both mountain big sagebrush and Wyoming big sagebrush habitats. Typical pygmy rabbit habitat consists of areas with taller more dense (greater than or equal to 30% cover) big sagebrush in areas with soils deeper than 20 inches (Ulmschneider et al., 2004) This description of pygmy rabbit habitat is relatively consistent for southeastern Oregon and northern Nevada (Crawford, 2008), southwestern Idaho (Burak, 2006), and the planning area. In some

areas, small mounds (mima mounds) (Ulmschneider et al., 2004) of soil 20 to 30 feet in diameter provide pygmy rabbit habitat in areas with generally shallow soil. Pygmy rabbits dig burrow systems with multiple openings (Green and Flinders, 1980). Breeding occurs between February and May (Keinath and McGee, 2004). Female pygmy rabbits dig a separate burrow for giving birth (Rachlow et al., 2005). Pygmy rabbit diets include greater than 50% sagebrush in the spring through summer and increases to nearly 100% sagebrush in the winter (Green and Flinders, 1980). During the spring and summer, grasses and forbs can make up 30% to 40% of the pygmy rabbits' diet (Green and Flinders, 1980).

There is no estimate of overall pygmy rabbit distribution or population size prior to 2005. The majority of the known occupied pygmy rabbit habitat burned in the Sailor Cap (2006), Murphy Complex (2007), and Kinyon Road (2012) fires. Following the Murphy Complex fires, numerous site visits in the winters of 2007 and 2009 did not reveal pygmy rabbits or active rabbit burrows in the areas where they had previously (2005 and 2006) been documented.

Piute and Wyoming Ground Squirrels

Piute and Wyoming ground squirrels are found in both sagebrush and grassland habitats in the planning area. Piute ground squirrels appear to be more widely distributed compared to Wyoming ground squirrels, which appear to be limited to the Jarbidge Foothills and have been observed in areas with mountain big sagebrush. Piute ground squirrels are present from the Snake River to south of the Three Creek Highway. Locally Piute ground squirrels are generally active from March through May. By June and into July, only ground squirrels at higher elevations remain active. There is no population trend for either Piute or Wyoming ground squirrels.

Piute ground squirrel diets consist of perennial grasses and forbs, annual grasses and forbs, and shrubs (Van Horne et al., 1998). Shrubs increase in their diet as herbaceous vegetation dries out (Van Horne et al., 1998). New leaves on shrubs may provide nutrition not found in bluegrass (Van Horne et al., 1998). Ground squirrels are dependent on perennial vegetation (Van Horne et al., 1998). Steenhof and others (2006) reported Piute ground squirrel numbers were higher in sagebrush habitats compared to grassland habitats. Van Horne and others (1998) stated, "As a consequence we believe that any habitats dominated by annual plants that lack substantial coverage of perennial plants cannot support stable, increasing, or source populations of ground squirrels for any substantial time period."

Black-throated Sparrow, Brewer's Sparrow, Sage Sparrow, Loggerhead Shrike, and Sage Thrasher

There are few local population trend data for black-throated sparrow, Brewer's sparrow, sage sparrow, loggerhead shrike, or sage thrasher. The only long-term data is the Hot Spring breeding bird survey route which is located in the northwestern part of the planning area. The route consists of 50 points 0.5 miles apart where birds are observed and recorded by species. Breeding bird survey routes are surveyed in the late spring and have specific protocols regarding time of day, weather conditions, and other factors.

In the summer of 2006, the Sailor Cap Fire reduced sagebrush along portions of the route. Following the fire, the average counts for Brewer's sparrow, sage sparrow, and sage thrasher along the Hot Spring route declined 54%, 10%, and 76%, respectively (Table 3-38). The 10% decline in sage sparrow is probably within the range of natural variability and may not reflect a declining population. For the same period loggerhead shrike numbers increased 37%, but the observed change may not reflect an increasing population because of the few observations in any year. Black-throated sparrows are rarely detected in this area so they do not exhibit a trend. Other large wildland fires, including fires within the planning area in 2010 and 2012, further reduced the amount of available habitat used by these special status birds.

Table 3-38. Average Number of Brewer's Sparrow, Loggerhead Shrike, Sage Sparrow, and Sage Thrasher on the Hot Spring Breeding Bird Survey Route (Pre- [1988-2006] and Post- [2007-2009] Fire)

Species Name	1988 - 2006 Average	2007 - 2009 Average	Percent Change
Brewer's sparrow	29.9	13.7	- 54%
Loggerhead shrike	2.9	4.0	37%
Sage sparrow	13.3	12.0	- 10%
Sage thrasher	23.3	5.7	- 76%

Source: (USGS, 2012).

In Idaho, the sage sparrow (Rich, 1980; Peterson and Best, 1985a), Brewer's sparrow (Rich, 1980; Peterson and Best, 1985b), sage thrasher (Reynolds et al., 1999) and loggerhead shrike (Woods and Cade, 1996) nest primarily in shrubs. Sagebrush used to support nests was taller than other sagebrush in the area (Peterson and Best, 1985a; 1985b). Loggerhead shrike nest in shrubs substantially taller (greater than 4 feet) (Woods and Cade, 1996) than Brewer's sparrow or sage sparrow (less than 2.5 feet). Locally, some shrike nests have been found in junipers.

Longnose Snake, Western Ground Snake, and Short-horned Lizard

The western ground snake and longnose snake have a limited distribution and are primarily found at lower elevations (less than 4,000 feet), in the northwestern part of the planning area. They are usually found in sites with sandy soils near rocky areas. They are not specific to dunelands and are therefore included in the sagebrush steppe group. Short horned lizards are relatively common and generally found in the southern third of the planning area including some of the higher (more than 7,000 feet) elevation sites. No population trend data are available for any of these reptile species.

Aspen Group

Special status wildlife in the aspen group includes:

- Lewis's woodpecker
- Long-eared owl
- Northern goshawk
- Willow flycatcher
- Red-naped sapsucker

There are no population trend data on local populations of Lewis's woodpecker, long-eared owl, northern goshawk, red-naped sapsucker, or willow flycatcher within the planning area. Locally, large diameter aspen, cottonwood and potentially juniper provide suitable nesting habitat for Lewis's woodpecker. Lewis's woodpeckers can nest in aspen with a diameter of 10 inches or greater (Vande Voort, 2011). Newlon and Saab (2011) reported Lewis's woodpecker selected larger diameter (average 16 inches) aspen for nesting in southcentral Idaho. Lewis's woodpeckers use the same nest cavity in subsequent years, but it is not known if the use was by the same pair (Saab et al., 2004, Newlon and Saab, 2011). Unlike other woodpeckers, Lewis's woodpeckers primarily catch insects while flying (Abele et al., 2004). Several Lewis's woodpecker nests have been documented in the southern portion of the planning area.

Long-eared owls nest in aspen stands and juniper stringers in the planning area. Often long-eared owls use old raven or magpie nests (Thurow and White, 1984). Nest site fidelity for long-eared owls appears limited (Marks et al., 1994).

No northern goshawk nests have been documented in the planning area, although larger aspen have the structure to support goshawk nests. Goshawks prey opportunistically on a variety of songbirds, woodpeckers, ground squirrels, cottontails, and jackrabbits depending on the habitat (Squires and Reynolds, 1997). Goshawk nests are often in the largest trees in the stand (Squires and Reynolds, 1997). The nest is generally located close to the tree trunk.

Willow flycatchers have been noted in some of the short aspen stands where snow accumulates on the lee side of ridges in the Monument Springs area. Shrubs with these aspen stands include shiny-leaf ceanothus, Wood's rose, Scouler's willow, chokecherry, and serviceberry.

Red-naped sapsuckers may nest in aspen if the diameter exceeds nine inches and exhibit fairly strong nest territory fidelity (Walters et al., 2002). In the planning area many aspen stands are used by red-naped sapsuckers.

Riparian/Wetland Group

Special status wildlife in the riparian group includes:

- Columbia spotted frog
- Western toad
- Woodhouse toad
- Northern leopard frog
- Calliope hummingbird
- Willow flycatcher
- Yellow breasted chat
- Sandhill crane
- Yellow-billed cuckoo
- Mountain quail
- River otter

The BLM has limited population data for the majority of special status wildlife associated with the Riparian/Wetland group. Since the early 1990s, Columbia spotted frogs (spotted frogs) were reported in Bear, Shack, Rocky Canyon, and Timber Canyon drainages. These creeks are in relatively close proximity and all are headwater tributaries to Salmon Falls Creek. Habitat is marginal for spotted frogs in all but Rocky Canyon Creek due to diminished water flows and limited slack water habitat (e.g., beaver ponds). Beaver ponds that were present in Bear, Shack, and Timber Canyon creeks when spotted frogs were found have failed and the creeks no longer provide suitable habitat; and all three drainages have experienced down-cutting (e.g., excessive downward erosion of the stream channel), which lowered the water table and reduced water permanence during the summer. Although willows and aspen are present along substantial portions of the creeks, the reduced water permanence inhibits beaver recolonizing the creeks. Spotted frogs have been most frequently observed in Rocky Canyon, which has numerous active stable beaver dams. Currently, occupied spotted frog habitat is vegetated primarily by sedges, rushes, grasses, and wetland forbs with a willow overstory. Since the late 1990s, cattle use has been reduced along Rocky Canyon Creek through herding, contributing to an increase in sedges and rushes along the banks and beaver have increased the number of ponds. Spotted frog numbers have increased in Rocky Canyon since 1998.

Western toads have only been found at three locations (Pilgrim Springs and King Hill Canal at Deer and Little Pilgrim Gulches) in the northern portion of the planning area since 2005. They were detected in Yahoo Creek in the early 1990s and the lower segment of Tuana Gulch in the early 2000s. In 2007 and 2008 tadpoles, metamorphic young, and adults have been seen in King Hill Canal downstream of Bliss Dam. Woodhouse's toads and northern leopard frogs were documented in the planning area in the 1970s and 1980s, but have not been documented in the planning area during inventories conducted since 1993.

On a few occasions, Calliope hummingbirds have been observed during the nesting period in early summer at the headwater springs of Cedar Creek.

Willow flycatchers have been detected in willow-dominated riparian areas in Deer Creek, Flat Creek, and Cedar Creek. Nests are usually placed in the crotch of a shrub or small tree. Willows are frequently selected for nesting (Sedgwick, 2000). The few aspen stands where willow flycatchers have been observed have shorter trees. Short aspen is usually located on the lee side of ridges where snow accumulates. Other shrubs with the aspen may include shiny-leaf ceanothus, wood rose, Scouler's willow, chokecherry, and serviceberry.

Yellow-breasted chats are migratory songbirds found in riparian areas with willows. This species has been observed along portions of Cedar Creek, Clover Creek, Rocky Canyon, and Salmon Falls Creek in the planning area. Chats usually produce one brood per year but occasionally produce two (Eckerle and Thompson, 2001). If the first nest fails only a portion of the chats attempt to renest (Eckerle and Thompson, 2001). In Indiana, eastern yellow-breasted chats exhibited little nest site fidelity between years (Eckerle and Thompson, 2001). However, male western yellow-breasted chats had 44% site fidelity between years in southern British Columbia (McKibbin and Bishop, 2012). Site fidelity of chats in Idaho is unknown. Yellow-breasted chats place their nest cup in dense shrubs relatively low to the ground (Eckerele and Thompson, 2001).

Sandhill cranes are present during the spring in the southern portion of the planning area, particularly in marshy private meadows. Sandhill cranes have been seen at Camas Slough on BLM land in this area. To date no nesting cranes have been documented nor fledgling cranes observed.

Yellow-billed cuckoo are observed rarely within the planning area. All observations are from islands along the Snake River near Hammett.

Riparian areas provide important winter habitat for mountain quail. More information about mountain quail is provided in the Mountain Mahogany/Mountain Shrub Group.

River otters have been noted in the Bruneau, Jarbidge, and Snake Rivers as well as Salmon Falls Creek in the planning area. The diet of the otter includes a variety of fish species as well as amphibians, small mammals and crayfish (Lariviere and Walton, 1998).

Mountain Mahogany/Mountain Shrub Group

Special status wildlife in the mountain mahogany/mountain shrub group includes:

- Columbian sharp-tailed grouse
- Mountain quail
- Juniper titmouse
- Pinyon jay
- Vesper sparrow

From 2003 to 2010, about 250 sharp-tailed grouse were transplanted into the planning area in the House Creek area (Smith, 2012). There are records of three sharp-tailed grouse leks, one of which is inactive. Sharp-tailed grouse use several habitats seasonally; they nest in grassland, sagebrush steppe, and mountain shrub areas if suitable herbaceous cover and desirable forbs are present. During the winter, they consume insect galls on sagebrush and eat aspen leaf buds, as well as fruit and leaf buds from deciduous shrubs such as chokecherry, serviceberry (Marks and Marks, 1988), Woods' rose, snowberry, willow, and aspen (Giesen and Connelly, 1993) in aspen, riparian, and mountain mahogany/mountain habitats. The IDFG does not authorize sharp-tailed grouse hunting in the planning area at this time.

Historically, a few mountain quail were harvested in the planning area in the 1960s and 1970s, but IDFG check station data suggest mountain quail were never abundant. The last report of mountain quail in the planning area was around 2001 (IDFG, 2012b). No mountain quail were detected during surveys conducted in 1994 in Cougar Creek, Dorsey Creek, Clover Creek, Deer Creek, and Columbet Creek (BLM and IDFG, 1994) and in 2003 and 2004 in Cougar Creek, Deep Creek, and Columbet Creek (IDFG, 2012b).

Both juniper titmouse and pinyon jay are rare in the planning area which lies at the edge of their normal range (Balda, 2002; Cicero, 2000). Juniper titmouse nests in natural cavities or old woodpecker holes (Cicero, 2000).Vesper sparrows are routinely present in or at the edge of mountain mahogany/mountain shrub habitats. They are also present in sparser sagebrush steppe and grassland with some brush.

Grassland Group

Special status wildlife in the grassland group includes:

- Short-eared owl
- Long-billed curlew
- Western burrowing owl
- Bobolink

These special status wildlife occurring in the planning area are linked primarily to grassland habitat types at this time. Short-eared owls are a widespread ground nesting owl species found in North America, Europe, and Asia (Wiggins et al., 2006). Within the planning area, short-eared owls have been seen in grassland and to a lesser extent sagebrush steppe habitat. They have been noted in the southern portion of Browns Bench near the Idaho/Nevada State line. Short-eared owl nests are usually in taller denser grass.

Long-billed curlew is a grassland species (Dugger and Dugger, 2002) which occasionally uses shrubland as nesting habitat (Hartman and Oring, 2009). Long-billed curlews lay one clutch of eggs each year (Redmond and Jenni, 1986) and do not usually renest if the nest fails. However, Hartman and Oring (2009) reported long-billed curlew usually renested in northern Nevada grass hay fields if nest failure occurred before mid-May (e.g. early in the nesting period). Long-billed curlew nest in areas with short sparse vegetation, but once the eggs hatch the young are moved to areas with taller cover (Dugger and Dugger, 2002). Due to wildland fires which removed sagebrush, long-billed curlew extended their distribution into the southern third of the planning area.

Burrowing owls are found both in sagebrush steppe and grassland habitats in the planning area. Nest site fidelity has been reported weak in the Snake River Birds of Prey National Conservation Area (Lehman et al., 1998) and within the planning area. In Oregon, Holmes and others (2003) reported re-use of nest sites varied between years from 87% down to 57%. Burrowing owls frequently use old badger holes for nesting. At burrowing owl nests in southwestern Idaho vegetation height average a little over 15 inches in a little over 6 feet from the burrow. Burrows in areas with sandier soils are more likely to collapse than areas with little sand in the soil (Holmes et al., 2003).

Bobolinks are rarely observed in the planning area. The few observations have been in the southern portion of the planning area associated with irrigated grass hay fields/pastures on private land. Bobolinks nest on the ground in areas with moderate to tall grass and exhibit strong breeding site fidelity (Martin and Gavin, 1995).

Canyonland Group

Special status wildlife in the canyonland group includes:

- Great Basin collared lizard
- Peregrine falcon
- Prairie falcon
- California bighorn sheep
- Spotted bat
- Townsend’s big-eared bat
- Big brown bat
- Brazilian free-tailed bat
- California myotis
- Fringed myotis
- Little brown bat
- Long-eared bat
- Long-legged myotis
- Pallid bat
- Western pipistrelle
- Western small footed bat
- Yuma myotis

Limited population data are available for most of the special status wildlife in the canyonland group. Great Basin collared lizards are known to be present in the northern portion of the Bruneau Canyon, as well as a little north of Indian Hot Spring.

Peregrine falcons are rarely observed in the planning area, whereas prairie falcons have been observed in numerous locations. Prairie falcons are known to nest in the Bruneau and Jarbidge Canyons and canyons associated with Cedar, Clover, Devil, Flat, Sailor, and Salmon Falls Creeks. Both peregrine (White et al., 2002) and prairie falcons (Steenhof, 1998) primarily nest on cliff ledges, cavities and crevices. Only one brood is raised per year. Multiple nest sites may be present in a prairie falcon’s nesting territory (Steenhof, 1998).

California bighorn sheep (bighorn sheep) are the only special status wildlife species in the canyonland group for which population data is available. Bighorn sheep numbers in the planning area appear to be increasing following a precipitous population decline in 1998 and 2000 (IDFG, 2010a). The substantial and rapid decline of this sheep population suggested a disease die-off, although no conclusive evidence was available (IDFG, 2010a). The current population is estimated to be approximately 210 bighorn sheep. Map 27 depicts bighorn sheep habitat and domestic sheep allotments in the planning area. Bighorn sheep in the Bruneau and Jarbidge Canyons do not exhibit seasonal migratory movements (IDFG, 2010a). Bighorn sheep tend to avoid areas dominated by juniper (Kornet, 1978). In a southeastern Oregon study conducted in habitat similar to the Bruneau and Jarbidge Canyons, Kornet (1978) reported bighorn sheep used cliff/shrub, rock outcrop, talus shrub, big sagebrush/bunchgrass, and bunchgrass

habitats. Kornet (1978) also reported that bighorn sheep used areas up to a mile from the rim and more than 30% of the ram groups were found more than 1.25 miles from escape cover. Payer and Coblentz (1997) noted bighorn rams commonly more than 1.8 miles from escape cover in southeastern Oregon.

Within the planning area, spotted bats occur in low numbers that are widely scattered. Luce and Keinath (2007) reported that in some instances spotted bats may be locally common, but such areas are separated by large areas lacking suitable habitat. Townsend's big-eared bats are primarily associated with caves or cave analogs (lava tubes, mines, old buildings) where they typically roost (Gruver and Keinath, 2006). The planning area generally lacks caves or lava tubes; rock crevices and cracks are numerous in rhyolite cliffs and provide roosting habitat. Locally, Townsend's big-eared bats have been found in the Bruneau and Salmon Falls Creek Canyons.

Big brown bat, Brazilian free-tailed bat, California myotis, fringed myotis, little brown bat, long-eared myotis, long-legged myotis, pallid bat, western pipestrelle, western small-footed bat, and Yuma myotis have been detected within the planning area (Doering and Keller, 1998; Vullo et al., 1999; Tetra Tech, 2011). Numerous bat species temporarily roost in rock crevices and cracks between foraging bouts. Perennial streams provide water in canyons, whereas reservoirs and water storage ponds provide water in the uplands. Bats prey on a variety of invertebrate prey (insects, moths, beetles) and can forage in uplands away from riparian areas. Population trends of bat species in the planning area are unknown.

Duneland Group

The only special status wildlife species within this group is the Bruneau Dunes tiger beetle. The global distribution for this narrow endemic tiger beetle has reduced by more than 50% since the early 1990s. The Bruneau Dunes tiger beetle is currently only found in the Bruneau Dunes State Park, adjacent to the northwest portion the planning area. Bruneau Dunes tiger beetle was described as a species distinct from the Idaho Dunes tiger beetle (Leffler, 2001). Mitochondrial DNA analyses have subsequently supported the species designation for Bruneau Dunes tiger beetle (Goldberg et al., 2012).

The planning area contains a small, isolated duneland habitat that was occupied by the tiger beetle in 1993 and was named the Windmill site. It is located approximately 8 miles east of Bruneau Dunes State Park (Baker et al., 1994). The tiger beetle population in the planning area appears to have been extirpated by 2007 (Bosworth et al., 2010). Monitoring indicated this species was declining at the Windmill site since the mid-1990s (Baker and Munger, 2000). Bosworth and others (2010) did not find any Bruneau Dunes tiger beetles or larval burrows between 2007 and 2009 at the Windmill site. The tiger beetle habitat has been invaded by cheatgrass and Russian thistle reducing habitat for tiger beetle larvae (Baker and Munger, 2000; Bosworth et al., 2010). Increases in invasive plants in dune interspaces where the females deposit eggs has reduced habitat.

In 2007 a pump and generator were installed for a trough about 0.3 miles from tiger beetle habitat. Water was previously hauled to this site when the pasture was grazed by sheep and cattle. Trailing by cattle increased in larval habitat as a result of the more permanent water source. Bauer (1991) reported that livestock trampling collapsed burrows and increased larval tiger beetle mortality. Without fencing, livestock are expected to continue to trail through tiger beetle habitat while foraging in uplands to the east.

3.3.8 Noxious Weeds and Invasive Plants

Noxious weeds are defined in Idaho statute as any plant having the potential to cause injury to public health, crops, livestock, land, or other property. Noxious weeds are designated by the Director of the Idaho State Department of Agriculture (Idaho Statute 22-2402). Invasive plants are non-native species whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112).

The 2012 Idaho Noxious Weed List contains 64 weed species. According to data from the Idaho State Department of Agriculture and the Natural Resource Conservation Service (NRCS), 36 of these are known to occur within Elmore, Owyhee, or Twin Falls Counties, Idaho (Table 3-39). Twenty of these noxious weeds are known to occur in the planning area (Table 3-41). In addition to the Idaho State Noxious Weed List, Twin Falls County has a noxious weed list consisting of two weeds: halogeton

(*Halogeton glomeratus*) and Saint John's wort (*Hypericum perforatum*), both of which are known to occur in the planning area.

Table 3-39. Idaho Noxious Weeds Occurring in Elmore, Owyhee, and/or Twin Falls Counties

Common Name	Scientific Name	Elmore	Owyhee	Twin Falls	Known to Occur in the Planning Area
Black henbane	*Hyoscyamus niger*	Yes	Yes	Yes	Yes
Buffalobur[A]	*Solanum rostratum*	No	Yes	No	No
Canada thistle	*Cirsium arvense*	Yes	Yes	Yes	Yes
Common reed (Phragmites)	*Phragmites australis*	No	Yes	No	Yes
Curlyleaf pondweed	*Potamogeton crispus*	Yes	Yes	Yes	No
Dalmatian toadflax	*Linaria dalmatica*	Yes	Yes	Yes	No
Diffuse knapweed	*Centaurea diffusa*	Yes	Yes	Yes	Yes
Dyer's woad	*Isatis tinctoria*	No	Yes	Yes	No
Eurasian watermilfoil	*Myriophyllum spicatum*	No	Yes	No	Yes
Field bindweed	*Convolvulus arvensis*	Yes	Yes	Yes	Yes
Giant knotweed	*Polygonum sachalinense*	No	No	Yes	No
Hoary alyssum	*Berteroa incana*	No	No	Yes	No
Hoary cress (whitetop)	*Cardaria draba*	Yes	Yes	Yes	Yes
Houndstongue	*Cynoglossum officinale*	Yes	No	Yes	Yes
Hydrilla	*Hydrilla verticillata*	No	Yes	No	No
Japanese knotweed	*Polygonum cuspidatum*	No	Yes	Yes	No
Johnsongrass	*Sorghum halepense*	Yes	No	No	No
Jointed goatgrass	*Aegilops cylindrical*	Yes	No	Yes	Yes
Leafy spurge	*Euphorbia esula*	Yes	Yes	Yes	No
Musk thistle	*Carduus nutans*	Yes	Yes	Yes	Yes
Orange hawkweed	*Hieracium aurantiacum*	Yes	No	No	No
Oxeye daisy	*Chrysanthemum leucanthemum*	No	Yes	Yes	Yes
Perennial pepperweed	*Lepidium latifolium*	Yes	Yes	Yes	Yes
Perennial sowthistle	*Sonchus arvensis*	Yes	Yes	Yes	No
Poison hemlock	*Conium maculatum*	Yes	Yes	Yes	No
Puncturevine	*Tribulus terrestris*	Yes	Yes	Yes	Yes
Purple loosestrife	*Lythrum salicaria*	Yes	Yes	Yes	Yes
Rush skeletonweed	*Chondrilla juncea*	Yes	Yes	Yes	Yes
Russian knapweed	*Acroptilon repens*	Yes	Yes	Yes	Yes
Salt cedar (Tamarisk)	*Tamarix* spp.	Yes	Yes	Yes	Yes
Scotch broom	*Cytisus scoparius*	No	Yes	No	Yes
Scotch thistle	*Onopordum acanthium*	Yes	Yes	Yes	Yes
Spotted knapweed	*Centaurea maculosa*	Yes	Yes	Yes	Yes
Yellow Flag Iris	*Iris psudocorus*	Yes	No	Yes	Yes
Yellow starthistle	*Centaurea solstitialis*	Yes	Yes	Yes	No
Yellow toadflax	*Linaria vulgaris*	Yes	No	Yes	No

[A] Species is native.
Sources: (BLM, 2006c; IASCD, 2004; ISDA, 2012; NRCS, 2012b).

