BLM

Spokane District Office

Analysis of the Management Situation

Eastern Washington and San Juan Resource Management Plan

March 2011

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United States Department of the Interior

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1610 (ORW000) P

March 17, 2011

Dear Reader:

The Bureau of Land Management (BLM) Spokane District has prepared this Analysis of the Management Situation (AMS) to support development of the Eastern Washington and San Juan Resource Management Plan (RMP). The AMS, along with the comments we received during the public scoping period (April 30, 2010 – July 12, 2010), provide the foundation for subsequent steps in the planning process, such as development of management alternatives and analysis of the environmental effects. More specifically, the AMS:

- Summarizes the existing conditions, trends, and management guidance for the planning area.
- Identifies management opportunities to address in the new RMP.
- Provides an initial description of the biological, physical, social, and economic components of the environment that BLM anticipates will be affected by the decisions in the new RMP.

During the scoping period we held six public meetings to share information about our planning process. We also asked you to identify your concerns about the lands and resources in the planning area. We will soon announce other opportunities as we proceed to develop alternatives and prepare the Draft RMP and Environmental Impact Statement. Public involvement is a critical component of our planning process and we appreciate your interest and participation.

[redacted]

Pat Ryan
Acting District Manager

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Chapter 1 Introduction

The Spokane District of the Bureau of Land Management (BLM) has begun the process of revising the Spokane Resource Management Plan (RMP; USDI BLM 1987), which directs the use, protection, and enhancement of resources on BLM-administered public lands (public lands) managed by the Spokane District in eastern Washington. In addition, the new RMP will incorporate BLM-administered lands in the San Juan Archipelago, which is not currently covered by an RMP. The new RMP will be called the Eastern Washington and San Juan RMP. Decisions in land use plans guide future land management actions and subsequent site-specific implementation decisions. Land use plan decisions establish goals and objectives for resource management (desired outcomes) and the measures needed to achieve these goals and objectives (management actions and allowable uses). This analysis of the management situation (AMS) is the first step in the BLM's land use planning process.

This document is organized to achieve the purpose which is described in section 1.1. Section 1.2 provides a general description of the planning area. Chapter 2 describes the current conditions of the resources, resource uses, special designations, and socioeconomic conditions of the planning and decision areas. Chapter 3 describes the current management situation, while Chapter 4 examines if the current management situation is responsive to current issues and discusses new management opportunities.

1.1 Purpose of the Analysis of the Management Situation

The Federal Land Policy and Management Act (FLPMA) of 1976 directs the BLM to develop and periodically update RMPs that guide land management on public lands. The first step in the process to prepare a new RMP is to conduct an AMS. The purpose of the AMS is to summarize the existing management situation, explain the need for change, propose a range of management opportunities, and describe any management limitations.

To make the most accurate determination of the current state of resource use, this AMS includes changes that have occurred in the management situation since the approval of the current Spokane RMP (USDI BLM 1987). Part of this process involves describing the physical, biological, and socioeconomic components of the environment that would be affected by the management decisions incorporated into the proposed RMP. Such information will also provide the analytical base for the proposed RMP's environmental impact statement (EIS).

The purpose of this AMS is threefold:

- To summarize the existing conditions, trends, and management guidance for the planning area;
- To identify opportunities for changing management direction in the new RMP; and
- To provide an initial description of the biological, physical, social and economic components of the environment that will be affected by the decisions made in the RMP.

Thus, this AMS is the foundation for subsequent steps in the planning process, such as the design of alternatives and analysis of environmental consequences (43 Code of Federal Regulations [CFR] 1610.4-4), which will be documented in the draft and final EISs that accompany draft and proposed RMPs.

1.2 General Description of the Planning Area

The planning area will encompass all of 20 counties, and portions of 3 other counties in eastern Washington and the San Juan Archipelago in northeast Washington as shown on map 1, appendix A). This includes approximately 425,000 acres of BLM-administered public land. The eastern portion of the planning area is bounded by the Canadian Border on the North, Idaho and Oregon State boundaries on the east and south, respectively, and the crest of the Cascade Mountain Range to the west. The San Juan portion includes all islands with BLM-administered lands that are part of the San Juan Archipelago. Table 1.2-1 shows acres of BLM land within each county.

Table 1.2-1. Acres of BLM-administered land within each county in the planning area

County	BLM Acres
Adams	9,947
Asotin	945
Benton	11,000
Chelan	21,382
Columbia	440
Douglas	54,483
Ferry	9,047
Franklin	23,778
Garfield	165
Grant	53,898
Kittitas	15,897
Klickitat	18,266
Lincoln	79,042
Okanogan	58,810
Pend Oreille	1,730
San Juan	902
Skagit	<1
Spokane	2,073
Stevens	25,046
Walla Walla	390
Whatcom	58
Whitman	9,224
Yakima	28,478
Total	**425,000**

Chapter 2 Area Profile

2.1 Resources

2.1.1 *Regional Context*

2.1.1.1 Physiographic Regions

Geomorphic, or physiographic, provinces are broad-scale subdivisions based on terrain texture, rock type, and geologic structure and history (USGS 2003). The planning area includes portions of seven physiographic provinces (see map 2, appendix A): (1) Puget Lowlands; (2)Northern Cascades; (3) Southern Cascades; (4) West Okanogan Highlands; (5) East Okanogan Highlands; (6) Columbia Basin; and (7) Blue Mountains. Section 2.2.1.3, ―Geology" provides a detailed description of each of these regions.

2.1.1.2 Ecoregions

Ecoregions reflect broad ecological patterns occurring on the landscape. In general, each ecoregion has a distinctive composition and pattern of plant and animal species distribution. Abiotic factors, such as climate, landform, soil, and hydrology, are important in the development of ecosystems, and thus help define ecoregions (Washington Department of Natural Resources 2007). The planning area consists of Spokane District-managed-lands found within six of the nine ecoregions described in the State of Washington Natural Heritage Plan (2007). The descriptions of the following ecoregions are excerpts taken from the 2007 State of Washington Natural Heritage Plan (see map 3, appendix A). Table 2.1-1 shows the total area of each ecoregion and the total acres of BLM land within each. Table 2.1-2 displays the vegetation types that occur within each ecoregion. Section 2.1.2.6, ―Vegetation" provides detailed descriptions of theses vegetation types.

Table 2.1-1. Ecoregions within the planning area

Ecoregion[1]	Total Acres in Planning Area	Acres of BLM	BLM % of Ecoregion	% of BLM
Canadian Rocky Mountains	1,669,770	9,910	<1	2.3
Okanogan	6,205,070	91,570	1.5	21.5
East Cascades	4,727,900	32,880	<1	7.7
Columbia Plateau	13,965,310	288,880	2	68
Blue Mountains	466,040	800	<1	<1
Puget Trough	130,000	960	<1	<1
Total	**27,164,090**	**425,000**		

[1] Land only, water area not included.

Table 2.1-2. Vegetation types by ecoregion (acres)

	Canadian Rocky Mountains		Puget Trough		Okanogan		East Cascades		Columbia Plateau		Blue Mountains	
Class Name	**Ecoregion**	**BLM**	**Ecoregion**	**BLM**	**Ecoregion**	**BLM**	**Ecoregion**	**BLM**	**Ecoregion**	**BLM**	**Ecoregion**	**BLM**
Agricultural	91,328	6	13,400	10	181,185	85	84,622	66	6,563,150	3,107	14,327	NA
Deciduous Shrubland	11,770	41	218	3	65,726	808	108,899	554	6,402	70	4,091	3
Developed	16,834	52	12,673	34	178,262	801	150,543	431	560,236	2,596	8,242	6
Eastern WA Forest−Cold Moist	111,701	26	NA	NA	357,407	279	1,240,147	78	1,224	NA	31,483	32
Eastern WA Forest−Dry	539,805	5,974	NA	NA	2,509,280	30,571	802,478	3,400	168,481	1,126	206,311	193
Eastern WA Forest−Warm Moist	585,185	1,981	NA	NA	47,327	228	476,653	16	3,982	NA	59,487	109
Grassland	103,639	813	9,630	91	985,690	8,165	572,698	4,884	795,952	20,548	48,884	62
Non-Vegetated	27,821	181	5,014	63	255,850	6,506	331,713	3,346	289,638	5,315	4,821	NA
Sagebrush Steppe	38,604	326	NA	NA	978,816	38,329	345,954	17,521	5,446,727	254,138	60,327	384
Sparsely Vegetated	1,482	23	6	NA	28,989	268	23,979	203	4,697	2	705	NA
Woodlands	141,602	492			616,539	5,523	590,219	2,385	124,822	1,980	27,359	7
San Juan Islands Forest/Woodlands			89,059	760								

Puget Trough Ecoregion

The Puget Trough Ecoregion, nestled between the Cascade and Olympic Mountains and the Willapa Hills, includes Puget Sound and the lowlands south to the Columbia River. The ecoregion extends north into the Georgia Basin in British Columbia and south into the Willamette Valley in Oregon. Roughly 8 percent of Washington is within this Ecoregion, which is by far the most populated ecoregion in Washington. As of 1991, more than 50 percent of the Washington portion had been converted to urban and agricultural uses (Washington GAP 1997). The Spokane District-managed-lands within the San Juan Archipelago are found within this ecoregion.

Landforms:

- Lowlands generally up to 1,000 feet above sea level; isolated highlands extend up to 2,400 feet.
- Retreating Pleistocene glaciers left behind glacial till plains over much of the area north of Olympia, and outwash plains between Tacoma and Centralia. Pleistocene floods formed the smooth floor of the Portland Basin around Vancouver.
- Ancient, well-weathered soils predominate between Centralia and Clark County.
- In the north, the mainland hills and San Juan Islands are composed of rocks common in the adjacent mountainous ecoregions.
- Large, low-gradient rivers begin in the adjacent mountains and flow through this ecoregion.
- Smaller streams originate at low elevations.
- Freshwater lakes are numerous in the glaciated portions of the ecoregion.

Climate:

- The Olympic Mountains and Willapa Hills create rain shadows that influence this ecoregion.
- Precipitation, primarily rain, ranges from 20 to 70 inches annually over the ecoregion.
- Summers are warm and dry compared to elsewhere within western Washington, and winters are mild.

Vegetation:

- Dominated by Douglas-fir forests with western hemlock and redcedar as the primary late-successional species.
- Oregon white oak, Pacific madrone, bigleaf maple, and red alder forests are plentiful.
- Grassland habitats, often associated with open oak woodlands, were historically maintained with frequent fires; they support rare species such as the federally threatened golden paintbrush and a number of butterfly species.
- Rare grassland species are declining due to development and the decrease in fire frequency.
- Other special habitats include wetlands, riparian areas, bogs, and estuaries.

Okanogan Ecoregion

The Washington portion of the Okanogan Ecoregion extends from the Cascade Crest in the northern Cascades east to the Selkirk Mountains. The ecoregion extends up the east slope of the Cascades into Canada and along the west slope of the Canadian Rockies to Kamloops, British

Columbia. The southwestern border of the ecoregion follows Sawtooth Ridge northeast of Lake Chelan. The Methow and Okanogan valleys are included, as are the Okanogan Highlands east to the Colville and Spokane valleys. Approximately 14 percent of Washington is within this ecoregion. Less than 10 percent of the Washington portion had been converted to agricultural or urban use as of 1991 (Washington GAP 1997). Development is concentrated in the Spokane, Colville, Methow, and Okanogan valleys.

Landforms:

- This ecoregion is less distinct than others in Washington, being more transitional and having characteristics of adjacent areas.
- The northeast Cascades peaks, rising to more than 9,400 feet, are the highest and most rugged part of the ecoregion, giving way to a series of low elevation valleys at about 750 feet.
- The mountains to the east in the Kettle Range and Huckleberry Mountains are more rounded.
- Continental and alpine glaciers played a major role in shaping these landforms.
- Geologically, the Okanogan Ecoregion is a complex story of plate tectonics, volcanic eruptions, and ice age sculpting. The Okanogan was once its own micro-continent.

Climate:

- Overall, the ecoregion has the coldest climate in the State due to the presence of cold, dense arctic air in winter. However, it also experiences hot, dry air from the Columbia Basin in the summer.
- The western portion of the ecoregion is in the rain shadow of the Cascade Mountains, while the eastern portion is in a zone of increasing precipitation created by the Rocky Mountains.
- Annual precipitation ranges from less than 12 inches annually in the Okanogan Valley to between 50 and 90 inches in the Cascades, with most of the ecoregion receiving 14 to 24 inches.
- There are fairly steep temperature and precipitation gradients from the mountains to the valleys within this ecoregion.

Vegetation:

- Conifer forests dominate the mountain ridges and low hills, and are more open and less continuous, consisting of smaller stands, than forests west of the Cascade crest and in the Canadian Rockies.
- Valleys and lowlands are often non-forested.
- Douglas-fir–ponderosa pine forests are characteristic, transitioning to shrub-steppe in the low, broad valleys in the east and to grasslands in the west.
- Subalpine fir–Engelmann spruce forests occur at higher elevations, while whitebark pine, lodgepole pine, and subalpine larch form parklands in the highest elevations, often associated with dry alpine or subalpine meadows.
- Moister forests are dominated by Douglas-fir, with western larch, western white pine, or quaking aspen as common components.
- Fire was significant in developing these forests, with a 10-year return interval for lowland foothills and 150-year return interval for high elevations and protected canyons. Fire suppression has resulted in dense, fire-prone forests.

Canadian Rocky Mountains Ecoregion

The Canadian Rockies Ecoregion is located in the northeastern corner of Washington. The vast majority of this ecoregion occurs in adjacent British Columbia and Idaho, extending into Alberta and Montana. Approximately 4 percent of Washington is within this ecoregion. As of 1991, less than 10 percent of the Washington portion had been converted to agricultural and urban land uses (Washington GAP 1997). Development is concentrated in low, broad valleys along the Pend Oreille River.

Landforms:

- Selkirk Mountains and Pend Oreille River are dominant landforms within Washington.
- The mountains are transitional between the western rolling Okanogan Highlands and the eastern higher ridges and mountains, interspersed with wide valleys.
- Once completely glaciated, the ecoregion now displays ice-carved, U-shaped valleys and isolated ice-sculpted mountain peaks, with elevations from 1,300 feet at the Columbia River to more than 7,000 feet in the Salmo-Priest Wilderness Area.

Climate:

- Precipitation ranges from 18 inches annually along the Columbia River to about 80 inches in the Salmo-Priest Wilderness Area, with most of the ecoregion receiving between 24 and 34 inches.
- Significant snowpack develops at mid and upper elevations.

Vegetation:

- Coniferous forests dominate, with composition reflecting variation in moisture, temperature, and elevation.
- Douglas-fir–ponderosa pine forests occur at low elevations, with grand fir–western hemlock–western redcedar forests characteristic of mid-montane elevations, and subalpine fir–Engelmann spruce forests at higher elevations.
- Whitebark pine, lodgepole pine, and subalpine larch form parklands in the highest elevations.
- Western larch and western white pine can be major components of the moister forests.
- Fire was significant in developing these forests, with a 10-year return interval for lowland foothills and 150-year return interval for high elevations and protected canyons. Fire suppression has resulted in dense, fire-prone forests.
- Grasslands, variously dominated by green fescue, Idaho fescue, or rough fescue, occur along the foothills and on higher elevation, south-facing slopes.

Columbia Plateau Ecoregion

The Columbia Plateau Ecoregion includes the area in eastern Washington bounded by the Cascade, Okanogan, Blue, and Rocky mountains. The ecoregion extends south in eastern Oregon to the Nevada border and then east to the Snake River Plain in Idaho. Approximately one-third of Washington is in this ecoregion. More than 50 percent of the Washington portion of this ecoregion has been developed for agricultural or urban use (Washington GAP 1997). Agriculture consists of a mixture of dryland and irrigated farming. Urban development is mostly associated with proximity to water.

Landforms:

- Columbia River basalt is the primary, almost exclusive, bedrock within the ecoregion.
- Windblown silts and volcanic ash cover extensive areas, forming rolling, deep, productive soils.
- Ice-age floods carved deep canyons and coulees through the basalt, scouring some areas of soils and vegetation and leaving exposed basalt.
- Dominant landforms include the Palouse Hills, Channeled Scablands, Yakima Fold Hills, Pasco Basin, Crab Creek, and the Frenchman Hills.
- Elevations range from 160 feet above sea level along the Columbia River in the southwestern corner to nearly 4,000 feet above sea level on isolated hills (Badger and Tekoa mountains).

Climate:

- The hottest and driest ecoregion in Washington, it lies in the Cascade Mountains rain shadow.
- Precipitation increases west to east from about 6 inches annually along the Columbia River's Hanford Reach to 25 inches in the Palouse Hills, with most of the ecoregion between 8 and 14 inches.
- Periodic drought and fire are common environmental features, with fires historically occurring at intervals of 10 to 50 years.

Vegetation:

- Dominated by shrub-steppe vegetation, with various species of sagebrush and bunchgrasses. Much of the remaining native vegetation occurs on steep canyon sides and on the shallower soils of basalt scablands.
- Bitterbrush and three-tip sagebrush steppe appear along the foothills of the Cascades.
- Douglas-fir–ponderosa pine forests occur on the moister sites near the foothills of surrounding mountains.
- Special habitats include sand dunes, gravelly areas, basalt cliffs, steep canyons, alkali lakes, and vernal pools.
- Many grassland and shrub-steppe species are declining, with isolation and fragmentation of intact habitat as a primary factor and non-native, weedy plant species as an additional factor; weeds are a persistent and increasing feature of the limited semi-natural and natural landscape.

East Cascades Ecoregion

The East Cascades Ecoregion lies east of the Cascade Crest, from Sawtooth Ridge near Lake Chelan south to the Oregon-California border. Its eastern border follows the transition zone between montane forest and lowland shrub-steppe. Approximately 10 percent of Washington is included within this ecoregion. As of 1991, less than 2 percent of the Washington portion had been converted to agricultural or urban development (Washington GAP 1997). The development that has occurred is concentrated in the Chelan, Wenatchee, Upper Yakima, and Little White Salmon valleys.

Landforms:

- Washington's East Cascades were modified by alpine glaciers and landslides, creating rugged ridges extending southeast to east from the Cascade Crest, with broad valleys occupying the lowlands between the mountain ridges.
- Isolated volcanic cones occur on the steep mountain ridges.
- Geology of the East Cascades is varied, including large serpentine areas in the Wenatchee Mountains.
- Elevation generally ranges from 2,000 to 7,000 feet, although Mt. Adams rises to 12,276 feet and the lowest elevation in the Columbia River Gorge is 100 feet.
- The Wenatchee and Simcoe mountains are eastward extensions of this ecoregion.

Climate:

- Climate changes rapidly west to east, from cold with high precipitation (120 inches) along the Cascade Crest, to hot and dry with less than 20 inches per year along the foothills.
- Most precipitation falls from November through April, with a snow pack accumulating at higher elevations.

Vegetation:

- Conifer forests are dominant and usually more open and patchy than forests of ecoregions west of the Cascades.
- Grand fir–Douglas-fir–ponderosa pine forests are characteristic, while Oregon white oak woodlands appear at lower elevations in the southern half of the ecoregion, and subalpine fir–mountain hemlock–Engelmann spruce are found at higher elevations.
- Douglas-fir–western hemlock–Pacific silver fir forests are present and locally abundant near low divides of the Cascades. Whitebark pine, lodgepole pine, and western larch are common components of these forests.
- Fire was significant in developing these forests, with a 10-year return interval for lowland foothills and 150-year return interval for high elevations and protected canyons. Fire suppression has resulted in dense, fire-prone forests..
- Shrub-steppe vegetation occurs along the foothills and higher south-facing slopes, generally composed of big sagebrush or antelope bitterbrush with native bunchgrasses.
- Alpine and subalpine parklands occur on the highest ridges, more commonly north of Snoqualmie Pass.

Blue Mountains Ecoregion

Washington's smallest ecoregion, the rugged Blue Mountains are a rolling, high plateau dotted with ponderosa pine forests, vestiges of Palouse Prairie, and steeply cut rimrock canyons.

The Blue Mountains–Middle Rockies Ecoregion extends from adjacent Idaho and Oregon into the southeast corner of Washington. It includes the Grande Ronde and Snake River canyons northward to a few miles south of Clarkston. Approximately 1 percent of Washington is within this ecoregion. As of 1991, less than 1 percent of the Washington portion had been converted to agricultural or urban development (Washington GAP 1997). The limited development that has occurred within the ecoregion has been along the Grande Ronde River.

Landforms:

- Blue Mountains were formed by uplift of Columbia River Basalt flows and simultaneously down-cut by the Grande Ronde and Snake rivers.
- Washington's Blue Mountains are typically flat top plateaus above deep canyons.
- The elevation within the ecoregion ranges from 750 feet along the Snake River to 6,387 feet. Most of the ecoregion is between 2,000 and 4,000 feet.
- Windblown silts and volcanic ash cover most of the plateaus, providing material for soil development.