The 2012 Nevada Noxious Weed List contains 47 weed species. According to the NRCS, 16 of these are known to occur within Elko County, Nevada (Table 3-40). Eight of these species are known to occur in the planning area.

Table 3-40. Nevada Noxious Weeds Occurring in Elko County

Common Name	Scientific Name	Known to Occur in the Planning Area
Black henbane	*Hyoscyamus niger*	Yes
Canada thistle	*Cirsium arvense*	Yes
Dyer's woad	*Isatis tinctoria*	No
Hoary cress (whitetop)	*Cardaria draba*	Yes
Houndstongue	*Cynoglossum officinale*	No
Leafy spurge	*Euphorbia esula*	No
Mayweed chamomile	*Anthemis cotula*	No
Perennial pepperweed	*Lepidium latifolium*	Yes
Poison hemlock	*Conium maculatum*	No
Puncturevine	*Tribulus terrestris*	Yes
Salt cedar (Tamarisk)	*Tamarix* spp.	Yes
Sow thistle	*Sonchus arvensis*	No
Spotted knapweed	*Centaurea maculosa*	Yes
Water hemlock[A]	*Cicuta maculata*	Yes
Yellow starthistle	*Centaurea solstitialis*	No
Yellow toadflax	*Linaria vulgaris*	No

[A] Species is native.
Sources: (Nevada Department of Agriculture, 2008; NRCS, 2003a).

Comprehensive noxious weed and invasive plant inventories have not been completed by BLM in the planning area; however, some documentation exists of noxious weeds and invasive plants and their locations. BLM weed treatments documented from 1996 through 2012 provided locations of 21 noxious weed species and 2 invasive plant species. The vegetation mapping effort (see the *Upland Vegetation* section) documented vegetation communities dominated by annual invasive plants; some locations for noxious weeds and invasive plants were also documented during the 2006 Ecological Site Inventory data collection.

Table 3-41. Invasive Plants Occurring in the Planning Area

Common Name	Scientific Name	Primary Habitat	Range[A]	Dominance[B]
Annual wheatgrass	*Eremopyrum triticeum*	Upland	Numerous	Locally abundant
Barnyard grass	*Echinochloa crus-gall*	Riparian	Rare	Uncommon
Bittersweet nightshade	*Solanum dulcamara*	Riparian	Restricted	Uncommon
Bulbous bluegrass	*Poa bulbosa*	Upland	Numerous	Locally abundant
Bull thistle	*Cirsium vulgare*	Riparian	Numerous	Uncommon
Bur buttercup	*Ranunculus testiculatus*	Upland	Widespread	Locally abundant
Burdock	*Arctium* spp.	Riparian	Numerous	Uncommon
Cheatgrass	*Bromus tectorum*	Upland	Widespread	Dominant
Clasping pepperweed	*Lepidium perfoliatum*	Upland	Widespread	Locally abundant
Cocklebur	*Xanthium* spp.	Riparian	Numerous	Uncommon
Common dandelion	*Taraxacum officinale*	Upland	Widespread	Common
Common mullein	*Verbascum thapsus*	Upland	Restricted	Common
Curly-leaf pondweed	*Potamogeton crispus*	Riparian	Restricted	Locally abundant
Field pennycress	*Thlaspi arvense*	Upland	Restricted	Locally abundant
Flixweed	*Descurainia sophia*	Upland	Widespread	Common
Forage kochia[C]	*Kochia prostrate*	Upland	Numerous	Common
Halogeton	*Halogeton glomeratus*	Upland	Widespread	Common
Hydrilla	*Hydrilla verticallata*	Riparian	Restricted	Locally abundant
Japanese brome	*Bromus japonicas*	Upland	Restricted	Common
Kentucky bluegrass	*Poa pratensis*	Upland	Widespread	Locally abundant
Kochia	*Kochia scoparia*	Upland	Numerous	Locally abundant

Common Name	Scientific Name	Primary Habitat	Range[A]	Dominance[B]
Littlepod false flax	*Camelina microcarpa*	Upland	Rare	Uncommon
Meadow fescue	*Festuca pratensis*	Upland	Restricted	Uncommon
Medusahead	*Taeniatherum caput-medusae*	Upland	Restricted	Locally abundant
Missouri iris	*Iris missouriensis*	Riparian	Restricted	Uncommon
Poverty weed	*Iva axillaris*	Upland	Restricted	Locally abundant
Prickly lettuce	*Lactuca serriola*	Upland	Widespread	Uncommon
Prostrate knotweed	*Polygonum aviculare*	Upland	Widespread	Uncommon
Purple mustard	*Chorispora tenella*	Upland	Numerous	Dominant
Rabbitfoot grass	*Polypogon monspeliensis*	Riparian	Restricted	Locally abundant
Reed	*Phragmites australis*	Riparian	Numerous	Dominant
Reed canary grass	*Phalaris arundinacea*	Riparian	Widespread	Dominant
Russian olive	*Elaeagnus angustifolia*	Riparian	Widespread	Dominant
Russian thistle	*Salsola* spp.	Upland	Widespread	Locally abundant
Smooth brome	*Bromus inermis*	Upland	Restricted	Locally abundant
Soft brome	*Bromus mollis*	Upland	Rare	Uncommon
Stork's bill	*Erodium cicutarium*	Upland	Widespread	Locally abundant
Tall oatgrass	*Arrhenatherum elatius*	Riparian	Rare	Uncommon
Teasel	*Dipsacus sylvestris*	Riparian	Numerous	Locally abundant
Tumble mustard	*Sisymbrium altissimum*	Upland	Widespread	Locally abundant
Western tansymustard	*Descurainia pinnata*	Upland	Widespread	Locally abundant
Yellow iris	*Iris pseudacorus*	Riparian	Restricted	Locally abundant

[A] Rare: species found only in one or two locations; Restricted: species limited to few areas; Numerous: species found in numerous areas; Wide spread: species found over large areas.
[B] Dominant: readily dominates sites; Locally abundant: abundant in patches and may dominate small sites; Common: numerous but scattered; Uncommon: present in low amounts.
[C] Forage kochia may be invasive in certain habitats. This species was seeded in the past by BLM in portions of the planning area.
Note: The list shown above was compiled by BLM staff based on observations in the field.
Source: (NRCS, 2012b).

Recent surveys of riparian areas in the planning area show increases in the presence of Canada thistle. Common reed and reed canary grass dominate the vegetation on some parts of Salmon Falls Creek, Clover Creek, and the Bruneau River. Russian olive dominates much of the tree component along the Snake River, and tamarisk has increased along Salmon Falls Creek and the Snake River.

Noxious weeds and invasive plants can displace native plants, degrade wildlife habitats, reduce recreational opportunities, and impact water quality, runoff, and sedimentation (Westbrooks, 1998). Noxious weeds and invasive plants can change the composition, structure, and productivity of vegetation communities, as well as the state of ecological sites (West, 1999). Tribes, Federal and State agencies, counties, and private landowners are pursuing control or eradication on lands under their ownership or jurisdiction (BLM, 2007c).

Noxious weeds and invasive plants can spread and invade from areas of high disturbance into adjacent native and non-native perennial plant communities. Disturbance areas (e.g., ditches, ruts, or other areas where vegetation has been reduced or removed) associated with infrastructure development can serve as corridors and starting points for the expansion of non-native invasive plants (Trombulak and Frissell, 2000). Other mechanisms for introduction and spread include but are not limited to cross-country motorized travel; passenger vehicles; road maintenance; recreational use; wild horse and wildlife movements; livestock movements and management activities including facility construction and maintenance; wind, gravel pit, and mining operations; and fire suppression activities. Noxious weeds and invasive plants can also spread to public land from adjacent private lands. Increased occurrence of wildland fire over the past 20 years (see the *Wildland Fire Ecology and Management* section) has created

opportunities for introduction and spread of noxious weeds and invasive plants, especially cheatgrass (Jessop and Anderson, 2007; Kinter et al., 2007). Some invasive plants dry earlier during spring and summer compared to native vegetation. This, coupled with periodic high biomass production, can contribute to wildland fire risk by increasing availability of fine fuels (Westbrooks, 1998). Rehabilitation or restoration treatments, such as seeding burned or otherwise disturbed areas with native or non-native perennial (Evans and Young, 1978) vegetation, reduce the potential for introduction and spread of noxious weeds and invasive plants.

3.3.9 Wildland Fire Ecology and Management

Wildland Fire Suppression Activities

The Twin Falls District of the BLM manages wildland fires on BLM, Bureau of Reclamation, and State lands by cooperative agreements. A contractual agreement also exists with the Department of Defense (DOD) US Air Force, which requires suppression of fires on DOD lands by the BLM. The BLM will suppress wildland fires on private lands when those fires pose a threat to BLM lands. The fire management organization performs management tasks that include preparing firefighting personnel and equipment for wildland fire activities; suppressing wildland fires; preventing and educating the public about wildland fire; planning and implementing fuel activities including prescribed fire, vegetation inventory, and mechanical and chemical treatments; providing funding to communities for education, fuels, and prevention activities through the community assistance program; and implementing Emergency Stabilization and Burned Area Rehabilitation measures such as seeding and restoring vegetation on a wildland fire to minimize soil loss. Wildland Fire Use is a management action which accomplishes resource objectives through the use of fire; however, fire must occur naturally (lightning) and the area analyzed to allow the action. Currently, the 1987 Jarbidge RMP does not identify areas which allow this action.

Wildland Fire History

Between 1987 and 2011, an average of 72,000 acres burned in the planning area each year, with a total of 1,806,000 acres burned during that 25-year period. The number of acres burned each year varied from a low of 600 acres in 2009 to a high of 505,000 acres in 2007. Approximately one-third of the planning area (688,000 acres) has burned at least once during this 25-year period. These figures are based on fires greater than 10 acres and include all areas burned regardless of ownership.

During this time there were 532 fires for an average of 21 fires per year. The majority of wildland fire ignitions in the planning area (62%) were caused by lightning, while human-caused fires comprised 38%. This includes all wildland fire ignitions and not just those that resulted in wildland fires greater than 10 acres.

Table 3-42 displays historical fire data for each vegetation management area (VMA) including the percentage of the total fires in each VMA, average number of fires per year, and average number of fires caused by humans per year. While the number of fires is not considered to be numerous, the burned acres have impacted the planning area.

Table 3-42. Fire Data by Vegetation Management Area

Fire Data	VMA A	VMA B	VMA C	VMA D
Percentage (%) of Fires	27	45	14	14
Average Number of Fires per Year	6	10	3	3
Average Number of Human-Caused Fires per Year	2	4	1	1

Fire Regime Condition Class

National and State BLM fire policy requires current and desired resource conditions related to fire management to be described in terms of three condition classes. These condition classes are collectively referred to as Fire Regime Condition Classes (FRCC) and are delineated as FRCC 1, FRCC 2, and FRCC 3 (Barrett et al., 2010). FRCC is a classification of the amount of departure from the historic fire

regime and the associated historical vegetation. The historic fire regime is defined by one of five regimes as displayed in Table 3-43 and is based on the number of years between fires (fire return interval) and the amount of vegetation altered by fire (severity) (Barrett et al., 2010). FRCC 1 indicates a low departure from the historic fire regime and the historic vegetation, while FRCC 2 indicates a moderate departure and FRCC 3 indicates a high departure.

Table 3-43. Historic Fire Regime Definitions

Historic Fire Regime	Fire Return Interval	Fire Severity	Severity Description
I	0-35 years	Low/Mixed	Generally low-severity fires replacing less than 25% of the dominant overstory vegetation; can include mixed-severity fires that replace up to 75% of the overstory.
II	0-35 years	Replacement	High-severity fires replacing greater than 75% of the dominant overstory vegetation.
III	35-200 years	Mixed/Low	Generally mixed-severity; can also include low-severity fires.
IV	35-200 years	Replacement	High-severity fires.
V	200 + years	Replacement/any severity	Generally replacement-severity; can include any severity type in this frequency range.

Potential natural vegetation group (PNVG) models are used to represent the historical vegetation for FRCC analysis. Each PNVG selected is based on ecological site potential as determined from soils, climate, and historical information. The following PNVGs were determined to represent the historical vegetation: Basin Big Sagebrush, Black and Low Sagebrush, Mountain Big Sagebrush, Wyoming Big Sagebrush Steppe, Salt Desert Shrub, Mountain Shrubland with Tree, Curleaf Mountain Mahogany, and Stable Aspen. Current FRCC for the planning area is displayed in Table 3-44 which shows that almost all of the planning area is in FRCC 2 and FRCC 3.

Table 3-44. Acres and Fire Regime Condition Class Ratings for Potential Natural Vegetation Groups by Vegetation Management Area

PNVG	Acres of PNVG[A]	Historic Fire Regime	FRCC Rating
VMA A			
Basin Big Sagebrush	600	IV	3
Mountain Shrubland with Tree	< 100	I	3
Salt Desert Shrub	2,000	V	3
Wyoming Big Sagebrush Steppe	213,000	IV	3
VMA B			
Basin Big Sagebrush	200	IV	3
Black and Low Sagebrush	300	III	2
Mountain Shrubland with Tree	400	I	3
Salt Desert Shrub	4,000	V	2
Wyoming Big Sagebrush Steppe	603,000	IV	2
VMA C			
Basin Big Sagebrush	9,000	IV	3
Black and Low Sagebrush	10,000	III	3
Mountain Big Sagebrush	800	IV	2
Mountain Shrubland with Tree	< 100	I	3
Stable Aspen	< 100	I	3
Wyoming Big Sagebrush Steppe	285,000	IV	2
VMA D			
Basin Big Sagebrush	18,000	IV	3
Black and Low Sagebrush	101,000	III	2

PNVG	Acres of PNVG[A]	Historic Fire Regime	FRCC Rating
VMA D			
Curlleaf Mountain Mahogany	3,000	III	3
Mountain Big Sagebrush	35,000	IV	1
Mountain Shrubland with Tree	6,000	I	3
Stable Aspen	3,000	I	2
Wyoming Big Sagebrush Steppe	28,000	IV	2

[A] Analysis was based on 2016 projected vegetation, used as the baseline vegetation composition for the RMP.

Fuel Models

Fuel models are used to describe fuel characteristics based on quantity, type, and spatial arrangement of vegetation. Fuel models are used to estimate or predict potential fire behavior and effects, such as flame length and rate of spread under various environmental parameters. Flame length corresponds to fireline intensity, while rate of spread relates to fire size. Fuel models designed for this purpose do not account for fire return interval, changes in landscape patterns, or length of fire season. Fuel models were assigned to each PNVG successional class using Standard Fire Behavior Fuel Models (Scott and Burgan, 2005).

Because the size of wildland fire is a concern in the planning area, changes to rate of spread are an important characteristic in evaluating fire size. Each fuel model has an associated adjective rating to represent the rate of spread. Table 3-45 shows the acres of vegetation within each rating. Approximately 76% of the planning area has fuels with a rate of spread rating of high or very high.

Table 3-45. Fire Rate of Spread Rating by Vegetation Management Area (Acres)

Rate of Spread Rating	VMA A	VMA B	VMA C	VMA D
Extreme	0	0	0	0
Very High	80,000	39,000	2,000	6,000
High	132,000	473,000	255,000	52,000
Moderate	0	< 100	5,000	57,000
Low	3,000	89,000	34,000	34,000
Very Low	0	3,000	5,000	45,000
Non-Burnable	5,000	26,000	12,000	14,000

Wildland Urban Interface

Communities at risk are Wildland Urban Interface (WUI) communities near Federal lands that are at high risk from wildland fire. An initial list of all communities at risk was identified in the Federal Register (Volume 66 [2001], pages 751-777). One community at risk, Three Creek, is located within the boundary of the planning area and is listed in the Fire Management Plan. Communities at risk that are located outside the boundary but may still be impacted by fire management activities in the planning area include Bliss, Glenns Ferry, Hammett, Castleford, and Hagerman. The community of Murphy Hot Springs was not initially listed in the Federal Register as a community at risk but has since been identified as a community of interest. Communities of interest are WUI areas identified after the 2001 Federal Register Notice.

FRCC is not an appropriate measure of wildland fire risk for WUI areas because these areas may be maintained in an altered vegetative state to protect life and property. Instead, relative risk ratings are used. Relative risk to WUI areas relates to vegetation condition and helps determine treatment areas for fuels reduction projects. The 2007 Idaho Interagency Assessment of Wildland Fire Risk to Communities maps communities most at risk from wildland fire in Idaho by assigning relative risk ratings by Hydrologic Unit Codes. Approximately 167,302 acres are rated moderate or above in the WUI areas located within the planning area (Table 3-46, Map 29).

Table 3-46. Relative Risk Ratings for Wildland Urban Interface

Relative Risk Rating	Number of Acres
High	6,000
Moderate-High	84,000
Moderate	77,000
Low-Moderate	116,000
Low	30,000
No Known Communities at Risk	< 100
Nevada/No Data	19,000
Total	**332,000**

Hazardous acres are those areas within WUI areas that have relative risk ratings of moderate or above and have fuels with rates of spread of high or above. Approximately 72,000 acres or 21% of WUI areas within the planning area are considered hazardous acres.

A County Wildfire Protection Plan identifies WUI areas and WUI priorities for fuels treatments and hazard mitigation in each county. Three County Wildfire Protection Plans were completed for the following counties in the planning area: Twin Falls, Owyhee, and Elmore. These plans are updated annually on an interagency basis with participation by BLM.

Minimum Impact Suppression Tactics

The concept of Minimum Impact Suppression Tactics (MIST) is to minimize the long-term effects while effectively meeting the goals of the suppression efforts. It is not a separate or distinct class of tactics but a strategy of selecting a suppression tactic, personnel, equipment, and actions which would minimize the effects but accomplish the task. Safety would still be the primary consideration when implementing the MIST concept. The MIST concept applies to all phases of the fire suppression effort, including fireline construction, mop-up, logistics (campsites), aviation, and fireline rehabilitation.

Examples of the use of the MIST concept could include: selecting the use of engines over dozers; using hose-lays instead of constructing handline; and the use of natural barriers for control lines. The National Wildfire Coordinating Group has published MIST guidelines for agency use and consideration.

3.3.10 Wild Horses

The Saylor Creek Herd Management Area (HMA) is located in the northern portion of the planning area, approximately 15 miles south of Glenns Ferry. Landownership consists of approximately 95,000 acres of BLM-managed lands (102,000 including all ownership types, Table 3-47). The HMA contains portions of eight livestock grazing allotments, which are divided into 10 pastures (Table 3-48).

Table 3-47. Land Status within the Saylor Creek Herd Management Area

Land Status	Acres
Bureau of Land Management	95,000[A]
Private	1,000
State Endowment Land	6,000
Total	**102,000**

[A] Includes Bureau of Reclamation

Table 3-48. Allotments within the Saylor Creek Herd Management Area

Allotment Name	Total Acres	Acres within HMA	Acres not in HMA
Black Mesa	12,000	10,000	2,000
Blue Butte	11,000	11,000	0
Dove Springs	9,000	9,000	0
Grindstone	7,000	7,000	0
Halejujah	8,000	1,000	7,000
Saylor Creek/ North Three Island	22,000	12,000	10,000

Allotment Name	Total Acres	Acres within HMA	Acres not in HMA
Thompson	23,000	13,000	10,000
Twin Buttes	51,000	37,000	12,000
Total	**143,000**	**102,000**	**41,000**

The Saylor Creek HMA was established pursuant to the Wild Free Roaming Horse and Burro Act. Prior to passage of the Wild Free Roaming Horse and Burro Act, small bands of horses were present in the vicinity of Dove Springs and the Sailor Creek seep, as well as the upland benches along the Snake River. The foundation for the herd is believed to have come from mares captured near Challis, Idaho (the present Challis HMA), and transported into the Saylor Creek area in the early 1960s. A registered stud was then purchased and turned out with the mares. Until the passage of the Wild Free Roaming Horse and Burro Act, private individuals would capture as many colts as possible in annual roundups.

BLM-sanctioned horse gathers and removals occurred in the fall of 1982 and again in the fall of 1989 to bring herd numbers to Appropriate Management Levels.

Over the past two decades, increased human activities associated with private lands and motorized recreation in the northeastern portion of the HMA has resulted in avoidance of portions of the HMA by wild horses. The horses have developed a strong affinity to preferred areas, or home ranges, within the Twin Butte and Dove Springs Allotments. Within the West Pasture of the Twin Butte Allotment, the horses spend the majority of their time in one of two favored areas that make up their home range. The horses will venture into other areas of the pasture but will retreat back to favored areas to avoid human contact.

Constant human presence associated with the development of private agricultural lands and some conversion of public lands to private land beginning in the 1960s slowly eliminated access to natural water at the Snake River, resulting in the herd's total dependence on developed livestock water systems. There are no naturally occurring perennial water sources (e.g., streams, springs) in the HMA. One ephemeral stream, Sailor Creek, carries water a few days each year during spring runoff, but the flow is inconsistent between years because it is dependent on winter and spring precipitation. Wild horses rely solely on pipeline systems installed to facilitate livestock management and support the horse herd. Currently, the HMA has four water pipeline systems consisting of 93 miles of pipeline and 69 troughs providing water to livestock and the wild horse herd. All pipelines are supplied by drilled wells. Because of the lack of naturally occurring water in the HMA, maintenance of the artificial water systems is critical. These maintenance duties are shared by permittees and the BLM, and a successful working relationship exists to ensure wild horses always have sufficient water available. When domestic livestock are present on allotments within the HMA, permittees assume the primary responsibility of daily operations and maintenance. During these periods, BLM continues inspections of pipelines and troughs but at a lower frequency. When livestock are not present on allotments, the BLM assumes responsibility for the daily operations and maintenance.

Currently there are approximately 126 miles of permanent fence within the HMA. The majority of these are HMA perimeter, allotment, or pasture division fences. Fences are also used for livestock holding areas and to exclude both livestock and wild horses from study areas, or wells and pump houses. Temporary fences have been constructed at various times to exclude both livestock and wild horses from burned areas while they recover. Because the wild horses tend to use favored areas within two allotments, the use of temporary fences in the remainder of the HMA have been used exclusively to exclude livestock from recovering burned areas. Temporary fences have been used in home ranges to exclude wild horses from burned areas. The fences have stayed in place for two to four years while burned areas recovered and then have been removed.

The climate within the HMA is hot and dry in the summer, and relatively mild during the winter months, with a few days of persistent snow accumulation that limit access to forage. Over the life of the 1987 RMP, changes to vegetation due to range improvement projects designed to increase forage production for livestock grazing, wildland fire creating more grasslands, and rehabilitation projects in burned areas, forage production has increased. Vegetation within the HMA is predominately grasslands consisting of

the following vegetation sub-groups: Non-Native Perennial (51%), Native Grassland (32%), and Native Shrubland (15%).

Wild horses consume the same amount of forage as cattle, approximately one animal unit month (AUM) per month.[5] Because the wild horse herd is present in the HMA year-round, adequate forage must be available year-round as well. Rangeland health of the HMA is important to long-term sustainability of forage available to the wild horse herd. Providing for rangeland health within the HMA may mean modifying livestock grazing-specific use periods (seasons and lengths of stay), utilization levels, and periods of rest or deferment, or reduction in horse numbers, as there is limited to no opportunity to control the timing, seasons of use, or levels of utilization by wild horses.

In July 2005, five wildland fires occurred within the HMA, burning approximately 41,000 acres, or 40%, of the HMA. The largest, the Clover Fire, burned approximately 192,000 acres across the planning area, including a large portion of the horses' home range within the HMA. An emergency gather resulted in 334 horses captured, with 12 remaining in unburned portions of the HMA. In February 2006, 93 horses, including 30 studs, 33 mares, and 30 yearlings, were returned to the HMA. Approximately 20 studs were released into the Grindstone Allotment. Half of the remaining 73 animals were released in the Twin Butte Allotment and the other half into the Thompson and Black Mesa Allotments. Prior to their release in 2006, 31 of the 33 released mares were treated with a single application of the two-year contraceptive vaccine *Porcine zona pellucida* (PZP). Within approximately one year, the studs had breached the allotment division fence between the Grindstone and Thompson Allotments and joined the herd in the Thompson and Black Mesa Allotments. Early in 2007, the majority of the wild horses in the Thompson and Black Mesa Allotments (all but five horses) breached the allotment division fence and joined the horse herd in the home range of the West Pasture of the Twin Butte Allotment.

A 2009 census estimated that the population of wild horses grew from the 105 horses (93 returned and 12 remaining on the HMA) in 2006 to 168. Between 2006 and 2010 the wild horse herd had an average annual growth rate of 18%.

From June through August 2010, four wildland fires burned approximately 57,000 acres, or 56%, of the Saylor Creek HMA and almost 100% of the horses' home range. The Long Butte Fire was the largest, burning approximately 307,000 acres within the planning area. A total of 194 wild horses were removed from the HMA through a post-fire emergency gather, with five uncaptured horses remaining in unburned portions of the HMA.