Climate:

- Precipitation varies from less than 10 inches annually in the Grande Ronde River canyon to more than 50 inches just 25 miles west in the Wenaha-Tucannon Wilderness Area, with most of the ecoregion between 14 and 24 inches.
- Much of the precipitation occurs as snow, although fall and spring rains are common, often creating floods.

Vegetation:

- Dominated by coniferous forest, but also supports grasslands and shrublands along low dry canyons, on broad plateaus, and in subalpine meadows.
- Douglas-fir–ponderosa pine forests are characteristic of the low and middle elevations, with subalpine fir–Engelmann spruce occurring at higher elevations.
- Western larch, lodgepole pine, and western white pine are components of mesic forests.
- Canyon grassland vegetation occurs on the steep slopes above the Grande Ronde and Snake rivers, while plateau grasslands are within the forest matrix, and dense shrublands are in the higher canyons along the Oregon border.
- Fire was significant in developing these forests, with a 10-year return interval for lowland foothills and 150-year return interval for high elevations and protected canyons. Fire suppression has resulted in a semi-natural to natural landscape composed of dense, fire-prone forests.

2.1.1.3 Human Geographic Mapping Units

The BLM contracted James Kent Associates (JKA) to conduct a pre-scoping study of the communities in the planning area. As part of this study, JKA conducted human geographic mapping to capture the way people relate to their landscapes. Utilizing the findings from their study, JKA divided the planning area into human resource units (HRUs) which were then grouped into social resource units (SRUs). The following is a general description of these units taken from JKAs report on this study (JKA 2010). Map 4, appendix A displays the HRUs and SRUs. Section 2.4.3, ―Social and Economic Conditions" provides more detail.

HRUs are roughly equivalent in size to a county, but seldom correspond to county boundaries. HRU boundaries are derived from the seven cultural descriptors and by self-reporting of residents living in these areas. The cultural descriptors (appendix B) are Settlement Patterns, Publics, Networks, Support Services, Work Routines, Recreation Activities, and Natural and Human-caused Features of the Landscape. HRUs are characterized by frequent and customary interaction; they reveal face-to-face human society where people could be expected to have personal knowledge of each other and strong informal caretaking systems.

People's daily activities occur primarily within their HRU including work, school, shopping, social activities and recreation. Health, education, welfare and other public service activities are highly organized at this level with a town or community almost always as its focal point.

A sense of place, a sense of identity with the land and the people, a sense of a common understanding of how the resources of their unit should be managed, and a common understanding of how things are normally done characterize this territorial level.

The regularity of interaction within an HRU reinforces a recognition and identification by the residents of natural and man-made features as ―home." Because of this familiarity, boundaries between HRUs are clearly defined in the minds of those living within them.

SRUs are the aggregation of HRUs on the basis of geographic features of the landscape, often a river basin, for example, or a geologic province, and on the basis of shared history, lifestyle, livelihood, and outlook. At this level, face-to-face knowledge is much reduced. Rather, social ties are created by action around issues that transcend the smaller HRUs and by invoking common values (―We are ranching country around here.").

SRUs are best characterized by a sense of belonging. These are rather large areas and one's intensity of perception as to the unit's boundary is much more general than at the HRU level. Those hold a general feeling of ―oneness" who are a part of this regional Unit, and a general understanding and agreement on values and the attributes of being a part of the unit.

The physical and biological environments play a large role in the development of the cultural pattern at this level of human geography. To a large degree, these environments determine the kinds of basic industries available for people to develop their culture around, and how the industries function in the most effective manner to preserve and strengthen the cultural pattern of the unit.

In eastern Washington, the Columbia River is a natural boundary between the arid, shrub-steppe plateau of eastern Washington and the wet, dense forests of the Cascade Mountains. As with any significant natural feature, the Columbia separates populations and defines HRUs based on daily routines of local people. A look at the map, however, shows that in the Chelan-Douglas HRU, the river is no longer a barrier—socially and culturally, Chelan and Douglas are the same unit, in part fed by daily interactions across the river.

The HRUs along the Cascade Mountains are similar in shape. They are watershed areas, stretching from the crest of the mountains to the Columbia River in the case of the Kittitas and Yakima HRUs. These two units share the common Yakima River Canyon. While daily routines are different and occur within the units, they have been tied in a regional sense from early settlement and warrant inclusion in the Yakama SRU.

Okanogan and Colville share a history of timber production, cattle grazing and mining but their isolation precludes their treatment as a single HRU. One older rancher in Okanogan said that they are more like ―cousins" to Colville people, with similarities in outlook and lifestyle. Instead, Okanogan has more in common with Chelan-Douglas and they are grouped together in the Two River SRU. This unit is reflected in history hundreds of years old in which the Columbia and the Okanogan Rivers formed a north-south corridor for trade, social relations, and in recent years, recreation.

Similarly, the map reveals the large landscape that claims Spokane as its urban center in the Inland Empire SRU. Note how the SRU stretches across the Idaho Panhandle into western Montana, in essence, capturing the ―catchment area" of Spokane. The Inland Empire SRU has its own distinctive history and culture.

Finally, the Tri-Cities HRU is part of the Columbia SRU which includes Moses Lake, Walla Walla, and extends into Gilliam, Morrow, and Umatilla counties in northern Oregon. This region has similarities in its desert environment, lower elevation lands, distinctive agriculture, and a love for motorized recreation activities.

2.1.2 *Resource Specific Information*

2.1.2.1 Climate

Indicators

In its recent report, ―Climate Change Indicators in the United States" (EPA 2010), the U.S. Environmental Protection Agency (EPA) identified 24 indicators of human influences on climate. These are grouped into five categories as follows:

1) **Greenhouse Gases:** These included gases, such as carbon dioxide, methane, and nitrous oxide, that can trap heat from the sun and cause the climate to change. According to the EPA's report, carbon dioxide accounts for most of the Nation's emissions of greenhouse gases, and most of the increase in emissions in recent decades. The report also identifies electricity generation as the largest source of greenhouse gases in the U.S., followed by transportation.

2) **Weather and Climate:** Changes in average temperatures, heat waves, drought, and tropical storm densities are all indicators within this category.

3) **Oceans:** Changes in ocean temperatures, sea level, and ocean acidity are indicators within this category.

4) **Snow and Ice:** This category includes size of glaciers, lake-ice freezing periods, snow cover, and snow pack.

5) **Society and Ecosystems:** This category includes human health and agricultural indicators, as well as bird wintering ranges.

Current Conditions

As described by the University of Washington's Climate Impacts Group (CIG 2010) the spatial contrasts in planning area climate can be stark owing to the region's mountains, especially the Cascades, which create a barrier between the maritime climate influences to the west—where temperatures are generally mild year-round—and the continental climate influences to the east, with more sunshine and larger daily and annual ranges in temperature. Map 5, appendix A, shows variations in average temperatures and map 6, appendix A, shows variations in average annual precipitation.

Climate for each ecoregion within the planning area is described in section 2.1.1, Regional Context. In general, the San Juan Archipelago portion of the planning area has a mild marine climate, with a mean January temperature of 39°F and mean July temperature of 65°F. Average annual precipitation is 15 to 30 inches, depending on the location. In contrast, the eastern

Washington portion of the planning area experiences a more continental climate with mean January temperatures as low as 8°F and mean July highs of 88°F. Average annual precipitation is generally less than 20 inches, and as low as 7 inches in some locations.

As explained by the Climate Impacts Group (CIG 2010), some fluctuations in regional climate are related to the El Niño/Southern Oscillation (ENSO) and Pacific Decadal Oscillation (PDO) phenomena. In their warm phases (i.e., El Niño conditions for ENSO), both ENSO and PDO increase the odds for a warmer-than-average winter and spring for the region and decrease the odds for a wetter-than-average winter. The opposite tendencies are true for cool phase ENSO (La Niña) and PDO: they increase the odds that winters will be cooler and wetter than average. While tending to be warmer than average, very strong El Niño winters often have near-normal precipitation.

Trends

Both temperature and precipitation have increased over the past century. On average, the temperature has warmed by about 1.5°F across the region, while precipitation has increased by only 1 to 2 percent (CIG 2010).

Forecast

According to an interim assessment on climate change prepared for the State of Washington by the Climate Impacts Group, ―Climate change is causing and will continue to cause significant changes in temperature, precipitation and related variables (e.g., streamflow) across the State. Based on results from a number of Global Climate Models (GCMs), we can expect annual temperature to increase approximately 0.3°C, or roughly 0.5°F, per decade over the next 50 years. Our best estimate of annual precipitation, on the other hand, is that it is likely to remain roughly the same as in the 20th Century. Some models indicate large increases in winter precipitation and some also indicate large decreases in summer precipitation. Our best estimate of sea level rise for most coastal waters of Washington is 15 cm (6 inches) by 2050 (CSES 2007).” The assessment identified the following key findings:

- *Hydrology*: Reduced snowpack and changes in soil moisture will occur; warmer temperatures and reduced snowpack will alter the flow regime in snowmelt dominant and transient (rain/snow) watersheds.
- *Agriculture and Irrigation Agriculture/Economics*: Warmer temperatures and changes in snowpack will cause water availability to decline during parts of the growing season; diseases and pests may be more problematic; and, changes in climate will force some changes in agricultural practices.
- *Salmon*: Warmer air temperatures will cause stream temperatures to increase, in some cases above critical thresholds for fish survival; in addition, changes in streamflow timing and volume may cause stress to fish life cycles.
- *Forest*: Warmer temperatures will cause decreases in lower elevation forest productivity, increases in wildfire frequency and area, increases in tree mortality due to insects, and changes in species distribution and composition.
- *Coasts*: Sea level rise and the associated coastal changes are projected to be gradual over time; however, the coast is particularly sensitive to low-frequency high-impact storm and erosion events that are difficult to predict.

- *Energy*: Heating degree days will continue to be the dominant energy-related factor over the next 50 years, but cooling degree days become a much more important factor in eastern Washington as the region warms.
- *Human Health*: Adverse health effects from increasingly intense heat waves, poor air quality, and possible increased flooding are likely to increase.

The Intergovernmental Panel on Climate Change reports that ―Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values determined from ice cores spanning many thousands of years. The global increases in carbon dioxide concentration are due primarily to fossil fuel use and land use change, while those of methane and nitrous oxide are primarily due to agriculture" (IPCC 2007). The EPA provides further specificity in reporting that carbon dioxide accounts for most of the Nation's emissions of greenhouse gases, and most of the increase in emissions in recent decades. The report also identifies electricity generation as the largest source of greenhouse gases in the U.S., followed by transportation (EPA 2010).

Key Features

The continuing change in climate will affect the baseline conditions for the lands and resources that will be addressed in the RMP. Plan goals, objectives, and allocations must take this into account.

In addition, allowable uses, such as prescribed burning, timber harvest, and livestock grazing may have a direct effect on greenhouse gas emissions, which should also be taken into account.

2.1.2.2 Air Quality

Indicators

The Clean Air Act of 1970, as amended, is the comprehensive Federal law that regulates air emissions from area, stationary, and mobile sources. It was passed by Congress to protect human health and the environment by improving the Nation's air quality and the stratospheric ozone layer (EPA 2010a). It also stresses the importance of visibility in sensitive areas. The Washington Department of Ecology (WDOE) has the primary responsibility to carry out the requirements of the Clean Air Act in Washington State.

<u>National Ambient Air Quality Standards</u>

The Clean Air Act requires the Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. These standards are defined as levels of pollutants which, if exceeded, can harm human health and the environment. The EPA established two types of NAAQS. The primary standard sets limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. The secondary standard sets limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. These pollutants are as follows (EPA 2010b):

- Carbon monoxide (CO)
- Lead (PB)
- Nitrogen dioxide (NO_x)
- Ozone (O_3)

- Fine particles smaller than 10 microns in size (PM_{10})
- Fine particles smaller than 2.5 microns in size ($PM_{2.5}$)

Washington State has established Washington Ambient Air Quality Standards (WAAQS) that apply throughout the State and include primary standards only.

The EPA assigns classifications to geographic areas with respect to air quality conditions. When an area is considered for classification, there are three possible outcomes of the designation process for each of the criteria pollutants (EPA 2010c):

- **Attainment:** Any area that meets the national primary or secondary ambient air quality standard for the pollutant.
- **Non-attainment:** Any area that does not meet (or that contributes to ambient air quality in an area that does not meet) the national primary or secondary standard for the pollutant.
- **Unclassified:** Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

Prevention of Significant Deterioration of Air Quality

The Clean Air Act also establishes a national goal of preventing any further degradation or impairment of visibility within federally designated attainment areas. There are different permissible increments for criteria pollutants for different areas, or classes. The classes are defined as follows (EPA 2010d):

Class I ~ These areas apply to international parks, national wilderness areas that exceed 5,000 acres in size, national memorial parks that exceed 5,000 acres in size, and national parks that exceed 6,000 acres in size in existence prior to August 7, 1977. These are the mandatory Class I areas that require the highest level of protection. However, the State and tribes have authority to designate additional Class I areas which are the non-mandatory Class I areas. For example, The Spokane Tribe has designated their reservation as a Class I area, which also makes it a non-mandatory Class I area.

Class II ~ Attainment areas that do not meet Class I or Class III designations. Class II designation allows moderate deterioration associated with moderate population and industrial growth.

Class III ~ This class is assigned to attainment areas to allow maximum industrial growth while maintaining compliance with NAAQS.

Current Conditions

Particulate matter (PM) is a complex mixture of extremely small particles and liquid droplets. Inhalable coarse particles (PM_{10}) have diameters larger than 2.5 micrometers and smaller than 10 micrometers. Construction sites, unpaved roads, fields, smokestacks, or fires contribute to course particles. Fine particles ($PM_{2.5}$) have diameters of 2.5 micrometers and smaller. Fine particles form in reactions in the atmosphere from chemicals that are emitted from power plants, industries, and automobiles (EPA 2010e).

In December 2007 the State of Washington made a recommendation to the EPA to designate a portion of Pierce County in the southern Puget Sound region as non-attainment for the 24-hour

$PM_{2.5}$ standard (WDOE, Dec 18, 2007). The State is currently working with the EPA to develop an implementation plan on how to improve the air quality in that region. Pierce County and the associated non-attainment area are not located within the Eastern Washington San Juan Island resource management plan (EWSJI RMP) planning area. The State proposed that Clark and Yakima counties be designated as ―unclassified", which means that the State would receive an extension to gather more data, and a proposal to designate those areas as either attainment or non-attainment for the 24-hour $PM_{2.5}$ standard would occur at a later date after the additional data could be analyzed. Clark County is not located within the EWSJI RMP planning area, but Yakima County is in the planning area. Spokane, King, and Snohomish counties have all been proposed as ―attainment" for the 24-hour $PM_{2.5}$ standard. Of those three, only Spokane County is in the planning area.

Trends

Ozone is created by a chemical reaction between oxides of nitrogen and volatile organic compounds in the presences of sunlight. Motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents, and natural sources contribute to the creation of ozone (EPA 2010f).

Currently, there are no areas considered to be in non-attainment for the 8-hour ozone standard. However, in December 2010 the EPA was scheduled to propose a more stringent standard. When the new standard is approved, it is likely that the Puget Sound area will be proposed as non-attainment for ozone. Current data shows that Spokane has elevated ozone levels and may become a non-attainment area in the future.

In March 2011 the EPA is scheduled to propose a new, more stringent Federal standard for $PM_{2.5}$ and PM_{10} for comment and approval. When the new standards are approved, it is likely that Yakima and Darrington will be proposed as non-attainment areas for $PM_{2.5}$ and that Colville will be proposed as a non-attainment area for PM_{10}. It is not possible to know the geographic boundaries of the non-attainment areas that would be proposed by the State.

Forecast

Puget Sound, Spokane, Yakima, Darrington, and Colville will continue to undergo air quality monitoring for ozone, $PM_{2.5}$, and PM_{10} levels as the State moves towards compliance with the NAAQS.

Key Features

Key features in the planning area include Puget Sound, Spokane, Yakima, Darrington, and Colville as they continue to be monitored for ozone, $PM_{2.5}$, and PM_{10}.

2.1.2.3 Geology

Geology in the eastern Washington portion of the planning area can generally be subdivided into four physiographic or geomorphic provinces (see map 2, appendix A). They include the Blue Mountains, Columbia Basin (sometimes referred to as the Columbia Plateau), the Okanogan Highlands, and the Cascades. Only a small part of the planning area is included within the Blue Mountains Province; some public lands managed by BLM are administered by the Vale District Baker City Field Office located in Oregon, while some scattered BLM parcels are still managed by the Spokane District Border Field Office. The San Juan RMP planning area lies within the northern portion of the Puget Lowland Physiographic Province.

The Columbia Basin encompasses the area east of the Cascades Mountains and south of the Okanogan Highlands and covers a majority of eastern Washington. The eastern Washington portion of the planning area lies predominately within the Columbia Basin Physiographic Province. This physiographic area is dominated by basalt flows associated with the Columbia River Basalt Group and contains unique geologic features associated with the Ice Age or Glacial Lake Missoula Floods. Areas that were sculpted by these powerful floods now contain a majority of the remaining shrub-steppe habitat in eastern Washington.

In the northeast corner of the State is the Okanogan Highlands. This geomorphic province is typically subdivided into two sub-regions, east and west. The eastern region is also referred to as the Northern Rocky Mountains and contains the oldest (metasedimentary) rocks in Washington, Pre-Cambrian in age dating to 1.5-billion-years old. These rocks formed along the old North American continent coastline and have been extensively metamorphosed by heat and pressure (Townsend and Figge 2002). Cambrian and Ordovician marine rocks ranging from sandstone, shales, and limestone, overlie the older Pre-Cambrian metasedimentary rocks and were subsequently regionally metamorphosed during the Jurassic to Eocene (Lasmanis 1991). This regional metamorphism changed the sandstone and shale into quartzite and argillite.

The western part of this province consists of sedimentary and volcanic rocks assemblages deposited off (to the west) of the continental margin that were later dominated by volcanic eruptions and were later covered by younger sedimentary deposits (Lasmanis 1991). According to Lasmanis (1991) the western Okanogan Highlands were subjected to numerous geologic processes which included:

- Tectonism
- Plutonism
- Volcanism
- Sedimentation
- Gneiss dome building
- Emplacement of epithermal precious metal deposits

Forming the spine of the State is the Cascade Province which is subdivided into northern and southern areas. The northern portion is subdivided into areas of similar geology or ―geologic domains" known as the Western, Metamorphic Core, and Methow Domains (Tabor and Haugerud 1999). The domains are further characterized by small pieces of geologic plates or terranes (exotic terranes if their origin is very distant) that have been pushed up or thrust against the older North American Plate, faulted and later intruded by plutonic igneous rocks. The geology varies abruptly in this northern area of the Cascades Province due to these terranes being thrust-faulted against one another and moved hundreds of miles by strike-slip faulting (similar to the movement along the present day San Andreas Fault). Some of the terrains within the geologic domains are relatively unchanged, such as those in the Methow Terrane, while those rocks of the Metamorphic Core Domain have been extensively altered to metamorphic rocks from deep burial subjecting the rocks to extreme heat and pressures. Much of the BLM-administered lands (except for some scattered parcels within the Methow Valley) occur in the extreme eastern portion of the northern Cascade Province.

The southern Cascade Province differs from the northern area in that the accreted rocks as seen to the north were weathered down and the area subsequently dominated by deposition of sedimentary and volcanic rocks. Only a few isolated BLM-managed parcels occur within the eastern portion of the southern Cascade Province. Sitting precariously on top of both the north

and south areas are the conspicuous stratovolcanoes such as Mt. Baker, Glacier Peak, Mount Rainier, Mount St. Helens, and Mt. Adams. As the Juan de Fuca Oceanic Plate slides under or is subducted (Cascadia Subduction Zone) below the North American Continental Plate, magma is generated at depth and works upward through conduits and eventually feeds the volcanoes. Recent alpine and valley glaciation has sculpted the Cascade Mountains into the topography seen today.

The geology of the San Juan Islands is similar to the processes that formed the North Cascades in that uniquely different geologic terranes have been thrust and faulted one on top the other. According to Orr and Orr (1996) five separate terranes (Turtleback, Garrison, Deadman Bay, Haro, and Decatur) make up the San Juan Islands and thus reflect the varied geology. Recent continental glaciation has further altered the landscape by rounding the topography in the San Juan Islands and leaving foreign rocks, known as erratics, such as those white granitic rocks on Lopez Island's Iceberg Point that were first noted by early mariners and thought to be icebergs.

Map 7, appendix A, shows the general geology of Washington State with the RMP planning area delineated.

2.1.2.4 Soil Resources

There are five major factors that control the formation of soils: (1) parent materials (geologic or organic precursors to the soils); (2) climate; (3) biota (living organisms); (4) topography; and (5) time. These factors vary widely across the planning area from the marine environments of the San Juan Archipelago to the arid Columbia Basin to the mountainous areas of northeast Washington. The formation of soils in the planning area was also affected by glacial and volcanic events. Volcanic ash is a common component of Washington State soils. Due to these varied conditions, more than 1,600 soil series are recognized and mapped within Washington State (Washington Society of Professional Soil Scientists [N.D.]).