In September 2011, 30 horses were released back to the western half of the West Pasture within the HMA. The released horses included 13 mares and 17 studs (matching the pre-gather ratio of 43% females and 57% males), which ranged in age from 1 to 13 years old. In June 2012, the horses passed through an open gate in the temporary protection fence and entered the eastern half of the West Pasture.

In July 2012, the Kinyon Road Fire burned approximately 211,000 acres; 34,000 of which were in the HMA, including portions of the West Pasture where horses were released in September 2011. However, because the horses had moved to the eastern portion of the West Pasture prior to the wildland fire they were not threatened.

BLM regulations direct that wild horses be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat (43 CFR 4700.0-6[a]). Self-sustaining refers to the process whereby established populations are able to persist and successfully produce viable offspring. The absolute size a population must attain to achieve a self-sustaining condition varies based on the demographic and sociological features of the herd and adjoining herds and should be evaluated on a case-by-case basis. In many cases, it is not necessary that populations be isolated genetic units, but both naturally-occurring and management-induced mixing (introduction or removal of individuals) can be

[5] Based on the average weight of wild horses in accordance with BLM Handbook H-4700-1; domestic horses consume 1.25 AUMs per month.

considered in order to maintain sufficient genetic diversity within these populations (Coates-Markle, 2000). The Saylor Creek HMA does not have any adjoining HMAs to allow for natural mixing of genetic material. As a result, genetic diversity must be aided through herd management. Coates-Markle discusses multiple options for consideration to ensure genetic diversity is maintained in a population, such as:

- Altering population age structure through removals to promote higher numbers of reproductively successful animals,
- Altering breeding sex ratios through removals to encourage a more even participation of breeding males and females,
- Increasing generation intervals and reducing the rate of loss of genetic material by removing or using contraception on younger mares, and
- Periodically introducing breeding females from other genetically similar herds to help in conservation efforts.

In this last scenario, only one or two breeding animals per generation (approximately 10 years) would need to be introduced in order to maintain the genetic resources in small populations of less than 200 animals (Coates-Markle, 2000).

Genetic testing of the Saylor Creek herd was completed following the 2010 emergency gather. Test results show strong genetic viability and no evidence to indicate the Saylor Creek horses suffer from reduced genetic fitness.

3.3.11 Paleontological Resources

Paleontological resources, or fossils, constitute a fragile and non-renewable scientific record of the history of life on earth and represent an important and critical component of America's natural heritage. BLM manages paleontological resources for their scientific, educational, and recreational values, to mitigate adverse effects as necessary, and to vigorously pursue the protection of fossil resources from theft, destruction, and other illegal or unauthorized uses (BLM Manual 8270). Permits for the collection and study of fossil resources from public lands are issued to qualified applicants under the Paleontological Resources Preservation Act (Public Law 111-11, Subtitle D).

The term fossil refers to the remains or traces of an organism preserved by natural forces in the earth's crust. It does not include what are commonly known as fossil fuels such as coal, oil and gas, bitumen, lignite, or tar sands. Fossils are integrally associated with specific geologic formations and may occur throughout those formations. For this reason, the condition of paleontological resources is directly linked to soil and landform stability.

Paleontological resources within the planning area are overwhelmingly associated with the Glenns Ferry Formation, a geologic unit composed of poorly consolidated lake and stream deposits, inter-bedded by occasional basalt flows and volcanic ash. The Glenns Ferry Formation was deposited between the Pliocene and early Pleistocene Epochs and dates from approximately 5 million to 1.5 million years ago. The primary fossil-bearing deposits date to the Blancan land mammal age and range between three and four million years old, although some materials may be assigned to the earlier Chalk Hills Formation and the Hemphillian land mammal age of the Late Miocene Epoch. Hemphillian fauna lived between nine and five million years ago.

A variety of fossilized vertebrate and invertebrate species have been identified within the planning area. These include mastodon, camel, horse, llama, giant ground sloth, rhinoceros, sabre-tooth cat, many smaller mammals, suckers, minnows and other fish, as well as snails and other freshwater mollusks. Plant fossils, represented primarily by petrified wood fragments, are less common but have been found at a few locations. Fossil localities have been recorded across the northern portion of the planning area, from the Bruneau River to Hagerman and from the Snake River as far south as Notch Butte in northeast Owyhee County.

The 1987 Jarbidge RMP identified several areas where paleontological resources were concentrated and deserving of special protection. Two of these areas, the Hagerman Fossil Beds and the Sand Point area near Hammett, have been recognized since the early 20th century as nationally important paleontological sites and were designated as Areas of Critical Environmental Concern (ACECs) in the 1987 Jarbidge RMP with the primary objective of protecting the fossil deposits. The Hagerman Fossil Beds were originally designated a National Natural Landmark in 1975. In 1988, the Hagerman Fossil Beds ACEC was designated a National Monument and was transferred to the National Park Service. BLM-managed lands are located along the northern and southern borders of the Monument. The Sand Point ACEC, at the time it was established, was adversely affected by grazing, private collecting, motorized recreational use, illegal digging, mining, and other activities (BLM, 1988). Vehicular access restrictions and construction of a fence across the southern boundary have reduced the level of surface disturbance attributable to livestock and human activities in the ACEC since the mid-1990s.

No large-scale, systematic paleontological inventories have been conducted within the planning area. Still, approximately 200 fossil localities are recorded on BLM-managed lands within the planning area. Because paleontological resources are closely tied to particular sedimentary geologic units, the probability of finding fossils can be broadly predicted from the geologic units present at or near the ground surface. Therefore, in the absence of large-scale paleontological inventories, geologic mapping can be used to assess the potential occurrence of fossils. For planning purposes, the BLM employs the Potential Fossil Yield Classification (PFYC) system, which classifies geologic units based on their relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils as well as their sensitivity to adverse impacts (BLM IM 2008-009). For the planning area, fossil-bearing geologic units were classified according to the guidance provided in Instruction Memorandum (IM) No. 2008-009 and the recommendations of professional paleontologists who possess extensive experience with the paleontology and geology of Idaho (Winterfeld and Rapp, 2009). In this five-tier classification system, PFYC Class 1 areas have very low potential for paleontological resources and PFYC Class 5 areas have very high potential.

- PFYC Class 1 units are igneous or metamorphic in origin and have a very low potential for paleontological resources. These units include the vast rhyolite and basalt lava flows that account for almost 83% (1,137,000 acres) of the planning area.
- PFYC Class 2 units are composed of sedimentary deposits that are not likely to bear fossils. Locally, they consist of ancient metamorphosed limestone outcrops in the extreme southwestern portion of the planning area (Bushnell, 1967) where they comprise less than 1% (2,000 acres) of the ground surface of the planning area.
- PFYC Class 3 units consist of fossiliferous sedimentary formations where fossil content varies in importance, abundance, and occurrence. In the planning area, Class 3 units are composed of Late Pliocene and Pleistocene gravels covering approximately 8% (113,000 acres) of the ground surface. While these units are known to contain widely scattered vertebrate and invertebrate fossils, the number of known localities is low and the potential for project impacts to the integrity of an important fossil locality, though greater than in PFYC Class 1 and 2 units, is also relatively low.
- PFYC Class 4 units are sedimentary deposits with a high occurrence of important fossils. Class 4 units for south-central Idaho are restricted to stratified cave deposits containing the remains of extinct Pleistocene fauna (Winterfeld and Rapp, 2009). No Class 4 units are currently recorded within the planning area.
- PFYC Class 5 units are highly fossiliferous geologic formations that consistently and predictably produce vertebrate or scientifically important invertebrate or plant fossils. In the planning area, both the Glenns Ferry and Chalk Hills formations are assigned to Class 5. These Miocene and Pliocene lake bed sediments comprise approximately 9% (121,000 acres) of the ground surface in the northern portion of the planning area and account for the majority of known fossil localities.

3.3.12 Cultural Resources

Cultural resources consist of locations of human activity, occupation, or use identified through field inventory, historic documentation, or oral evidence. The term includes archaeological, historic, and architectural properties and sites or places of traditional cultural or religious importance to Native

American tribes or other social or cultural groups. The BLM manages cultural resources under its jurisdiction or control according to their relative importance. Management objectives include protecting against impairment, destruction, and inadvertent loss, while accommodating uses determined appropriate through consultation and planning. Primary direction for management of cultural resources on public lands is derived from the National Historic Preservation Act, the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, Executive Order 13007-Indian Sacred Sites, and BLM's 8100 Manual Series.

Since the late 1950s, hundreds of cultural resource inventories have been conducted in the planning area, ranging from large-scale inventories for Emergency Stabilization and Burned Area Rehabilitation activities following wildland fires to small-scale surveys for such things as livestock water systems, fences, rights-of-way, and land use permits. Not all inventories were associated with surface-disturbing projects; a few studies have also been conducted for planning purposes and for scientific research, including the Class II Cultural Resource Inventory of the Boise District, BLM (Young, 1984) which formed the basis for some of the cultural resource management actions in the 1987 Jarbidge RMP. As of January 2012, approximately 29% of the planning area has been inventoried at the Cultural Resource Class III level, the most intensive survey level. As a result, approximately 5,800 cultural resources have been recorded. These represent a wide variety of site types and chronological periods. Approximately 73% of the recorded resources are prehistoric sites (i.e., Native American sites that predate European contact), 23% are historic sites (i.e., post-contact Native American, Euro-American, Chinese, or Basque sites up through World War II), and 4% contain both prehistoric and historic components. Together, these resources document an almost continuous record of human occupation in the planning area for the past 12,000 years. An additional 13,900 unrecorded cultural resources are estimated to be present within the planning area.

Lithic scatters are the most common type of prehistoric site found in the planning area. These sites contain stone tools and/or stone flakes produced during the manufacture or maintenance of stone tools and may represent short-term hunting camps, tool manufacturing or repair locations, or butchering sites. Other prehistoric site types include streamside camps, cave and rock shelter camps, hunting blinds, rock alignments and cairns, vision quest sites, tool-stone quarries, fishing locations, ceremonial sites, burials, and rock art sites.

Most of the historic sites in the planning area are related to the early livestock industry (ca. 1880 to World War II) and are represented by cow and sheep camps, herders' monuments, rock fences and corrals, and a few abandoned line shacks. Other historic sites include failed homesteads, trash dumps, irrigation ditches, miners' cabins, and transportation systems. The latter category includes the nationally significant Oregon Trail (see the *National Historic Trails* section) and regionally significant portions of the Kelton and Toana[6] Freight Roads. Intact segments of these three wagon roads have been determined eligible for listing or are listed in the National Register of Historic Places.

One category of cultural resources that may or may not contain artifacts or other physical remains is the traditional cultural property. These places may be eligible for inclusion in the National Register of Historic Places because of their association with a living community's cultural practices or beliefs rooted in the community's history. Traditional cultural properties play an important role in maintaining the continuing cultural identity of the community and are identified through scoping and consultation rather than field inventory. Examples of traditional cultural properties include locations where Native Americans have historically gone to perform ceremonial activities in accordance with traditional cultural rules of practice or a location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historical identity (Parker and King, 1998). In the planning area, contemporary members of the Shoshone-Paiute Tribes and the Shoshone-Bannock Tribes maintain cultural ties to the

[6] There are several spellings for this word within the region, including "Tuana" and "Tuanna." Place names established on US Geological Survey quad maps have not been changed in this document, with the exception of the Toana Freight Road, which is the spelling used in the National Register listing.

land and resources, although places of importance to traditional ranching and farming communities may also be considered traditional cultural properties.

Based on an analysis of the site documentation that occurred during initial site recording, approximately 55% of sites in the planning area were in good or excellent condition when discovered, 31% were in fair condition, and 14% were in poor condition.[7] The condition of cultural resources in the planning area varies with terrain, access, and visibility, as well as past and current land use patterns. Because cultural resources are often exposed on the earth's surface, they are subject to natural and human forces that can damage their integrity. Natural forces such as erosion, animal burrowing, wildland fire and post-fire exposure, deterioration, and decay have affected and will continue to affect cultural resources to varying degrees. Human actions and decisions, past and present, including public land disposals, concentrated livestock use in riparian settings, construction projects, cross-country motorized vehicle use, unauthorized artifact collecting, looting, and other inadvertent and purposeful human damage, are also known to have impacted sites in the planning area. The BLM, through the planning process, has much more control over the quantity and degree of future human-related, versus natural, impacts to cultural resources.

To aid in the evaluation of alternatives, BLM developed a model to characterize the relative density and distribution of cultural resources in the planning area. The model combines the results of two previous archaeological studies, a large-scale sample survey of the southern half of the planning area (Young, 1984) and a synthesis of 11 burned-area rehabilitation inventories conducted between 1994 and 1996 (Fawcett, 1997), and augments those findings with data from more recent inventories. These studies indicate that elevation and proximity to water are reliable indicators of archaeological site density. Site density is highest at elevations above 5,000 feet and lowest below 3,500 feet. Density is characterized as moderate between 3,500 and 5,000 feet. Within these elevation areas, sites cluster near water and prominent topographic features.

3.3.13 Visual Resources

The planning area is known for its unique geology of broad, gently rolling plateau lands with deeply incised rivers, which provide a variety of scenic values. Water availability influences the distribution of plant communities and is based on the rain shadow effect, distribution of soil types, slope, and aspect. Dry lowland areas in the north support salt desert shrub communities, which change to sagebrush steppe with increasing elevation and moisture in the south. At higher elevations in the south, juniper, aspen, and mountain mahogany are present. A few areas contain limber pine and subalpine fir. Surface water is generally limited to scattered perennial springs and creeks. Creeks are typically located in the deeper draws and canyons.

The BLM designed the visual resource management system to help identify visual values and minimize visual impacts to the landscape character of public lands. In order to fulfill these requirements, an interdisciplinary team conducted a visual resource inventory (VRI) of the planning area between October 2007 and March 2008 (BLM, 2008d).

The VRI process has three steps: a scenic quality rating, a sensitivity rating, and a distance zone analysis. Scenic quality is a measure of the visual appeal of a tract of land. In the VRI process, public lands are given an A, B, or C rating based on the apparent scenic quality, which is determined using seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modification. Areas with the most visual appeal are rated A, while areas with the least visual appeal are rated C. In the planning area, areas rated as A typically contained changes in topography, deeply incised canyons, unique geologic features such as hoodoos, and native vegetation communities that provided a variety of vegetation species. Areas rated as B typically contained slight changes of topography and some variation

[7] These are qualitative assessments made by a variety of researchers over a number of years. Data collection during site recording includes a summary assessment of site condition, an estimate of the percentage of the site area that is disturbed, and identification of the impacting agents. The following criteria, taken from the Intermountain Antiquities Computer System User's Guide (University of Utah et al., 1990), define the condition classes: excellent = virtually undisturbed, good = 75% undisturbed, fair = 50-75% undisturbed, and poor = more than 50% disturbed.

in vegetation species. Areas rated as C typically contained no change in topography and very few vegetation species. During the VRI, scenic quality rating A was given to 155,000 acres, scenic quality rating B was given to 158,000 acres, and scenic quality rating C was given to 1,058,000 acres. Map 148 displays the Scenic Quality Rating Results.

Sensitivity levels are a measure of the public concern for scenic quality. During the sensitivity rating, public lands are assigned high, medium, or low sensitivity by analyzing six indicators of public concern: type of user, amount of use, public interest, adjacent land uses, special areas, and other factors. During the VRI, a high sensitivity rating was given to 120,000 acres, a medium sensitivity rating was given to 150,000 acres, and a low sensitivity rating was given to 1,101,000 acres in the planning area. Map 149 displays the Sensitivity Rating Results.

A distance zone analysis was conducted by selecting the base routes and rivers with recreational use as travel routes and performing a viewshed analysis, which identifies areas that can be seen from one or more observation points or lines. According to the distance zone analysis, 626,000 acres were assigned to the for Foreground-Middleground Zone, 261,000 acres were assigned to the Background Zone, and 484,000 acres were assigned to the Seldom Seen Zone. Map 150 displays the Distance Zone Analysis.

The result of the inventory process is the assignment of VRI Classes. VRI Class I is assigned to areas where a management decision has been made previously to maintain a natural landscape. This includes areas such as Wilderness Areas, Wild and Scenic Rivers with a scenic outstandingly remarkable value, and other Congressionally and administratively designated areas where decisions have been made to preserve a natural landscape. Classes II, III, and IV are assigned based on a combination of scenic quality, sensitivity level, and distance zones by combining overlays for these factors generated through the inventory process.

After overlaying the scenic quality, sensitivity, and distance zone maps and applying the criteria for assigning VRI Classes, 71,000 BLM-managed acres were identified as VRI Class I, 90,000 acres as VRI Class II, 51,000 acres as VRI Class III, and 1,159,000 acres as VRI Class IV. Map 40 displays the results of the VRI.

3.3.14 Lands with Wilderness Characteristics

Consistent with Section 201 of Federal Land Policy and Management Act of 1976, which requires the Secretary of the Interior to “prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values,” and policy and guidance contained in BLM Manual 6310 Conducting Wilderness Characteristics Inventory on BLM Lands, BLM Manual 6320 Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process, and BLM Handbook H-1601-1 Land Use Planning, the BLM evaluated and identified BLM-managed Lands with Wilderness Characteristics. This inventory did not address Wilderness Areas designated by Congress or Wilderness Study Areas (WSAs) pending before Congress.

Wilderness characteristics are features of the land associated with the concept of wilderness, including naturalness and outstanding opportunities for solitude or primitive and unconfined types of recreation. Areas have a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable. Assessing an area for naturalness includes examining the area for attributes such as the presence or absence of roads and trails, fences, and other infrastructure; the nature and extent of landscape modifications; the presence of native vegetation communities; and the connectivity of habitats.

Areas have outstanding opportunities for solitude or primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent; where visitors can be isolated, alone, or secluded from others; where the use of the area is through non-motorized, non-mechanical means; and where no or minimal developed recreation facilities are encountered.

Areas evaluated for wilderness characteristics satisfy the required size criteria by meeting one of the following situations and circumstances:

- Roadless areas with over 5,000 acres of contiguous BLM lands. State or private lands are not included in making acreage determinations.
- Roadless areas of less than 5,000 acres of contiguous BLM lands where any one of the following apply:
  - They are contiguous with lands which have been formally determined to have wilderness or potential wilderness values (e.g., designated wilderness or WSAs).
  - The area is of sufficient size to make practicable its preservation and use in an unimpaired condition.
  - Any roadless island of the public lands.

These areas were evaluated for the presence of naturalness and outstanding opportunities for solitude or primitive and unconfined types of recreation (BLM, 2012c). Eighteen areas outside wilderness and the existing WSA were identified as having wilderness characteristics (Table 3-49; Map 49).

Table 3-49. Lands with Wilderness Characteristics (Acres)

Area Name	Size
Antelope Canyon[A]	20
Antelope Pocket 1[A]	4,000
Antelope Pocket 2[A]	2,000
Black Canyon 2011	17,000
Browns Bench	9,000
China Creek	5,000
Columbet Table[A]	200
Crater Hole[A]	2,000
East Fork Jarbidge	6,000
Hole in the Ground	16,000
Indian Hot Springs[A]	1,000
Inside Lakes	5,000
Larios Camp[A]	400
Long Draw	27,000
Roberson Trail[A]	4,000
Sheepshead[A]	2,000
Twin Lakes[A]	3,000
Winter Camp[A]	900
Total	**104,000**

[A] Contiguous with Wilderness

3.4 RESOURCE USES

The Federal Land Policy and Management Act of 1976 (FLPMA) directs that in addition to managing the public lands "in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; (and) that will provide food and habitat for fish and wildlife" (Sec. 102[8]), the public lands will be managed in a manner that will "provide food and habitat for…domestic animals; and that will provide for outdoor recreation and human occupancy and use" (Sec. 102[8]) and "in a manner which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands" (Sec. 102[12]). In addition, FLPMA identifies the "principal or major uses" of public lands as "domestic livestock grazing, fish and wildlife development and utilization, mineral exploration and production, rights-of-way, outdoor recreation, and timber production" (Sec. 103[l]).

As such, the BLM manages public lands for a variety of resource uses. Resource uses occurring in the planning area are discussed in this section.

3.4.1 Livestock Grazing

The planning area is divided into 93 grazing allotments on 1,371,000 acres of BLM-managed lands with 64 permit holders (permittees). Additionally, livestock grazing on 92,000 acres of military withdrawal lands is managed by the BLM in accordance with Public Land Order (PLO) 1027 as amended by PLO 4902. Salmon Falls Creek Canyon was identified in the 1987 Jarbidge RMP as unavailable to livestock grazing.

The Bruneau and Jarbidge Canyons are not contained within grazing allotments administered by the Jarbidge Field Office. However, portions of the planning area within the Bruneau River Canyon are currently being grazed within the Bruneau Canyon Allotment administered by the Bruneau Field Office, Boise District. Future management of lands administered by the Jarbidge Field Office will be resolved following appropriate administrative processes (43 CFR 4130) and will comply with direction of the Jarbidge RMP.

Permits or leases are issued to authorize use on BLM-managed lands available for livestock grazing. Grazing permits describe terms and conditions for annual grazing use to achieve management and resource objectives. Mandatory terms and conditions include the allotment(s) to be used, the period-of-use (dates), number and kind of livestock, and the level of allowed grazing use in animal unit months (AUMs). Allowable use includes both active and suspended AUMs. Active-use AUMs are those available for grazing use. Suspended-use AUMs are generally on permits as a result of past reductions in grazing use and are not available for use until a grazing decision and supporting National Environmental Policy Act of 1969 (NEPA) documentation is issued by the BLM authorized officer. Other terms and conditions may include, but are not limited to, locations of supplements, provisions for temporary delay in grazing use, and management methods to use to achieve objectives (43 CFR 4130.3). Permits generally cover a 10-year period and are renewable if the BLM determines the terms and conditions of the expiring permit are being met.

Permit holders may submit grazing applications to make annual adjustments in grazing use within the terms and conditions of the grazing permit. Annual applications allow permittees to apply for adjustments in annual grazing use within the terms and conditions of the grazing permit. The amount of grazing that occurs each year can be affected by such factors as drought, wildland fire, and market conditions. A bill is issued to the permittee specific to the amount of grazing use authorized for that season.

Currently, approximately 189,000 AUMs of active use are authorized on the allotments within the planning area (Appendix J), including 12,154 AUMs in the US Air Force Saylor Creek Training Range; 96% of the AUMs are allocated to cattle, 4% to domestic sheep, and less than 1% to domestic horses. Interim grazing measures pursuant to stipulated settlement agreements (SSAs) govern 112,620 of these AUMs. Interim measures vary by agreement but generally affect seasons-of-use, utilization limits, and stocking rates to address special status species habitat requirements. The interim measures are to be in effect until the grazing permits could be reissued under updated environmental analysis.

In addition to permitted AUMs, approximately 17,000 AUMs of non-renewable use can be issued annually in 18 allotments in accordance with 43 CFR 4130.6-2 and the authority of Department of the Interior (DOI) appropriations acts.[8] The 11 allotments under SSAs signed in 2010 and 2011 (CV-04-181-S-BLW [Docket 400 and 420]), the 17 allotments under the 2011 Federal District Court Order (CV-04-181-S-BLW [Docket 505]), and the two allotments under the 2003 SSA (CV-02-521-S-MHW) are only allowed active use as described in the interim measures. Authorized active use AUMs for these allotments are summarized in Table 3-50 (see Appendix J for additional detail).

Table 3-50. Animal Unit Months Authorized in the Planning Area

Legal Obligation	Number of Allotments	Current Permits (AUMs)	Nonrenewable Authorizations (AUMs)
2003 SSA for CV-02-521-S-MHW (Judge Williams)	2	27,888	0
2010/2011 SSA for CV-04-181-S-BLW (Judge Winmill)	11	20,231	0
2011 Order CV-04-181-S-BLW (Judge Winmill)	17	64,501	0
Non-Renewable Grazing Permits under DOI Appropriations Acts	18	27,320	17,071
Other Allotments	45	48,862	0
Total	**93**	**188,802**	**17,071**

Over the life of the 1987 Jarbidge RMP, changes to vegetation due to range improvement projects designed to increase forage production for livestock grazing, wildland fire creating more grasslands, and rehabilitation projects in burned areas, forage production has increased (see *Upland Vegetation* section for changes to vegetation). To take advantage of the increased availability of forage in the planning area, permittees requested temporary non-renewable (TNR) permits that would authorize additional AUMs when forage was available and resource objectives could be maintained or achieved (CFR 4130.6-1). Between the periods of 1998 to 2002, as much as 47,459 AUMs were authorized in 22 allotments under TNR permits. Following the 2004 Federal District Court Order (CV-04-181-S-BLW) the Jarbidge Field Office was enjoined from issuing TNR permits until an updated environmental analysis could be completed. A subsequent Congressional rider compelled BLM to authorize TNR permits consistent with the most recently expired TNR permit between March 1, 1997 and February 28, 2003. The rider was updated annually until 2008 when the language was modified to remain in effect until the grazing permits were renewed. The new rider language also changed the effective dates to include all TNR permits issued since March 1, 1997, to present, rather than limiting the period to 2003. The parameters of the rider could allow approximately 17,700 AUMs to be authorized in TNR permits. Between the years 2002 and 2011, TNR permits averaged 10,200 AUMs (Appendix J).

Actual use (grazing use that actually occurred) has varied annually based on factors such as forage production, resource conditions, wildland fire, court decisions, and individual livestock grazing operations. Actual grazing use since the 1987 Jarbidge RMP has been as high as approximately 217,000 AUMs in 1997 and as low as approximately 109,000 AUMs in 1988. Between 2002 and 2011, the average actual use was approximately 173,000 AUMs.

Livestock grazing occurs within the planning area yearlong. Generally, the lower elevation rangeland of the northern third of the planning area is grazed in the fall, winter, and spring. The higher elevation

[8] This rider appears in the following: section 142 of Public Law (PL) 108-108 (Fiscal Year [FY] 2004); section 132 of PL 108-447 (FY 2005); section 123 of PL 109-54 (FY 2006); and section 116 of PL 110-161 (FY 2008). In FY 2005 and 2008, the section was contained in a consolidated appropriations act.

rangeland in the middle third is grazed in the spring, summer, and fall, and the high elevation rangeland in the southern third are grazed primarily in the summer and fall.

Rangeland Health

The 1995 Grazing Regulations provided for the Fundamentals of Rangeland Health and development of standards and guidelines for livestock grazing. The regulations authorized the BLM to establish Resource Advisory Councils and to consult with them to develop standards for rangeland health in local areas. Regulation requires the authorized officer to take action upon determining that current livestock grazing is a significant causal factor for failing to achieve land health standards. Bureau policy is to assess and evaluate a defined area (usually watersheds or allotments) to ascertain if current conditions meet standards, and if not, to determine the causal factor(s). In 1996, Idaho BLM developed standards in consultation with its Resource Advisory Council. The Standards for Rangeland Health and Guidelines for Livestock Management for rangeland health, as applied in the State of Idaho, are to be used as BLM management goals for the betterment of the environment, protection of cultural resources, and sustained productivity of the range. They were developed with the specific intent of allowing for multiple uses of the public lands.

Assessments of rangeland health have been completed on 43 of the 93 allotments, approximately 61% of the acreage in the planning area, between 1998 and 2003. Table 3-51 summarizes the determinations as to whether the allotments are meeting or making progress toward meeting the Standards for Rangeland Health. These determinations apply only to the allotments assessed.

Table 3-51. Status of Allotments in Meeting the Standards for Rangeland Health

Description	Number of Allotments	Number of Acres
Allotments meeting all standards or making significant progress toward meeting the standard.	1	36,800
Allotments not meeting all standards or making significant progress toward meeting the standards, and current livestock use is a significant causal factor.	28	608,351
Allotments not meeting all standards or making significant progress toward meeting the standards due to causes other than livestock grazing.	14	194,272
Total	**43**	**839,423**

Range Infrastructure

Effective management of livestock grazing is dependent on the use of infrastructure to meet resource objectives. Range improvements include specialized treatments and infrastructure used to improve range resources or their use by grazing animals (Vallentine, 1989). Infrastructure such as water developments and fences provide a means to control livestock movement and the timing and duration of grazing periods. The planning area contains pipelines supplied by creeks, springs, and wells that provide water for livestock. In addition to providing water for livestock, some pipeline systems distribute water used for wildland fire suppression and serve as a source of water for wildlife and the only source of water for wild horses. Reservoirs for water storage on pipeline systems and stock ponds for livestock watering were developed by constructing low earthen dams and excavating pits in playas. Vegetation treatments that improve forage availability, such as non-native perennial seedings, are addressed in the *Upland Vegetation* section. Table 3-52 shows the range infrastructure currently in the planning area.

Table 3-52. Types and Approximate Amount of Existing Range Infrastructure

Type of Range Infrastructure	Amount
Cattleguards	130
Fences (miles)	2,000
Reservoirs and Stock Ponds	100

Type of Range Infrastructure	Amount
Spring Developments	25
Pipelines (miles)	900
Wells	15
Corrals	25
Cow Camps	5

3.4.2 Recreation

Public lands in the planning area provide opportunities for a variety of outdoor recreation and related benefits with most users participating in dispersed recreation, either individually or in small groups. Many of these visitors view public lands as respite from their day-to-day routines and as places for individual challenge and exploration, along with social development and an appreciation for the natural world.

The BLM accounts for different types of recreation use through the Recreation Management Information System. It measures participation in 65 types of recreation activities and calculates increases or decreases in use for:

- Recreation sites,
- Dispersed use areas,
- Special Recreation Permits (SRPs), and
- Road, trail, river, or special designation area segments.

Recreation Management Information System data sources can include information from fee envelopes, traffic or trail counter data, self-registration forms, use reports from recreation permittees, or, as is largely the case in the planning area, observations and professional judgment. During Fiscal Years 1999 to 2011, the planning area averaged 48,000 visits a year (BLM, 2012b).

Recreation Management Areas

BLM-managed public lands are allocated to recreation management areas based on: recreation demand and issues, recreation setting characteristics, resolving use/user conflicts, compatibility with other resource uses, and resource protection needs. Areas are allocated to two types of administrative units, Special Recreation Management Areas (SRMAs) and Extensive Recreation Management Areas (ERMAs).

The SRMA is an administrative unit where unique and distinctive recreation values are identified and are managed to enhance an existing or proposed targeted set of activities, experiences, benefits, and recreation setting characteristics. Within a SMRA, recreation resources and use management is recognized as the predominant planning focus, where specific recreation opportunities and recreation setting characteristics are managed and protected on a long-term basis.

The ERMA is an administrative unit that recognizes existing recreation use, demand, or program investments and is managed to sustain principal recreation activities and associated qualities and conditions of the ERMA. Management of ERMAs is commensurate with the management of other resources and resource uses.

The policy to specifically identify areas not managed for recreation results from direction contained in BLM Manual 8320*,* Recreation and Visitor Services Land Use Planning Guidance. These areas essentially replace the custodial level of management assigned previously to the ERMA designation. Custodial management is reactive to problems and issues that arise, as opposed to proactively providing opportunities and directly managing the recreation resource. As these areas are not specifically managed for recreation, desired objectives for settings and targeted activities, benefits and outcomes are not identified or managed for.

Five SRMAs are identified in the 1987 Jarbidge RMP (Table 3-53).

Table 3-53. Special Recreation Management Areas Identified in the 1987 Jarbidge RMP

SRMA	Acres	Type of Opportunity	Setting
Bruneau-Jarbidge	57,000	Whitewater boating, fishing, hunting, viewing wildlife and natural scenery, primitive camping	Opportunities for isolation from man-made sights and sounds in a natural environment. Visitors use outdoor skills and have minimal contact with other users or groups.
Jarbidge Forks	4,320	Rafting, fishing, camping, picnicking, viewing wildlife and natural scenery	The landscape is generally natural with modifications moderately evident. Concentration of users is low to moderate and there are opportunities for both motorized and non-motorized activities.
Oregon Trail	16,384	Hiking, viewing wildlife and natural scenery, educational activities	Some opportunities for isolation from man-made sights and sounds in a predominantly unmodified environment. Concentration of visitors is low, but evidence of other area users is present.
Hagerman-Owsley Bridge	2,680	OHV riding	The landscape is generally natural with modifications moderately evident. The concentration of users is often moderate to high. Predominately motorized activities with moderate challenge and risk.
Salmon Falls Creek	5,600	Fishing, camping, water sports, hunting, boating, equestrian, hiking, OHV riding	The landscape is generally natural with modifications moderately evident. Concentration of users is low to moderate, but facilities for group activities may be present. Opportunities for both motorized and non-motorized activities are present.

Special Recreation Permits

Five types of uses requiring Special Recreation Permits (SRPs) are authorized by the Federal Lands Recreation Enhancement Act of 2004: commercial (e.g., whitewater outfitters), competitive (e.g., off-highway vehicle [OHV] races), vending (e.g., food service), individual or group use in special areas (e.g., weddings), and organized group activity and event use (e.g., club trail ride). SRPs are issued to manage visitor use, protect natural and cultural resources, and accommodate commercial recreational uses and may be issued for 10 years or less with annual renewal. Commercial SRPs are issued to outfitters, guides, vendors, recreation clubs, and commercial competitive event organizers providing recreational opportunities or service without employing permanent facilities. SRPs for competitive and organized group events are also included in this category. The maximum number of commercial SRPs in place at one time during the last 20 years was six. In 2012, five commercial SRPs were in place for the planning area.

The BLM issues SRPs for noncommercial use in certain special areas, including wilderness, rivers, and backcountry hiking or camping areas.

Developed Recreation

Developed recreation sites incorporate visitor use infrastructure (i.e., roads, parking areas, and facilities) to protect the resource and support recreational users in their pursuit of activities and experiences that

result in satisfying recreation benefits that are both short- and long-term and are realized on- and off-site. Visitor use infrastructure is a management tool that can minimize resource impacts, concentrate use, and reduce visitor conflicts.

There are six developed recreation sites within the planning area. Currently, these six sites do not meet the Federal Lands Recreation Enhancement Act of 2004 criteria for charging fees. None of the sites have potable water or trash service in the form of trashcans or dumpsters. The following list outlines these sites and their amenities:

- **Bruneau Canyon Overlook** - Parking area, interpretive kiosks, and protective fence structures;
- **Bruneau River Launch Site, East** - Parking and information kiosk;
- **Bruneau River Take-out** - Information kiosk;
- **Cedar Creek Reservoir (Roseworth Reservoir)** - Parking area, vault restrooms, and docks;
- **East Fork Jarbidge River Recreation Sites (four sites)** - Vault restrooms, picnic tables, and fire rings with grills; and
- **Jarbidge River Recreation Site** - Parking area, launch facilities for whitewater boating, vault restrooms, and information kiosk.

Dispersed Recreation

Hunting is the major dispersed recreation use across the entire planning area. The average number of hunter-days in pursuit of mule deer and pronghorn in the planning area was 7,220 between 2007 and 2011 (IDFG, 2012e). In 2011, elk hunting units 46 and 47 were separated from a larger geographic hunting unit, and the total for the season was 598 hunter-days, with anticipation of increased participation in the future (IDFG, 2012e).

Sport fishing in the Snake River along the northern boundary of the planning area and on the Salmon Falls Creek and Cedar Creek Reservoirs are also popular dispersed recreation activities. Salmon Falls Reservoir is one of the most heavily used fisheries in south-central Idaho. In 2010, a Salmon Falls Creek Reservoir angler effort survey was conducted by the Idaho Department of Fish and Game (IDFG, 2012a). Out of a total of 215 days in the survey period, the angler survey was completed on the reservoir on 75 of those days, or 35% of the time. Estimated angler effort in the surveyed sections and time period was 89,046, $\pm$ 1,617 hours. Average angler catch rates on trout during the surveyed period in all intervals were 1.02 fish, $\pm$ 0.03 fish per hour. Peak months of fishing activity typically are April through October.

Only two recognized trails exist within the planning area. The Idaho Centennial Trail is used for both hiking and motorized vehicles; use of the segment within the planning area is generally low because much of the trail is in remote terrain with difficult access. The Roberson Trail is located in the Bruneau-Jarbidge Rivers Wilderness which dictates a no mechanized or motorized use. This trail is used in the spring and early summer by whitewater boaters accessing the Five Mile Rapids, a series of Class IV rapids on the Bruneau Wild and Scenic River.

Off-Highway Vehicle Use

The term off-highway vehicle (OHV) is used by the public, industry, and the BLM interchangeably with off-road vehicle. The term off-road vehicle has a legally established definition in the Presidential Executive Order 11644 (1972) and BLM regulations. OHVs are defined as “any motorized vehicle capable of or designated for, travel on or immediately over land, water, or other natural terrain, excluding (1) any non-amphibious registered motorboat; (2) any military, fire, emergency or law enforcement vehicle when being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicle in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies” (43 CFR 8340.0-5). OHVs are used within the planning area for recreational and nonrecreational purposes. Much of the nonrecreational OHV use involves BLM administrative activities and grazing administration by ranchers. The BLM has chosen to use the term OHV, partly because it is a more popular term, but also because the regulations address vehicles that use roads and trails on BLM-managed land, and are therefore not solely off-road.

The national BLM objectives for OHV management are to protect the resources of public lands, promote the safety of all users of those lands, and minimize conflicts among the various uses of those lands (BLM, 2001b). OHV use has become a popular method of recreation as well as a means of transportation while pursuing other forms of recreation such as hunting, fishing, or camping. Antler gathering is an example of an increasing OHV use. Antlers shed by big game in their winter and spring ranges across most of the southern portion of the planning area are sought by collectors, as a recreational hobby, and for art. Many people participating in this activity use OHVs to cover more ground than can be done on foot or horseback. The Jarbidge Field Office has received reports of people who grid areas to increase their success in finding antlers.

In 2003, the Idaho Department of Fish and Game implemented restrictions for motorized vehicles used while hunting big game and upland game in the Jarbidge Foothills area (hunt unit 47). This rule applies to designated areas within Idaho and states, “hunters may only use motorized vehicles on established roadways which are open to motorized traffic and capable of being traveled by full-sized automobiles. Any other use by hunters is prohibited. All off-road use by hunters is prohibited” (IDFG, 2012e). This rule does not apply to valid Handicapped Persons Motor Vehicle Hunting Permits, game retrieval, packing camping equipment, or use on private property.

All-terrain vehicle (ATV), utility vehicle (UTV), and off-highway motorbike use are some of the fastest growing recreation activities in the planning area. Table 3-54 displays the increase in ATV, UTV, and off-highway motorbike registrations since 2006 in the counties with people most likely to participate in motorized recreation within the planning area.

Table 3-54. All-Terrain Vehicle, Utility Vehicle, and Off-Highway Motorbike Registrations by County

Year	Elmore	Owyhee	Twin Falls	Gooding	Jerome
2006	1,880	853	5,289	1,194	1,529
2007	2,128	988	5,971	1,389	1,759
2008	2,354	1,072	6,373	1,532	1,836
2009	2,332	1,028	6,528	1,569	1,898
2010	2,281	1,003	6,408	1,531	1,887

Note: These registration numbers reflect registrations processed for the sticker year. This table includes registered off-highway motorbikes, ATVs, and UTVs. UTVs were not identified as a separate registration until 2007.
Source: (IDPR, 2011).

Between 2006 and 2011, 10,258 visitor days were spent participating in OHV activities in the planning area (BLM, 2012b). Because of its relationship to transportation and access issues, further discussion of this use can be found in the *Transportation and Travel* section.

Whitewater Boating

Whitewater recreation continues to be a popular activity locally, regionally, and nationally. The Jarbidge and Bruneau rivers have a growing national reputation for those attracted to remote, wild, and spectacular canyons and a challenging whitewater boating experience. The float season lasts approximately one month, with the peak use occurring during the latter part of May. Water runoff from snowpack in the Jarbidge Mountains usually dictates the optimum flows for this activity. In 1983, the Jarbidge Field Office implemented a mandatory registration system for private boaters on the Jarbidge and Bruneau Rivers, which provides some use data. While the Jarbidge Field Office administers outfitting on the Jarbidge and Bruneau Rivers, maintenance of facilities and accountability for visitor use are currently shared with the Bruneau Field Office, Boise District.

Between 2006 and 2011, 3,347 visitor days were spent participating in whitewater recreation activities in the planning area (BLM, 2012b).

3.4.3 Transportation and Travel

Transportation involves access to public lands and infrastructure management. Within the planning area, local dependence on public land to meet transportation needs occurs mostly in terms of access to public and private lands, in contrast to town-to-town or city-to-city destination-type travel. Development of the

existing transportation system in the planning area has been associated with providing access for resource uses such as livestock grazing and recreation. Increased demand for access to public lands, combined with research on impacts of roads and trails to resources and resource uses, requires a well-designed and managed transportation system.

There are approximately 4,300 miles of mapped transportation routes (i.e., roads, primitive roads, and trails) in the planning area (Map 71). Based on field observations and recent aerial photography, the actual amount of transportation routes could be twice as high as the amount mapped. The transportation system includes BLM and county system roads and primitive roads. Some BLM and county system roads receive regular maintenance. County roads are usually constructed and maintained to higher standards than BLM roads and provide access to and through BLM lands, supporting a higher volume of traffic than other roads in the planning area. These county roads are maintained by the six local highway districts and, in some areas, by the US Air Force if higher standards are required for operations connected with training ranges.

Various government entities and individuals acquire rights-of-way from the BLM for portions of the transportation system roads that cross BLM-managed land. Issuance of rights-of-way is based on access needs and resource considerations.

In addition to main and local routes, numerous primitive roads are laced throughout the planning area connecting more remote locations to main roads. These primitive roads are used for administrative access (i.e., range monitoring), recreational purposes, access to private land inholdings, and access to livestock management infrastructure. Some of these routes are maintained as needed and are of native surface: dirt, gravel, or sand.

One backcountry airstrip in the planning area, near Murphy Hot Springs, was leased to the Idaho Transportation Department's Division of Aeronautics in 1993 and is managed by that agency.

The growth of off-highway vehicle (OHV) use has become an issue because of the number of users who participate in this recreation opportunity with limited designated OHV areas and routes, as well as concerns related to the potential resource degradation resulting from high levels of unmanaged motorized use in and near sensitive areas. During public scoping, more than 31% of comments received on resource uses related to transportation and access and OHV use.

Areas are designated during the planning process in accordance with BLM regulations and include the following three management categories:

- **Open to Cross-Country Motorized Vehicle Use** - An area where all types of vehicle use are permitted at all times, anywhere within the designated "open" area. This refers to cross-country travel both on and off roads.
- **Limited to Designated Routes** - Areas where vehicle use is restricted at certain times, in certain areas, and/or to certain vehicular uses in order to meet specific resource management objectives. These limitations may include: limiting the number or types of vehicles; limiting the time or season of use; permitted, administrative, or licensed use only; use on existing roads and trails; and limiting use to designated roads and trails.
- **Closed to Motorized Vehicle Use** - Motorized vehicles are permanently or temporarily prohibited. The use of motorized vehicles in closed areas may be allowed for certain reasons (e.g., emergency services); such use shall be made only with the approval of the BLM authorized officer (43 CFR 8340.0-5).

The Omnibus Public Lands Management Act (OPLMA; Public Law 111-11) was signed by the President on March 30, 2009. OPLMA directed the Secretary of the Interior to prepare a travel management plan for motorized and mechanized OHV recreation on BLM-managed lands in Owyhee County. In general, the plan would limit recreational motorized and mechanized OHV use to a system of designated roads and trails; this limitation would not apply to snowmobiles. Until the plan is completed, all recreational motorized and mechanized OHV use (excluding snowmobiles) shall be limited to roads and trails lawfully in existence on the day before the enactment of the act.

OPLMA changed all open areas in Owyhee County to “limited to designated routes”, with a “limited to existing routes” in effect until a transportation plan is completed. Inventoried ways, within the released Wilderness Study Area (32,080 acres) are also “limited to designated routes”, with a “limited to existing routes” in effect until a transportation plan is completed. All acres within the Bruneau-Jarbidge Rivers Wilderness are closed to motorized and mechanized vehicle use under OPLMA.

Back Country Byways

The Thousand Springs Scenic Byway begins at Interstate 84 near Bliss, Idaho, and follows US Highway 30 southeast through Twin Falls, Idaho. Contact with small parcels of land managed by the Jarbidge Field Office occurs near the Thousand Springs area. The Idaho Transportation Department administers this highway. This byway is a Scenic Byway and not a component of the BLM Back Country Byway program.

3.4.4 Land Use Authorizations

The Jarbidge Field Office administers rights-of-way (ROWs), land use permits, and leases, collectively referred to as land use authorizations. These existing authorizations are for a variety of different uses and are held by private individuals and groups, as well as by various business and government entities.

Section 501 of the Federal Land Policy and Management Act of 1976 (FLPMA) authorizes BLM to grant, issue, or renew ROWs on public lands; within the planning area, roads, power transmission lines, and telephone lines are the most common uses for ROWs and account for well over half of the total number of grants. Examples of additional types of ROW facilities authorized within the planning area include natural gas pipelines, communication sites, ditches, water pipelines, water facilities, and fiber optic lines. To date there are approximately 440 authorized ROWs. The Jarbidge Field Office processes approximately 10 to 20 ROW applications annually, including new authorizations, amendments, assignments, renewals, and relinquishments. Since the 1987 Jarbidge RMP was completed, there has been an increase in the number of utility services, power line upgrades, roads to private residences, communication sites, and upgrades to existing land use authorizations. Unauthorized uses such as farming, road grading, and road building on BLM-managed lands have increased as well.

Section 302 of FLPMA authorizes the BLM to issue or renew land use permits and leases for the use, occupancy, and development of public lands. Leases and permits are issued for purposes such as commercial filming, apiaries, and uses that cannot be authorized under ROWs. Permits are usually short-term authorizations not to exceed three years. The Jarbidge Field Office currently has approximately 250 land use permits.

Twelve communication site ROWs, occupying seven different communication site locations, are authorized within the planning area. Potential users are encouraged to locate within existing communication facilities or in the immediate vicinity, because the existing facilities can only accommodate a certain number of users. The two largest communication sites within the planning area are the Yahoo Creek Communication Site and the Lower Salmon Communication Site, both of which have completed communication site plans. There are no site plans for any of the other communication site facilities because of their single-occupant status. If future development were to occur at these sites, a site management plan would be completed at that time.

The 1987 Jarbidge RMP was amended in 2009 by the Record of Decision for the Westwide Energy Corridor Section 368 of the Energy Policy Act of 2005. The amendment designated four utility ROW corridors: Pilgrim Gulch, Shoestring, Balanced Rock, and Saylor Creek (Map 97). Other proposed utility ROW corridors include the Jarbidge, Roseworth, and the Oil/Gas Pipelines (Map 97). Compatible facilities are grouped together where possible. Special designation areas, such as Areas of Critical Environmental Concern and the Wilderness Study Area, may restrict such development.

Renewable energy includes geothermal[9], wind, hydroelectric, and solar power. There are no renewable energy developments on public lands within the planning area; however, the Jarbidge Field Office has had several inquiries for wind energy-related interests on public land within the past several years. The only authorized use granted to date is the 2007 Renewable Energy Systems (RES) ROW for wind velocity test towers on China Mountain. The authorization allowed RES to construct four meteorological (MET) towers within a 13,000-acre ROW area. The ROW was amended in 2009 to authorize the installation of two additional MET towers and was renewed for a three year period in 2010. In 2011 and 2012, RES removed the MET towers and provided a decommissioning plan. RES has requested a relinquishment for the MET tower ROW.

In May 2007, RES submitted an application to construct a commercial wind energy project in portions of the Jarbidge and Wells Field Offices. The proposed wind development was to produce 425 megawatts on approximately 30,700 acres; 4,700 acres would be managed by the Wells Field Office, 2,000 acres would be managed by the State of Idaho, 15,300 acres would be managed by the Jarbidge Field Office, and approximately 8,700 acres on private land. The processing of RES's project level EIS has been deferred pending the decision of the Greater Sage-Grouse Western Regional Land-Use Plan Revision and Jarbidge RMP Record of Decision. The Jarbidge Field Office has also received one more renewable energy application for wind development in the Bell Rapids area; however, the processing for this application was also placed on hold pending the Jarbidge RMP Record of Decision.

Additional ROW applications are being submitted for ancillary uses to energy-related facilities on private and public land. The Jarbidge Field Office received an application for an upgrade on a road that would support a wind farm on private land in the Bell Rapids area.

Under current conditions and technology, Idaho does not have significant potential for commercial solar energy development. Solar resources in the planning area do not exceed 6 $kWh/m^2/day$ (NREL, 2009a); therefore, the planning area is not currently identified as a high-priority State for solar energy development (NREL, 2009b)[10].

Withdrawals are formal actions that set aside, withhold, or reserve Federal land by statue or administrative order for public purposes. A withdrawal may remove areas from the public lands to be managed under the authority of another Federal agency or department, but the land does not leave Federal ownership.

There are two Federal Energy Regulatory Commission withdrawals on portions of the Snake River within the planning area. Six emitter sites are included as part of the Juniper Butte Training Range withdrawal by the US Air Force in addition to uses ancillary to these withdrawals, such as power lines, telephone lines, and roads. Other withdrawals in the planning area include public water reserves, water power reserves, power site reserves, and classifications.

3.4.5 Land Tenure

Land tenure, or land ownership adjustment, refers to actions that result in the disposal of BLM lands or the acquisition of nonfederal lands or interests by the BLM. Lands can be disposed of through sales, exchanges, color of title, State in Lieu selections, Desert Land Act entries, Carey Act of 1894 entries, patents under the Recreation and Public Purposes Act of 1954 (R&PP), or through Federal legislation. The 1987 Jarbidge RMP identified the number of acres available for land tenure transactions (Table 3-55). As mandated by Section 102(a) of the Federal Land Policy and Management Act of 1976 (FLPMA), public lands are retained in Federal ownership, the exception being those public lands that have future potential for disposal (i.e., sale and exchange), as described in Section 203(a) and 206 of FLPMA. Public lands have the potential for disposal when they are isolated, difficult to manage, or are needed to fulfill State selections. Lands identified for disposal must meet public objectives, such as community expansion

[9] Geothermal resources are considered leasable minerals and are addressed in the *Minerals* section.
[10] See also BLM IM 2011-003.

and economic development. The preferred method of disposal is land exchange. Disposal actions are usually in response to public request or application that results in a title transfer, wherein the lands leave the public domain. Criteria for land tenure adjustments and lands identified for disposal are outlined in Appendix I.