Soil functions to:

- Sustain biological diversity, activity, and productivity;
- Regulate and partition water and solute flow;
- Filter and buffer, degrade, immobilize, and detoxify organic and inorganic materials;
- Store and cycle nutrients and carbon within the Earth's biosphere; and
- Provide physical stability and support for plants or socioeconomic structures or protection for archeological treasures associated with human habitation

Indicators

Land health and soil quality are interdependent. Land health is characterized by the functioning both of the soil and the plant communities; therefore, the attributes of rangeland health correspond to soil quality. Two of the attributes, soil/site stability and hydrologic function, relate directly to soil properties. Soil/site stability is the capacity of an area to limit redistribution and loss of soil resources by wind and water. Hydrologic function is the capacity of an area to capture, store, and safely release water from rainfall, run-on, and snowmelt, to resist a reduction in this capacity, and to recover this capacity when a reduction does occur. The third attribute, biotic integrity, indicates the soil's ability to support healthy biotic communities. Biotic communities include plants, animals, and the microorganisms occurring above and below the ground (USDI 2005). Table 2.1-3 shows the rangeland health indicators used to assess the attributes of rangeland health and the related soil quality indicators.

Table 2.1-3. Rangeland health indicators and related soil quality indicators

Rangeland Health Indicator (NRCS 2001)	Related Soil Quality Indicator
1. Rills	Water Erosion
2. Water flow patterns	Infiltration
3. Pedestals and/or terracettes	Water Erosion, Wind Erosion
4. Bare ground	Water Erosion, Wind Erosion
5. Gullies	Water Erosion
6. Wind-scoured areas	Wind Erosion
7. Litter movement	Water Erosion, Wind Erosion
8. Soil surface resistance to erosion	Physical and Biological Soil Crusts, Aggregate Stability
9. Soil surface loss or degradation	Water Erosion, Wind Erosion
10. Plant community composition and distribution relative to infiltration and runoff	Infiltration
11. Compaction layer	Compaction
12. Functional/structural groups (plants)	Soil Biota, Water/Nutrient Availability, Chemistry
13. Plant mortality/decadence	Soil Biota, Water/Nutrient Availability, Chemistry
14. Litter amount	Organic Matter
15. Annual production	Organic Matter, Water/Nutrient Availability
16. Invasive plants	Soil Biota, Water and Nutrient Availability, Chemistry
17. Reproductive capability of perennial plants	Soil Biota, Water and Nutrient Availability, Chemistry

An indicator of the sensitivity of soils to management activities is erosion hazard. Erosion hazard is a measure of the susceptibility of soil to erosion and an indicator that erosion damage may occur as a result of management implementation. Actual erosion rates vary due to a wide range of factors, including geology, parent material, elevation, slope, aspect, vegetation cover, local microclimate, land use, and landscape history. Erosion hazard ratings are available in county soil surveys available from the Natural Resource Conservation Service (NRCS).

Data Sources

Sources of data include county soil surveys which are available for most of the planning area from NRCS. Additional data sources include rangeland health assessments and project-specific analysis.

Current Conditions

The planning area is primarily in four of the NRCS Major Land Resource Areas (MLRAs). The San Juan Archipelago falls within the Willamette and Puget Sound Valley MLRA. The soils in this MLRA are primarily formed in glacial till, glacial outwash, and lacustrine deposits. The dominant soil orders in this area are Alfisols, Inceptisols, Mollisols, and Ultisols. The soils in the area dominantly have a mesic soil temperature regime, a xeric soil moisture regime, and mixed mineralogy.

East of the Cascades, most of the public lands are in the Columbia Basin and Columbia Plateau MLRAs. Both these MLRAs are almost entirely underlain by Miocene basalt flows. Columbia River basalt is covered in most areas with as much as 200 feet of eolian, lacustrine, and alluvial deposits. The Columbia Basin area lies in the south-central portion of Washington State. The towns of Yakima, Pasco, Richland, Kennewick, and Ephrata lie in the Columbia Basin. The dominant soil orders of the Columbia Basin are Aridisols and Entisols. The soils in the area dominantly have a mesic soil temperature regime, an aridic soil moisture regime, and mixed

mineralogy (tables 2.1-4 and 2.1-5). Average annual precipitation is 6 to 10 inches in most of the area; it is the warmest and driest portion of the planning area.

The Columbia Plateau area lies primarily in the central portion of the State. Douglas County and major portions of Lincoln and Adams counties are within this MLRA. The dominant soil order of this MLRA is Mollisols. The soils are generally moderately deep to very deep, well drained, and loamy, although there are significant areas of shallow and very shallow soils. Many of the soils are formed in loess. The soils of the Columbia Plateau dominantly have a mesic soil temperature regime, a xeric soil moisture regime and mixed mineralogy. The average annual precipitation is 10 to 16 inches in most of the MLRA.

The Northern Rocky Mountains MLRA is predominant in the northeast portion of the planning unit. Eastern Okanogan, Ferry, Stevens and Pend Oreille Counties are in this MLRA. The dominant soil orders in this MLRA are Andisols, Inceptisols, and Alfisols. Many of the soils are influenced by Mount Mazama ash deposits. The soils in the area have a frigid or cryic soil temperature regime; have an ustic, xeric, or udic soil moisture regime; and dominantly have mixed mineralogy. The average annual precipitation is 25 to 60 inches.

The public lands in the southeast portion of the planning area lie in the Palouse and Nez Perce Prairies MLRA. There is relatively little public land acreage in this MLRA. The dominant soil orders in this MLRA are Mollisols and Aridisols. The soils in the area dominantly have a frigid or cryic soil temperature regime, a xeric or aridic soil moisture regime, and mixed, carbonatic, or siliceous mineralogy. They generally are very deep, well drained, and loamy, loamy-skeletal, or sandy skeletal.

The above descriptions of soils and conditions within the MLRAs are from the USDA Handbook 296, Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (2006).

Table 2.1-4. Soil temperature regimes and mean temperatures at depth in the planning area

Soil Temperature Regimes in Planning Area	Annual Mean Temperature at Depth of 50 Centimeters
Mesic	47−59°F
Frigid	32−47°F
Cryic	32−47°F

Source: Brady and Weil (1996).

Table 2.1-5. Soil moisture regimes and conditions in the planning area

Soil Moisture Regimes in Planning Area	Description of Moisture Conditions
Xeric	Mediterranean type climate; cool moist winters and warm dry summers
Aridic	Very low moisture levels; characteristic of soils is arid areas
Ustic	Soil moisture is generally adequate to meet plant growth requirements during growing season, although significant periods of drought may occur
Udic	The soil moisture is sufficient most years to meet plant needs

Source: Brady and Weil (1996).

BLM has completed rangeland health assessments on selected public lands in the planning area east of Cascades, and as was discussed in the ―Indicators" section above, the indicators of rangeland health correspond to soil quality. Thirty two grazing allotments containing

approximately 103, 893 acres have been evaluated for rangeland health. Twenty nine of these allotments containing roughly 91,987 acres were meeting all standards. Three allotments containing an estimated 11,906 acres were determined to be not meeting rangeland health standards, but were making significant progress towards meeting standards due to changes in grazing management. In areas meeting rangeland health standards, indicators of soil quality, such as erosion, compaction, and infiltration rates, were within the ranges that would be expected for the sites, and the soils are functioning to sustain biological diversity, activity, and productivity.

Soils with high erosion hazards have been identified throughout the planning area. These are generally associated with steep slopes. Soils formed on slopes of 15 to 30 percent and having textures of loam, silt loam, very fine sandy loam, sandy clay loam, and clay, and soils of all other textures formed on slopes greater than 30 percent, have a high water erosion hazard. Soils with surface textures that are highly susceptible to water erosion generally have a high proportion of fine sands, very fine sands, or silts with little binding material such as clay or organic matter. Erosion events occurred on steep slopes following the major wildfires of the mid 1990s.

Wind erosion is more likely to occur in the more arid areas of the planning area. When vegetative cover is removed, soils high in fine-textured material are easily transported by wind. This results in the displacement or loss of topsoil in some areas, increased sediment deposition in other areas, and impacts to ambient air quality from elevated dust levels. Wind erosion has been observed only in limited areas on the public land, and is generally associated with dirt roads and other limited disturbance areas where the vegetation and top soil has been removed.

Trends

Wildfire: Increased frequency of fires in the most arid portion (Columbia Basin) of the planning area has resulted in conversion of perennial plant communities to annual grass communities which results in an additional increase in fire activity. Increased fire hazard can directly affect vegetation cover and soil erosion. Many secondary effects such as soil mass movement follow intense fires (Swanson 1981). While conversion of perennial plant communities to annual grasses has not been observed on BLM lands since the implementation of the Spokane District RMP, it has occurred in nearby areas within the Columbia Basin.

Grazing: Grazing levels affect soil qualities such as compaction, infiltration, erosion, and the health of biological soil crusts. The trend has been towards lowered grazing levels. Implementation of rangeland health standards and guidelines has reduced grazing impacts to soils and reduced erosion.

Logging: Logging activities can result in increased soil compaction and disturbance. These impacts have been reduced with the implementation of best management practices (BMPs) and reduced number of acres logged since the mid 1980s.

Fuels Treatments: Fuel treatments, such as thinning and prescibed burning, can cause temporary increases in erosion. However, these treatments can result in significant reductions in erosion by reducing the acreage and intensity of wildfires. Wildfire is predicted to produce nearly 70 times as much sediment as a thinning treatment. The effects of 70 acres of thinning treatment would be about the same as the effect of 1 acre consumed in a wildfire (USDA and USDA FS 2005). Fuels treatments activities have increased in the planning area particularly since 2000.

Damage to Soils Due to Mineral Development and Oil and Gas Exploration/Development: Acreage under mineral development has stayed static. Requirements for commercial operations

to reclaim and restore damaged soils have slowed or reversed soil degradation. Oil and gas exploration activities tapered off after a burst of activities in the mid 1980s. This exploration activity resulted in the removal of vegetation and may have increased erosion temporarily. There has been a slight increase in oil and gas exploration in the past 5 years. Much of this activity has been focused on private lands.

Recreation and Off-road Vehicle Use: The planning area has seen an increase in demand for recreation, including an increase in demand for off-road vehicle-related recreation, resulting in an increasing trend in soil damage due to erosion and compaction. These activities are controlled through permit requirements and public education. This system has worked fairly well to limit damage, but off-highway vehicle (OHV) use remains a significant cause of soil damage in limited areas. The public lands areas available for OHV use are limited due to parcel size and access. Restriction of OHV use to designated roads and trails on roughly an additional 12 percent of the total acres managed by BLM in the Spokane District resulted from implementation of the Spokane RMP Amendment in 1992.

Forecast

Wildfire: Increased frequency of fires in the most arid portion (Columbia Basin) of the planning area will continue due to the conversion of perennial plant communities to annual grass communities. This will continue to affect vegetation cover and result in increased soil erosion. Increased fuels treatments will result in reduced fire intensities and acres burned, which will reduce negative impacts to soils. Fuels treatments are slated to occur primarily in the northern, timbered portions of the planning area.

Grazing: Continued reductions in grazing levels due to wildlife habitat considerations will reduce impacts to qualities such as compaction, infiltration, erosion and the health of biological soil crusts. Continued implementation of rangeland health standards and guidelines will also reduce grazing impacts to soils and reduce erosion particularly in riparian areas.

Logging: The trend of reduced acreage of timber harvest will continue, and implementation of BMPs will continue to reduce impact to soils from this activity.

Fuels Treatments: Increased acreage of fuel treatments will lead to the reduction of impacts to soil qualities due to wildfire.

Damage to Soils Due to Mineral Development and Oil and Gas Exploration/Development: Acreage under mineral development is anticipated to stay static. The increase in oil and gas exploration and development in the past 5 years may continue leading to localized increases in impacts to soils. Much of this activity is on private lands.

Recreation and Off-road Vehicle Use: The increase in demand for OHV-related recreation is anticipated to continue, which will result in additional soil erosion and compaction. This may be mitigated by increased law enforcement presence, permitting, and public education.

Alternative Energy Development and Energy Infrastructure: Based on recent applications and regional trends, it is anticipated that there will be increased alternative energy development such as wind farms in the planning area. Large wind farm development continues in Oregon and Washington. Increased impacts to soils due to infrastructure such as roads and transmission lines are anticipated. Some localized increases in erosion will occur at wind turbine pad sites.

Key Features

Areas of highly erodible soils occur throughout the planning area. Areas of high erosion hazard are often associated with steep slopes. Estimates of the amount of land area susceptible to erosion can be derived from the NRCS county soil surveys; slope information can be derived from GIS.

Deep loamy soils are important features for wildlife, particularly for fossorial species (species that burrow). Many of these wildlife species are special status species or species of concern such as Townsend's ground squirrels, badgers, and burrowing owls. Most of the lands with the deep loamy soil in eastern Washington are in private ownership and have been converted to agriculture (primarily wheat) and do not provide significant habitat for these wildlife species. Recent land acquisitions have increased the amount of lands underlain by deep soils managed by the BLM. Estimates of the amount of land with deep soils can be derived from NRCS soil surveys and GIS information.

While limited in area, inland sand dunes are an important feature in the planning area. Inland sand dune areas recognized as having significant conservation value include: Hanford Central Dunes (USDI Fish and Wildlife Service [FWS]), Juniper Dunes Wilderness (BLM), Delight Dunes, Wanapum and Wanapum North Dunes (BOR), Wahluke Dunes (USDI FWS), Hanford Black Sand Dunes (USDOE), Sentinel Butte Dunes (BLM), and Wakefield Dunes. The total extent of Washington inland sand dune systems has declined approximately 76 percent from the early 1970s, primarily due to agricultural conversion, reservoir flooding, and dune stabilization. As noted above, BLM manages two of these areas. The Juniper Dunes support a unique plant community in Washington, open savanna with western juniper, and provides habitat for many special status species including Washington ground squirrel, Ord's kangaroo rat, and Woodhouse's toad. *Cryptantha leucophaea*, for example, is found only in unstabilized sand dunes. The above information concerning inland sand dunes in Washington is from ―Conservation Strategy for Washington State Inland Sand Dunes" prepared for BLM by Hallock et al. (2007).

Lithosols (shallow, rocky soils) are typically shallow lithic soils with limited water-holding capacity over fractured basalt. Because of poor drainage through basalt, these soils are often saturated from fall to spring by winter precipitation, but typically dry out completely to bedrock by midsummer. These soils are subject to compaction, displacement, and erosion when they are saturated. Although vegetation cover is typically low, these soils often support a diversity of forbs such as species of *Allium*, *Antennaria*, *Balsamorhiza*, *Lomatium*, *Phlox*, and *Sedum*. Many of these plants are gathered as root crops and are culturally important to American Indian tribes in the planning area.

2.1.2.5 Water Resources

Indicators

The Clean Water Act of 1972, as amended, establishes the framework for regulating discharges of pollutants into waters of the U.S. and regulating quality standards for surface waters (EPA 2010a). The objective is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Under the CWA, the EPA has implemented pollution control standards such as setting wastewater standards for industry (EPA 2010a). Water quality standards have also been set for most contaminates in surface waters (EPA 2010a). Potential sources of water pollution can be categorized into point and nonpoint pollution. Point source pollutants originate from a direct source such as permitted industrial discharges or sewage plant discharges.

Nonpoint source pollution comes from many diffuse sources such as mercury, lead, and pesticides. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained (EPA 2010a). EPA's National Pollutant Discharge Elimination System permit program controls discharges (EPA 2010a). The EPA approved and delegated CWA non-point source authority to the Washington Department of Ecology (WDOE), while retaining point source authority for Federal facilities including roads. Therefore, under Washington Administrative Code (WAC) 173-201A, WDOE has the primary responsibility to carry out the requirements of the CWA in Washington State.

The Safe Drinking Water Act (SDWA) is the principal Federal law that protects the quality of drinking water in the U.S. (EPA 2010b). Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards (EPA 2010b). The law requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water (EPA 2010b). The EPA has approved and delegated SDWA authority to the WDOE. The Water Quality Standards for Ground Waters of the State of Washington (WAC 173-200) establish standards for ground water quality in Washington. The goal of these standards is to maintain a high quality of ground water and protect existing and future beneficial uses through the reduction or elimination of contaminants discharged to the subsurface.

The general indicators used when addressing the conditions of water resources in the planning area are the quantity of water available for beneficial uses and the water quality which describes its suitability for beneficial uses.

Water Quality Assessment (303(d)) & Water Quality Improvement Projects (TMDLs). Under section 303 (d) of the 1972 CWA, states are required to develop lists of impaired waters (EPA 2010c). These impaired waters do not meet Federal and or State water quality standards. The law requires a priority ranking for waters on the lists to be established and total maximum daily loads (TMDL) be developed for these waters (EPA 2010c). Water quality improvement projects or TMDLs determine the amounts of pollutant loading that a given water body can receive and still meet water quality standards (WDOE 2010a). Common parameters for TMDL development measurement include water temperature, sediment, turbidity, pH, bacteria, dissolved oxygen, and nutrients.

Washington State's Water Quality Assessment divides waterbody impairments into the following five categories as recommended by the EPA (WDOE 2010b):

> **Category 1 ~ Meets tested standards for clean waters**: Placement in this category does not necessarily mean that a water body is free of all pollutants. Most water quality monitoring is designed to detect a specific array of pollutants, and placement in this category means that the water body met standards for all the pollutants for which it was tested.
>
> **Category 2 ~ Waters of concern:** Waters where there is some evidence of a water quality problem, but not enough to require production of a water quality improvement project (also known as a TMDL) at this time. There are several reasons why a water body would be placed in this category. A water body might have pollution levels that are not quite high enough to violate the water quality standards, or there may not have been enough violations to categorize it as impaired according to the WDOE listing policy. For instance, there might be data showing water quality violations, but the data were not collected using proper scientific methods. In all of these situations, these are waters that WDOE want to continue to test.

Category 3 ~ Insufficient data: This category will be largely empty. Water bodies that have not been tested will not be individually listed, but if they do not appear in one of the other categories, they are assumed to belong in this category.

Category 4 ~ Polluted waters that do not require a TMDL: Waters that have pollution problems that are being solved in one of three ways:

Category 4a ~ Has a TMDL: Water bodies that have an approved TMDL in place and are actively being implemented.

Category 4b ~ Has a pollution control program: Water bodies that have a program in place expected to solve the pollution problems. While pollution control programs are not TMDLs, they must have many of the same features, and there must be some legal or financial guarantee that they will be implemented.

Category 4c ~ Is impaired by a non-pollutant: Water bodies impaired by causes that cannot be addressed through a TMDL. These impairments include low water flow, stream channelization, and dams. These problems require complex solutions to help restore streams to more natural conditions.

Category 5 ~ Polluted waters that require a TMDL: The traditional list of impaired water bodies known as the 303(d) list. Placement in this category means that the WDOE has data showing that the water quality standards have been violated for one or more pollutants, and there is no TMDL or pollution control plan. TMDLs are required for the water bodies in this category.

Current Condition

The term instream flow" is used to identify a specific stream flow (typically measured in cubic feet per second, or cfs) at a specific location for a defined time, usually following seasonal variations (WDOE 2010c). Instream flow is generally defined as the amount of water needed to protect and preserve resources within the stream (WDOE 2010c). Instream flow is necessary to sustain groundwater recharge. Therefore, under WAC 173-500, the WDOE recognizes groundwater as a component of instream flow in continuity with surface water and regulates the use of water accordingly.

A river basin is the portion of land drained by a river and its tributaries (Office of Environmental Education 2010). It encompasses the entire land surface dissected and drained by many streams and creeks that flow downhill into one another, and eventually into one river (Office of Environmental Education 2010). The final ending point would be an estuary or ocean. The four main river basins in the State of Washington are the Spokane, Yakima, Columbia, and Puget Sound (WDOE 2010d). Each drainage basin is composed of many smaller watersheds. The term watershed" is used to describe a smaller area of land that drains to a smaller stream, lake, or wetland. WDOE and other State agencies have divided the State of Washington into 62 water resource inventory areas (WRIAs) to delineate the State's major watersheds. The BLM currently holds 425,000 acres of land in 34 designated WRIAs (see table 2.1-6 and map 8 in appendix A).

Table 2.1-6. BLM-administered lands within designated water resource inventory areas (WRIAs)

WRIA Name	BLM Acres (GIS)
Alkali-Squilchuck	7,172
Chelan	10,740
Colville	7,372
Entiat	5,172
Esquatzel Coulee	18,652
Foster	8,149
Grand Coulee	6,764
Hangman	49
Kettle	9,694
Klickitat	3,145
Lower Crab	14,723
Lower Lake Roosevelt	7,448
Lower Snake	23,177
Lower Spokane	3,618
Lower Yakima	32,169
Methow	5,139
Middle Lake Roosevelt	5,938
Middle Snake	1,442
Moses Coulee	56,443
Naches	989
Nooksack	56
Okanogan	51,835
Palouse	29,005
Pend Oreille	1,730
Rock-Glade	16,792
San Juan	904
Sanpoil	1,095
Upper Crab-Wilson	67,135
Upper Lake Roosevelt	8,447
Upper Yakima	14,571
Walla Walla	740
Wenatchee	4,618
Wind-White Salmon	76

The current condition of water quality in these watersheds may be affected by land uses on and off BLM-managed lands. There are 26 listings for 9 rivers and creeks within the planning area under a category 5 status for TMDL. These include the Columbia River, Crab Creek, Lambert Creek, Palouse River, Pend Oreille River, Pintler River, Swauk Creek, Umtanum Creek, and the Yakima River. This means that water quality standards have not been met for one or more pollutants, and a TMDL or pollution plan is required. The WDOE is responsible for the TMDL process. Temperature appears to be the most frequent violation (see table 2.1-7).

Table 2.1-7. Reaches within the planning area rated category 5 for TMDL

Name	Reason Listed	Stream Miles
Columbia River	Temperature	0.45
Columbia River (Lake Entiat)	4, 4'-DDD	0.16
Columbia River (Lake Entiat)	4, 4'-DDE	
Columbia River (Lake Entiat)	PCB	
Columbia River (Lake Pateros)	Temperature	0.59
Columbia River (Priest Rapids Lake)	4, 4'-DDD	0.65
Columbia River (Priest Rapids Lake)	4, 4'-DDE	
Columbia River (Priest Rapids Lake)	PCB	
Columbia River (Priest Rapids Lake)	Temperature	
Crab Creek	Dissolved Oxygen	0.27
Crab Creek	pH	2.30
Crab Creek, South Fork	Dissolved Oxygen	0.87
Lambert Creek	Fecal Coliform	0.22
Lambert Creek	Temperature	
Palouse River	Dissolved Oxygen	0.22
Palouse River	Fecal Coliform	
Palouse River	pH	
Pend Oreille River	PCB	0.05
Pend Oreille River	Temperature	
Pend Oreille River	pH	
Pintler Creek	Temperature	0.28
Swauk Creek	Temperature	0.01
Umtanum Creek	Temperature	1.35
Yakima River	Chlordane	1.35
Yakima River	Dioxin	
Yakima River	PCB	
Total		**8.76**

Water quantity can be discussed only in very general terms because it is difficult to quantify water available for use due to the large number of surface and ground water rights in the area. The BLM has little to no control over water withdrawals within the region and, therefore, has little control over low flows, unless a BLM right is being impacted. Precipitation and snow pack are dependent on climate and control timing and volume of peak flows.

Trends

The rivers and creeks determined to qualify for category 5 (303 (d)) listings should generally improve over time as measures are taken to improve water quality in these areas. Agents of change for TMDL standards may include changes to the chemical, physical, and biological makeup of the waters in the planning area.

Forecast

The demand for water resources will increase in the future as the population in the planning area increases. If the amount of water remains relatively constant, this may lead to a reduction in the availability of water. Water quality may be impacted by changes to the chemical, physical, and biological constituents of the water. These changes may be caused by factors such as population growth, urbanization of the surrounding area, commercial use, agricultural use, and recreational use.

Key Features

Key features in the planning area are rivers and creeks that are designated under (303(d)) classification. Streams under this classification do not meet water quality standards and are required to have a pollution control plan lead by the WDOE. Since ground water supplies much of the drinking water for communities in the planning area, the protection of ground water is important.

2.1.2.6 Vegetative Communities

Vegetation of the planning area was mapped using the LANDFIRE vegetation classification (NatureServe 2009a), which is based on ecological systems. A terrestrial ecological system is defined as a group of plant community types (plant associations and/or alliances) that tend to co-occur within landscapes with similar ecological processes, substrates, and/or environmental gradients (NatureServe 2009b). The LANDFIRE map of existing vegetation in the planning area includes 96 categories; most are ecological systems, but some additional land cover types from the National Land Cover Database (U. S. Geological Survey 2001) have been included to characterize areas that have been modified and do not readily fit into the ecological system classification. For the purpose of this overview, the categories have been grouped into ten classes, plus agricultural and developed lands (table 2.1-8). Table 2.1-9 lists the ecological systems and land cover types included within each of the classes.

Table 2.1-8. Categories and acreage of vegetation types occurring in the planning area

Vegetation Community Type	Planning Area Acres	BLM Acres	BLM% of Type	% of BLM
Agricultural	6,948,012	3,274	0.0	0.8
Deciduous Shrubland	202,689	1,479	0.7	0.3
Developed	926,906	3,920	0.4	0.9
Eastern WA Cold Moist Forest	1,758,866	414	0.0	0.1
Eastern WA Dry Forest	4,226,746	41,264	1.0	9.7
Eastern WA Warm Moist Forest	1,177,349	2,335	0.2	0.5
Grassland	2,522,408	34,563	1.4	8.1
Non-Vegetated	926,826	15,411	1.7	3.6
Sagebrush Steppe	6,870,427	310,697	4.5	73.1
Sparsely Vegetated	59,878	495	0.8	0.1
Eastern WA Woodlands	1,505,833	10,388	0.7	2.4
San Juan Island Forest/Woodlands	89,058	760	0.9	0.2

Source: LANDFIRE 2010.

Table 2.1-9. Ecological systems and land cover types within each vegetation type class

ID	Landfire Name	RMP Class
2	NASS-Pasture and Hayland	Agricultural
3	NASS-Orchard	Agricultural
4	NASS-Close Grown Crop	Agricultural
5	NASS-Row Crop	Agricultural
6	Agriculture-Cultivated Crops and Irrigated Agriculture	Agricultural
7	Agriculture-Pasture and Hay	Agricultural
8	Northern Rocky Mountain Montane-Foothill Deciduous Shrubland	Deciduous Shrubland
9	North Pacific Montane Shrubland	Deciduous Shrubland
10	Developed-Upland Deciduous Forest	Developed
11	Developed-High Intensity	Developed
12	Developed-Low Intensity	Developed
13	Developed-Open Space	Developed
14	Developed-Medium Intensity	Developed
15	Developed-Upland Herbaceous	Developed
16	Developed-Upland Shrubland	Developed
17	Developed-Upland Evergreen Forest	Developed
18	Developed-Roads	Developed
19	Introduced Upland Vegetation-Shrub	Deciduous Shrubland
20	Introduced Upland Vegetation-Perennial Grassland and Forbland	Grassland
21	North Pacific Alpine and Subalpine Dry Grassland	Grassland
22	Northern Rocky Mountain Lower Montane-Foothill-Valley Grassland	Grassland
23	Herbaceous Semi-dry	Grassland
24	Herbaceous Wetlands	Grassland
25	Barren	Non-Vegetated
26	Open Water	Non-Vegetated
27	Northern Rocky Mountain Ponderosa Pine Woodland and Savanna	SJI Forest/Woodlands
28	North Pacific Dry-Mesic Silver Fir-Western Hemlock-Douglas-fir Forest	SJI Forest/Woodlands
29	North Pacific Wooded Volcanic Flowage	SJI Forest/Woodlands
30	North Pacific Swamp Systems	SJI Forest/Woodlands
31	North Pacific Dry Douglas-fir(-Madrone) Forest and Woodland	SJI Forest/Woodlands
32	Pseudotsuga menziesii Giant Forest Alliance	SJI Forest/Woodlands
33	East Cascades Mesic Montane Mixed-Conifer Forest and Woodland	SJI Forest/Woodlands
34	Pseudotsuga menziesii-Quercus garryana Woodland Alliance	SJI Forest/Woodlands
35	Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest	SJI Forest/Woodlands
36	North Pacific Mesic Western Hemlock-Silver Fir Forest	SJI Forest/Woodlands
37	Rocky Mountain Aspen Forest and Woodland	SJI Forest/Woodlands
38	North Pacific Montane Riparian Woodland and Shrubland	SJI Forest/Woodlands
39	North Pacific Hypermaritime Western Red-cedar-Western Hemlock Forest	SJI Forest/Woodlands
40	North Pacific Lowland Riparian Forest and Shrubland	SJI Forest/Woodlands
41	North Pacific Hypermaritime Seasonal Sitka Spruce Forest	SJI Forest/Woodlands

ID	Landfire Name	RMP Class
42	North Pacific Maritime Mesic-Wet Douglas-fir-Western Hemlock Forest	SJI Forest/Woodlands
43	North Pacific Broadleaf Landslide Forest and Shrubland	SJI Forest/Woodlands
44	North Pacific Maritime Dry-Mesic Douglas-fir-Western Hemlock Forest	SJI Forest/Woodlands
45	North Pacific Sparsely Vegetated Systems	Sparsely Vegetated

The map is based on satellite imagery, and should be regarded as a general overview of the types and distribution of vegetation in the planning area, rather than as an indication of the vegetative cover of a specific location. BLM lands classified as ―Agricultural" may be pasture lands or former Conservation Reserve Program (CRP) lands that came into BLM ownership through land acquisition, or may be lands adjacent to agricultural fields. BLM lands classified as ―Developed" are typically roads and the lands bordering those roads.

A given vegetation class may include a broad range of vegetative condition, from areas with a highly intact native plant community to areas that are dominated by introduced vegetation. Some of the categories included in the original analysis are labeled as Introduced Upland Vegetation, but introduced vegetation also occurs within many of the terrestrial ecological systems defined by NatureServe, so it did not seem appropriate to create a separate class for introduced vegetation types. These categories were grouped with similar ecological systems (for example, Introduced Upland Vegetation–Annual Grassland was included in the broader Grassland category).

Riparian and wetland categories were not separated from upland categories because of the difficulty in defining the extent of riparian areas in a broad-scale classification. Riparian woodlands and forests were included in the Woodlands class. Herbaceous wetlands in eastern Washington were included under Shrub-Steppe, because the majority of herbaceous wetlands in this portion of the planning area occurs within the matrix of shrub-steppe. In the San Juan Islands, herbaceous wetlands were included under Grasslands.

Forest and Woodland Vegetation

Indicators

Current forest conditions can be assessed by using the Fire Regime Condition Class System (Hann et al. 2004) explained in tables 2.1-23 and 2.1-24. Condition classes are a function of how far the current fire regimes have departed from historical fire regimes, resulting in alterations of components such as species composition, structural stage, stand age, and canopy closure.

Current Conditions

Dry coniferous forests are the predominant types on BLM lands in the District; most include Douglas-fir, in association with ponderosa pine on the driest sites, and in association with more mesic species on sites with higher precipitation and deeper soils. Mesic to wet forests supporting western hemlock and western red cedar occur in the extreme northeastern part of the planning area, and along streams. Mixed conifer-oak woodlands occur in the foothills of the southern portion of the Eastern Cascades, but are not well represented on BLM. The most extensive forest types on the District are discussed below. Riparian forests are included in the various vegetation community types discussed in the forests and woodlands section, and are experiencing similar types of issues.

In general, forests on BLM lands have been modified by timber harvest and fire exclusion. Fire return intervals have become increasingly longer than historical intervals, which resulted in the accumilation of unnatural fuel levels. Areas of unnatural fuel loading have to potential to burn with a greater intensity and severity. Increases in stand density and shifts in composition and structure have increased the susceptibility of interior forests to insects and diseases, and other pathogens across millions of acres in the interior Columbia Basin of Oregon, Washington, and Idaho (Hessberg et al. 1993; Mason and Wickman 1993). This has resulted in some of the largest insect infestations in recent decades, which can be associated with high intensity or high severity fires. These risks vary by insect type (bark beetle versus defoliator), time since the outbreak, and how the fuel bed changes over time, as well as other factors we may not have identified as yet. Table 2.1-8 shows forest types in the Spokane District.

Large, Old Trees. Large, old trees make up a small portion of the planning area. Individual and small clumps of large, old trees exist within larger stands of younger trees making delineation of large old tree stands difficult. Large, old trees are identified by their unique characteristics as described in ―dentifying Old Trees and Forests" (Van Pelt 2008). These characteristics include thick bark with wide plates (relative to each species) and coloring indicative of old bark for that species, sometimes large size, an age that is near the upper portion of the maximum biological age for that species or site, old crown and branch pattern characteristics, and some individuals have some form of internal decay or branch dieback.

Eastern WA Dry Forest. The majority of the forested land in the decision area is classified within the Eastern WA Dry Forest vegetation group (i.e., receives 14 to 25 inches of precipitation annually); these forests comprise approximately 77 percent of the forest cover in the planning area. Eastern WA Dry Forests were historically open-grown ―park-like" stands, with an overstory of large, widely spaced ponderosa pine in the lower to mid elevations with increasing amounts of Douglas-fir and western larch cohorts on mid elevation and higher elevations and more mesic sites. In some instances, Douglas-fir occurs as the dominant species, including as pure stands, with a similar structure as ponderosa pine or mixed conifer stands. Typically, the understory would consist of primarily grass and forb species with little underbrush, sporadic conifer regeneration, and occasional clumps of smaller trees.

The primary disturbance agents in the Eastern WA Dry Forest types are insects, disease, and wildfires. In healthy stands, insects, diseases, and/or parasites (primarily bark beetles, defoliators, root rots, rusts, and dwarf mistletoe) typically create small canopy openings and promote a multi-layered stand structure with some agents targeting overstory trees and others thinning understory trees. The canopy openings or gaps created are typically less than 5 acres in size.

The Eastern WA Dry Forest types are generally within fire regime I, which has a mean fire interval range of 0 to 35 years. These fires typically occur as low intensity, low severity understory fires, which keep the understory relatively free of ladder fuels and large accumulations of ground fuels. Overstory mortality from wildfire is generally uncommon and usually occurs as single tree or small clumps. Today, the Eastern WA Dry Forest types have a mean fire interval of greater than 100 years. This has resulted in densely vegetated understories with large accumulations of ground fuels that have changed the fire effects to uncharacteristic moderate to high intensity and severity, with abnormal overstory mortality.

The great majority of Eastern WA Dry Forest in the planning area is classified as Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest or the very similar Pseudotsuga Menziesii Forest Alliance. These forests occur on the eastern slope of the Cascades, in

northeastern Washington north of the Spokane River, and in the Blue Mountains in southeastern Washington. Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) are the dominant tree species; western larch (*Larix occidentalis*) and lodgepole pine (*Pinus contorta*) are often present also. Grand fir (*Abies grandis*), a fire-sensitive and shade-tolerant species, has increased within this vegetation type because of fire suppression. Shrubs, including Douglas maple, ninebark, oceanspray, snowberry, and thinleaf huckleberry, are common in the understory and may become dense in areas harvested for timber. Timber production has been a primary resource use, and nearly all occurrences of these forests have been logged at some time.

Eastern WA Cold Moist Forest (Lodgepole Pine/Sub-alpine Fir, Englemann Spruce, Grand Fir). The Eastern WA Cold Moist Forest comprises approximately 1 percent of the forest acreage in the planning area. This forest group occurs at lower frequency within the decision area. These forests typically occur at higher elevations, or in moist micro-sites such as stream bottoms or select northern aspects. Most stands have a mixed species composition. Often these stands will have a component of drier site species such as ponderosa pine and Douglas-fir, but there will be an abundance of grand fir, Engelmann spruce, lodgepole pine, and/or sub-alpine fir. These stands have a greater carrying capacity than Eastern WA Dry Forests and thus can sustain a greater density of trees per acre. Increased stand densities are also at least partially due to species in these stands being more shade tolerant. In fully stocked stands, understory vegetation including conifer regeneration is typically less dense than would occur in the drier forest type. Understory grass, forb, and shrub species may be depauperate or absent in very dense, closed canopy stand conditions.

The Eastern WA Cold Moist Forest type is most readily identified by the presence of sub-alpine fir. Stands containing sub-alpine fir within the planning area are a mixture of several species. Similar to the Eastern WA Dry Forest group, the primary disturbance agents in the moist forest types are insects, disease, parasites, and wildfires. However, unlike the drier forests, these stands are more likely to have one or more diseases or insects at work at any given time. This is due to several factors including a greater competition for water and light when dense stand conditions prevail, a greater species-specific susceptibility to infection or infestation, and a greater likelihood of mechanical injury resulting from inter-tree contact. The greater susceptibility to insect and disease and greater likelihood of injury are both due, at least in part, to shade-tolerant trees having thinner bark.

The majority of Eastern WA Cold Moist Forest stands within the decision area are within fire regime II and III, which has a mean fire interval range of 35 to 200 years. Fires within this interval are of mixed severity and generally cause mortality in both the understory and the overstory, but typically do not result in a stand-replacing event. In a typical wildfire, less than 75 percent of the stand would experience high severity. Larger, fire hardy individuals and clumps of trees may have survived more than one fire interval and will form a multilayered structural component. Wetter sites generally burn less frequently than drier sites.

Eastern WA Warm Moist Forest. The Eastern WA Warm Moist Forest comprises approximately 4 percent of the forest cover within the planning area. The Eastern WA Warm Moist Forest type, which comprises the upland forest sites in the planning area, is generally dominated by western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), and grand fir, also in this type are Douglas-fir, grand fir, and Englemann spruce. This type occupies the lower wetter portions of the northeast portion of the planning area. Historically, this type would have been dominated by seral species, including western white pine and western larch. Currently, this cover type is in fair health due to stand densities, root rot, and loss of western

white pine due to blister rust. This type occupies approximately 2,326 acres in the planning area. Disturbances have longer return intervals; fire return intervals are less than 100 years.

Eastern WA Woodland. All Eastern WA Woodland types within the planning area comprise 15 percent of the total forest cover. Historically, conifer woodlands were located in rocky areas that were refugia from fire. Decreased fire frequencies, changing climate, and past grazing practices promoted the expansion of woodlands out of these refugia. The extent of lower elevation conifer woodlands is limited by a number of site factors. Generally, in the east Cascades, woodlands require precipitation greater than 14 inches per year. In these harsh sites, tree establishment requires several years of above normal precipitation. These low elevation sites are sometimes surrounded by sagebrush, and confined to areas with mineral deficiencies that sagebrush cannot occupy (Arno and Hammerly 1984). Soils greatly influence tree establishment. In fine textured soils, moisture is less available to conifers, and competition from grasses and other plants is more intense (Arno and Hammerly 1984).

Ponderosa Pine Woodland and Savanna occur in the foothills of the eastern Cascades and in the Columbia Plateau, at the ecotone between forest and shrublands/grasslands. Ponderosa pine is the major, and often the only, coniferous species. Understory shrubs include many of the species found in the Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest, but also often include big sagebrush (*Artemisia tridentata*) and/or antelope bitterbrush (*Purshia tridentata*). The herbaceous understory consists of fire-resistant grasses and forbs that can resprout after fire. Historically, fire frequency was high, but fire intensity was low. Shrubs have become more abundant in this vegetation type because of fire suppression, and open stands with large trees have commonly been replaced by patches of dense young pines, so fuel loads support hotter, more intense fires than in the past.

Oak Woodlands occur in the southern portion of the planning area and in limited locations in the San Juan Islands. Yakima and Klickitat counties are the northern-most limit of Oregon Oak Forests on the east side of the Cascade Range.

The oak and associated habitats are common in Klickitat County, which has the largest remaining acreage of Oregon White Oak Habitats in the State of Washington and perhaps the largest contiguous distribution of oak in the Pacific Northwest. These plant communities also represent some of the eastern-most areas of Oregon White Oak Habitat in the Pacific Northwest and provide key habitat to a number of plant and animal species. Oregon white oak has a long lifespan of up to 500 years and may persist as a climax species on sites prone to drought or naturally occurring fire (Vesely and Tucker 2004).These stand occupy areas with precipitation of as low as 10 inches per year.

The oak stands consist of older, widely spaced cohort oaks and dense small-diameter trees. Patterns of tree density are highly variable and range from open stands to dense thickets. Current stand density of oaks is well beyond the pre-European settlement range. The current stand structure within oak stands appears to be a result of fire suppression. Oak woodlands consist of single trees, stands of pure oak, and in mixed stands of ponderosa pine and oak. Oak Woodlands are found on very droughty sites with as little as 10 inches of precipitation per year. Because it is drought tolerant, Oregon oak is found on sites that are not able to support other tree species. Where there is adequate site moisture and suitable soils, Oregon oak is found with ponderosa pine and occasionally Douglas-fir.

Aspen makes up less than 1 percent of forest cover within the planning area, and occurs as pure stands in the shrub-steppe and as individuals and in clumps in association with various conifers

such as Douglas-fir in upland areas. The primary disturbance agent was wildfire that regenerated the stands. In healthy stands regeneration is abundant especially around the edge of the clone. Aspen grows best in deep, moist loamy soils in a range of precipitation zones (16 to 40 inches).