Table 3-55. Acres Available for Land Tenure Transactions in the 1987 RMP

Type of Land Tenure Transaction	Number of Acres Available
Sale	2,000
Exchange	243,000
Desert Land Entries/Carey Act	67,000
R&PP Patent	1,371,000

Land tenure for the planning area was divided into three zones (Map 106). Zone 1 is a retention area where acres placed in Zone 1 cannot leave Federal ownership. Zone 2 are acres that can be exchanged, but only for acres within the planning area, or offered as R&PP patents, resulting in little to no net loss of BLM-managed acres within the planning area. Acres in Zone 3 can be sold, exchanged for acres outside the planning area, or offered as R&PP patents resulting in a net loss of BLM-managed acres within the planning area.

Public sales of BLM-managed lands are managed under the disposal criteria set forth in Section 203 of FLPMA. Public lands determined suitable for sale shall be offered on the initiative of the BLM and sold at not less than fair market value. Public lands classified, withdrawn, reserved, or otherwise designated as not available or subject to sale are unavailable. Zone 3 lands, are lands that were identified that met the criteria of Section 203 of FLPMA. As such they may be considered for disposal by sale and can be found in Appendix I.

Exchanges can be used to improve land management, consolidate ownership, and protect environmentally sensitive areas. By exchanging public land that is isolated and difficult to manage, the BLM is able to acquire other lands with importance for recreation, wildlife, fisheries, wetlands, habitat for threatened and endangered species, wilderness, open space, scenic, cultural, and other resource conservation purposes. Land exchange allows the BLM to reposition lands into more manageable units and to meet community expansion needs. Exchanges are initiated in direct response to customer proposals or by the BLM, to improve management of the public lands. Lands considered for exchange must be determined suitable for disposal and acquisition; the exchange package must be of equal monetary value, approved by the Washington Office, and located within the same State. Exchange benefits the public by: placing public land in private ownership to serve local needs and consolidating ownership of scattered tracts of land for more efficient and less costly management of resources. Zone 2 lands can be considered for exchange within the planning area, or offered as a R&PP lease or patent, resulting in little to no net loss of BLM-managed acres within the planning area.

Land tenure transactions in the planning area are analyzed in project-specific reviews in accordance with the National Environmental Policy Act of 1969 (NEPA) and comply with the guidelines of FLPMA. Since the 1987 Jarbidge RMP, the Jarbidge Field Office disposed of 61.59 acres through exchange and 62.5 acres through sale; the Jarbidge Field Office also acquired 40 acres through exchange and 376 acres through the Land and Water Conservation Fund. These acquisitions allowed the BLM to acquire important cultural and paleontological sites, including a spring at the Dean Site, the Morgan Property (adjacent to the Sand Point Area of Critical Environmental Concern), and Three Island Crossing.

The R&PP was established by Congress as a means for State and local governments as well as non-profit organizations to acquire or lease (without patent) public lands at no cost or reduced cost for public or recreational purposes. Many governmental entities use this act to provide the public with much needed local services and locations for recreational activities.

One lease under R&PP within the planning area was transferred by patent to the Idaho Department of Parks and Recreation in 1993 for the Three Island State Park southwest of Glenns Ferry. Three Island

State Park contains the Oregon Trail crossing of the Snake River by emigrants in the early 1840s through the late 1860s. The park is visited by travelers and tourists from all over the world.

The Desert Land Entry Act was passed in 1877 to encourage and promote the economic development of the arid and semi-arid public lands of the western United States. Through the act, individuals may apply for a desert land entry to reclaim, irrigate, and cultivate arid and semi-arid lands. Most of the suitable lands for agricultural development have already been placed into private ownership. Due to the Snake River Basin Adjudication and limited water available for irrigation, the high cost of development, and the lack of land available for agricultural purposes in the BLM-managed planning area, the field office would not be accepting new desert land entry applications. However, the four pending applications would be processed.

More than 4,000 acres have left BLM-management in the planning area through desert land entries since 1987. More than 200 entries have been relinquished or rejected in the planning area since 1987, either by default or inability to support a profitable plan of development due to water right reviews by the State of Idaho's Snake River Basin Adjudication. The resolution of those entries placed the land back into Federal ownership.

The Federal Land Transaction Facilitation Act (FLTFA) became law on July 25, 2000. It provides for the use of revenues from the sale or exchange of public lands identified for disposal under the land use plans in effect as of the date of enactment for future land acquisitions. Therefore all lands identified for disposal in the 1987 RMP are FLTFA eligible. The FLTFA expired on July 24, 2010, but, on July 29, 2010, Congress passed an emergency supplemental appropriations bill to extend FLTFA for one year. Congress may reinstate the act in the future.

3.4.6 Minerals

The BLM manages the Federal mineral estate for the United States. The land surface overlying this estate can be owned by a non-Federal entity such as the State of Idaho or private interests; these lands are referred to as split-estate lands. The Jarbidge Field Office manages the surface of 1,371,000 acres of public lands within the planning area boundary and 1,612,570 acres of mineral estate. Of these, 126,000 acres are split-estate lands; more than 99% of these split-estate lands have private surface ownership where the United States retains the mineral estate and a private individual or other entity owns the surface. In these situations, mineral rights are considered the dominant estate, meaning they take precedence over other rights associated with the property, including those associated with owning the surface. However, the mineral owner must show due regard for the interests of the surface estate owner and occupy only those portions of the surface that are reasonably necessary to develop the mineral estate.

Specific minerals are categorized as leasable, salable, or locatable, depending upon regulations contained in 43 CFR. Although similar in many ways, each classification is administered differently and has different requirements for acquisition, exploration, and development.

3.4.6.1 Leasable Minerals

Leasable minerals can be explored for and developed under the Mineral Leasing Act of 1920, as amended; other leasing acts; and regulations 43 CFR 3100, 3200, 3400, and 3500. Leasable minerals include energy minerals such as oil, gas, coal, geothermal steam, and associated geothermal resources. Leasable minerals also include some non-energy minerals such as phosphate, sodium, potassium, and sulfur. All minerals on acquired lands are leasable. The BLM has discretionary authority to lease mineral resources for exploration and development. Where the Federal government owns the mineral estate and an agency other than the BLM manages the surface, the BLM will consult with that agency prior to leasing or approving an operations plan. In some situations, the BLM must obtain concurrence as required by law.

The BLM-managed mineral estates in the Saylor Creek Training Range, Juniper Butte Training Range, Hagerman Fossil Beds National Monument, and the Bruneau-Jarbidge Rivers Wilderness are closed to

mineral leasing by statute or Public Land Order (PLO 1027, PLO 4902, Public Law [PL] 105-261, PL 100-696, and PL 111-11, respectively).

There is currently no leasable mineral activity within the planning area. As described in the Oil and Gas Potential Report (BLM, 2009c), three wells were drilled in 1950 for the purpose of exploring for oil and gas in the planning area, all in the extreme northwest corner; no showings of oil or gas were encountered at any interval in any of the three wells, the deepest of which was drilled to 3,808 feet. Another well approximately eight miles north of the planning area was drilled to a depth of 9,678 feet, but did not encounter oil or gas. Based on the geology of the planning area and where interest in leasing has recently been expressed, the areas with potential for oil and gas leasing include the Cedar Creek/China Mountain areas and the northwest corner of the planning area (Map 114); these areas are referred to as the potential oil and gas areas. However, even though the potential for leasing in these areas is slightly higher than the potential in the rest of the planning area, the potential for discovery and development is considered to be low. Appendix K contains the Reasonably Foreseeable Development Scenario (RFDS) for oil and gas resources in the planning area.

There are no wells in the planning area for geothermal power, only wells on private land for direct use for aquaculture, recreation, and heating. Other wells within the planning area that encountered geothermal water were drilled for other purposes, such as irrigation. As described in the Geothermal Potential Report (BLM, 2009b), the area near Bruneau Hot Springs, determined to have high potential for geothermal resources, has high potential for leasing. There is also potential for leasing in the northern third of the planning area, determined to have medium potential for geothermal resources (Map 115); these areas with high and medium potential are referred to as potential geothermal areas. The probability of full geothermal resource development and production occurring in the planning area during the next 20 years is higher than for oil and gas development but still considered low. Appendix L contains the RFDS for geothermal resources in the planning area.

No deposits of coal or oil shale are known to exist in the planning area, and no commercially valuable deposits of other leasable minerals such as sodium and phosphate have been identified.

3.4.6.2 Salable Minerals

The BLM manages salable minerals under the Materials Act of July 31, 1947 as amended (30 USC 601 *et seq.*); and as amended by the Acts of July 23, 1955 (69 Stat. 367), and September 28, 1962 (Public Law [PL] 87-713); and under regulations 43 CFR 3600. Salable minerals, or mineral materials, are common varieties of minerals and building materials such as sand, stone, gravel, pumice, pumicite, cinders, and clay. Generally, salable minerals are widespread, of low unit value, and often used for construction or landscaping materials. Their value depends largely on market factors, quality of the material, availability of transportation, and transportation costs. The BLM has the discretionary authority to dispose of salable mineral materials either through a contract of sale or a free use permit.

The BLM-managed mineral estates in the Saylor Creek Training Range, Juniper Butte Training Range, Hagerman Fossil Beds National Monument, and the Bruneau-Jarbidge Rivers Wilderness are closed to salable mineral development by statute or Public Land Order (PLO 1027, PLO 4902, PL 105-261, PL 100-696, and PL 111-11, respectively).

There is ongoing use of salable minerals at several locations in the planning area. Two community pits for rhyolite flagstone are located in the Browns Bench and China Creek areas. There are currently 7 community gravel pits for sand and gravel and 25 free use permits issued to the surrounding local highway districts. The BLM and the highway districts continue to develop sources of sand and gravel for road maintenance projects.

The 1987 Jarbidge RMP identified 700 acres for salable mineral development, with a provision that allowed additional new sites to be developed. There are currently 1,300 acres within the planning area being used for salable mineral operations of all types.

3.4.6.3 Locatable Minerals

Locatable minerals, those not classified as leasable or salable, are managed under the General Mining Law of 1872 (17 Stat. 91, as amended) and regulations at 43 CFR 3700 and 3800. They include gold, silver, copper, gem stones, lead, zinc, barite, gypsum, certain varieties of high-calcium limestone, and other uncommon variety minerals. The General Mining Law of 1872 provides United States citizens the right to prospect, explore, and develop these minerals on public domain lands not withdrawn from mineral entry by Congress or the Secretary of the Interior.

The BLM-managed mineral estates in the Saylor Creek Training Range, Juniper Butte Training Range, Hagerman Fossil Beds National Monument, and the Bruneau-Jarbidge Rivers Wilderness are withdrawn from mineral entry by statute or (PLO 1027, PLO 4902, Public Law [PL] 105-261, PL 100-696, and PL 111-11, respectively).

Exploration for and development of locatable mineral resources under the General Mining Law of 1872 are nondiscretionary activities on public lands open to mineral entry, where the BLM cannot prohibit the public from locating mining claims or from conducting reasonably necessary activities required for the prospecting, exploration, and development of valuable locatable mineral deposits. Since the January 1, 1981, issuance of 43 CFR 3809 regulations, the BLM has had the authority to regulate these activities and require mitigation or changes in operational practices to ensure activities do not result in unnecessary or undue degradation of the environment (43 CFR 3809.4). The 43 CFR 3809 regulations ensure a proposed mineral exploration or development activity conforms to reasonable industry standards for that type of activity, based on the appropriate stage of development. If the BLM concludes the proposed activity is not reasonable, it would not be approved under 43 CFR 3809.

A variety of locatable minerals are found within the planning area due to its geologic diversity; however, the area generally lacks any known large, economically viable metallic deposits. There are 13 active mining claims in the planning area; fewer than 100 acres are affected by these claims. One of these active mining claims is a lode claim for Bruneau Jasper, a semi-precious decorative stone; which is located in the Bruneau Canyon at Indian Hot Springs.

Precious metal deposits, which consist of gold and silver, are rare in the planning area; there are no active precious metal mines in the planning area and no known commercially viable deposits. The Snake River contains placer deposits from the American Falls Reservoir downstream to the Idaho/Oregon border. There are 12 active claims (four lode claims and eight placer claims) for gold in the planning area, along the lower Bruneau River, the Snake River, and Salmon Falls Creek. Recreational panning and placer mining for gold also occur in the planning area; the State of Idaho administers permits for mechanized gold collection, or dredging, in rivers. There are numerous historic, non-active, mining claims, the majority of which are placer claims concentrated in the river drainages throughout the planning area.

Base metal deposits, which include those containing copper, lead, zinc, manganese, and molybdenum, are rare in the planning area. There are no active base metal mines in operation and no known commercially viable deposits located within the planning area.

Industrial minerals are those utilized in industrial processes, such as limestone, zeolites, silica, sulfur, perlite, and peat. There is no current activity related to industrial minerals in the planning area.

3.5 SPECIAL DESIGNATIONS

3.5.1 Areas of Critical Environmental Concern

An Area of Critical Environmental Concern (ACEC) is defined as an area "within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards" (FLPMA). The ACEC designation indicates that an area has values that meet criteria for relevance and importance and that special management has been established to protect those values.

An area meets relevance criteria if it contains one or more of the following:

- A significant historic, cultural, or scenic value, such as rare or sensitive archaeological resources and religious or cultural resources important to Native American tribes;
- A fish or wildlife resource, such as habitat for Endangered, Threatened, or BLM sensitive species, or habitat essential for maintaining species diversity;
- A natural system or process, such as Endangered, Threatened, or BLM Sensitive plant species; rare, endemic, or relic plants or terrestrial, aquatic, or riparian plant communities; or rare geologic features; or
- Natural hazards[11], such as areas of avalanche, dangerous flooding, landslides, unstable soils, or seismic activity.

The value, resource, system, process, or hazard described above must have substantial importance and value in order to satisfy the importance criteria. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following factors:

- More than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource;
- Qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change;
- Recognition as warranting protection in order to satisfy national priority concerns or to carry out the mandates of the Federal Land Policy and Management Act of 1976;
- Qualities that warrant highlighting in order to satisfy public or management concerns about safety or public welfare; or
- A significant threat to human life and safety or to property exists.

The ACEC designation does not automatically or necessarily result in exclusion of uses. Special management within an ACEC is specific to the relevant and important values of that ACEC and the threats to the quality and integrity of those values. In other words, the level of special management required varies by ACEC depending on its relevant and important values and the need for management to maintain or enhance those values. As a result, a specific use may need to be excluded in one ACEC if it presents a threat to its relevant and important values, while that same use may be allowed in another ACEC if it does not present a threat.

Descriptions of each existing and nominated ACEC, including maps, the relevant and important values that may be affected by management proposed in Chapter 2, and existing and potential threats to those values, can be found in Appendix M. Table 3-56 lists the existing and nominated ACECs, their acreage, and the relevant and important value(s) for their consideration as ACECs.

[11] No existing or nominated ACECs contain natural hazards that meet criteria for relevance and importance; therefore, this value is not discussed further.

Table 3-56. Existing and Nominated Areas of Critical Environmental Concern in the Planning Area

Area	Acreage (BLM-managed surface)	Relevant and Important Value(s)
Existing ACECs		
Bruneau-Jarbidge	85,000	California bighorn sheep (bighorn sheep), Bruneau River phlox, bull trout, cultural values, Davis peppergrass, redband trout, riparian systems, and scenic values
Salmon Falls Creek[A]	3,000	redband trout, scenic values, and upland vegetation
Sand Point	800	cultural values, historic values, paleontologic and geologic resources
Nominated ACECs		
Bruneau-Jarbidge (expanded boundary)	123,000	bighorn sheep, Bruneau River phlox, bull trout, cultural values, Davis peppergrass, redband trout, riparian systems, and scenic values
Bruneau-Jarbidge (reduced boundary)	57,000	bighorn sheep, Bruneau River phlox, bull trout, cultural values, Davis peppergrass, redband trout, riparian systems, and scenic values
Inside Desert (large boundary)	73,000	slickspot peppergrass
Inside Desert (small boundary)	41,000	slickspot peppergrass
Jarbidge Foothills (large boundary)	134,000	cultural values, redband trout, greater sage-grouse (sage-grouse), spotted frog, and upland vegetation
Jarbidge Foothills (small boundary)	64,000	cultural values, sage-grouse, and upland vegetation
Lower Bruneau Canyon (large boundary)	1,000	Bruneau hot springsnail, Bruneau River phlox, paleontological resources, special status plant assemblages, and thermal springs and seeps
Lower Bruneau Canyon (small boundary)	900	paleontological resources, special status plant assemblages
Middle Snake	7,000	Snake River snails, special status plant assemblages, and white sturgeon
Sagebrush Sea	956,000	bighorn sheep, Bruneau River phlox, bull trout, cultural values, Davis peppergrass, redband trout, sage-grouse, slickspot peppergrass, and spotted frog
Sand Point (expanded boundary)	1,000	cultural values, historic values, paleontologic and geologic resources
Upper Bruneau Canyon	18,000	bighorn sheep, cultural values, Davis peppergrass, redband trout, riparian system, and scenic values

[A] The Salmon Falls Creek ACEC is located in both the Jarbidge and Burley Field Offices; however the acreage depicted is for the planning area only.

Existing Areas of Critical Environmental Concern

The Bruneau-Jarbidge and Sand Point ACECs were designated in the planning area under the 1987 Jarbidge RMP. The Salmon Falls Creek ACEC was designated following a land use plan amendment in 1989.

Bruneau-Jarbidge ACEC

The Bruneau-Jarbidge ACEC contains 85,000 acres of BLM-managed land in the Bruneau and Jarbidge Canyons and the surrounding uplands. The ACEC is located along the Bruneau River from near Crowbar Gulch upstream to the planning area boundary, along the Jarbidge River from the Bruneau River confluence to the Buck Creek confluence, and along the East Fork of the Jarbidge River from the Jarbidge River confluence to the planning area boundary. Portions of Clover, Deep, Cougar, Dorsey, Columbet, and Dave Creeks are within the ACEC.

Values meeting relevance and importance criteria include cultural values, scenic values, fish and wildlife resources (bighorn sheep, bull trout, and redband trout), and natural systems or processes (Bruneau River phlox, Davis peppergrass, and riparian systems).

Regionally significant cultural resources are present within the ACEC. Native American use of the area extends back thousands of years. While the canyonlands provided food, shelter, and water, the adjacent uplands also served as travel corridors between winter villages along the Snake and lower Bruneau Rivers and summer camps in the Jarbidge and Owyhee Uplands. The area retains traditional cultural importance for the tribes. Many sites are also important for their archaeological value.

Scenic values in the Jarbidge and Bruneau Canyons are outstanding. The majority of the ACEC is within the Bruneau-Jarbidge Rivers Wilderness and is a designated Wild and Scenic River corridor. The canyon complex has exceptional rugged desert scenery and natural qualities, including both basalt and rhyolite forms of volcanic material. The canyons plunge from 300 to more than 900 feet from the adjacent upland plateaus to the rivers below. Arch Canyon contains a unique, large, natural arch composed of rhyolite that spans Cougar Creek.

The ACEC contains 41,000 acres of habitat for bighorn sheep, a Type 3 BLM sensitive species, which represents 84% of the bighorn sheep habitat within the planning area. The bighorn sheep population within the ACEC is estimated to be approximately 210 sheep (IDFG, 2010a). The canyonlands provide secure lambing habitat. The rivers in the canyon bottoms, as well as occasional seeps from canyon walls, provide water. Bighorn sheep forage is available in both the canyons and adjacent uplands.

The ACEC contain 77 miles of critical habitat for bull trout, which represents 87% of the critical habitat within the planning area. Bull trout are listed as Threatened under the Endangered Species Act of 1973 (ESA) and are a Type 1 BLM sensitive species. The Jarbidge River Distinct Population Segment is the southern-most surviving population of bull trout in North America (FWS, 2004).

The ACEC contains 96 miles of occupied streams for redband trout, a Type 2 BLM sensitive species. Redband trout occur in four stream reaches: the Bruneau River, the Jarbidge River, the East Fork of the Jarbidge River, and Dave Creek. These redband trout are adapted to both colder streams and warmer, low elevation streams such as the lower Jarbidge River and Bruneau River. The occupied streams within the ACEC lack migration barriers that prevent redband trout from moving between streams, unlike most of the other redband trout streams within the planning area.

Bruneau River phlox, a Type 3 and Nevada BLM sensitive species, occurs within the Bruneau and Jarbidge Canyons within the ACEC. The ACEC contains 240 acres of Bruneau River phlox habitat, which represents 65% of the habitat within the planning area. Bruneau River phlox has a total estimated population of 500 plants.

Davis peppergrass, a Type 3 and Nevada BLM sensitive species, is present in playas within the ACEC. The ACEC contains 30 acres of Davis peppergrass habitat, which represents 20% of the habitat within the planning area. Although the population of Davis peppergrass is declining range wide, the Bruneau-

Jarbidge populations are a population stronghold. Davis peppergrass is limited in its distribution to portions of southeastern Oregon, southcentral Idaho, and northcentral Nevada, with the majority of known populations occurring in Idaho. The species is restricted to a narrow suite of environmental conditions, occurring in playas on volcanic plains where the regional vegetation is dominated by big sagebrush and, to a lesser extent, shadscale.

The Bruneau and Jarbidge Rivers are two of the longest free-flowing streams in southern Idaho; 96 miles of these rivers occur within the ACEC. The majority of other desert rivers in southern Idaho, including the Snake and Owyhee Rivers and Salmon Falls Creek, contain dams. The riparian systems in the ACEC are typically dominated by Rocky Mountain juniper with interspersed quaking aspen and a few pockets of cottonwood. In addition, riparian areas on BLM portions of lower Dave Creek, as well as the Jarbidge River and its East Fork, and portions of the Bruneau River (from about 0.5 miles downstream of Indian Hot Springs almost to the Bruneau Valley) are ungrazed, as the topography limits access.

Salmon Falls Creek ACEC

The Salmon Falls Creek ACEC encompasses 6,000 acres of BLM-managed land. The ACEC is located within the Salmon Falls Creek Canyon (rim to rim), extending from Balanced Rock Crossing Park south to the private land near Salmon Falls Creek Dam. The Salmon Falls Creek ACEC is located in both the Jarbidge and Burley Field Offices. The west side of the ACEC is managed by the Jarbidge Field Office while the east-side of the ACEC is managed by the Burley Field Office; Salmon Falls Creek is the dividing line. While the ACEC encompasses 6,000 acres, only 3,000 acres are within the Jarbidge Field Office.

Values meeting relevance and importance criteria include scenic values, fish resources (redband trout), and natural systems or processes (upland vegetation).

The scenic values of Salmon Falls Creek ACEC are strongly influenced by the geology of the area and the quality of the native vegetation communities. In some areas, basalt lava flows are separated by layers of sediment. Other areas of the canyon are dominated by rhyolite columns and spires. A few springs on the lower portion of canyon walls provide a contrast with the dominant upland vegetation.

Salmon Falls Creek supports a population of redband trout. The redband trout population within the ACEC is fragile, given that it is an isolated population in poor habitat. The flow alteration within the canyon has largely eliminated flushing flows, heightening the deposition of sediment in portions of the canyon. The lack of flushing flows has reduced the quality of the aquatic habitat for redband trout.

The upland vegetation communities within the ACEC are unique because they are relatively undisturbed and have been relatively unaffected by humans. The canyon has upland plant communities at or near potential natural condition, including Wyoming big sagebrush/bluebunch wheatgrass sites and some late seral riparian areas. There are few areas within southern Idaho, especially those close to human population centers, where human uses are not the primary forces influencing the vegetation community. The lands have not been grazed by livestock, and more than 95% of the ACEC has not burned in the last 20 years. There are no travel routes within the canyon, and recreational use of the area is low.

Sand Point ACEC

The Sand Point ACEC encompasses 800 acres of BLM-managed lands south of the Snake River near Hammett, Idaho. The ACEC extends from the high water mark along the Snake River about 0.5 to 0.75 miles south into the upland plateau.

Values meeting relevance and importance criteria include historic and cultural values and natural systems or processes (paleontological and geological resources).

The Sand Point area, within the Glenns Ferry Formation region, lies between the Hagerman locality to the east and the Chalk Flat and Grandview localities to the west in elevation and time. This geologic formation is important for understanding the paleogeography of this part of western North America during the late Cenozoic Era.

The ACEC contains 1.3 miles of Oregon Trail ruts and the south bank landing for the Medbury Ferry. This site represents a unique opportunity to protect a type of culturally and historically significant site that has been damaged or destroyed in other areas through development and agricultural use.

Several large prehistoric archaeological sites are located within the ACEC. The ACEC contains archaeological sites in a riverside setting that meets the National Register of Historic Places eligibility criteria. Their importance is enhanced because most similar sites in the region are in private ownership and have been altered by agricultural development.