Associated understory vegetation consists of mallow ninebark (*Physocarpus malvaceus*), sticky currant (*Ribes viscosissimum*), Rocky Mountain maple (*Acer glabrum*), elk sedge (*Carex geyeri*), pinegrass (*Calamagrostis rubescens*), blue wildrye (*Elymus glaucus*), and snowberry (*Symphoricarpos albus*). In many aspen stands, conifer encroachment is a natural pattern, resulting in an increased dominance by conifers and reducing the extent of aspen-dominated stands. Forest health for the Aspen/Conifer Mix type is considered to be generally good to fair, with some mature stands of aspen undergoing succession to conifers.

An aspen study on the Okanogan and Wenatchee National Forests (Hadfield and Magelssen 2004) showed that 56 percent of the aspen stands were less than 2 acres in size, many with fewer than five living stems, and 28 percent of the stands were over 5 acres in size. Most aspen stands are located in upland sites or riparian areas. The condition of aspen ranges from healthy stable stands to decadent declining stands.

Cottonwood occurs primarily along riparian areas within the planning area. Most stands are found along rivers with smaller stands and individual trees found along smaller riparian areas. This type makes up less than 1 percent of the planning area.

The BLM San Juan Islands forests comprise approximately 2 percent of the forests within the BLM planning area. The BLM portion of the San Juan Islands in western Washington contains approximately 767 acres. Precipitation varies from a low of 17 inches on the southern end of Lopez Island to 29 inches on Patos Island. This change in precipitation is due to the rain shadow effect of the Olympic Mountains to the south. Most soils are shallow, and experience droughty conditions in the summer months.

Historically, the forest vegetation on the San Juans was described as being injured by wildland fire and stunted, with few large trees, and spare (Schroeder [N.D.]). A comparison of two databases from 1874 and 1990 (Schroder [N.D.]) shows that Douglas-fir was, and is, the dominant species, but that there are fewer red alder and pine than historically, and there is now more grand fir, red cedar, and Douglas-fir than historically.

Common disturbance agents are insects and diseases. Historically, low to moderate severity wildland fires were initiated both by lightning and by Native Americans.

From the 1800s to 1930s logging occurred over much of the San Juan Islands, so much of the current forest land is now in second growth (Gannett 1902).

San Juan Islands Forest/Woodlands. Dry Forest in the San Juan Islands consists of Douglas-fir, madrone, lodgepole pine (shore pine), and Oregon oak. These dry sites are sometimes open and located on rocky and steep, south facing slopes The understory in this type is mostly grasses and forbs. Open grasslands are diminishing due to the invasion of trees into these areas. Without wildland fire or mechanical treatment projects, conifers will continue to expand into native grasslands. As the conifer canopy closes in, grass and shrub cover declines.

Warm Moist Forest on the San Juan Islands is restricted to draws on the southern islands where precipitation is 17+ inches but is more extensive on Patos and Little Patos islands due to the increased precipitation levels of up to 29 inches. Species in moister areas include western red

cedar, grand fir, western hemlock, and Douglas-fir. Soils are usually deeper than in drier areas, and are able to support a heavier forest cover. These sites are usually more moist and productive, and protected from wind and salt spray (Gray and Daniels 2006).

Forests classified as North Pacific Maritime Dry-Mesic Douglas-fir-Western Hemlock Forest are the most extensive forest type on BLM lands in the San Juan Islands, occurring at Point Colville, Chadwick Hill, Iceberg Point, Kellett Bluff, Turn Point, and Patos Island. Although the acreage managed by BLM is small, it includes forest stands on Patos Island, Iceberg Point, and Chadwick Hill/Point Colville.

Trends

The eastside forests of the Cascade Range in Washington State have been modified in structure and species composition by the actions of humankind for thousands of years. The recent actions of humankind since the settlement by Europeans and Americans have significantly changed the structure of these forests that favor longer-term fire regimes and ~~"c~~atastrophic" stand replacement fires (NPS 1995). Since the 1980s there has been a series of land exchanges within the planning area primarily involving the exchange of forestland for shrub-steppe. Forestlands exchanged are generally accessible and contain a significant amount of commercial timber.

<u>Eastern WA Woodlands</u>

Forest health is declining in some areas of conifer woodlands due to drought, insects, disease, overstocking, and fire exclusion. Conifer woodlands were once more open than today; thickening and expansion of the lower timberline can be caused by fire exclusion and grazing that remove competing vegetation (Arno and Hammerly 1984). Most of this type is in fire regime I and II and condition class 2. Western pine beetle activity is occurring in some of the ponderosa pine trees in conifer woodlands, and will continue as drought, climate change and competition make these trees more susceptible to beetle attack.

Pre-settlement oak woodlands were characterized by relatively open canopies dominated by trees with full, mushroom-shaped crowns (Vesely and Tucker 2004). This translates to tree densities that vary with age but will eventually range from 25 to 50 trees per acre with a canopy closure of 25 to 50 percent.

Land health is declining in oak woodlands due to the lack of natural disturbances resulting in increases in the density of small oak stems and expansion of oaks into other habitats. Without wildland fire or mechanical treatment projects, oak woodlands will continue to expand into Wyoming big sagebrush and mountain big sagebrush communities, and native grasslands. Some oak stands are reaching a state where oak dominance is beginning to alter understory conditions. As the oak canopy closes in, grass and shrub cover decline, decreasing wildlife habitat and forage production.

More favorable sites that are or were oak and pine oak savannah are rapidly becoming closed canopy with the increase in understory ponderosa pine and oak. A lack of wildland fire and other disturbances is changing the composition and structure of these stands. The pine oak forest in the project area is currently out of its natural fire regime resulting in higher stand densities and reduced vigor. The forest in its current condiditon is susceptible to stand-replacing wildfires, loss of wildlife habitat, stand structure, and composition.This imbalance has occurred over the last 50 to 100 years because of fire suppression.

The stands consist of older, widely spaced cohort oaks and dense, small-diameter trees. Patterns of tree density are highly variable and range from open stands to dense thickets. Current stand density of oaks is well beyond the pre-European settlement range. The current stand structure within oak stands appears to be a result of fire suppression and domestic grazing.

Severe wildfires pose a major challenge to forest sustainability in mixed forests of *Pinus* and *Quercus* spp. in many areas of the world. The combination of modern land-use practices, especially fire exclusion, together with warming climate (Westerling et al. 2006), has led to increasingly large and severe wildfires in pine-oak forests of the U.S. (Barton 2002). Most of this type is in fire regime I and condition class 3. Active management in the form of implementing vegetation treatments has begun to improve the health and sustainability of oak woodlands.

Aspen stands were once more abundant than today. Aspen stands often contained a mixture of age classes with a ―skirt" or ―fairy ring" of regeneration around the edge of the stand. This regeneration results from root sprouting in the full sunlight reaching the ground, and a lack of competing vegetation. Wildland fire, insects, and disease benefitted aspen by keeping encroaching conifers from outcompeting aspen and by allowing aspen to regenerate by sprouting. Aspen in shrub-steppe communities benefitted in the same way except the competition came from shrub-steppe species. Because of the lack of disturbances, principally wildland fire, aspen are not able to regenerate as easily and are declining in vigor, with some clones down to just a few declining stems.

Cottonwood stand conditions vary across the planning area. Stands near large rivers with frequent flooding are healthy and have a wide range of age classes. Where flooding is infrequent or has been prevented, cottonwood does not regenerate well. Those trees farthest from the water are least likely to regenerate, as flooding and one or more months of adequate soil moisture with full sunlight are required for successful seedling establishment (DeBell 1990).

Large, Old Trees

Because of the history of timber harvest on the District's forested lands, large, old trees on BLM in eastern Washington are less common than they were historically, and are scattered and mostly in small patches. Large, old trees can, however, be an important habitat component for wildlife, particularly where contiguous with similar areas managed by other Federal or state agencies. Existing large, old trees in certain areas should receive priority for protection from wildfire; specifically, from conditions that could lead to stand-replacing wildfire. There is an area on Mt. Elizabeth that has been identified as having large, old trees that have cultural importance and should be managed as such. Large, old trees in the San Juan Islands occur on BLM properties on Patos Island, Iceberg Point, and Point Colville; the Patos Island occurrence is recognized by the Washington Natural Heritage Program as an outstanding example.

Eastern WA Dry Forest

The current stand condition for Dry Forest in most of the planning area is a distinct departure from the historic condition of open-grown, large trees with a sparse understory. Most of these stands are declining and unstable due to overstocking stress, climate change, drought, insect and disease infestations, and susceptability to severe wildfires. While there have probably always been dry site stands in all stages of development, there is historic evidence that millions of acres were in the open, park like condition throughout the Columbia Basin. The planning area has very few stands that meet these criteria and most of those that do exist are the result of management actions taken in the relatively recent past.

These forests may have been deprived of 10 or more natural fire cycles (Brown et al. 2004). The absence of wildland fires in the area for many decades has resulted in stands that are dense with understory trees. As a result, the severity and size of wildfires have increased in the region over the last 100 years, and especially within the last 20 years. These changes have altered tree species composition and age classes, with uniform stands of middle-aged trees predominating at present, in contrast to historic conditions that included predominantly large and older age class trees.

Within the planning area, the loss of the natural thinning effects of wildfire has lead to the development of overstocked, stagnant stands. Past harvest in stands with road access, primarily in the form of mortality salvage and removal of individual overstory trees of commercial value, has also contributed to high understory densities of stagnant conifers and woody vegetation. Finally, some areas with very few large overstory trees are a result of past wildland fires. Conifers and shrubs less than 60 years old form dense stands. Competition for site resources, especially water, is severe. Understory tree densities have created conditions that stress existing overstory trees competing for limited resources.

Historical duff accumulations for these stand types would have averaged approximately 0.5 inch (Arno 2000). Arno (2000) states, ―In today's dry forest stands that have missed multiple [wildland] fire events, larger ponderosa pines often have deep accumulations of duff and litter around their bases." he also notes that in many of these stands, duff mounds 6 to 24 inches deep have accumulated under large, old trees, and burning these mounds may girdle and kill trees.

Schmitt and Scott (1993) recognized that a variety of insects and diseases, compounded by protracted drought, overstocking, and inappropriate past management, have severely damaged many mixed conifer stands. They also saw that large areas in the ponderosa pine type are drastically overstocked and in imminent danger of a bark beetle population buildup and resultant epidemic. Insect populations throughout the planning area are spreading each year, similar to the occurrence of millions of acres across the West with a shift in composition and structure and increased susceptibility to insects and diseases (Hessberg et al. 1993; Mason and Wickman 1993). Many forest stands are losing trees including the larger trees left for seed sources during past management treatments. In fact, mountain pine beetles seem to select these larger trees during outbreaks. Furthermore, the natural resistance of trees to attack by mountain pine beetles decreases as age and competition increase (Gast et al. 1991). As a result, ―when bark beetle mortality reduces stand density in unthinned stands, some of the best trees are lost, and the mortality often occurs in clumps, resulting in uneven distribution of growing space among remaining trees" (USDA FS 1999).

While there is not currently a bark beetle epidemic within the decision area, there is a marked increase in mountain pine beetle, western pine beetle, and fir engraver beetle activity. Most pine beetle activity is within stands and clumps of trees in the 12-inch and smaller class, which is the preferred size class of tree for mountain pine beetle attacks. However, there are increasing random occurrences of larger pine mortality from western pine beetle. This mortality is believed to be a result of overstocking and drought. Additionally, similar neighboring areas of Washington have recently suffered significant mortality by beetles.

Annual aerial surveys by the U.S. Forest Service (USFS) have shown increases in western and mountain beetle mortality in the region, especially in the Dry Forest type. Since 2007 there has also been a large increase in western spruce budworm defoliation on forested land in central Washington, primarily in the Dry Forest type. These types of outbreaks can last for years, cover large portions of landscape, and are related to the unhealthy conditions of the forest. Since 2009

there have also been increases in the Douglas-fir tussock moth defoliation in north-central Washington. Spruce budworm defoliation damage and mortality will continue on these lands as long as the food source (Douglas-fir, true firs) is available.

Throughout the decision area, there are varying levels of disease infestation. The primary agents appear to be dwarf mistletoe (primarily in Douglas-fir, ponderosa pine, and western larch), Comandra blister rust (ponderosa pine), and various wood rotting fungi. These agents occur in varying degrees of infection from endemic to epidemic in which all trees within a stand are infected. Of primary concern is Douglas-fir being infected by dwarf mistletoe, which has the highest rate of infection of any tree species within the decision area. While pine and larch have scattered stands with very heavy infection levels, this parasitic plant is far more pervasive in Douglas-fir and is well beyond endemic levels. Most of this type is in fire regime I and condition class 2 and 3.

Implementation of forest health and fuels reduction treatments in some stands in this type has started to reduced the chances for high intensity wildfire and resultant high tree mortality rate. These treatments have also made these stands more resistant to insect and disease outbreaks, drought, and other climate influences. Vegetative treatments in this forest type are improving land health where implemented.

The 5,000-acre Chopaka Mountain Wilderness Study Area (WSA) is located in the upper elevation areas of dry forest and is experiencing the same set of forest health and wildfire hazard issues that the overall dry forest is experiencing. Currently there are areas of spruce budworm defoliation, Douglas-fir tussock moth infestation, and mistletoe infections. These conditions will only worsen with time, because these stands are in an unnatural condition and options to restore these acres are very limited. Most Forest Service wilderness areas are located in high elevation areas that have different and longer disturbance cycles, and have not departed much from the historical range of variability. Most of these wilderness areas are in fire regimes IV and V, whereas the Chopaka WSA is in a fire regime II and III, and condition class 2 and 3. This area is moving away from a healthy condition.

Eastern WA Cold Moist Forest

Stands were less dense historically than today, and fire regimes were in the mixed severity regime, with occasional high intensity wildfires, although most were of mixed severity. Due to wildland fire suppression, stands are more dense and have higher fuel loads. Stand density and structure have not changed as much as those in the Dry Forest group. Most stands within the planning area are located near the lower elevational range for sub-alpine fir. As a result, this group is influenced by the proximity of the Dry Forest group. Historically the Dry Forest group was more open and less susceptible to insects, diseases, and wildfires. The risk of wildfires and insect outbreaks in the Dry Forest type has put the Cold Moist Forest type at higher risk. Spruce budworm outbreaks that were less intensive and extensive in the past, are more intensive and extensive today as a result of changes in the Dry Forest (Hessburg et al. 1994). Lodgepole pine is found mostly as individual trees and small stands within the planning area. Historically, lodgepole pine would have been more heavily represented as a result of moderate and high intensity wildfires. With the advent of wildland fire suppression, lodgepole pine is not able to regenerate in the numbers or extent as historically. Root diseases were present but not extensive due to the presence of non-susceptible species such as western larch, western white pine, and lodgepole pine (Hessburg et al. 1994). Today there are fewer of the no susceptible species due to lack of disturbances that enable these species to become established; these disturbances were

mostly mixed to high severity fires. This type is currently fire regime I and II and condition class 2.

Western spruce budworm defoliation has been occurring on this type for the last several years and is related to the defoliation being experienced in the Dry Forest.

Implementation of forest health and fuels reduction treatments in this type has started to reduced the chances for high intensity wildfire and resultant high tree mortality rate. These treatments have also made these stands more resistant to insect and disease outbreaks, especially those originating from the dry forest. The effects of drought and other climate influences are also lessened by these treatments.

Eastern WA Warm Moist Forest

The Warm Moist Forest type has changed in the last century as the area in western red cedar, grand fir, and western hemlock has increased (fire intolerant) and the area in fire tolerant species such as western larch has decreased (Hessburg et al. 1999). Disturbances were of mixed and high severity, usually in the form of fire, but insects and disease also played a role. Historically this forest type had a western white pine component, but with the introduction of white pine blister rust, white pine is virtually absent. Bark beetles and defoliators were present but not a major disturbance agent. Weakened individual and small groups of trees were injured or killed creating small openings. Most of this type is a fire regime III and conditions class 1 and 2.

Currently insect and disease outbreaks are similar to the past, except larger in scale due to altered wildland fire disturbances (Hessburg et al. 1994). Vegetation treatments in this forest type are reducing the insect and disease severity and wildland fire hazard.

San Juan Islands Forest/Woodlands

The Dry Forest of the San Juan Islands has a similar trend as the Eastern WA Dry Forest type. Several studies in the San Juan Islands have shown the frequent disturbance history (Spurbect and Keenum 2003) of wildland fire that is similar to low elevation eastern Washington forests. The fire return interval on the southern end of Lopez Island was found to be 11 to 14 years over a 340-year-period, but the last recorded fire was in 1916 (Spurbect and Keenum 2003). Forests in this type appear to be temporarily stable, but current trends for this type are not sustainable. Woodlands and grasslands are converting to closed forests due to tree encroachment (Kruckeberg 1991). The encroachment is causing a decline of Oregon white oak due to conifer shading and tree encroachment on grasslands. Large, scattered trees 200 to 300 years old that once grew in an open condition are now growing with young Douglas-fir (Barsh and Murphy 2005). Oregon oak is currently declining in some areas as a result of conifer shading and encroachment and lack of wildland fire. Pacific madrone is a moderate-sized tree that requires direct sunlight to thrive. Historically, more open stands resulting from frequent burning would have maintained habitat to ensure healthy madrone trees on the landscape. With the advent of wildland fire suppression for many decades, madrone has had to compete for sunlight, water, and nutrients on many sites. Currently madrone dieback has been occurring on the San Juan Islands (Mehmel 2006). This dieback is a result of overhead shading from conifers and side-shading from conifers and other tree species. This cover type is mostly in fire regime I and condition class 2.

The current Warm Moist Forest in the San Juan Islands is most likely very different from historic forests that were more open grasslands and un-even-aged patches (Gray and Danials 2006). In addition, western hemlock, Sitka spruce, lodgepole pine, and grand fir, now a part of the

structure, may not have been present in the past (Gray and Danials 2006). Most of this type is in fire regime I and condition class 2. These stands appear to be temporarily stable.

Forecast

The drivers of change for active management of forest resources involve BLM forest and woodlands policy that states, ―The primary emphasis of BLM's Forests and Woodlands program is offering a scientifically sound, environmentally responsible level of timber sales; as well as forest and woodland health restoration treatments". The Healthy Forest Restoration Act (HEFRA), stewardship contracting, and the National Fire Plan are examples of a national strategy to actively manage BLM's forests and woodlands. Active management of forest and woodland resources will depend on available funding and the feasibility of implementation.

There will continue to be some land exchanges involving forestland for shrub-steppe, but most likely at a diminished rate from previous years.

Recent studies suggest that climate change is occurring and will have an influence on forested vegetation. The climate will become more extreme, suggesting oscillations between wet and drought conditions will be more common (North et al. 2009). Warmer temperatures will cause decreases in lower elevation forest productivity; increases in wildfire frequency, severity, and area (Westerling et al. 2006; CSES 2007; Peterson 2009); increases in tree mortality due to insects, drought, and wildfires; and changes in species distribution and composition (CSES 2007; Peterson 2009). A climate change study for the State of Washington (Little et al. 2010) projects that the area of Washington forests severely water-limited will increase by 32 percent in the 2020s, and an additional 12 percent in both the 2040s and the 2080s. The decline in climatically suitable habitat for Douglas-fir is most widespread at lower elevations and particularly in the Okanogan Highlands. Climate is likely to be a significant stressor in pine forests in the Columbia Basin and eastern Cascades as early as the 2040s, particularly in parts of the Colville National Forest, Colville Reservation, and central Cascades. The Columbia Basin, Palouse Prairie, and Okanogan Highlands would have mean area burned increases of between 0 and 600 percent. These areas would coincide with the Woodlands and Dry Forest types on BLM, and to a lesser extent in the Cool Moist Forest, Warm Moist Forest, and San Juan Forests.

<u>Eastern WA Woodlands</u>

Conifer woodlands will continue to increase in density and increasingly come under overstocking stress and high wildfire risk (Abella and Fulé 2008). This overstocking stress will predispose these stands to drought, insects, and disease susceptibility. Those in the shrub-steppe environment will continue to experience moisture and nutrient stress from shrub-steppe vegetation, and at increased risk of high intensity wildfires. Due to climate change in the past and present, some of these are likely relict stands that if killed by environmental stress, wildland fire, insects, or disease may not be capable of regenerating. With the loss of isolated stands there may be a loss of genetic material as well (St. Clair and Howe 2009). Implementing vegetation treatments in conifer woodlands will reduce individual tree stress and the likelihood of mortality from insects, disease, climate change, and wildfire (on some sites).

Oak woodlands will continue to increase in density. Pure stands of oak clumps will continue to become more connected, oak savannah sites with larger, scattered oak trees will become more fully stocked with oak and conifer regeneration (Abella and Fulé 2008), and come under increasing competition from shading from conifers (Gould and Harrington 2008) from above and younger oaks from the side. Acorn production on individual trees would continue to decline as crown shading becomes more intense. The risk of moderate to high intensity wildfire would

continue to increase (Fule et al. 2007) in these stands. Continuing forest health treatments on present sites and additional sites will reverse negative successional trends associated with wildland fire exclusion, and increase the health and resiliency of these stands.

Many aspen stands in a forest setting are now being crowded out by competing trees (Hadfield and Magelssen 2004). These trees shade out aspen trees and prevent sprouting due to a lack of sunlight. Older, overtopped aspen trees decline in vigor and eventually die as they lose their ability to sprout. Many aspen stands in shrub-steppe vegetation are prevented from reproducing by sprouting by competing shrub-steppe vegetation. Since the principle means of aspen regeneration is sprouting, the aspen stands that are not currently being managed will continue to be under stress from competing vegetation. These stands will continue to decline and die out on individual sites. Implementing vegetative treatments in aspen stands will improve the health and continued viability of these stands.

Cottonwood stands will continue to regenerate under favorable conditions along major free flowing rivers. Those cottonwoods along smaller riparian areas may not fare as well without a disturbance to expose soil and full sunlight. With possible climate change, the timing of seed availability and adequate soil moisture may not always coincide.

Large, Old Trees

Stands and individual large, old trees would continue to decline and be at increasing risk of damage and mortality from insects, disease, drought, and high intensity wildfire without management intervention (Fitzgerald et al. 2000). Implementation of vegetative treatments on additional acres would make these stands more sustainable in the long term. These treatments would enable stands and individual large, old trees more resilient to wildfires, insects, disease, drought, and climate change.

Eastern WA Dry Forest

Dry Forest acres that have not had density reduction disturbances will continue to be at risk of insect, disease, climate, and wildfire risks (Dahms et al. 1997; Alexander and Hawksworth 1975; Fitzgerald et al. 2000). This risk will also increase the risk to adjacent forest types, and adjacent property owners. Those stands that have been recently treated and those to be treated in the near future will have a much lower risk of large, stand-replacing disturbances. In these managed stands individual tree and stand health will improve, and the risk of a stand replacing disturbance will decrease. These stands and sites will be more resistant and resilient to disturbances. Insects, diseases, drought, and wildfire may still occur, but damage and mortality would be more on an individual trees and small groups of trees instead of large stands and landscapes. The risk to adjacent property owners and to the Cold Moist Forest type from wildland fires and insect infestation would be lower, and much closer to historical conditions. Implementing forest and fuels reduction treatments on additional acres would help to restore these stands to similar historic conditions. These stands would be more resilient to disturbances such as wildland fires, insects, and disease outbreaks, and other environmental factors.

The Chopaka WSA will continue to further depart from desired future conditions until large unnatural disturbances occur. These disturbances will include continued insect defoliation, barkbeetle mortality, mistletoe infestation, drought mortality, and stand-replacing wildfires.

Eastern WA Cold Moist Forest

The Cold Moist Forest will continue trending toward increasing tree density and fuel loadings. There will be a continued increased risk of wildfires and insect activity (Hessburg et al. 1999)

threatening this type from the adjacent Dry Forest type until active management has changed conditions in the Dry Forest type. Lodgepole pine and any white pine will continue to decline in vigor and numbers and there will continue to be increasing root diseases without active management. Additional active management in this type would encourage an increase in lodgepole pine and white pine, and a subsequent decrease in susceptibility in insect, disease, and wildfire risk.

Eastern WA Warm Moist Forest

The Warm Moist Forest would continue to experience changes in stand composition and structure. This trend of increasing shade-tolerant species and less fire-resistant and shade-intolerant species is due to lack of disturbances that would provide adequate growing space for the shade-intolerant and fire-resistant species. Continued implementation of forest health and fuel reduction treatments on additional acres would reduce the extent and severity of insect, disease, and wildland fire disturbances.

San Juan Islands Forest/Woodlands

The current trends in the San Juan Islands Dry Forest will continue until there is a wildfire, wind event, or insect and disease outbreak. Stand densities will continue to increase with a continued increase in closed canopy forests and a continuing trend in certain areas of tree encroachment on grasslands. Oregon oak will continue to decline and large, old, formerly open grown trees will continue to be put under increasing stress from young trees. The stress and risk agents are similar to those for the Dry Forests and Old Growth types. Oregon oak is limited in the San Juan Islands; without active management, oak stands will continue to be shaded out in areas by conifers. Pacific madrone dieback will continue to occur and most likely increase as more competition from competing trees occurs. Implementing forest and fuels reduction treatments on additional acres would help to restore these stands to similar historic conditions. These stands would be more resilient to disturbances such as wildland fire, insects, and disease outbreaks, and environmental factors.

The current trends in the San Juans Moist Forest will continue until there is a wildfire or insect and disease outbreak. Grasslands would continue to be encroached upon by trees, and forest stands with openings will continue to be filled in with trees creating more closed canopy conditions. Western hemlock, Sitka spruce, lodgepole pine, and grand fir will continue to increase in areas where historically numbers of these species were low or did not exist. Implementation of forest health and fuel reduction treatments on additional acres would reduce the extent and intensity of insect, disease, and wildland fire disturbances.

Key Features

Large, Old Trees

Because of the history of timber harvest and wildland fire on the District's forested lands, areas with large, old trees on BLM in eastern Washington are uncommon, scattered, and mostly in small patches. However, it can be an important habitat component for wildlife, particularly where it is contiguous with similar areas managed by other Federal or State agencies. Existing late seral or individual old growth with large, old trees should receive priority for protection from wildfire; specifically, from conditions that could lead to stand-replacing wildfire. This should concentrate on thinning-from-below and reduction of fuels, and should extend to stands that have an old, large tree component. Exceptions should only occur where there is a severe

forest health situation and it is necessary to remove some old, large individuals to help restore the stand to a healthy condition.

There is an area of large, old trees on Mt. Elizabeth that has been identified as having cultural importance and should be managed as such. Large, old trees in the San Juan Islands occur on BLM properties on Patos Island, Iceberg Point, and Point Colville; the Patos Island occurrence is recognized by the Washington Natural Heritage Program as an outstanding example.

Eastern WA Woodlands

Conifer woodlands are found on transition areas between lower treeline and shrub-steppe habitats, and are a unique resource in arid lands of the West. This forest type has been identified as an important wildlife habitat component by the Arid Lands Initiative.

Oak woodlands east of the cascades are found only in Klickitat and Yakima counties. Oak woodlands are also identified by the Arid Lands Initiative as important wildlife habitat to manage.

Quaking aspen, cottonwood, and any other hardwood communities occurring throughout the decision area should receive priority consideration for protection from further decline. In addition, active management should be used to restore them to their former range, including removal of encroaching conifers and using prescribed fire to initiate suckering.

Eastern WA Dry Forest

The Dry Forest type should be managed to restore historic conditions for resilient ecosystems and to reduce the wildfire hazard to adjacent lands. This is a top priority for BLM and other agencies.

San Juan Islands Forest/Woodlands

Oregon oak is considered a species of importance in the Puget Trough region. Few areas support Oregon oak in the San Juan Islands, the best site being on Henry Island. Without mechanical and prescribed fire treatments the Oregon oak will continue to decline.

The grassland/Douglas-fir ecotone on Lopez Island at Point Colville and Iceburg Point is mentioned as one of the finest examples of this type in the North Pacific Border (Dougherty 2004).

The forest associations on Patos Island are considered of high ecological importance (Crawford and Chappell 2006). The western red cedar-Grand-fir/Swordfern Forest association is the best example of this Moist Forest type in Washington (Crawford and Chappell 2006).

Shrub and Grassland Vegetation

Indicators

Indicators for shrub-steppe and grassland vegetation include ecological site inventory (Habich 2001), and BLM rangeland health standards (USDI BLM 1997). Ecological site inventory compares the vegetation at a site with what would be expected under natural conditions of succession based on soils, climate, and other physical characteristics. Rangeland health standards include watershed function of upland and riparian areas, ecological processes (nutrient cycling and energy flow), water quality, and health of native plant and animal communities. Fire Regime

Condition Class (FRCC), as discussed above, can also be used as an indicator of departure from historical conditions in shrublands and grasslands.

Current Conditions

Upland Shrubland and Shrub-Steppe Systems

Big sagebrush (*Artemisia tridentata*) is the predominant shrub in eastern Washington, occurring in combination with one or more grasses and often with other shrubs such as threetip sagebrush (*Artemisia tripartita*), antelope bitterbrush (*Purshia tridentata*), gray rabbitbrush (*Ericameria nauseosa*) and/or green rabbitbrush (*Chrysothamnus viscidiflorus*).

Sagebrush-steppe once covered a large part of the central and western portion of the Columbia Plateau, but has been reduced dramatically by conversion to agriculture, and much of the remaining acreage has been substantially degraded. Sagebrush communities on shallow soils, such as Rigid Sagebrush associations, have experienced less loss because cultivation of these rocky, thin soils was impractical. Lands unsuitable for cultivation have been, and continue to be, used primarily for livestock grazing. Extensive grazing encourages increased shrub cover as compared to grass cover. Invasion of the sagebrush-steppe by non-native annual grasses has occurred in response to grazing pressure and the introduction of propagules through vehicle travel and livestock movement.

Eastern Washington. Inter-Mountain Basins Big Sagebrush Steppe occurs throughout much of the Columbia Plateau and is the most widely distributed shrub-steppe type on BLM lands in the District. Soils are typically deep and well-drained, not saline, and microphytic soil crusts are often present. It is classified as steppe because of dominance (>25 percent cover) by perennial bunchgrasses such as bluebunch wheatgrass (*Pseudoroegneria spicata*), needle-and-thread grass (*Hesperostipa comata*), and Sandberg's bluegrass (*Poa secunda*), and perennial forbs. Wildland fire historically has had an important role in maintaining a patchy distribution of shrubs; shrub density tends to increase with heavy grazing and wildland fire suppression. Annual grasses such as downy brome (*Bromus tectorum*) also tend to increase under heavy grazing pressure.

Inter-Mountain Basins Big Sagebrush Shrubland differs from the previous system in that big sagebrush dominates, and herbaceous cover is typically less than 25 percent. Soil characteristics and species occurrence are similar. This system occurs over much of the western U.S. in basins and foothills at moderate elevations.

Inter-Mountain Basins Montane Sagebrush Steppe occurs primarily on deep soils on mountain slopes; within the District, it occurs in the foothills surrounding the Columbia Basin. Precipitation tends to be somewhat higher at these elevations, with much occurring as snow. Available moisture supports an abundant herbaceous layer of perennial grasses and forbs.

Columbia Plateau Scabland Shrubland occurs on shallow lithosols that are typically poorly drained, but droughty in summer. Total vegetative cover is low, and crust cover is often high in areas that have not been disturbed. The dominant shrub is stiff sagebrush (*Artemisia rigida*), often in association with various species of buckwheat (*Eriogonum* spp.). Characteristic perennial grasses include Sandberg's bluegrass (*Poa secunda*) and squirreltail (*Elymus elymoides*). This system occurs primarily as a mosaic with Big Sagebrush Steppe or Columbia Plateau Steppe and Grassland. Because of extremely low moisture availability, invasion by non-native annuals has not occurred to as great an extent as in communities on deeper soils.

Columbia Plateau Steppe and Grassland is similar in species composition to Inter-Mountain Basins Big Sagebrush Steppe, but is characterized by a more frequent fire regime and reduced cover of shrubs. It is dominated by perennial bunchgrasses and forbs (greater than 25 percent cover), and shrubs are absent or sparse (<10 percent) cover. Microphytic crusts are often present. Shrubs may increase in response to heavy grazing and/or wildland fire suppression.

Inter-Mountain Basins Mixed Salt Desert Scrub forms relatively open shrublands in the interior of the Columbia plateau. Soils are calcareous and often saline; precipitation is low and temperatures are high during summer. Characteristic shrubs include saltbush (*Atriplex* spp.), spiny hopsage (*Grayia spinosa*), winterfat (*Krascheninnikovia lanata*) and big sagebrush. The herbaceous layer is dominated by perennial grasses such as Indian ricegrass (*Achnatherum hymenoides*) and Sandberg's bluegrass. Microphytic crusts are important in this system.

Grassland Systems

Grassland systems are dominated by the same grasses that are characteristic of shrub and shrub-steppe systems, and as in most of those systems, microphytic crusts cover much of the soil surface in the absence of major disturbance. Like sagebrush steppe, native grasslands have been altered by conversion to agriculture, grazing, and introduction of non-native species.

Eastern Washington. Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland is similar in species composition to Inter-Mountain Basins Big Sagebrush Steppe, but physical conditions tend to be more severe, with shorter summers and colder winters, and soils are not as well developed. The dominant vegetation is cool-season perennial bunchgrasses with more than 25 percent cover, including bluebunch wheatgrass, Idaho fescue, and needle-and-thread grass. There may be a sparse (<10 percent) shrub layer; while big sagebrush may be present, shrubs such as serviceberry (*Amelanchier alnifolia*), rose (*Rosa* spp.) and snowberry (*Symphoricarpos* spp.) are also characteristic of this system. Shrub invasion was historically limited by a short interval between fires; shrub cover may increase under heavy grazing and/or wildland fire suppression. Lichen soil crusts cover much of the ground surface between grass clumps.

Columbia Basin Palouse Prairie once covered an extensive range in southeastern Washington, occurring on rolling topography in deep loess soils. Most of this vegetation type has been converted to cropland, because of its fertile soils and ease of cultivation. Summer conditions are hot and dry, but winter precipitation is higher than in the shrub-steppe areas to the west. Cool-season bunchgrasses, including bluebunch wheatgrass, Idaho fescue, needle-and-thread grass, basin wild rye (*Leymus cinereus*) and prairie junegrass (*Koeleria macrantha*), are the dominant vegetation. Shrubs such as serviceberry, rose, and snowberry occur in swales and along drainages. Forbs are abundant and diverse. Remnants of this vegetation are now largely restricted to steep sites that are not amenable to cultivation. Invasion by non-native annual grasses has occurred in areas that have experienced heavy grazing or past cultivation.

San Juan Islands. The grasslands of the San Juan Islands were once maintained by wildland fires (both naturally occurring, and set by aboriginal peoples). Camas (*Camassia* spp.) was an important food source, and figured prominently in cultural practices of the native inhabitants. Settlement by European and American migrants brought livestock grazing and cultivation, reduced the frequency of fire, and resulted in the introduction of numerous non-native plants which have invaded the landscape. Most of the grasslands in the San Juans, including those on BLM lands, are largely composed of non-native grasses, and support a mixture of native and non-native forbs. Grasslands are also being invaded by woody shrubs such as blackberry (*Rubus* spp.) and Scotch broom (*Cytisus scoparius*).

Trends

The areal extent of shrub-steppe and grasslands has been substantially diminished because of conversion to agriculture, and much of the remaining acreage has been degraded by historic livestock grazing and the invasion of non-native species, particularly annual grasses. Since the current RMP was issued, the District has acquired over 130,000 acres of shrub-steppe lands, primarily through land exchange and purchase programs. Most of these lands had a long history of livestock grazing prior to BLM acquisition. Although grazing continues under BLM management, stocking rates and season of use have generally been reduced in comparison to typical levels that existed when these lands were under private ownership. Native perennial grasses have shown increased cover on many of these parcels. However, in numerous locations, annual grasses have become well established. Invasive introduced species continue to spread into new areas, as their propagules are widely available and are often brought to new locations by vehicle traffic and livestock movement as well as by natural means.

Forecast

In shrub-steppe and grassland areas, native perennial grasses and shrubs may continue to increase slowly, but well-established populations of annual grasses are unlikely to be displaced in the absence of intensive and prolonged restoration efforts. Invasive non-native species are expected to continue to spread; control efforts may reduce the rate of spread but are unlikely to eradicate them.

Grasslands in the San Juan Islands are being invaded by native forest species in the absence of wildland fire, as well as introduced shrubs and forbs. This is likely to continue in the absence of active management actions.

Key Features

Shrub-steppe is a particular concern on the District because of the amount of loss and degradation of this vegetation type, along with the decline of wildlife species such as greater sage-grouse (referred to in this document sometimes as simply ―sage grouse”) that are dependent on shrub-steppe habitat. Maintaining and improving shrub-steppe communities and associated riparian corridors, particularly in areas that are large enough to maintain the diversity of habitats necessary to sustain many wildlife species, is an important management priority.

Riparian and Wetland Systems

Although minor in acreage, riparian systems support plants not found in upland systems, and provide important habitat for wildlife and protection of water quality.

Indicators

Indicators for riparian habitats include PFC (Proper Functioning Condition) ratings. PFC assessments evaluate the vegetation, landform/soils, and hydrology of riparian areas with regard to their suitability to dissipate stream energy, filter sediments, improve flood-water retention and ground-water recharge, stabilize streambanks, develop a diversity of physical characteristics that provide suitable habitat for wildlife, and support greater biodiversity (Prichard et al. 1998, 1999). PFC integrates such indicators as diversity and abundance of native riparian/wetland species, absence of exotic species, and capability of those species to contribute to system stability.

Current Conditions

Eastern Washington. Lotic systems (riparian areas associated with streams) in eastern Washington drain into the Columbia River and its tributaries. Potential riparian vegetation is greatly influenced by the effects of elevation on temperature and precipitation patterns.

Columbia Basin Foothill Riparian Woodland and Shrubland include low elevation riparian systems along the Columbia River and its tributaries around the periphery of the Columbia Basin. Flooding is common during spring runoff. Characteristic trees are black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), quaking aspen (*P. tremuloides*), water birch (*Betula occidentalis*), and sometimes ponderosa pine. Shrubs include black hawthorn (*Crataegus douglasii*), red osier dogwood (*Cornus sericea*), mock orange (*Philadelphus lewisii*), and willows (*Salix* spp.).

Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland occur at higher elevations than the previous system. Balsam poplar (*P. balsamifera*) is present along with other deciduous and/or coniferous trees such as quaking aspen, birch (*Betula* spp.) and spruce (*Picea* spp.) Shrubs include red osier dogwood and various forest shrubs such as Douglas maple (*Acer glabrum* var. *douglasii*) and gray alder (*Alnus incana*). Ferns and forbs associated with mesic forest are often present.

Lentic systems in eastern Washington include permanent lakes, semi-permanent ponds, marshes, and vernal pools. Emergent pond/marsh vegetation typically includes bulrush (*Schoenoplectus* spp.), cattail (*Typha* spp.), bur-reed (*Sparganium* spp.) and spikerush (*Eleocharis* spp.). Reed canary grass (*Phalaris arundinacea*), originally introduced for erosion control, has invaded many wetlands in the planning area, displacing native species that are characteristic of shallow zones of wetlands.

PFC assessments have been conducted on 2,802 acres of wetlands and ponds on the Spokane District, all of which is in the Border Field Office. Wenatchee Field Office data are not available. About 2,336 acres (83 percent) were rated as PFC, less than 1 acre (less than 1 percent) as functioning-at-risk with an upward trend, 118 acres (4 percent) as functioning-at-risk with a downward trend, 315 acres (11percent) as functioning-at-risk with unknown trend, and 33 acres (1 percent) as nonfunctional.

PFC assessments have been conducted on 106 miles of streams on the Spokane District. About 71 miles (67 percent) were rated as PFC, 8 miles (8 percent) as Functioning-At-Risk with an upward trend, 3 miles (3 percent) as Functioning-At-Risk with a downward trend, 20 miles (19 percent) as Functioning-At-Risk with unknown trend, and 3 miles (3 percent) as Nonfunctional.

San Juan Islands. The terrain of the San Juan Islands does not support significant development of lotic systems, but lentic systems occur on the larger islands. On the Point Colville parcel, there are two bogs, dominated by sedges and mosses, within the coniferous forest. Comparisons with old aerial photos show that the bogs are filling in (USDI BLM 1990). The smaller of the bogs supports a population of leathery grapefern (*Botrychium multifidum*); while not a special status species, it is considered rare on Lopez Island.

Trends

Historically, timber harvest and livestock grazing practices did not always consider the role of riparian vegetation in preventing erosion and providing wildlife habitat.

Agricultural conversion has also resulted in substantial losses of wetland acreage since European settlement, as lowlands were ditched and drained to increase cropland and pasture. The Spokane District has teamed with State agencies and private conservation groups on several wetland restoration projects within the last decade.

Forecast

The alteration of riparian areas by timber harvest is decreasing, because of the establishment of riparian buffers for timber sales, and as the focus of forest management continues to shift from timber production to forest health. In shrub-steppe and grassland, grazing management plans are taking into account the need to protect riparian areas, so riparian condition is expected to improve on many grazing allotments. However, it will be more difficult to improve riparian condition on custodial allotments in which BLM lands are intermingled with private property. Riparian and wetland environments are also susceptible to invasion by exotic species, which if not controlled are likely to cause further loss of native riparian vegetation, particularly in non-forested habitats.

Key Features

While BLM ownership generally includes only a small segment of a given stream, on larger parcels BLM management decisions may be able to significantly influence hydrology and vegetation, and therefore stream function, along that segment. Examples are the Lake Creek and Upper Crab Creek drainages in the Border Resource Area.

Sparsely Vegetated Systems

Several types of sparsely vegetated systems occurring on the District are of interest because of their limited extent and the unique plants and animals that they support.