The Sand Point area contains one of the largest concentrations of Blancan Age (three million years old) freshwater snail and clam fossils in the United States. Fish and mammal fossils are also present. The scientific importance of the Sand Point fossils and their geologic context has been recognized since their original discovery in 1902.

Nominated Areas of Critical Environmental Concern

Several ACECs were nominated and were found to meet criteria for relevance and importance; these ACECs are described below.

Bruneau-Jarbidge ACEC – Expanded Boundary

Two new boundary configurations of the Bruneau-Jarbidge ACEC were nominated: an expanded boundary and a reduced boundary.

The extensions to the existing Bruneau-Jarbidge ACEC would encompass about 38,000 acres of BLM-managed land; if added to the existing ACEC, the new ACEC would total 123,000 acres of BLM-managed land. The extensions include the remainder of the Jarbidge River and additional upland areas in the Diamond A and Inside Desert areas not already within the existing ACEC, as well as bull trout habitat along the Jarbidge River south of the Jarbidge Forks, Dave Creek, Jack Creek, and Buck Creek. The eastern boundary of the existing ACEC south of Three Creek Highway would be modified to follow a road.

The same values meet relevance and importance criteria in the extensions as in the existing ACEC.

Numerous regionally significant archaeological sites are located within the extensions to the existing ACEC. Many sites associated with playas suggest a unique adaptation to the arid uplands, which involved transplanting stream-adapted shellfish to seasonal lakes to augment food supplies.

In addition to the scenic values for the existing Bruneau-Jarbidge ACEC, the Jarbidge River south of the Jarbidge Forks contains numerous rhyolite columns, spires, and a few window rocks that are visible from the Jarbidge Road. Aspen are present on some of the hillsides and draws. The majority of the Jarbidge River riparian area contains a mix of juniper, willows, and dogwood, with some cottonwood and limber pine.

The extensions to the existing ACEC would add 55,000 acres of the bighorn sheep habitat to the ACEC and would include 92% of the habitat in the planning area.

The extensions would include the remaining BLM-managed portion of Dave Creek, which is crucial spawning, rearing, foraging, migratory, and overwintering habitat for bull trout within the Jarbidge River system (FWS, 2004). The extensions to the existing ACEC would also include migratory bull trout habitat on the Jarbidge River south of the Jarbidge Forks and all of the BLM-managed portions of Jack Creek, one of the spawning streams in the Jarbidge River watershed. These areas total approximately eight miles of streams with bull trout habitat.

The extensions to the existing ACEC would add 11 miles of occupied redband trout streams to the ACEC, including habitat in the Jarbidge River above the confluence with the East Fork, Dave Creek, and Deer Creek (NV).

The extensions to the existing ACEC would add 90 acres of Davis peppergrass habitat to the ACEC and would include 80% of the habitat within the planning area.

The extensions to the existing ACEC would add 10 acres of Bruneau River phlox habitat to the ACEC and would include 68% of the habitat within the planning area.

The Jarbidge River above the confluence with its East Fork, as well as Dave, Jack, and Deer Creeks, which are unrestricted and free-flowing on BLM-managed lands, would be included in the extensions. Approximately 10 additional miles of riparian area are included in the extensions.

Bruneau-Jarbidge ACEC – Reduced Boundary

The reduced boundary of the nominated Bruneau-Jarbidge ACEC would encompass 57,000 acres of BLM-managed land. The majority of the ACEC lies within the Bruneau and Jarbidge Canyons; some of the adjacent uplands are included within the boundary as well. Portions of the existing ACEC that would not be included within this boundary include areas south of the Bruneau-Jarbidge Rivers Wilderness boundary on the Bruneau River, Jarbidge River and its East Fork, as well as areas north of Sheepshead Draw.

The same values meet relevance and importance criteria in the reduced boundary as in the existing ACEC.

The cultural and scenic values within the reduced boundary of the ACEC are the same as those documented for the existing boundary of the Bruneau-Jarbidge ACEC.

The reduced boundary of the ACEC contains 29,000 acres of bighorn sheep habitat. The bighorn sheep values within the reduced boundary are the same as those documented for the existing boundary of the Bruneau-Jarbidge ACEC; however, the ACEC would include 59% of the bighorn sheep habitat (the majority of the area where bighorn sheep are commonly observed). Roughly 20,000 acres of occupied bighorn sheep habitat from Blackrock Pocket in the Bruneau Canyon northward would not be included within the ACEC.

The reduced boundary of the ACEC contains 43 miles of critical habitat for bull trout, which represents 48% of the bull trout habitat in the planning area. The ACEC contains 49 miles of occupied redband trout habitat in the Bruneau River and the Jarbidge River below the confluence with the East Fork; however, occupied redband trout habitat within the East Fork of the Jarbidge River and Dave Creek would not be included within the ACEC.

The Bruneau River phlox values within the reduced boundary of the ACEC are the same as those documented for the existing boundary of the Bruneau-Jarbidge ACEC; however, the reduced boundary contains 10 additional acres of Bruneau River phlox habitat. The nominated reduced boundary includes 68% of the Bruneau River phlox habitat within the planning area.

The Davis peppergrass habitat values within the reduced boundary of the ACEC are the same as those documented for the existing boundary of the Bruneau-Jarbidge ACEC; however, only 20 acres of habitat would be included in the ACEC. This represents 13% of the habitat within the planning area.

The reduced boundary of the ACEC would contain fewer than 45 miles of free-flowing reaches of the Bruneau and Jarbidge Rivers and would not contain riparian systems dominated by Rocky Mountain juniper.

Inside Desert ACEC – Large Boundary

Two boundary configurations of the Inside Desert ACECs were nominated: an ACEC with a large boundary and an ACEC with a small boundary.

The large boundary of the Inside Desert ACEC would encompass 73,000 acres of BLM-managed land. The large ACEC boundary would be located between Clover Creek and the Jarbidge River and from Clover Butte south to approximately Poison Butte and would be adjacent to the Juniper Butte Training Range. The ACEC boundary was drawn along existing pasture fences to make the nominated ACEC manageable.

Values meeting relevance and importance criteria include natural systems or processes (slickspot peppergrass).

Slickspot peppergrass is a rare, annual or biennial forb endemic to the sagebrush steppe in southwestern Idaho (Moseley, 1994). Slickspot peppergrass is a Type 1 BLM sensitive species that is proposed for listing under the ESA. The large boundary of the Inside Desert ACEC contains high-quality habitat for slickspot peppergrass, which is characterized by intact sagebrush steppe, low abundance of non-native species, and low levels of human-caused disturbances (Colket, 2006; FWS, 2003; Moseley, 1994). The population of slickspot peppergrass in the ACEC is the most genetically diverse of the known slickspot peppergrass populations. The nominated ACEC contains 100% of the acres supporting slickspot peppergrass populations on BLM-managed lands in the planning area.

Inside Desert ACEC – Small Boundary

The small boundary of the nominated Inside Desert ACEC would encompass 41,000 acres of BLM-managed land. The small ACEC boundary would be located from Clover Butte south to approximately Middle Butte in several pastures near the Juniper Butte Training Range.

The slickspot peppergrass values within the small boundary of the ACEC are the same as those documented for the large boundary of the Inside Desert ACEC; however, the small boundary would contain 83% of the acres supporting slickspot peppergrass on BLM-managed lands in the planning area.

Jarbidge Foothills ACEC – Large Boundary

Two boundary configurations of the Jarbidge Foothills ACECs were nominated: an ACEC with a large boundary and an ACEC with a small boundary.

The large boundary of the Jarbidge Foothills ACEC would encompass 134,000 acres of BLM-managed land in the southern third of the planning area. The boundary would run from the canyon of the East Fork of the Jarbidge River to Salmon Falls Creek and from Three Creek Highway to the southern boundary of the planning area.

Values meeting relevance and importance criteria include cultural values, fish or wildlife resources (redband trout, spotted frog, sage-grouse), and natural systems or processes (upland vegetation).

Regionally significant cultural resources are located throughout the ACEC area. The Jarbidge Foothills area was used extensively by Native Americans for thousands of years. For the tribes, many of the sites created by this use serve as important links to ancestral lifeways and play a critical role in maintaining traditional tribal culture. In addition, many of the sites contain important archaeological information concerning human adaptation to the semi-arid environment of southern Idaho.

The large boundary of the ACEC contains 41 miles of streams occupied by redband trout, which represents 16% of the occupied streams in the planning area. Redband trout in the Jarbidge Foothills exist in isolated populations, or strongholds, that are unable to migrate to adjacent suitable habitats during low streamflow conditions or other environmental disturbance such as wildland fire. Several of the streams within the ACEC (Deadwood, Deer [ID], Cedar, Flat, and Deadman) lack or have limited connectivity with other streams. Due to the lack of connectivity between redband trout-occupied streams, these fish are vulnerable to population declines.

The large boundary of the ACEC would contain all known occupied habitat for Columbia spotted frogs (spotted frogs; a Candidate, Type 1, and Nevada BLM sensitive species) within the planning area. Spotted frog populations are part of a larger but fragmented population of spotted frogs in northern Nevada. Spotted frogs are presently found on fewer than 1,000 acres of the planning area in the areas of Bear, Rocky Canyon, Shack, and Timber Creeks. Potentially suitable habitat occurs in several other drainages (China, Cedar, Flat, and House Creeks) within the ACEC.

The Browns Bench/Monument Springs area within the ACEC is a regionally important stronghold area for sage-grouse, a Candidate and Type 1 BLM sensitive species. The ACEC includes land that provides

connectivity between sage-grouse populations in Nevada and the Shoshone Basin. Sage-grouse habitat in this area has remained relatively intact and has generally not been fragmented by wildland fire. The changes in elevation and plant communities provide quality late-brood rearing habitat for sage-grouse. Both resident and migratory sage-grouse are present in the area. The large boundary of the ACEC would contain 94,000 acres of key sage-grouse habitat, including important wintering and breeding habitat. There are currently 19 occupied sage-grouse leks, associated satellite leks, and sage-grouse nesting habitat present within the large boundary of the ACEC.

The ACEC contains one of the last large, contiguous blocks of high-quality sagebrush steppe habitat in the planning area. Although there are other blocks of similar size and quality within the region, the habitat within the ACEC is important for maintaining connectivity between other regional blocks of habitat. Some of the late-seral range sites in the planning area occur within the ACEC. Plant communities in the ACEC include aspen woodlands, mountain mahogany woodlands, high elevation low sagebrush, black sagebrush, mountain shrub, mountain big sagebrush, riparian areas, and salt desert shrub.

Jarbidge Foothills ACEC – Small Boundary

The small boundary of the nominated Jarbidge Foothills ACEC would encompass 64,000 acres of BLM-managed land and would be located in the southeast corner of the planning area. The boundary would run from Salmon Falls Creek west to the House Creek Allotment, and from Three Creek Highway south to the southern boundary of the planning area. This boundary for the Jarbidge Foothills ACEC would focus management on a block of primarily BLM-managed lands and would reduce the amount of private land that would be in the ACEC boundary.

The same values meet relevance and importance criteria in the small boundary of the Jarbidge Foothills ACEC as in the large boundary; however redband trout did not meet importance criteria and spotted frogs would no longer occur within the ACEC boundary.

The cultural values within the small boundary of the ACEC are the same as those documented for the large boundary of the Jarbidge Foothills ACEC.

The sage-grouse values within the small boundary of the ACEC are the same as those documented for the large boundary of the Jarbidge Foothills ACEC. However, the small boundary of the ACEC would contain 49,000 acres of key sage-grouse habitat. There are currently 16 occupied sage-grouse leks, associated satellite leks, and sage-grouse nesting habitat present within the small boundary of the ACEC.

The upland vegetation values within the small boundary of the ACEC are the same as those documented for the large boundary of the Jarbidge Foothills ACEC. However, some of the other large blocks of high-quality sagebrush steppe habitat outside the small boundary of the ACEC contain substantially greater amounts of private land.

Lower Bruneau Canyon ACEC – Large Boundary

Two boundary configurations of the Lower Bruneau Canyon ACEC were nominated: an ACEC with a large boundary and an ACEC with a small boundary.

The large boundary of the nominated Lower Bruneau Canyon ACEC would encompass 1,000 acres of BLM-managed land. The ACEC would be located along the east side of the lower Bruneau River, southeast of Indian Bathtub.

Values meeting relevance and importance criteria include fish or wildlife resources (Bruneau hot springsnail) and natural systems or processes (paleontological resources, special status plant assemblages, thermal seeps and springs).

The Bruneau hot springsnail was listed as an Endangered species in 1998 (FWS, 1998). Geothermally influenced seeps and springs in the Bruneau River and one of its tributaries (Hot Creek, outside of the planning area) are the only locations where this species occurs in the world. The ACEC would protect 22.1 miles of geothermal springs on the east side of the Bruneau River, which is 81% of the suitable hot

springsnail habitat on BLM-managed lands in the planning area. Approximately one-third of the global population of these snails exists within the ACEC. Since the early 1990s, the water flows at the thermal springs and seeps have declined, reducing habitat for this Endangered species. The hot springsnail has evolved to occupy these unique spring habitats and is sensitive to actions that affect the surface flows from the springs, the temperature of the spring, or the substrates within the springs.

The Lower Bruneau Canyon ACEC includes extensive outcrops of Hot Springs Limestone – a carbonate layer composed of fossilized lacustrine algal reefs which formed along the shoreline of ancient Lake Idaho (Straccia et al., 1990). These Miocene-aged deposits are associated with the geologic Chalk Hills Formation and contain a variety of vertebrate, invertebrate, and micro-fossils ranging in age from eight million to six million years. The nominated ACEC contains the only concentrated exposures of the fossil bearing Chalk Hills Formation in the planning area.

Numerous BLM sensitive plant species occur in the area including Packard's cowpie buckwheat (Type 4) and spine-node milkvetch (Type 4) (both perennials) and rigid threadbush (Type 4), spreading gilia (Type 3), and white-margin waxplant (Type 4) (all annuals). The nominated ACEC contains 60 acres of Bruneau River phlox (Type 3) habitat, which represents 16% of the Bruneau River phlox habitat within the planning area. This high concentration of special status plants is unique; this assemblage of species does not occur elsewhere in Idaho.

Lower Bruneau Canyon ACEC – Small Boundary

The small boundary of the nominated Lower Bruneau Canyon ACEC would encompass 900 acres of BLM-managed land. The small ACEC boundary, southeast of Indian Bathtub does not include areas contained within the Bruneau-Jarbidge Rivers Wilderness and the designated Wild and Scenic River corridor.

The same values meet relevance and importance criteria in the small boundary of the Lower Bruneau Canyon ACEC as in the large boundary, except thermal seeps and springs which support the Bruneau hot springsnail would not be included within the ACEC boundary. However, they are within the Bruneau-Jarbidge Rivers Wilderness boundary and the designated Wild and Scenic River corridor.

The paleontological resources within the small boundary of the ACEC are the same as those documented for the large boundary of the Lower Bruneau Canyon ACEC.

Special status plant species within the small boundary of the ACEC are the same as those documented for the large boundary of the Lower Bruneau Canyon ACEC; however, Bruneau River phlox would not occur within the small ACEC boundary.

Middle Snake ACEC

The nominated Middle Snake ACEC would encompass 7,000 acres of BLM-managed lands; these lands are separated in several areas by blocks of private land. The ACEC would be located in an area southeast of King Hill to the Hagerman Fossil Beds National Monument. The ACEC would extend from the planning area boundary in the Snake River to the canyon rim or to existing fences on the adjacent uplands.

Values meeting relevance and importance criteria include fish or wildlife resources (Snake River snails and white sturgeon) and natural systems or processes (special status plant assemblages).

A portion of the global population of the Snake River physa (Endangered, Type 1 BLM sensitive) and the majority of the global population of the Bliss Rapids snail (Threatened, Type 1) reside in the Snake River within the ACEC. Both snails are primarily in the eastern portion of the ACEC. Other special status mollusks found in the Snake River within the ACEC include the California floater (Type 3), Columbia pebblesnail (Type 3), and short-face lanx (Type 2). This reach of the Snake River also contains a portion of the occupied habitat of the Utah valvata snail (Type 2). This reach of the Snake River was identified in the Snake River Aquatic Species Recovery Plan as the recovery area for these species (FWS, 1995).

White sturgeon, a Type 2 BLM sensitive species, is present in the free-flowing reach of the Snake River downstream from the Bliss Dam; this segment contains the best habitat in the upper Snake River. The ACEC covers the majority of spawning habitat for white sturgeon in the planning area including the upper-most reach of the Snake River with a self-sustaining population of white sturgeon. Because of the free-flowing nature of this reach, white sturgeon are able to reproduce naturally and do not require hatchery supplementation to sustain the population.

The Snake River breaks in this area contain a mixture of soils. The mix of old lake bed sediments and volcanic soils provides habitat to a number of uncommon plants including the following special status species: calcareous buckwheat (Type 3), Greeley's wave-wing (Type 3), Janish penstemon (Type 3), matted cowpie buckwheat (Type 4), and Snake River milkvetch (Type 4). A few other plant species (e.g., desert dandelion and Torrey's blazingstar) formerly on the Idaho BLM Sensitive Species List are also present in the ACEC.

Sagebrush Sea ACEC

The nominated Sagebrush Sea ACEC would encompass 956,000 acres of BLM-managed land, roughly the southern two-thirds of the planning area. It would extend from the Bruneau River on the west to Salmon Falls Creek on the east. Its southern boundary would follow the southern boundary of the planning area. The northern boundary would follow the road that runs from Balanced Rock to Crows Nest to Clover Crossing, then follow Clover Creek along its east and north canyon rims to Clover Creek's confluence with the Bruneau River.

Values meeting relevance and importance criteria include cultural values, fish or wildlife resources (bull trout, redband trout, spotted frog, sage-grouse, and bighorn sheep), and natural systems or processes (slickspot peppergrass, Davis' peppergrass, and Bruneau River phlox).

Due to its size, the ACEC contains numerous archaeological sites. The distribution of the numerous regionally significant archaeological sites present is not uniform; site density varies by terrain and proximity to critical resources. Many sites have traditional cultural relevance to the tribes and are also important for their scientific value.

The ACEC contains 70 miles of critical habitat for bull trout, which represents 79% of the critical habitat in the planning area. In addition, the area contains 201 miles of occupied redband trout streams, which represents 80% of the redband trout streams within the planning area, including the perennial streams in the Jarbidge Foothills and most of the perennial streams in the Jarbidge River and Salmon Falls Creek watersheds. The area contains all known occupied habitat for spotted frog within the planning area. However, habitat for all three of these species occurs in only a portion of the ACEC.

The ACEC would contain the vast majority of the active sage-grouse leks and their winter and nesting habitat. The ACEC would contain 302,000 acres of key sage-grouse habitat[12], which is 97% of the key sage-grouse habitat within the planning area. There are currently 87 occupied sage-grouse leks, associated satellite leks, and sage-grouse nesting habitat present within the ACEC.

The ACEC would encompass all habitat used by bighorn sheep. Bighorn sheep habitat in the Bruneau and Jarbidge Canyons accounts for less than 10% of the ACEC, as the majority of the ACEC is not generally suitable for bighorn sheep.

The ACEC would include all known occupied habitat for slickspot peppergrass and Davis peppergrass in the planning area. The ACEC would include 250 acres of Bruneau River phlox habitat, which represents 68% of the habitat within the planning area. However, these species are each found in only a small portion (less than 10%) of the ACEC.

[12] The Draft RMP/EIS reported 252,000 acres of key sage-grouse habitat for the Sagebrush Sea ACEC. The number of acres of key sage-grouse habitat has been updated in the Final EIS to include key habitat in Nevada that was unavailable at the time of the Draft RMP/EIS.

Sand Point ACEC – Expanded Boundary

One additional boundary configuration of the Sand Point ACEC was nominated. The expanded boundary of the Sand Point ACEC would include the 800 acres of the existing Sand Point ACEC as well as the Morgan property, an additional 200 acres between the existing ACEC and the Snake River; totaling 1,000 acres. The Morgan property was acquired by BLM in 2002 to protect the relevant and important values of the existing ACEC that extended onto this property.

The same values meet relevance and importance criteria in the expanded boundary of the Sand Point ACEC as in the existing ACEC.

The Morgan property extension would add 1.1 miles of Oregon Trail and the historic Morgan cabin to the ACEC. Several large prehistoric archaeological sites are also located within the Morgan property extension. The Morgan property extension contains archaeological sites in a riverside setting that meet National Register of Historic Places eligibility criteria.

The Morgan property extension also contains paleontological resources for which the Sand Point area is known. The extension would add two known paleontological sites to the existing ACEC as well as additional acreage of the Glenns Ferry Formation.

Upper Bruneau Canyon ACEC

The nominated Upper Bruneau Canyon ACEC would encompass 18,000 acres of BLM-managed land. The ACEC would be located along the upper Bruneau River and the surrounding uplands within the southern-most portion of the planning area. The ACEC includes the Bruneau Canyon and adjacent uplands from the planning area boundary to the south extending to the Bruneau-Jarbidge Rivers Wilderness boundary to the north.

Values meeting relevance and importance criteria include cultural values, scenic values, fish or wildlife resources (bighorn sheep, redband trout), and natural systems or processes (Davis peppergrass and riparian system).

Regionally significant cultural resources are present within the ACEC. Native American use of the area extends back thousands of years. The canyonlands provided food, shelter, and water for Native Americans along the Bruneau River. The area retains traditional cultural importance for the tribes. Many sites are also important for their archaeological value.

Scenic values in the Bruneau Canyon are outstanding and the portions of the ACEC downstream of the Black Rock Crossing are suitable for wild and scenic river designation. The canyon complex has exceptional rugged desert scenery and natural qualities, including both basalt and rhyolite forms of volcanic material.

The ACEC contains 99,000 acres of habitat for bighorn sheep, a Type 3 BLM sensitive species, which represents 18% of the habitat within the planning area. The bighorn sheep population within the Bruneau Jarbidge River Canyons is estimated to be approximately 210 sheep (IDFG, 2010a). The canyonlands provide secure lambing habitat. The rivers in the canyon bottoms, as well as occasional seeps from canyon walls, provide water. Bighorn sheep forage is available in both the canyons and adjacent uplands.

The ACEC contains 14 miles of occupied habitat for redband trout, a Type 2 BLM sensitive species. The Bruneau River within the ACEC lacks migration barriers that prevent redband trout from moving up or down stream, unlike most of the other redband trout streams within the planning area.

Davis peppergrass, a Type 3 and Nevada BLM sensitive species, is present in playas within the nominated ACEC. The nominated ACEC contains 10 acres of Davis peppergrass habitat, which represents 7% of the habitat within the planning area.

Fourteen miles of the Bruneau River system is within the ACEC. The Bruneau River system is free-flowing. Free-flowing streams are unique in southern Idaho since the majority of other desert rivers,

including the Snake and Owhyee Rivers and Salmon Falls Creek, contain dams. The riparian system is dominated by Rocky Mountain juniper and willows.

3.5.2 Wilderness

A wilderness area is designated by Congress and is defined by the Wilderness Act of 1964 as a place that "(1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

The Omnibus Public Lands Management Act (OPLMA) designated 89,780 acres as the Bruneau-Jarbidge Rivers Wilderness (Map 145), of this 60,320 acres are in the planning area. The remainder is managed by the Bruneau Field Office. Of the portion located within the planning area, 46,170 acres were formerly in the Jarbidge River Wilderness Study Area (WSA), 13,980 acres were formerly in the Bruneau River-Sheep Creek WSA, and 170 acres outside of WSAs altogether.

OPLMA also contains management provisions for the new Wilderness designations:

- Subject to valid existing rights, the Wilderness shall be administered by the Secretary of the Interior in accordance with the Wilderness Act.
- Subject to valid existing rights, the Wilderness is withdrawn from all forms of:
  - Entry, appropriation, or disposal under the public land laws;
  - Location, entry, and patent under the mining laws; and
  - Disposition under the mineral leasing, mineral materials, and geothermal leasing laws.
- Livestock grazing established as of the passage of the Act shall be allowed to continue, subject to such reasonable regulations, policies, and practices as the Secretary of the Interior considers necessary, consistent with section 4(d)(4) of the Wilderness Act and the guidelines described in Appendix A of House Report 101-405.
- Fences may be constructed and maintained around the Wilderness as determined to be appropriate to enhance Wilderness values.
- The Secretary of the Interior shall accept the donation of any valid existing grazing permits or leases, all or a portion of which is within the Wilderness; for each permit or lease donated, the permit or lease shall be terminated and grazing on the land covered by the permit or lease shall be ended permanently. If the land is also covered by another valid existing permit or lease that is not donated, the authorized grazing level on that land shall be reduced to reflect the donated permit or lease. If less than the full amount of grazing use under a permit or lease is donated, the authorized grazing level shall be reduced to reflect the donation and the permit or lease shall be modified to reflect the revised use levels.
- Land or interests in land may be acquired within the boundaries of the Wilderness through purchase, donation, or exchange. Any land or interest in land acquired in, or adjoining the boundary of, the Wilderness shall be added to and administered as part of the Wilderness.
- A trail plan addressing hiking and equestrian trails will be developed.
- Commercial services, including authorized outfitting and guide activities, are authorized in the Wilderness to the extent necessary for activities that fulfill recreational or other Wilderness purposes.
- Adequate access shall be provided to any owner of private property within the Wilderness boundary.
- Management activities necessary to maintain or restore fish and wildlife populations and habitats in Wilderness may be conducted if the activities are consistent with relevant Wilderness management plans and conducted in accordance with appropriate policies, such as those established in Appendix B of House Report 101-405. These management activities may include the occasional and temporary use of motorized vehicles, if the use would promote healthy, viable, and more naturally distributed wildlife populations that would enhance Wilderness values while causing the minimum impact necessary to accomplish those tasks.
- Any measures that the Secretary determines to be necessary may be taken to control wildland fire, insects, and diseases.