Indicators

Indicators include presence of native species that are adapted to the typically harsh physical conditions of their environments, and absence of invasive non-native species.

Current Conditions

Eastern Washington. Inter-Mountain Basins Active and Stabilized Dune Systems occur at the Juniper Dunes in Franklin County, and the Sentinel Butte Dunes in Grant County. Juniper Dunes is a relatively large dune system that includes active open sand dunes and juniper woodlands. Portions of the area support native bunchgrasses, but invasive species, particularly cheatgrass and tumble mustard, are common on flat and gently sloping sites. Surrounding private lands are used for irrigated agriculture and livestock grazing. A portion of Juniper Dunes is a designated wilderness and is off limits to grazing and OHV use. Gray cryptantha, a Federal species of concern, occurs within the wilderness.

Sentinel Butte Dunes is a small dune area near the Columbia River. Active sand deposition and erosion is taking place, and the sandy substrate is intermingled with basalt outcrops and talus. Two species of concern, gray cryptantha and Geyer's milk-vetch, occur here.

Inter-Mountain Basins Cliff and Canyon Systems and Rocky Mountain Cliff, Canyon and Massive Bedrock Systems occur at mid to high elevations on rock outcrops, cliff faces, and talus. Vegetation is generally similar to that of surrounding sites, but the open character and often severe physical environment of these sites can provide suitable habitat for some rare plant species.

Cliff and canyon systems occur in conjunction with forest, shrub-steppe, and grassland plant associations in the planning area. Topography restricts many land uses, but mining and utilization of rock products may alter the natural landscape.

Trends

A study of inland sand dune systems in Washington (Hallock et al. 2007) found that the acreage of inland sand dunes has decreased from approximately 448,177 acres in the early 1970s to 106,953 acres by 2006; a loss of 76 percent. Federal lands showed a similar decrease of 78 percent from 422,217 total acres historically to the current 93,589 acres. Prior to the 1970s, stabilization of sand dunes was considered a desirable outcome, so it is likely that the overall decrease has been even larger than that reported. Losses are attributed to invasion by exotic species, agricultural conversion, development, and flooding behind reservoirs. While the rate of loss to agriculture is probably slowing, the spread of invasive species is unlikely to do so. Hallock et al. (2007) report a decrease in active dune area, and an increase in shrub communities such as grey rabbitbrush/ green rabbitbrush/ snow buckwheat and big sagebrush/bitterbrush. They also point to the role of crop irrigation in raising water tables, which allows species characteristic of more moist environments to displace dune species in low areas. Recreational activities, in particular OHVs (off-highway vehicles), have impacted many sand dune areas. While OHV trails reduce stabilization, they also disrupt native plant communities and contribute to the spread of invasive plants.

Forecast

While the areal extent of sand dunes is unlikely to change significantly in the foreseeable future, degradation of native plant communities is likely to continue as invasive species continue to spread and recreational use increases.

Key Features

Juniper Dunes includes vegetation communities not found elsewhere in the State, including the sand lyme-grass (*Leymus flavescens*) association and juniper woodlands. Recreational use, particularly OHV use, has increased greatly in the area outside the wilderness, and trespass into the wilderness occasionally occurs. OHV use also threatens rare species at Sentinel Butte Dunes. Management approaches need to consider the high potential for conflict between recreational use and persistence of native vegetation.

2.1.2.7 Noxious Weeds and Invasive Plants

Indicators

Inventories and surveys for noxious weeds have been conducted over the last 20 years; however, data collection techniques have varied over time making it difficult to quantitatively define the scope of weed invasions on BLM lands. Many areas of the district have not yet been surveyed for noxious weeds, which prohibits any comprehensive assessment of the current status and trends of noxious weeds and invasive plants within the planning area. A continued emphasis to survey and map noxious weed infestations, as well as gathering weed-related data from other resource programs and BLM partners, will close data gaps over time. Although the existing noxious weed data is incomplete for quantitative analysis, qualitative indicators based on sample data can be used to describe the management objectives and general distribution.

For this analysis, the indicators used to describe the condition of noxious weeds and invasive plants are the presence of known weedy species in the planning area and their classification

status on Washington State and Federal weed lists. The presence and extent of noxious weed invasions are commonly used as some of the key indicators of plant community health and functionality, specifically in characterizing rangeland health. The occurrence of invasive plants was identified as an indicator of poor condition in shrub-steppe and grassland vegetation classes derived from LANDFIRE data (NatureServe 2009). The classification status of noxious weeds is used by the State and county weed boards to develop both Statewide and local management objectives. BLM's participation in landscape-scale coordination and control of priority noxious weeds helps prevent both the spread and reinvasion of these species.

Current Conditions

Weed Categories

Noxious Weeds. Noxious weeds are non-native plants which have been designated for control or eradication by law because their introduction can cause environmental and economic harm. They are a subset of plants within the larger category of invasive species, which are known to be highly destructive, competitive, or difficult to control.

Federal Noxious Weeds. The Federal Noxious Weed Act of 1974 (7 U.S.C. § 2814(a)) established an undesirable plant management program, implemented cooperative agreements with state agencies, established integrated management systems to control undesirable species, and authorized a list of non-indigenous plants prohibited from entry and establishment in the United States. Federally listed noxious weeds have been added to the Washington State Noxious Weed list as Class A species once detected in the State. There are currently no known occurrences of any federally listed noxious weeds on BLM lands within the planning area.

Washington State Noxious Weeds. Washington State's Noxious Weed Control List (W.A.C. 16-750) is updated annually by the Washington State Noxious Weed Control Board (WSNWCB) and is separated into three classes based on the weed's distribution, abundance, and potential impacts. There are currently 140 species on the Washington State Noxious Weed Control list, of which 23 species are known to occur on BLM lands within the planning area (table 2.1-10).

Class A. Class A weeds are the most limited in distribution and are considered the highest priority for control in Washington State. Eradication is required in all counties within the planning area.

Class B. Control is required in some areas of the State where weed populations have not become widespread. The prevention of seed dispersal within a calendar year is required for designated Class B weeds. Containment or buffers may be imposed for some weed species with well-established populations.

Class C. Weed species which are commonly found in the State, but can be selected for control locally if considered feasible by county noxious weed control boards. To meet land management objectives Class C weeds may be controlled to the same standard as a Class A or Class B species.

County Weed Board Lists. Under the Washington State Noxious Weed Control Law (R.C.W. 17.10) each county weed board has the authority to develop and enforce a weed list that reflects the concerns at the local level. County weed lists include all State listed Class A

weeds, any State- or county-designated Class B weeds, and any Class C weeds selected for control.

Invasive Plant Species. Invasive plants are non-native, aggressive plants whose introduction may cause harmful economic, environmental, or human health impacts (Executive Order 13112). This category of vegetation is fairly broad and includes plant species which may already be prevalent throughout the State, thereby making regulatory control unfeasible.

Undesirable Vegetation. In specific situations, some native vegetation may need to be controlled to satisfy FLPMA's public land management policies and meet specific habitat, safety, and administrative integrated weed management goals. These species are not formally defined and the threshold for management is reached when vegetation encroachment results in harm or impairment to infrastructure or resource values. The lists of invasive plants and undesirable vegetation were compiled using source material from BLM, WSNWCB, USDA, The Nature Conservancy (TNC), and the Western Society of Weed Science (WSWS) (table 2.1-11).

Table 2.1-10. Washington State noxious weeds occurring within the planning area

Common Name	Scientific Name	Weed Class	Designated for Control by County
Syrian bean-caper	*Zygophyllum fabago*	A	All counties in the planning area
Annual bugloss	*Anchusa arvensis*	B	All counties in the planning area except portions of Whitman County
Dalmatian toadflax	*Linaria dalmatica* ssp.*dalmatica*	B	Adams, Chelan, Franklin, Kittitas, Lincoln, Okanogan, and portions of Douglas and Spokane counties
Diffuse knapweed	*Centaurea diffusa*	B	Chelan and portions of Adams, Franklin, Grant and Stevens counties
Hoary alyssum	*Berteroa incana*	B	All counties in the planning area except Ferry, Lincoln, Pend Oreille, Spokane, Stevens, and portions of Okanogan County
Houndstongue	*Cynoglossum officinale*	B	Chelan and Douglas County
Kochia	*Kochia scoparia*	B	Chelan, Kittitas, Pend Oreille, and Stevens counties
Leafy spurge	*Euphorbia esula*	B	All counties in the planning area except portions of Lincoln and Spokane counties
Meadow knapweed	*Centaurea* x *moncktonii*	B	All counties in the planning area except Kittitas County
Musk thistle	*Carduus nutans*	B	All counties in the planning area
Oxeye daisy	*Leucanthemum vulgare*	B	Adams, Asotin, Benton, Columbia, Franklin, Garfield, Grant, Lincoln, Spokane, Walla Walla, and Whitman counties
Perennial pepperweed	*Lepidium latifolium*	B	All counties in the planning area except Benton, Chelan, Douglas, Franklin, Grant, Klickitat, and Yakima
Plumeless thistle	*Carduus acanthoides*	B	All counties in the planning area
Poison hemlock	*Conium maculatum*	B	Chelan, Kittitas, San Juan, and Whatcom counties
Purple loosestrife	*Lythrum salicaria*	B	All counties in the planning area except Benton, Walla Walla and portions of Grant and Okanogan counties
Puncturevine	*Tribulus terrestris*	B	Adams, Benton, Chelan, Franklin, Kittitas, and Stevens counties
Rush skeletonweed	*Chondrilla juncea*	B	All counties in the planning area except Columbia, Franklin, Garfield, Lincoln, Spokane, Stevens, Walla Walla and portions of Adams, Grant, and Whitman counties
Russian knapweed	*Acroptilon repens*	B	All counties in the planning area except Benton, Franklin, Douglas, Klickitat, Okanogan, Yakima, and a portion of Ferry County
Saltcedar	*Tamarix ramosissima*	B	All counties in the planning area except Benton and Franklin counties
Scotch broom	*Cytisus scoparius*	B	All counties in the planning area except San Juan, Whatcom, and Skagit counties
Scotch thistle	*Onopordum acanthium*	B	All counties in the planning area

Common Name	Scientific Name	Weed Class	Designated for Control by County
Spotted knapweed	*Centaurea stoebe*	B	All counties in the planning area except Garfield, Lincoln, Spokane, Stevens and Pend Oreille counties
Sulfur cinquefoil	*Potentilla recta*	B	All counties in the planning area except Ferry, Klickitat, Pend Oreille, Skagit, Spokane, Stevens, and Yakima counties
Yellow starthistle	*Centaurea solstitialis*	B	All counties in the planning area except Columbia, Garfield, Klickitat, Walla Walla, and portions of Stevens, Whitman and Asotin counties
Canada thistle	*Cirsium arvense*	C[1]	Benton, Chelan, Franklin, Pend Oreille counties
Common St. Johnswort	*Hypericum perforatum*	C[1]	Chelan and Pend Oreille counties
Hoary cress	*Cardaria draba*	C[1]	Chelan County
Jointed goatgrass	*Aegilops cylindrica*	C[1]	Benton, Franklin, and Lincoln counties
Yellow toadflax	*Linaria vulgaris*	C[1]	Chelan County

[1] Class C noxious weeds that have been selected for control in the counties listed.

Table 2.1-11. Known invasive plant species occurring within the planning area

Common Name	Scientific Name	Status, Weed Class	Distribution/Abundance
Absinth wormwood	*Artemisia absinthium*	C[2]	Wide spread/sparse
Bedstraw	*Galium aparine*		Wide spread/common
Bulbous bluegrass	*Poa bulbosa*		Wide spread/common
Bull thistle	*Cirsium vulgare*	C[2]	Wide spread/common
Cereal rye	*Secale cereale*	C[2]	Limited/common
Cheatgrass	*Bromus tectorum*		Wide spread/abundant
Clasping pepperweed	*Lepidium perfoliatum*		Limited/abundant
Common mullein	*Verbascum thapsus*		Wide spread/common
Common reed	*Phragmites australis*	C[2]	Limited/locally abundant
Common tansy	*Tanacetum vulgare*	C[2]	Wide spread/common
English ivy	*Hedera helix*	C[2]	Wide spread/common
English hawthorn	*Crataegus monogyna*		Limited/sparse
Field bindweed	*Convolvulus arvensis*	C[2]	Wide spread/common
Himalayan blackberry	*Rubus armeniacus*	C[2]	Limited/common
Japanese brome	*Bromus japonicus*		Limited/locally abundant
Lamb's-quarters	*Chenopodium album*		Wide spread/common
Marestail	*Conyza canadensis*		Wide spread/common
Medusahead wildrye	*Taeniatherum caput-medusae*		Limited/locally abundant
Milkvetch	*Astragalus* spp.		Limited/common
Prickly lettuce	*Lactuca serriola*		Wide spread/common
Reed canary grass	*Phalaris arundinacea*	C[2]	Wide spread/locally abundant
Russian olive	*Elaeagnus angustifolia*		Limited/locally abundant
Russian thistle	*Salsola kali*		Wide spread/locally dominant
Spurge laurel	*Daphne laureola*	B[1]	Limited/sparse
Teasel	*Dipsacus sylvestris*		Numerous/locally abundant
Tumble mustard	*Sisymbrium altissimum*		Wide spread/common
Yellow flag iris	*Iris pseudacorus*	C[2]	Limited/common
Western salsify	*Tragopogon dubius*		Wide spread/common

[1] Class B noxious weed selected for control within the planning area but not known to occur on BLM lands.

[2] Class C noxious weeds present on BLM lands but not required for control under R.C.W. 17.10.

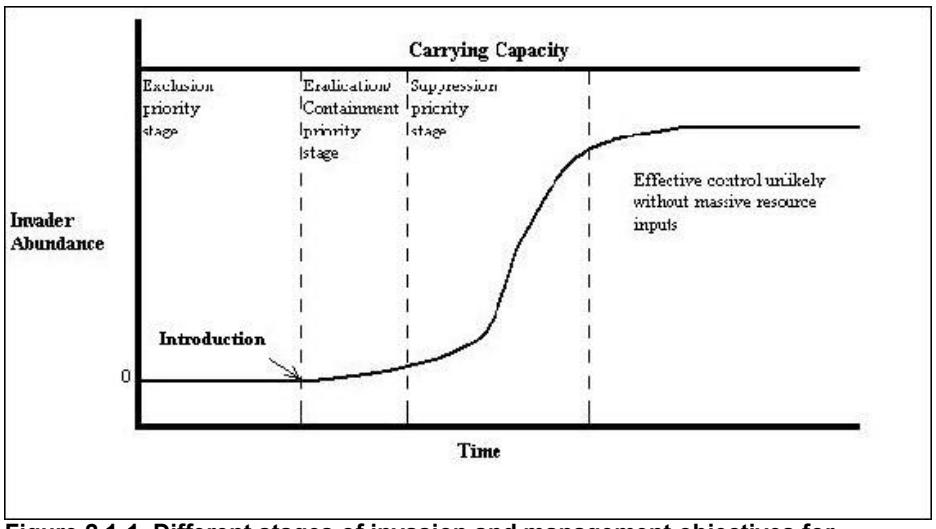


Figure 2.1-1. Different stages of invasion and management objectives for noxious weeds and invasive plants

Source: Rice (2008).

Integrated Weed Management

Noxious weeds and invasive plant species are currently managed using an integrated weed management (IWM) approach, incorporating the goals and objectives identified in the Partners Against Weeds: An Action Plan for the BLM (PAWS 1996). Project planning and management actions emphasize preventing the establishment and spread of new infestations and controlling noxious weeds in support of a variety of environmental values and benefits. Treatment methods for weed control involve the use of standard operating procedures, prevention strategies, and mitigation measures described in numerous BLM policies, guidelines, and manuals. Project-level treatment methods are analyzed and utilize ~~"a~~ combination of biological, cultural, physical, and chemical tools in a method that minimizes economic, health, and environmental risk" (7 U.S.C. § 136r-1). Vegetation management techniques, including currently approved herbicides, tier directly to the Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement and its Record of Decision (USDI BLM 2007).

Coordination with Partners

Noxious and invasive species move across jurisdictional boundaries and property lines; therefore, coordination and partnerships with local, state, tribal governments, and other Federal agencies, as well as with interested organizations and individuals, is a critical component of management. The BLM has partnered with Washington State Department of Agriculture (WSDA), State and county weed boards, and cooperative weed management areas to manage weeds on Statewide and local projects.

BLM Site Characteristics

The BLM lands within the planning area are managed under FLPMA for supporting conservation values and for a variety of uses including public access, recreation, mining, grazing, and timber production. These human uses and the vegetation managed in support of them have resulted in changes in native plant communities. Although changes in vegetation in many instances have been intentional and beneficial, disturbances associated with management can create conditions that lead to weed invasions. Many of the recorded noxious weed and invasive plant infestations on BLM lands have been found in highly disturbed areas including livestock grazing allotments, rights-of-way, recreation sites, timber management areas, and

recent wildfire sites. In these areas of high disturbance, desirable plant communities may be reduced in abundance, structure, and function.

The scattered tract land ownership pattern of BLM lands presents several challenges to the management of noxious weeds and invasive plant species, particularly in prevention of weed invasions across borders. Many of the BLM lands are small, for example 82 percent of grazing allotments are less than 1,000 acres in size. The small footprint of BLM lands, including the larger management areas developed in the 1987 RMP, are vulnerable to noxious weed invasion because there is a greater proportion of boundary area compared to interior area. A larger boundary area can be more difficult to control the migration of weeds across borders, especially if the plant communities within the area have been recently disturbed.

BLM lands in the planning area are commonly intermingled with private and other public lands which can restrict access to BLM lands, create inconsistent weed management between parcels, and reduce the opportunities to detect new infestations. The different types of adjacent land ownership and uses may also contribute to the migration of weeds, especially where land-conversions or intensively managed lands open niches for weed invasion.

The diversity of ecoregions within the planning area provides many opportunities for a variety of noxious weeds and invasive plants to find ecological niches suitable for their habitat needs. Although 68 percent of the public lands managed by BLM are in sagebrush steppe/perennial bunch grass communities, the condition of vegetation has often been degraded on sites due to recent high-intensity wildfires, invasion by listed noxious weeds and non-native annual grasses (like cheatgrass), and poor historic land management practices. Since BLM lands in the planning area do not encompass any particular ecosystem, the ability to restore plant communities is limited to individual parcels. Restoration efforts have been difficult due to a lack of available native plant propagules either on site, or from adjacent lands which have been converted to agriculture.

Trends

Increase in Noxious Weeds and Invasive Plants

Rate of Spread. Noxious weeds and invasive plants have been detected and treated on over 3,500 acres of BLM land between 1989 and 2000, but there is no current estimate of total acres infested on all BLM lands within the planning area. It has been reported that since 1996 the spread rate of noxious and invasive plants on BLM lands has been 2,300 acres per day and 4,600 acres per day on all western public lands (PAWS 1996). A recent estimate of weed spread on all western lands is 10 to 15 percent per year (2007 Vegetation Treatments on BLM Lands in 17 Western States EIS). In Oregon, the rate of spread of noxious weeds on BLM lands was calculated at 12 percent annually in the Draft Vegetation Treatments Using Herbicides on BLM Lands in Oregon (USDI BLM 2009). These spread estimates were examined in the draft EIS; it was noted that cheatgrass was not included in the calculation of these estimates, hence the average spread rates would be higher. The Forest Service Region 6 (Oregon/Washington) determined the average rate of spread to be from 8 to 12 percent. These estimates of noxious weed spread are likely similar for BLM lands in Washington because many of the same weed species and ecoregions within the planning area were analyzed at the regional scale.

Increase in Noxious Weed Designations. New introductions of invasive species into Washington State and the listing of some established invasive species have increased the number of species on the Washington State Noxious Weed List from 109 in 1998 to 140 at present. The

increase in listed noxious weeds has resulted in new detections of some of these species on BLM lands.

Improved Policies and Techniques for Vegetation Management

The BLM has been actively developing strategic weed management policies, priorities, and guidelines to improve the response and efficacy of noxious weed control. Since 1974, BLM has implemented IWM to encourage the consideration and evaluation of all control methods to optimize weed control. The first goal of IWM is the prevention, early detection, and rapid response to eliminate new invasive species introductions in weed-free areas. In 2011, the BLM in Oregon/Washington promulgated supplementary rules requiring the use of certified weed-free hay, straw, and mulch on BLM lands. This rule was intended to promote consistency between BLM and other natural resource agencies, including the U.S. Forest Service and National Park Service. Since weed seeds and propagules can be transported in contaminated hay, soil, gravel, etc., this is a policy that supports the goal of prevention.

Noxious weed treatments within the planning area have been conducted using an IWM framework since the start of the control program in 1989. Biological, physical, cultural, and chemical controls have been used as appropriate for site-level management objectives.