- No protective perimeter or buffer zone shall be created around the Wilderness.
- Non-Wilderness activities or uses outside the Wilderness that can be seen or heard from within the Wilderness shall not be precluded.

OPLMA released the remaining portions of the Jarbidge River and Bruneau River-Sheep Creek WSAs from consideration as Wilderness. Within the planning area, 17,940 acres of the Jarbidge River WSA and 14,140 acres of the Bruneau River-Sheep Creek WSA were released. The released lands are to be managed in accordance with the applicable land use plan adopted under section 202 of the Federal Land Policy and Management Act of 1976.

3.5.3 National Historic Trails

The Oregon Trail was designated a National Historic Trail (NHT) under the National Trails System Act on November 10, 1978 (Public Law 95-625). The purpose of the National Trails System Act is to promote preservation, public access, travel, enjoyment, and appreciation of designated trails. The Oregon NHT follows the primary route of the Oregon Trail based upon emigrant travel that occurred between 1841 and 1848. In all, there are approximately 47 miles of the Oregon NHT managed by the Jarbidge Field Office. The nature and purposes of the Oregon NHT are to identify, preserve, and interpret the sites, route, and history of the Oregon Trail for all people to experience and understand and to commemorate the westward movement of emigrants to the Oregon country as an important chapter of our national heritage (NPS, 1999). Included are the resources, qualities, and values comprised of the physical remnants of the trail, associated artifacts, campsites, and landmarks, their associated settings, and the recreational, scenic, natural, and historical values attached to them. The primary uses of the trail include cultural resource sight-seeing, hiking, horseback riding, historical interpretation, and historic resource protection.

In the planning area, the Oregon NHT closely follows the Snake River. The trail splits at Three Island Crossing near Glenns Ferry; the main trail crosses over to the north side of the Snake River, while the South Alternate continues along the south bank of the Snake River (Hutchison and Jones, 1993). Those portions of the Oregon NHT on public land meeting the National Trails System Act criteria for historical importance, national significance, and high potential for recreation or historic interpretation are called Federal Protection Components.

The Comprehensive Management and Use Plan Update for the Oregon NHT developed by the National Park Service identifies one high-potential route segment and two high-potential historic sites on BLM-managed land in the planning area (NPS, 1999). These Federal Protection Components include approximately 29 miles of the North Trail high-potential segment, from the Elmore County line to Glenns Ferry, and the Thousand Springs Complex and Three Island Crossing high-potential sites.

During the 20th century, portions of the Oregon Trail in the planning area were destroyed by agricultural development and highway construction projects. Prior to the passage of the National Trails System Act, Federal Land Policy and Management Act of 1976, and National Environmental Policy Act of 1969 (NEPA), portions of the remaining trail's visual corridor were altered by the construction of major overhead transmission lines between Hagerman and Glenns Ferry. Since the mid-1980s, dedicated management under the Boise District's Oregon Trail Management Plan (BLM, 1984) and extensive trail marking have stemmed the loss and reduced damage to trail resources. Trail conditions are generally good in remote, undeveloped settings. However, trail and visual corridor conditions have deteriorated in the vicinity of wind energy developments and where cross-country motorized vehicle use overlaps with the historic route. The presence of livestock fences and water troughs and the alteration of native vegetation communities adjacent to the trail after wildland fires, especially conversion from native to annual communities, have affected the physical and visual setting of the Oregon NHT in isolated areas.

In addition to NHT status, the Oregon Trail is eligible for listing in the National Register of Historic Places under the National Historic Preservation Act. The BLM is currently completing a detailed assessment of the physical condition and setting of the Oregon and California Trails in the Twin Falls District. Information from this study will help identify those stretches of trail that qualify as contributing segments (i.e., segments that meet the criteria for inclusion in the National Register of Historic Places) as well as

noncontributing segments (i.e., segments that lack integrity due to substantial alteration or complete destruction).

3.5.4 Wild and Scenic Rivers

Congress enacted the Wild and Scenic Rivers Act (WSRA; 16 USC 1271-1287) on October 2, 1968. The WSRA stipulates selected rivers should be preserved in a free-flowing condition and be protected for the benefit and enjoyment of present and future generations. Since 1968, the WSRA has been amended many times, primarily to designate additional rivers and to authorize the study of other rivers for possible inclusion.

Section 5(d)(1) of the WSRA directs Federal land management agencies to consider potential Wild and Scenic Rivers (WSRs) in their land and water planning processes, stating, “In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas.” To fulfill this requirement, the BLM evaluates river and stream segments to determine whether they might be eligible for inclusion in the National Wild and Scenic Rivers System whenever it undertakes a land use planning effort such as a RMP.

The WSRA seeks to protect and enhance a river’s natural and cultural values and to provide for public use consistent with its free-flowing condition, water quality, and outstandingly remarkable values (ORVs). Designation affords certain legal protection from development. For instance, new dams cannot be constructed, and Federally assisted water resource development projects that might negatively affect the designated river values are not permitted. Where non-Federal lands are involved, the managing Federal agency works with local governments and private landowners to develop protective measures.

Consideration of whether a river should be designated as a wild, scenic, or recreational river can be broken into two phases:

- **Determination of Eligibility** - Federal agencies conduct an evaluation of river features to determine which rivers qualify to be added to the National Wild and Scenic Rivers System and
- **Determination of Suitability** - Most commonly, Federal agencies conduct a review and then recommend to Congress which rivers should be protected. Only Congress can designate a river as wild, scenic, or recreational.

River segments determined to be eligible are assigned a tentative classification as wild, scenic, or recreational. These classifications are defined as follows:

- **Wild** - Wild river areas are those rivers or sections of rivers free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.
- **Scenic** - Scenic river areas are those rivers or sections of rivers free of impoundments, with shorelines or watersheds still largely primitive or shorelines largely undeveloped, but accessible in places by roads. Scenic does not necessarily mean the river corridor has to have scenery as an ORV.
- **Recreational** - Recreational river areas are those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past. Recreational does not imply that the river will be managed or prioritized for recreational use or development or that the river corridor has to have recreation as an ORV.

The Omnibus Public Lands Management Act (2009) designated four WSR segments in the planning area:

- A 38.1-mile segment of the Bruneau River from the downstream boundary of the Bruneau-Jarbidge Rivers Wilderness to the confluence with the West Fork of the Bruneau River, except for a 0.5-mile segment at the Indian Hot Springs public road access, to be administered as a wild river.
- A 0.5-mile segment of the Bruneau River at the Indian Hot Springs public road access to be administered as a recreational river.

- A 0.3-mile segment of the West Fork of the Bruneau River from the confluence with the Jarbidge River to the downstream boundary of the Bruneau Canyon grazing allotment to be administered as a wild river.
- A 27.9-mile segment of the Jarbidge River from the confluence with the West Fork of the Bruneau River to the upstream boundary of the Bruneau-Jarbidge Rivers Wilderness to be administered as a wild river.

ORVs attributed to all these river segments are scenic, recreational, geological, fish, wildlife, cultural, and vegetation.

WSR eligibility determinations and tentative classifications for the Snake River segments were made in 1991 by the Shoshone District Office[13]. Two of the eligible segments of the Snake River are shared with the Jarbidge Field Office. Eight miles of the Snake River from Lower Salmon Falls Dam downstream to Bliss Dam Reservoir (the Hagerman Reach) and 13 miles of the river from Bliss Dam downstream to the King Hill Bridge (the King Hill Reach) were both found to be eligible and were tentatively classified as recreational (Table 3-57).

Table 3-57. River Segments Eligible and Suitable for Inclusion in the Wild and Scenic River System

River	Segment Description	Length (miles)	Outstandingly Remarkable Values (ORVs)	Tentative Classification	Current Status
Bruneau River, Upper[A]	Blackrock Crossing to 11 miles downstream	11	Cultural, Fish, Geological, Recreational, Scenic, Vegetation, Wildlife	Scenic	Suitable
Bruneau River[A]	11 miles downstream from Blackrock Crossing to 0.3 miles above the confluence of the Jarbidge River	12	Cultural, Fish, Geological, Recreational, Scenic, Vegetation, Wildlife	Wild	Suitable
Cougar Point Creek[B]	Jarbidge Field Office boundary to East Fork, Jarbidge River confluence	1	Scenic	Wild	Eligible
Dave Creek[B]	Private boundary to East Fork, Jarbidge River confluence	3	Fish	Wild	Eligible
Jarbidge River[B]	Jarbidge Field Office boundary to East Fork, Jarbidge River confluence	10	Fish, Scenic	Recreational	Eligible
East Fork Jarbidge River, South[B]	Jarbidge Field Office boundary to Murphy Hot Springs	7	Fish	Wild	Eligible
East Fork Jarbidge River, North[B]	Murphy Hot Springs to Jarbidge River confluence	2	Fish	Recreational	Eligible

[13] The Shoshone District Office is now known as the Shoshone Field Office within the Twin Falls District.

River	Segment Description	Length (miles)	Outstandingly Remarkable Values (ORVs)	Tentative Classification	Current Status
Rocky Canyon Creek[B]	Headwaters to North Fork, Salmon Falls Creek confluence	2	Wildlife	Wild	Eligible
Salmon Falls Creek, Upper[C]	Nevada border to Salmon Falls Reservoir	9	Recreational	Recreational	Eligible
Salmon Falls Creek, Lower[C]	Salmon Falls Dam to Balanced Rock	30	Geological, Recreational, Scenic	Scenic	Eligible
Snake River, Hagerman Reach[D]	Lower Salmon Falls Dam to Bliss Dam Reservoir	8	Fish, Geological, Historical, Recreational, Wildlife	Recreational	Eligible
Snake River, King Hill Reach[D]	Bliss Dam to King Hill Bridge	13	Fish, Geological, Recreational, Wildlife	Recreational	Eligible
Snake River, Three Island Reach[B]	King Hill Bridge to Highway 51 Bridge	25	Cultural, Fish, Historical, Recreational	Recreational	Eligible

[A] Evaluation and study conducted in the Bruneau WSR Study (1976); ORVs for Bruneau and Jarbidge River segments were inferred from the narrative in the Bruneau WSR Study Report.
[B] Evaluation conducted as part of the current planning process (BLM, 2009d).
[C] Evaluation conducted by the Burley District Office in 1992 and finalized in 2009.
[D] Evaluation conducted by the Shoshone District Office as part of the Draft Bennett Hills RMP in 1991.

WSR eligibility and tentative classifications for the Idaho segments of Salmon Falls Creek were initiated in 1992 by the Burley District Office[14]; eligibility determinations were finalized in 2009. These segments form the majority of the eastern boundary of the planning area. Nine miles of Salmon Falls Creek from the Nevada border downstream to Salmon Falls Reservoir and 30 miles of Salmon Falls Creek from Salmon Falls Dam downstream to Balanced Rock Park were identified as eligible (Table 3-57). The upper segment was tentatively classified as recreational and the lower segment as scenic.

An eligibility evaluation was first conducted in 2007 and updated in 2012 on all river segments within and bordering the planning area not already determined eligible or suitable as part of the planning process for the Jarbidge RMP (Appendix N). River segments determined to be eligible as part of that evaluation, as well as their tentative classification, are contained in Table 3-57. Eligible rivers and their corridors on Federal lands are provided interim protection until the suitability phase is complete. Rivers recommended as suitable are protected as potential additions to the National Wild and Scenic Rivers System until Congress or the Secretary of the Interior determines whether the suitable river will be included. Rivers deemed nonsuitable by Congress revert to land management as described in the most recent RMP.

3.5.5 Wilderness Study Areas

Wilderness Study Areas (WSAs) are Lands with Wilderness Characteristics identified through the wilderness review required by Section 603 of the Federal Land Policy and Management Act of 1976 (FLPMA), Congressional legislation, or the land use planning process in Section 202 of FLPMA. WSAs are administrated and managed under BLM Manual 6330, Management of Wilderness Study Areas pending Congressional action. Wilderness characteristics are features of the land associated with the concept of wilderness, including naturalness and opportunities for solitude and primitive and unconfined types of recreation, that are reasonably present, of sufficient value, and practical to manage. An area with

[14] The Burley District Office is now known as the Burley Field Office within the Twin Falls District.

naturalness generally appears to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable. Solitude is the state of being alone, remote from habitation, or in a secluded place. A primitive and unconfined recreation experience is an activity that provides dispersed, undeveloped recreation that does not require facilities or motorized equipment.

Only Congress can designate WSAs as Wilderness or release them from management. Until such time as Congress acts, the BLM must manage these lands in a manner so as not to impair the suitability of such areas for preservation as wilderness. Any WSA lands released from management are subject to specific release direction as stated in the release legislation. If the release legislation does not contain specific direction, released lands would be managed according to direction in the current RMP.

There is currently one WSA in the planning area (Map 145). The Lower Salmon Falls Creek WSA is located in Twin Falls County, Idaho. This WSA includes Salmon Falls Creek from Salmon Dam downstream to the Lilly Grade crossing. Lands of the Lower Salmon Falls Creek WSA are located in the Jarbidge and Burley Field Offices, including 2,000 acres of BLM-managed land in the planning area. Two additional WSAs, the Bruneau River-Sheep Creek WSA and the Jarbidge River WSA, were designated wilderness by the Omnibus Public Lands Management Act (2009).

3.6 SOCIAL AND ECONOMIC FEATURES

Every area has defining features which influence the shape and nature of local economic and social activity. Among these are the demographics of local populations, the presence of or proximity to large cities or regional population centers, types of longstanding industries (i.e., agriculture and oil and gas), and natural amenities. The Jarbidge Field Office operates as a steward of many of these area resources and opportunities and thus plays a role in the community. The social and economic features section provides insight into the character and the extent to which local communities are connected to BLM-managed lands within the planning area.

The economic analysis focuses on goods and services provided by BLM-managed lands within the planning area. These lands contribute a wide range of economic values to people. Market goods, such as livestock and recreation, generate employment and income as well as payments to local communities and some revenue for the Federal treasury. Non-market goods such as ecosystems and habitats generate value everyone reaps but do not necessarily pay for. Other goods such as outdoor recreation and scenery are valued by the people who use them but only a portion of this value is represented in market purchases.

The planning area straddles the Idaho/Nevada border and is located within four counties (Twin Falls, Elmore, and Owyhee Counties, Idaho, and Elko County, Nevada). While few people live within the boundaries of the planning area, there are a number of adjacent small cities whose residents rely on the natural and cultural resources provided by these BLM-managed lands. Since the social and economic effects from changes on BLM-managed lands extend to neighboring communities, the geographic scope of the analysis has been expanded beyond the planning area boundary to encompass all of Elmore, Owyhee, and Twin Falls Counties in Idaho and Elko County, Nevada. To examine both the role of these lands on individual counties and on the larger region, a multidimensional approach was taken to provide information at the county and larger analysis area scale. By doing so, regional relationships are addressed without masking relationships with smaller counties and communities in the analysis

Map 147 displays lands managed by the Jarbidge Field Office and their relationship with the four-county region.

3.6.1 Social Conditions

Stakeholder Groups

Several stakeholder groups with varying levels of interest in the planning area can be identified. These stakeholders are either physically engaged with the planning area or socially engaged with those who are, and see themselves as acting on behalf of themselves, their families, their future descendants, neighbors, and the public good. Jarbidge stakeholders include ranchers, local residents, recreationists, hunters, and anglers, as well as individuals with cultural or emotional ties who see themselves as acting on behalf of the public good. While tribal members of the Shoshone-Bannock and Shoshone-Paiute Tribes are also classified as stakeholders, their relationship to the planning area is discussed in the *Tribal Rights and Interests* section.

Ranchers

Approximately 60 family ranches have permits to graze livestock in the planning area. Many ranchers love the way of life ranching provides and pride themselves on being stewards of the land. An estimate of three ranchers per family yields a population size of 180 ranchers working in the planning area. This is a conservative estimate, as local observers generally used higher estimates for the number of ranchers per ranch, but they agreed it could possibly be this low.

Families with grazing permits in the planning area also use public land for purposes other than grazing, including scientific, educational, spiritual, aesthetic, and recreational purposes (Black, 2006; Brackett et al., 2006; Lehmann et al., 2006).

Livestock grazing has been an important social and economic activity in the planning area since the 1870s. Ranching within the planning area relies on multi-generational family farms, with several families reporting that they have been raising cattle in the planning area for six generations. These ranchers have a vested interest in maintaining healthy and productive rangelands and take pleasure in the stewardship of the land they utilize. Public comments indicated that range stewardship improved the quality of life of local ranchers, and that ranching practices in the planning area will preserve open space from development, improving the quality of life of non-ranching households and future generations living in the four-county region.

Local Residents (Non-Ranchers)

Local businesses and non-ranching residents (part-time and year-round*)* have a strongly rural character and are closely integrated with their ranching neighbors (Wulfhorst et al., 2003). Survey data from Owyhee County suggests that non-ranchers view their ranching neighbors in a positive light (Harp et al., 2001), and in many instances, their lives are intertwined as they take part in round ups, branding, and many of the same recreation activities.

Public land issues are important to these stakeholders. In nearby Jarbidge, NV, more than 70% of homeowners have attended two or more community meetings or hearings or have worked with other community members to bring public action on public land issues. More than half of Jarbidge, NV, homeowners have written a letter or editorial or provided testimony on public land issues at least twice (Rollins et al., 2007a). Residents in this region were identified as being concerned by the threat of wildland fire to their community. The majority of these residents believed that livestock grazing has a valuable role to play in reducing fire risk; only 12% say they do not approve of using grazing to reduce wildland fire threats (Rollins et al., 2007b).

Participants in the Jarbidge Community Economic Workshop identified the Malad Gorge and Billingsley Creek State Parks, Miracle and Sligar's Hot Springs, and the Thousand Springs Scenic Byway as culturally and socially significant places and areas (Gardner, 2006). Participants also identified what they appreciated about the planning area. Responses included solitude, livestock, wildlife, scenery, recreation opportunities, hunting, and cultural aspects. Areas important to the Shoshone-Paiute Tribes and the Shoshone-Bannock Tribes exist within the planning area boundaries; these are addressed in the *Tribal Rights and Interests* section.

Dispersed Recreators

The dispersed recreator stakeholder group represents people who view wildlife, camp, and hike in the planning area. Dispersed recreators may also engage with the planning area contemplatively when they are not there (e.g., thinking about the area, telling stories, and sharing photos).

River Recreators

Based on user data, the river recreator stakeholder group is estimated to be comprised of approximately 3,000 people. River recreators participate in whitewater and flat-water kayaking, rafting, and canoeing primarily on the Bruneau, Jarbidge, and Snake Rivers and Salmon Falls Creek.

Motorized Recreators

Motorized recreators comprise a large portion of recreators in the planning area. There were 9,454 all-terrain vehicles (ATVs), utility vehicles, and off-highway motorbikes registered to residents of Elmore, Owyhee, and Twin Falls Counties in 2011 (IDPR, 2011). ATV and motorcycle use is likely high in Elko County as well, as 74% of Jarbidge, NV, residents reported ATV and motorcycle use in a recent survey (Rollins et al., 2007a). It can be assumed that two-thirds of the 9,454 ATV, utility vehicles, and off-highway motorcycle owners residing in adjacent counties recreate in the planning area, that many of these vehicles are used by more than one person, and that some individuals own more than one of these vehicles.

Hunters and Fishermen

The hunter and angler stakeholder group is assumed to have a population of 34,042 people based on research by Wulfhorst and others (2003) that found 43% of Owyhee County residents participated in hunting or fishing. The rate in neighboring Elmore County is likely to be similar. Twin Falls County is more urban and more likely to have a participation rate similar to the statewide rate for Idaho of 24% (FWS, 2006b). Among Jarbidge, NV, residents, 52% have fished, 43% have hunted birds, 35% have hunted other small game, and 30% have hunted big game (calculations from Rollins et al., 2007a).

Demographics

Over the past two decades, the four-county region grew by more than 37% and was estimated to have a population of 164,612 in 2010 (Table 3-58). While the four-county region witnessed steady growth between 1990 and 2010, population growth in Elmore, Owyhee, Twin Falls, and Elko Counties tapered off over the last decade. Between 1990 and 2000, populations in Elmore, Owyhee, and Twin Falls Counties grew by 33%, 21.6%, and 17.4% respectively, while Elko County, Nevada grew by 31%. Like many nonmetropolitan regions within the United States, population growth grew sluggish during the first decade of the 21st century as growth rates fell to less than half of those experienced in the 1990s. Between 2000 and 2010, growth within the four-county region slowed to just 10% as growth within Elmore County plummeted from 33% to 7%. While populations in Elmore County dwindled, the remaining three counties continued to experience positive growth. Owyhee and Elko Counties grew by 8.3% and 7.8% respectively in the early 2000s, as growth became more rapid in Twin Falls County with the rate of population change increasing from 17.4% to 20.1%.

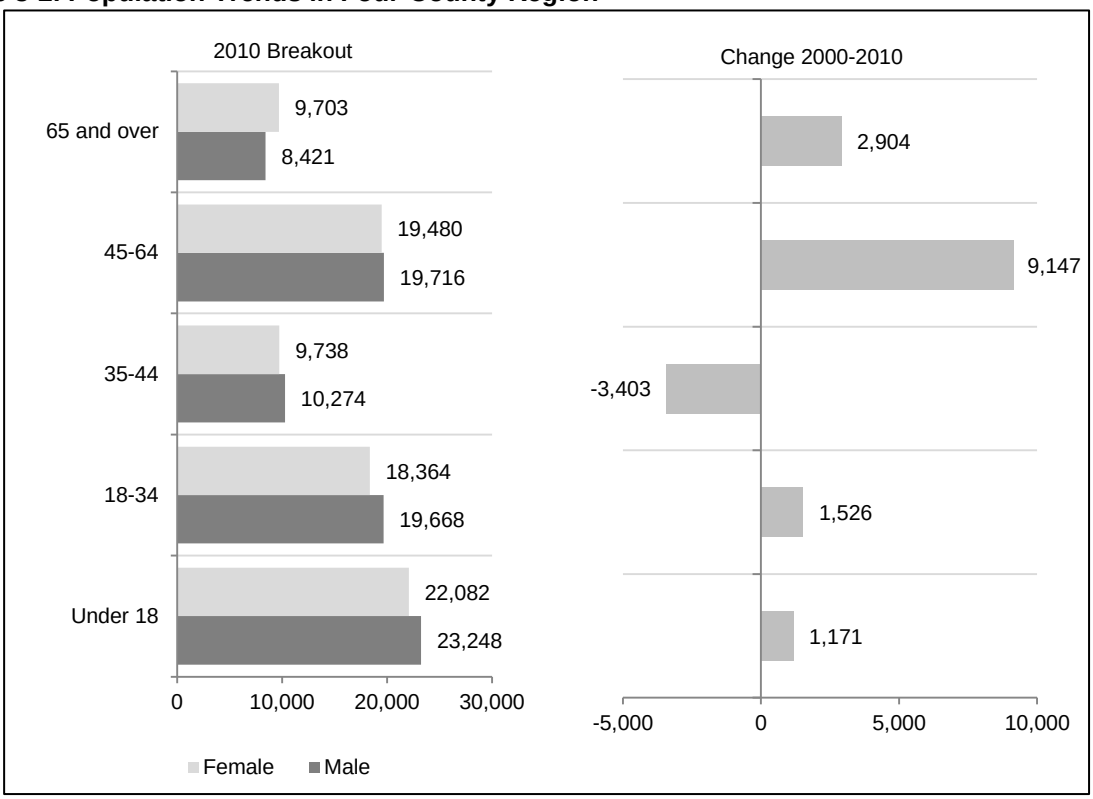
Table 3-58. Population Change for Counties within the Four-County Region

Analysis Areas	Resident Population (thousands of people)			Population Change		
	1990 Census	2000 Census	2010 Census	1990-2000	2000-2010	1990-2010
Nevada	1,230.7	1,998.3	2,700.6	62.4%	35.1%	119.4%
Idaho	1,029.3	1,294.0	1,567.6	25.7%	21.1%	52.3%
Four-County Region	120.0	149.3	164.6	24.4%	10.2%	37.2%
Elko, NV	34.6	45.3	48.8	31.0%	7.8%	41.2%
Elmore, ID	21.9	29.1	27.0	33.0%	-7.2%	23.4%
Owyhee, ID	8.8	10.6	11.5	21.6%	8.3%	31.7%
Twin Falls, ID	54.8	64.3	77.2	17.4%	20.1	41.0%

Source: (U.S. Census Bureau, 1990; 2000; 2010a).

Although more than half of all residents in the four-county region were under the age of 35 in 2010 (Figure 3-2), trends over the last decade indicate that the region's population is aging at an increasing rate. While the median age across Elko, Elmore, Owyhee, and Twin Falls Counties has remained in the early thirties, the age group 45 and older showed steady increases in their share of the total population. Between 2000 and 2010, the four-county region experienced growth in populations 45 years and older as the number of residents 45 to 64 years increased by 9,147 people and residents 65 years and older increased by 2,904 people. Changes in the shares of these age groups caused the median age across the region to rise. The number of residents 18 to 35 increased by 1,526 people, and the number of residents under the age of 18 increased by 1,171 people. During this time period, residents 35 to 44 declined by 3,403 people (Figure 3-2). In Owyhee and Elko Counties, the median age increased by more than two years, while the median age in Elmore and Twin Falls Counties remained relatively unchanged during this time period (Table 3-59).

Figure 3-2. Population Trends in Four-County Region



Source: (U.S. Department of Commerce, 2011).

Table 3-59. Median Age for the Four-County Region

Age	Impact Area			
	Elmore	Owyhee	Twin Falls	Elko
Median Age (2000)	29.1	32.9	34.9	31.2
Median Age (2010)	29.5	35.3	34.5	33.6
Median Age (% Change)	1.4	7.3	-1.1	7.7

Source: (U. S. Department of Commerce, 2011).

The 2010 census indicated that the racial composition of the four-county region was much less diverse than the overall national population, with more than 89% of residents identifying themselves as White alone. Although national population data indicated several racial and ethnic groups are underrepresented in the planning area, the four-county region reported having higher concentrations of individuals identifying themselves as White alone, American Indian and Alaska Native, Two or more races, and of Hispanic origin than at the national level. When demographics of the four-county region are compared to those of the modified State-level population (which aggregates Elko, NV with the State of Idaho), it becomes evident that the population of the four-county region has greater concentrations of Black or African American, American Indian and Alaska Native, and some other racial groups; as well as a higher concentration of residents with a Hispanic origin. Further disaggregating the population of the four-county region reveals that the racial and Hispanic composition of individual counties may be more diverse than the total population of the four-county region. When county shares of these minority groups are compared to the population shares within the modified State-level population it becomes evident that Elko County has a greater percentage of individuals identifying themselves as American Indian and Alaska Native, or having a Hispanic origin; Elmore County was home to a greater percentage of residents who identified themselves as Black or African American, Asian, Two or more races, or some other race alone; Owyhee County has greater concentrations of residents identifying themselves as having a Hispanic origin or belonging to American Indian and Alaska Native or Two or more racial groups; and the population of Twin

Falls County has a higher concentration of residents identifying themselves as some other race alone (Table 3-60[15]).

Table 3-60. Racial and Hispanic Composition of 2010 Population

Location	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some other race alone	Two or more races	Hispanic Origin
United States	74.0%	12.5%	0.8%	4.7%	0.2%	5.5%	2.4%	15.7%
Idaho + Elko County, NV	92.1%	0.6%	1.4%	1.2%	0.2%	2.2%	2.4%	10.9%
Four-County Region	89.7%	0.9%	2.3%	1.0%	0.2%	3.2%	2.7%	16.7%
Elko County	88.0%	0.8%	5.3%	1.1%	0.2%	2.3%	2.4%	22.3%
Elmore County	85.5%	2.6%	1.5%	1.5%	0.2%	3.3%	5.3%	14.8%
Owyhee County	90.5%	0.1%	3.1%	0.0%	0.0%	2.5%	3.7%	24.4%
Twin Falls County	92.1%	0.5%	0.5%	1.0%	0.2%	3.9%	1.8%	12.6%

Source: (U.S. Department of Commerce, 2011).

3.6.2 Economic Conditions

Economic Specialization and Employment

Unemployment rates for the four-county region have historically been below the averages for the United States, Idaho, and Nevada. Average annual unemployment rates for this region were 4.8% in Owyhee County, 7.4% in Elko County, 8.1% in Twin Falls County, and 8.5% in Elmore County (Bureau of Labor Statistics, 2011), while unemployment was 13.7% in Nevada, 8.8% in Idaho, and 9.6% for the United States. Employment within the four-county region is distributed among economic sectors and displayed below (Figure 3-3) relative to employment at the modified State level (the State of Idaho plus Elko County, NV). Of particular interest is the bottom six sectors, which contain jobs related to BLM land management. The Government sector includes all Federal, State, and local employment, while the Grazing sector includes both cattle and sheep ranching. The last four sectors have been specifically identified as being at least partially attributable to tourism and recreation (Marcouiller and Xia, 2008). The contributions from BLM lands managed by the Jarbidge Field Office represent only a portion of the economic activity reflected in industry sectors (Figure 3-3), and the exact portion supported by activities on BLM-managed lands is discussed further in the *Economic Sectors Affected by the Jarbidge RMP* section below.

Using the ratio of the percent employment in each industry in the region of interest (four-county region) to the percent of employment in that industry for a larger reference region (the State of Idaho plus Elko County, NV) enables the identification of labor specialization within the region. For a given industry, when the percent employment in the analysis region is greater than in the reference region, local employment specialization exists in that industry (USDA, 1998). Identification of employment specialization within the planning area provides a frame of reference for contributions from BLM management of Jarbidge Field Office lands. Applying this criterion to 2010 data reveals that the planning area can be characterized as most specialized in the Government and Accommodation and Food Service sectors.

[15] Race and ethnicity are separated since Hispanics can be of any race.

Over the last decade, total employment in the four-county region increased by nearly 7,000 jobs, from 81,058 jobs in 2001 to 87,975 jobs in 2010. A large portion of this growth stemmed from services-related sectors. Over this time period, non-service sectors grew by 1.4% while services-related sectors grew by 16.8%. Services-related sectors consist of the following sectors: Utilities; Wholesale Trade; Retail Trade; Transportation and Warehousing; Information; Finance and Insurance; Real Estate, Rental, and Leasing; Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support Services; Educational Services; Health Care and Social Assistance; Arts, Entertainment, and Recreation; Accommodation and Food Services; and Other Services. Non-services related sectors consist of the following sectors: Mining, Construction, Manufacturing, Agriculture, Grazing, Fishing, and Hunting (U.S. Department of Commerce, 2012a).

Decreased employment in non-services related sectors and increased employment in services-related sectors can indicate that economic well-being in the region could be declining. In general, jobs in services-related sectors tend to pay lower annual wages than jobs in non-services related sectors. Although increased employment in these sectors relative to non-services related sectors implies that a greater share of the labor force in the four-county region could be working lower-paying jobs, increases in these jobs may signal higher labor participation by women and minority groups.

In addition, people moving to the area for its amenities may opt for employment in the lower paying services-related sectors as a means to enjoy the natural amenities of the region supported in part by BLM-managed lands. In this manner, some may benefit from a secondary income because of the enjoyment they gain from living in the area. Changes in population and employment have been shown to be related to natural amenities (Knapp and Graves, 1989; Clark and Hunter, 1992; Treyz et al., 1993; Mueser and Graves, 1995; McGranahan, 1999; Lewis et al., 2002), and are often provided by surrounding public lands. Thus the Jarbidge Field Office operates as a steward of many of these natural amenities, consequently supporting a portion of the regional population and employment growth.

Figure 3-3. Estimated Employment by Occupation for the Planning Area and the Four-County Region, 2008

Self-Employment

Self-employment in farm and non-farm sectors is an important contributor to employment within the four-county region, and includes sole proprietorships, partnerships, and tax-exempt cooperatives. Proprietors accounted for 20.9% of 2010 total employment in the four-county region, growing by nearly 16% between 2000 and 2010. The planning area was estimated to have 2,400 farm proprietors in 2010, which accounted for 2.7% of total farm employment within the four-county region (U.S. Department of Commerce, 2012a).

Income Levels

Two measures commonly used to measure the relative prosperity of a population are total personal income and per capita personal income. Personal income can be broken into three major sources: labor earnings or income from the workplace, investment income (income received by individuals in the form of rent, dividends, or interest earnings), and transfer payment income from government social programs like social security, retirement and disability, or Medicare and Medicaid payments.

Between 1970 and 2010, total personal income in the four-county region increased from $1.75 million to $5.67 million in inflation adjusted 2010 dollars. This reflected a 224% increase in total personal income. Labor earnings earned within Elko, Elmore, Owyhee, and Twin Falls Counties are attributable to a diverse range of industry sectors and accounted for 67% of the four-county region's total personal income in 2010 (U.S. Department of Commerce, 2012a). Figure 3-4 breaks down the region's labor income by industry and highlights the importance of the Government sector's income contributions.

Figure 3-4. 2010 Personal Income by Sector for the Four-County Region

Dividing total personal income by the number of individuals living within the region yields per capita personal income, which was estimated to be $34,486 for the four-county region in 2010 (US Department of Commerce, 2012a). While per capita personal income is a useful measure of economic well-being it should be examined alongside changes in real earnings per job. Since per capita personal income includes labor and non-labor income, it is possible for per capita income to rise, even if the average wage per job declines over time. Between 1970 and 2010 per capita personal income rose by 57%, as average earnings per job increased by 50% (from $24,785 to $37,216; values adjusted for inflation to 2010 dollars) indicating a rise in area economic well-being (US Department of Commerce, 2012a). Further examination of data from the Bureau of Economic Analysis also indicated that non-labor income's share of personal income within the region steadily grew during this time period as transfer payments increased from 22% of total personal income in 1970 to nearly 33% by 2010. Although the data showed that investment income rose from 13.7% to 14.7%, a majority of the non-labor income increase was attributed to transfer payment income (welfare, social security, retirement and disability, or Medicare and Medicaid payments).

Poverty

The measure of poverty at the household level is the Federal definition for poverty level. The Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty levels do not vary geographically, but they are updated for inflation using the Consumer Price Index. The official poverty level definition uses money income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps).

Within the four-county region, there were an estimated 3,966 families and more than 18,000 individuals living below the Federal poverty level in 2010. The Federal poverty level for a three-person family (the rounded average family size in Idaho) in 2010 was $18,310 (U.S. Census Bureau, 2010b) and for an individual it was $10,830 (U.S. Department of Health and Human Services, 2010a; 2010b).This was equivalent to 12% of individuals and 9.5% of families living within the four-county region. Although poverty rates for Idaho and Nevada were below the national rate of 13.8% of individuals and 10.1% of families, rates were shown to vary across the four counties (Table 3-61). Elko and Elmore Counties maintained poverty rates below those for the States of Nevada and Idaho at 7.1% and 12.0% of people and 5.8% and 9.2% of families, respectively. While Twin Falls County maintained rates consistent with rates at the State level, Owyhee County suffered from the highest poverty rates within the four-county region. In 2010, poverty in rural Owyhee County was higher than Idaho's average rate for individuals and nearly twice the average for families. The Census Bureau reported more than 22% of individuals and 18% of the county's families lived in poverty in 2010 (U.S. Department of Commerce, 2012b).

Table 3-61. Poverty in the Four-County Region, 2010

	Below Poverty Line			
	Individuals	**Percent of Individuals**	**Families**	**Percent of Families**
United States	40,917,513	13.8	7,685,345	10.1
Idaho	203,942	13.6	38,942	9.7
Nevada	308,426	11.9	55,599	8.6
Elko County	3,341	7.1	709	5.8
Elmore County	3,127	12.0	666	9.2
Owyhee County	2,510	22.2	544	18.0
Twin Falls County	9,576	13.0	2,047	10.6

Economic Sectors Affected by the Jarbidge RMP

Agriculture and Ranching

Agriculture is big business in Elmore, Owyhee, and Twin Falls Counties, compared to most areas of Idaho. Net farm income exceeded $337 million in 2010 as cash receipts surpassed $1.2 billion. Two-thirds of these receipts were from livestock. That share has grown over time, led by the growth in the number of dairies and dairy cows in the region. The crop share of receipts dropped from 41% in 1970 to 32% in 2010. Although government payments have dropped over time, both in amount and share of farm receipts, 2010 government payments within Elko, Elmore, Owyhee, and Twin Falls Counties were reported to be more than $6.5 million (Gardner and Martin, 2006; U.S Deparment of Commerce, 2012a). The Cattle Ranching and Farming Sector in Elko County, NV is a major contributor of economic activity in the area, and was attributed with providing 1.4% of the employment in Elko County in 2010 (IMPLAN, 2010). In 2010, net farm income was $10.9 million, and average annual cash receipts and other income for this sector was $65.5 million (Vusovic and Harris, 2006; Gardner and Martin, 2006; U.S Deparment of Commerce, 2012a).

The Cattle Ranching and Farming sector and the sector containing sheep grazing (animal production, except cattle, poultry, and eggs) are the IMPLAN[16] sectors most affected by cattle grazing in the planning area and are used to evaluate effects in Chapter 4. The Cattle Ranching and Farming sector and the sector containing sheep grazing was responsible for 22% of employment (1,254 jobs) and 15% of labor income ($34.6 million) within the larger Agriculture sector depicted in Figure 3-4.

While large, the value and ranking of industry sector employment and income do not by themselves reveal the importance of an economic sector or its subsectors. Another way to view the importance of an economic sector to an area's economy is by the sector's contribution to the local economic base. Economic base or basic sectors are those that export to economies outside the area's boundaries. These sectors bring dollars into the local economy for expanded economic development. The Cattle Ranching and Farming Sector ranked second among the 440 IMPLAN sectors in the four-county region in value of exports. This export value is an indication of the importance of the Cattle Ranching and Farming Sector to economic development in the four-county region.

The connection between the BLM Jarbidge Field Office and the Cattle Ranching and Farming Sector is based on management of livestock grazing and rangeland resources. Cattle ranchers can be authorized to use BLM allotments for livestock grazing through grazing permits. The amount of livestock grazing on BLM-managed lands is measured in animal unit months (AUMs). Cattle ranches use BLM grazing as part of a forage resource rotation that includes base property (i.e., private grazing land owned by the rancher) and other resources. Assuming that Federal AUMs are part of an overall grazing system, a change in BLM livestock grazing management can affect the use of the forage resources throughout the planning area. Furthermore, based on discussions with other rangeland-managing agencies, such as the Forest Service, there is not any additional rangeland currently available in the planning area. Therefore, forage provided by the BLM Jarbidge Field Office can be considered a crucial part of operators' overall grazing systems.

Consequently, estimating the contribution of livestock grazing on the four-county region using only BLM AUMs may underestimate the actual importance of BLM-managed lands as a forage resource if BLM AUMs are part of an overall grazing system, where a change in BLM grazing management affects the use of the rest of the forage resources. A study by Alevy and others (2007) in Elko County, NV, estimated that one public land AUM supports 2.21 AUMs at the ranch level. Therefore, current forage use on BLM-managed lands in the planning area (an average of 151,000 AUMs were billed between 2008 and 2011) may support up to 334,000 AUMs at the ranch level.

Using an IMPLAN input-output model, contributions to the four-county region from this range of AUM contributions is examined. This includes direct employment and labor income to permittees and their families, which directly affect the local economy. Additional indirect and induced multiplier contributions (ripple effects) are generated by the direct activities. Indirect contributions occur when permittees make purchases in the local economy that further support employment and income. Indirect contributions occur when income is spent by employees of support industries. Together the direct, indirect, and induced contributions comprise the total economic contribution to the local economy from the planning area.

[16] IMPLAN (IMpact analysis for PLANning) is an input-output analysis software program produced by MIG, Inc. (formerly Minnesota IMPLAN Group, Inc.). In combination with regional-specific Social Accounting Matrices and Multiplier Models, IMPLAN provides a highly accurate and adaptable model for its users. The IMPLAN database contains county, state, zip code, and federal economic statistics which are specialized by region, are not estimated from national averages, and can be used to measure the effect on a regional or local economy of a given change or event in the economy's activity.

Using this IMPLAN model, total contributions range from 281 to 621 jobs[17] and $4.7 to $10.5 million in labor income on an average annual basis. Direct contributions to the Cattle Ranching and Farming sector and the sector containing sheep grazing would range from 183 to 405 jobs, which constitutes 15% to 32% of the total employment in these sectors within the four-county region.

Government

BLM disbursements coming out of the planning area in Fiscal Year 2011 include approximately $800 in Special Recreation Permits, $195,000 in grazing receipts, $6,000 in mineral material sales, and $594,000 in land use authorizations and rights-of-way collections. Total collections from grazing on BLM-managed land in Idaho were approximately $1,352,000 in FY 2011. The planning area represented nearly 15% of that total.

BLM disburses Payments In Lieu of Taxes (PILT) to counties (Table 3-62). Congress appropriates PILT payments each year for tax-exempt Federal lands administered by the BLM, National Park Service, US Fish and Wildlife Service, Forest Service, Federal water projects, and some military installations. PILT payments are in addition to other Federal revenues transferred to the States such as oil and gas leasing, livestock grazing, and timber harvesting. These payments help local governments carry out vital services such as firefighting and police protection, construction of public schools and roads, and search-and-rescue operations. The formula used to compute the payments is contained in the PILT Act and is based on population, receipts-sharing payments, and the amount of Federal land within an affected county (entitlement acreage). PILT payments within the four-county region totaled more than $13.5 million in 2012; however, BLM was responsible for only a portion of the entitlement acreage the payment was based on. The PILT payment attributable to BLM entitlement acreage within the planning area is estimated to be $1.2 million.

Table 3-62. Payments in Lieu of Taxes for the Four-County Region

	Elmore	Owyhee	Twin Falls	Elko	Four-County Area
Total Federal Entitlement Acreage	1,355,467	3,634,223	638,166	7,906,516	13,534,372
Jarbidge Entitlement Acreage	113,720	924,780	289,116	45,879	1,373,495
2012 Total Payment	$2,197,381	$1,245,549	$1,574,196	$2,904,627	$7,921,753
BLM Share of Payment	$184,354	$316,948	$713,177	$16,855	$1,231,334

Based on the IMPLAN methodology, payments to counties from minerals disbursements, grazing revenues, and the share of PILT attributable to entitlement acreage within the planning area contributes 19 jobs and $795,000 in labor income (direct, indirect, and induced contributions) to the four-county region on an average annual basis.

Recreation

BLM-managed land within the planning area provides a variety of recreation opportunities to local recreationists and visitors. The majority of recreation activity in the planning area is classified as

[17] Jobs reported from IMPLAN are an annual average and are not full-time equivalents. These estimates measure the number of jobs per year supported by the Jarbidge Field Office management and include all full-time, part-time, and temporary positions. Thus a job can be interpreted as 1 job lasting 12 months = 2 jobs lasting 6 months each = 3 jobs lasting 4 months each, etc. While IMPLAN provides a means by which changes in employment stemming from Jarbidge Field Office management can be measured, its data cannot determine the number of hours worked, the relative percentage of full-time to part-time employment, or identify the number of local employees associated with these job-years.

dispersed or motorized, with the majority of users traveling fewer than 100 miles to enjoy the activities available to them. Recreation use levels generally follow a pattern of growth commensurate to population growth. Population growth in southcentral Idaho has contributed to greater recreation activity within the planning area.

Data collected by the Jarbidge Field Office staff indicate that that there were 48,300 recreational visits to the planning area over the 11-year period between October 2000 and September 2011. On their way to recreate, and once they arrive, these visitors spend money on goods and services they would spend elsewhere if these opportunities did not exist. In this manner, the opportunities on BLM-managed lands contribute to the four-county region economy by attracting these visitors.

Analyses of expenditures reported by national forest visitors show the primary factor determining the amount spent by a visitor was the type of trip taken and not the specific activity or area visited (Stynes and White, 2005). Since visitor expenditure information for the type of trip taken on BLM is not yet available, National Visitor Use Monitoring data from US National Forests serves as a proxy. There are six trip type segments with detailed expenditure information for visitors:

- Visitors who reside greater than 30 miles from the visited planning area:
  - Non-local residents on day trips,
  - Non-local residents staying overnight on the planning area, and
  - Non-local residents staying overnight off the planning area.

- Visitors who live within 30 miles of the visited planning area:
  - Local residents on day trips,
  - Local residents staying overnight on the planning area, and
  - Local residents staying overnight off the planning area.

Data collected for the Humboldt-Toiyabe and Caribou-Targhee National Forests and Jarbidge Field Office information were used to allocate total visitation into the six trip type segments. This process indicated approximately 15% of all visits to the planning area were non-local visitors and 85% were local visitors. Local visitors on day trips were the largest trip type segment of about 25,000 visits. Non-local recreationists contribute seven total jobs (direct, indirect, and induced) and $173,000 total labor income (direct, indirect, and induced) to the four-county region on an average annual basis.

While providing recreation opportunities to local residents is an important contribution, the recreation expenditures of locals do not represent new money introduced into the economy. Regardless, area residents and recreationists feel the opportunities within the planning area are unique enough to keep them in the area and thus maintain a portion of local visitor spending in the area. In other words, if the opportunities did not exist within the planning area, the local resident-recreationists would travel outside the four-county region for substitute recreation opportunities. In addition to non-local contributions, local recreationists visiting the planning area contribute seven total jobs and $195,000 in total labor income to the four-county region on an average annual basis. As noted above the primary factor determining the amount spent by a visitor was the type of trip taken and not the specific activity; consequently, these visitation estimates include all motorized and non-motorized activities occurring on the planning area.

Wind Energy

Wind energy potential is estimated at 25,000 megawatts (MW) for Idaho. Idaho has experienced a wind construction boom, growing from 75 MW at the end of 2008 to an expected 500 MW at the end of 2011 (Idaho Legislative Council Interim Committee on Energy, Environment, and Technology, 2012).

There has been considerable interest in developing the wind energy resources within the planning area. Several projects have been built or approved on private land in the northeast corner of the planning area, including nearly 30 turbines with a capacity of over 40 MW. These are small projects built under the Public Utilities Regulatory Policies Act of 1978 which requires local utilities to purchase the electricity these projects generate at a rate calculated by the State public utilities commission. This gives these small projects the advantages of a guaranteed market for their electricity. Additionally, there is potential

for another 700 MW of wind power generation through multiple projects in and around the four-county region (Fleischman, 2010). If actual wind energy development were to occur on BLM-managed lands in the planning area, employment and labor contributions would result. For every 1.5 MW turbine, 10 full-time equivalent jobs and $373,000 in labor income would result during construction, and about a third of a full-time equivalent job and $12,000 labor income would be provided annually during normal operation and maintenance (DOE, 2012).

3.6.3 Non-market Values

Generally goods and services can be traded in markets where interactions between buyers and sellers dictate the price, or value, of a good through the unit prices and quantities sold. Rangelands within the planning area produce a wide range of environmental goods and services which society benefits from. Some goods, like forage for cattle, can easily be valued because livestock feed can be bought and sold in markets. Other resources provided by the planning area, like recreational opportunities, ecological processes, and scenic views, cannot be bought and sold in traditional markets, which is why they are often characterized as non-market goods. Measuring the value of these non-market goods can enable management to make more informed decisions regarding their use and value to society.

Non-market values can be separated into two categories, use and non-use values. The use-value of a non-market good is the value to society from the direct use of the asset; within the planning area this occurs through recreational activities such as hiking, bird watching, and off-highway vehicle use. The use of non-market goods often requires consumption of associated market goods, such as lodging and gas.

Non-use, or passive use, values of a non-market good reflect the value of an asset beyond its current use. These can be described as existence, option, and bequest values. Existence values are the amounts society is willing to pay to guarantee that an asset simply exists. An existence value for the planning area might be the value of knowing that undisturbed native plant habitat exists or the value associated with undeveloped scenic landscapes. In addition to implicit existence values, society's willingness to pay to preserve resources for future use attaches additional passive use values. The potential benefits people would receive from future use are referred to as option values (when future use is expected to occur within the same generation) and bequest values (when preservation allows future generations to benefit from the resource use). Within the planning area, bequest and option values might exist for numerous plant species, wild and scenic rivers and landscapes, heritage sites, and recreational trails. While use and non-use values exist for the planning area, the methodologies for measuring these values are controversial and difficult to apply, making evaluation at the planning process infeasible. However, this does not preclude their consideration in land use allocations in the RMP.

3.6.4. Environmental Justice

Communities where the percent of minorities or the percent of the population below the poverty level is greater than the State average are defined as minority and low-income communities, respectively, by the Environmental Protection Agency. As part of the National Environmental Policy Act of 1969 (NEPA) process, Federal agencies are required to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income communities as specified by Executive Order 12898, dated February 11, 1994. Minority and low-income populations are to be identified in the NEPA process. The following indicators were used to identify minority and low-income populations in the planning area:

- **Percentage of non-white minorities and percentage of Hispanic ethnicity** - Individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.
- **Poverty rates** - Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Census Bureau (CEQ, 1997).

Minority populations should be identified where either the minority population of the affected area exceeds 50% or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ, 1997). For this analysis, a difference of 10% from the State rates was determined to be meaningfully greater. The same criteria were applied when considering poverty rates.

Relevant census data for the counties within the planning area were collected to determine whether these populations constitute an environmental justice population. Based on the region's racial and ethnic composition discussed in the demographics section above, the four-county region does not contain environmental justice populations.