In 2007, the decision for the Vegetation Treatments on BLM Lands in 17 Western States EIS approved the use of 14 herbicides previously approved for use on BLM lands, added 4 additional herbicide active ingredients, and removed 6 herbicides based on their risks to non-target plants and animals. Monitoring of treated areas and applying adaptive management principles are designed to compare treatment results and make critical adjustments to increase future successes.

Since 2003, 14 cooperative weed management areas (CWMA) have been started within the planning area. This trend coincided with the passage of the Noxious Weed Control Act of 2004 (7 U.S.C. § 7781) which established a program to provide assistance through states to eligible weed management entities to control noxious weeds. CWMAs generally have a geographic emphasis and encourage all landowners within the management area to participate in coordinated prevention and control of noxious weed populations.

BLM Site Characteristics

Increased Demands on BLM Lands. Over the last 25 years, there has been a decline in native plant communities on lands adjacent to BLM as residential, industrial, and agricultural needs have increased with population growth. Through land exchanges within the planning area, more than 130,000 acres have been acquired by BLM since 1987. Many of these acres have been infested with noxious weeds as a result of historic land use practices that contributed to the displacement of native vegetation. Across the planning area disturbances associated with extensive grazing, recreation, timber harvesting, and minerals and energy development have also contributed to the spread of invasive plants. The multiple use mandate directed by FLPMA provides for recreational opportunities, such as hunting and OHV use, which are increasingly limited throughout Washington State. The diverse interests of the public, as well as commodity and natural resource management goals, place increasing pressure on existing plant communities to support these purposes. As activities contributing to disturbance and loss of native cover increases, invasions of noxious weeds can interfere with site-recovery mechanisms, resulting in permanent changes in ecological condition and function.

During the same 25-year period the number of federally listed threatened and endangered species occurring in the planning area increased from 3 to 16, with 7 candidate species. Numerous BLM

and State special status species of concern have also been added for protection. In order to protect and enhance the habitats of these special status species noxious weed control and in some instances plant community restoration is necessary to meet recovery objectives.

In 1982, an inventory of grazing allotments in the planning area determined that 41 percent of the plant communities sampled were in early seral ecological condition. Plant communities in early seral stage are defined as producing 0 to 25 percent of the vegetation found in potential native climax communities and are often composed of annual plants or small perennials. Early seral plant communities develop after disturbance and may be more susceptible to weed invasion compared to plant communities with established vegetation. Of the current grazing allotments, including new acquisitions, 155,791 acres (or 49 percent of the total acreage) were classified in the (I) improvement category. In many of these allotments the plant communities have become dominated by invasive annual grasses, such as cheatgrass, and are used for spring grazing. To fully restore these allotments to pre-disturbance ecological function and structure would likely require significant resources, potentially exceeding its benefits as rangeland.

Between 1985 and 2009 over 112,000 acres burned from wildfire in the planning area with varying levels of disturbance to native and desirable plant species. Noxious weed control is incorporated as part of the emergency stabilization and rehabilitation (ESR) program to prevent unacceptable degradation of natural resources. Noxious weeds, and invasive annual grasses in particular, can alter fire regimes through the production of fine fuels that produce wildfires of greater intensity and frequency.

Forecast

Noxious weeds and invasive plants will likely continue to be spread on public lands from natural disturbances, management activities, increasing public use, and along travel corridors. Many different vectors of dispersal can transport noxious weeds including abiotic factors, vehicles, equipment, wildlife, livestock, and people engaged in a variety of activities on public lands. The rate of future noxious weed and invasive plant expansion will likely continue within current estimated rates, between 8 and 15 percent per year. These spread rates will vary depending on the intensity of the land use activity, the degree of any associated disturbance, the resilience of the native plant community, and the presence of noxious weeds.

At locations where BLM and its partners are actively managing noxious weed infestations, weed populations will likely decline over time. Many infestations are heavily entrenched, especially the invasive annual grasses, and will require repeated and sustained inputs to reduce weed impacts below acceptable tolerance thresholds. However, many noxious weed infestations may be at levels where rapid gains can be achieved with current and improved control methods and management strategies. An increased emphasis on prevention and control of newly-detected weed populations may reduce the risk of those infestations becoming established. Implementing BLM prevention strategies and better integration of noxious weed control into all BLM ground-disturbing activities will likely reduce the risk of new noxious weed introductions.

As new control methods, design features, and mitigation measures become available and approved for use by BLM, control efforts should improve. The increased interest in developing and improving coordinated weed management efforts, including CWMAs within the planning area, is expected to continue in the future. The potential benefits of partnership and collaboration in weed control can include maximizing the economic contributions of the partners through resource sharing and other efficiencies.

Climate change will likely have significant impacts on plant communities as some species and/or entire systems will not be able to adapt to increased environmental stress and disturbance incurred from changes in climatic conditions. Some native plants and animals may no longer be able to persist in their current ranges and may create additional open niche opportunities for weeds to invade. Increased global temperatures and altered patterns of precipitation and water storage patterns will likely affect soils as well as native plant tolerances. The physiological tolerances of some invasive plant species may be within the projected variation in climate and will in some instances be more suitable than current environmental conditions. It is possible that some of the current noxious weeds may become extirpated in response to variation in climate patterns. The trend of new noxious weed and invasive species introductions could also lead to the establishment of different and unforeseen infestations and effects on ecosystem function and structure.

Key Features

Priorities for noxious weed and invasive plant management follow the classification systems of the Washington State Noxious Weed List along with the Federal Noxious Weed List. There is currently only one known Class A weed on BLM lands in the planning area, Syrian bean-caper (*Zygophyllum fabago*) in Okanogan County; and potentially another species, wild four o'clock (*Mirabilis nyctaginea*), also in Okanogan County. The prevention and eradication of these species are the highest priority based on the listing criteria for Washington State. Class B weeds will be controlled as required by the State and county weed boards.

Noxious weeds and invasive plants are able to occupy a variety of habitats that exist within the planning area. The scattered tract ownership pattern, the diverse and numerous plant communities, and the large geographic extent of the planning area present several challenges in managing noxious weeds. With current levels of funding the emphasis for vegetation management will continue to be prevention and control of early-detected noxious weed species in areas which have not become invaded. The collection and analysis of noxious weed location data is needed to provide a baseline of information where priority treatment areas can be determined and the greatest benefits to plant communities can be achieved.

To adequately address protection of special status species, priority habitats, and special designation areas susceptible to noxious weed invasions, will require additional inventory and data collection. For example, the San Juan Archipelago has not been inventoried or treated for noxious weeds to the same levels that management areas in eastern Washington have received. The San Juan's have several unique plant communities as well as different noxious weed threats posed by Himalayan blackberry (*R. armeniacus*) and Scotch broom (*Cytisus scoparius*).

2.1.2.8 Special Status Plants

Special status plants are those included on the Oregon/Washington State Director's Special Status Species List (USDI BLM 2010 [draft]). This list is compiled by the BLM and USFS and is updated periodically. The list includes three categories:

1. Species listed or proposed for listing under the Endangered Species Act (ESA).
2. Sensitive species as designated by the State director. This includes all documented or suspected Federal candidate species, species that are listed as endangered or threatened by the State, and any other species that may be designated by the director. Species that have been listed as sensitive by the Washington Natural Heritage Program have been included as BLM sensitive species on the 2010 list.

3. Strategic species as designated by the State director.

BLM has two objectives for special status species: (1) To conserve and/or recover ESA listed plants and their habitats so that ESA protections are no longer needed; and (2) to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species so as to minimize the likelihood of, and need for, listing under the ESA.

Indicators

The indicators for special status plants include population demographics, species range-wide distribution, habitat quality and distribution, fecundity, pollinator status, presence of invasive species, threats and impacts to the species, existence of recovery or conservation strategies or other formalized conservation planning tools, and changes in wildfire frequency and severity.

Current Conditions

The 2010 draft list of special status species for the Spokane District includes three mosses that are documented as occurring on the Spokane District, three lichens that are documented and two other lichens that are suspected. It also includes 76 documented and 208 suspected vascular plants (see appendix B).

Within Washington, there are nine vascular plant species that are federally listed (table 2.1-12). Three of those species (water howellia, Spalding's catchfly, and Ute ladies'-tresses) are documented as occurring on BLM lands in the Spokane district. Three additional species are documented as occurring within counties in the planning area, but have not been documented on BLM. Two species are documented as occurring only within counties that are not included in the planning area, and one listed species is believed to be extirpated from Washington.

Table 2.1-12. Federally listed plants within the planning area

ESA Listed, Proposed & Candidate Species	Federal Status	State Status	Border Field Office	Wenatchee Field Office
Water howellia (*Howellia aquatilis*)	T	T	X	
Spalding's catchfly (*Silene spaldingii*)	T	T	X	
Ute ladies'-tresses (*Spiranthes diluvialis*)	T	E		X
Golden paintbrush (*Castilleja levisecta*)	T	E		X
Showy stickseed (*Hackelia venusta*)	E	E		X
Wenatchee Mountains checker-mallow (*Sidalcea oregana* var. *calva*)	E	E		X
Northern wormwood (*Artemisia campestris* ssp. *borealis* var. *wormskioldii*)	C	E		X
Umtanum desert buckwheat (*Eriogonum codium*)	C	T	X	
White Bluffs bladderpod (*Physaria tuplashensis*)	C	T	X	

Three plant species (northern wormwood, Umtanum desert buckwheat, and White Bluffs bladderpod) are candidates for Federal listing; all three occur within counties in the planning area, but have not been documented on BLM lands.

ESA Listed Plant Species in Washington

Water howellia (*Howellia aquatilis*) is an aquatic annual forb that occurs in shallow water of semi-permanent ponds that typically have deciduous trees or shrubs around at least part of the perimeter. It is listed as threatened under the ESA and at the State level; it is considered rare to imperiled in Washington, and rare globally. It is documented from one pond on BLM land in Spokane County.

Spalding's catchfly (*Silene spaldingii*) is a perennial forb that occurs in shrub-steppe and grassland habitats, typically on north-facing slopes with Idaho fescue. It is listed as threatened under the ESA and at the State level, and is considered imperiled at both State and global levels. It is documented on BLM lands at numerous locations in Lincoln County, several locations in Spokane County and Whitman County, one location in Adams County, and one location in Asotin County. Most of the sites are on lands leased for livestock grazing.

Ute ladies'-tresses (*Spiranthes diluvialis*) is a perennial orchid that occurs in moist open meadows near lakes or perennial streams. It is listed as threatened under the ESA, and endangered in the State of Washington. It is considered critically imperiled in Washington, and imperiled globally. It is documented from one location on BLM land in Chelan County.

Marsh sandwort (*Arenaria paludicola*) is believed to be extirpated in Washington; the only known extant population is in California. It is listed as endangered under the ESA, and is considered critically imperiled globally. There is one historical record from Pierce County, Washington (WNHP 2003), but there are no records within the planning area.

Golden paintbrush (*Castilleja levisecta*) is a regional endemic of open grasslands in the Puget Trough. It is listed as threatened under the ESA, and as endangered in Washington. It is considered critically imperiled at both State and global levels. The species has been documented from several sites in the San Juan Islands, but none of the locations are on BLM lands. However, BLM lands in the San Juans include Festuca grasslands, so there is potential for the plant to occur on BLM. The recovery plan for golden paintbrush (USDI FWS 2000) calls for reintroducing the plant into unoccupied areas of its former range. BLM lands in the San Juan Islands may provide appropriate habitat for reintroduction.

Showy stickseed (*Hackelia venusta*) is a narrow endemic restricted to less than 1 acre of unstable talus on the lower slopes of Tumwater Canyon, Chelan County, Washington. It is listed under the ESA and at the State level, and is considered critically imperiled at both State and global levels. The existing population is on USFS land and adjacent private land. This plant is not known to occur on or near BLM lands. Because of the highly restricted distribution of the species and the absence of BLM lands within 5 miles of the population, it is highly unlikely to be present on BLM.

Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*) is a regional endemic in Lewis County, Washington, and in western Oregon. It is listed under the ESA, and as endangered in Washington. It is considered critically imperiled in Washington, and the subspecies is imperiled globally. This plant is not known to occur on or in the vicinity of BLM lands in Washington, nor within the planning area.

Nelson's checker-mallow (*Sidalcea nelsoniana*) is a regional endemic occurring in Lewis and Cowlitz counties in Washington, and in northwestern Oregon. It is listed under the ESA, and as endangered in Washington. It is considered critically imperiled in Washington, and imperiled globally. This plant is not known to occur on BLM lands in Washington, nor within the planning area.

Wenatchee Mountains checker-mallow (*Sidalcea oregana* var. *calva*) is endemic to the Wenatchee Mountains of Chelan County in central Washington. It is listed under the ESA, and at the State level. It is considered critically imperiled in Washington, and the variety is critically imperiled globally. It occurs on lands owned by the USFS, Washington Department of Natural Resources, and private owners. This plant is not known to occur on BLM lands, but existing sites are within 5 miles of BLM lands, so there is potential for the plant to occur on BLM. If appropriate habitat is present on BLM lands within the watersheds that comprise the plant's current or historical range, reintroduction of this species on BLM may be a possibility.

ESA Candidate Plant Species

Northern wormwood (*Artemisia campestris* ssp. *borealis* var. *wormskioldii*) is a regional endemic known from two sites along the Columbia River in Washington. It is endangered in Washington, and the variety is considered critically imperiled at both State and global levels. It occurs within the planning area, but is not known to occur on BLM lands.

Umtanum desert buckwheat (*Eriogonum codium*) is a very narrow endemic known from a single location in Benton County, Washington. It is endangered in Washington, and critically imperiled at both State and global levels. It occurs within the planning area, but is not known to occur on or in the vicinity of BLM lands in Washington.

White Bluffs bladderpod (*Physaria tuplashensis*) is a narrow endemic occurring on barren calcareous substrate in Franklin County, Washington. It is threatened in Washington, and imperiled at both State and global levels. It occurs within the planning area, but is not known to occur on or in the vicinity of BLM lands in Washington.

Several of the Washington sensitive species on the list are of particular interest because of their presence on BLM lands in the District.

Gray cryptantha (*Cryptantha leucophaea*) occurs within the Juniper Dunes Wilderness, and this population has been monitored several times during the past decade. Historic records suggest that this population was much larger in the past than it is now. Gray cryptantha also occurs in the Sentinel Butte Dunes area. Gray cryptantha is Bureau sensitive, and sensitive at the State level, and is considered rare to imperiled on both State and global levels.

Washington polemonium (*Polemonium pectinatum*) occurs along the Coal Creek and Crab Creek drainages on BLM lands in Lincoln County, and in a number of scattered sites. The presence of this species was a factor in BLM's acquisition of several parcels in the 1990s, and the Coal Creek ACEC was established, in part, to protect a large population of this plant. Washington polemonium is Bureau sensitive, is threatened in Washington State, and is considered imperiled on both State and global levels.

Several ACECs have been established for the primary purpose of protection of rare plant populations, including Columbian milkvetch (*Astragalus columbianus*), pauper milkvetch (*Astragalus misellus* var. *pauper*), Whited's milkvetch (*Astragalus sinuatus*), basalt fleabane (*Erigeron basalticus*), Piper's fleabane (*Erigeron piperianus*), Hoover's desertparsley (*Lomatium*

tuberosum), Chelan rockmat (*Petrophytum cinerascens*), sticky phacelia (*Phacelia lenta*), Columbian yellowcress (*Rorippa columbiae*), Hoover's tauschia (*Tauschia hooveri*), and Thompson's clover (*Trifolium thompsonii*).

Trends

In comparison to the conditions that existed prior to extensive Euro-American settlement, trends for many special status plants have been downward as a result of conversion of natural habitats to agriculture, livestock grazing, and development. Those processes continue to threaten special status plants and habitats on private lands. Exotic invasive species have spread into much of the remaining habitat, competing with native plants; some invasives, such as cheatgrass, have the potential to increase fire frequency in those ecosystems where cheatgrass became the major component. While some plants have been removed from State rare plant lists, this is usually because additional surveys have shown that the plant is more common than previously believed, rather than because populations have actually increased.

Land acquisitions by the Spokane District BLM over the past two decades have resulted in greater protection for several special status plant species, in particular Washington polemonium and Spalding's catchfly. As noted above, establishment of ACECs in areas of rare plant habitat has protected those sites from conversion to other uses and has elevated protection of those species to a priority for management within those areas. However, invasive species still threaten those areas.

The trend for water howellia on the District is not clear. The single occurrence on District lands has been monitored yearly since its discovery in 1993. The abundance of water howellia and its distribution around the pond has varied widely from year to year; it was not found in the pond in 2003 or 2006, but was present in every other year.

The population of Ute ladies'-tresses has been monitored regularly since 2005, and the population appears stable. Since the discovery of the Ute ladies'-tresses population in 2005, the numbers of individuals has ranged from 20 in 2005 to 336 in 2007. Surveys in 2010 found 280 individuals. However, invasive species are a potential threat to this population.

Spalding's catchfly appears to be stable on BLM lands. Surveys conducted on several allotments in 2008 and 2009 showed increased numbers of plants compared to the original inventories in 1993−1996, but it is not clear whether this represents an actual increase in numbers. The original surveys were done in the fall, when the plants had senesced and were not as visible as they might be earlier in the season. This species also demonstrates prolonged dormancy (Lesica 1994); individuals may remain dormant for one or more full seasons with no production of above-ground parts, so apparent plant numbers may fluctuate significantly from year to year. Trend monitoring data suggest that the species is currently not declining on BLM lands on the District. The overall trend for all ownerships within the planning area is unknown, as the extent of the plant's distribution on private lands is not known.

The recovery plan for Spalding's catchfly (USDI FWS 2007) calls for the establishment of key conservation areas (KCAs) that have sufficient habitat to support at least 500 reproducing individuals of the species, are composed of intact habitat of 40 acres or more, have native plants comprising at least 80 percent of the canopy cover, and have adjacent habitat sufficient to support pollinating insects. BLM has areas that meet the criteria at Telford, Twin Lakes, Hawk Creek, Goose Butte, and Coal Creek/Lamona. Future inventories may show that additional areas also meet the criteria. Another potential KCA occurs on State land in the Swanson Lakes

Wildlife Area adjacent to BLM's Twin Lakes land. Populations on BLM and State lands are likely to be important for the eventual delisting of this species. BLM recovery plan efforts include inventory, monitoring, and control of invasive species.

Washington polemonium also appears to be stable on BLM lands; however, no formal monitoring is taking place at present.

Gray cryptantha appears to be declining in the Juniper Dunes Wilderness, based on recent monitoring data. The reasons for this are unknown; livestock grazing and recreational vehicles are excluded from the area, and while occasional trespass does occur, it does not appear to be significant.

Forecast

Under current management, most special status plant species are anticipated to remain stable on the District. However, they continue to be threatened by factors such as high fire severity and wildland fire suppression activities, invasive weeds, and the potential for increased use of OHVs on BLM lands. Anticipated changes in temperature and precipitation patterns are also likely to affect special status species through alterations in competitive relationships, phenology, and fire frequency. Recovery plans have been developed for each of the federally listed species, and critical habitat has been designated for Wenatchee Mountains checker-mallow. It is unlikely that any of these listed plants will be delisted in the near future.

Key Features

Spalding's catchfly occurs on 13 grazing allotments within the District, and its presence is a consideration in management of livestock grazing on those allotments. Currently, monitoring efforts include use supervision of livestock, trend monitoring of Spalding's catchfly numbers, and monitoring of plant community composition. Monitoring will need to continue to ensure that livestock grazing is not adversely affecting Spalding's catchfly. There are opportunities for BLM to participate in recovery actions for this plant by developing habitat management plans for those areas where it occurs on BLM.

Several BLM sensitive plant species, as noted above, occur within ACECs that were designated for the protection of those plants. However, the plants are still vulnerable to threats such as high fire severity wildland fires, spread of invasive plants, and recreational activities.

2.1.2.9 Fisheries Resources

Indicators

Many factors are indicative of fisheries habitat conditions, and therefore the potential to impact fish populations. Wenatchee Resource Area BLM has primarily been concerned with habitat conditions on Wenatchee Resource Area BLM lands within the range of salmon and steelhead anadromy. Although habitat conditions are affected by multiple use activities, BLM has focused on effects from recreation sites and grazing within riparian areas on fish-bearing streams in both resource areas. Stream bank stability, condition and age class of riparian vegetation, riparian vegetation recruitment, damage from OHV crossings, hedging from both wildlife and cattle, bank alteration, silt and sediment delivery, shade, temperature, and available spawning gravel habitat all can affect the success of fisheries populations. Riparian conditions are often measured as —proper functioning condition" (PFC).

Often, conditions on private lands both upstream and downstream of BLM lands can have a great effect upon fish habitats. Loss of quality habitat throughout the BLM planning area has led to reduced and sometime ESA-listed fish species. BLM only manages the habitat, while the State manages the fish species. Long-term activities of dams, irrigation withdrawals, over fishing, logging, mining, and other resource uses have damaged fisheries habitats throughout the planning area.

Current Conditions

The range of salmon anadromy, which is mostly along the Highway 97 corridor for BLM Wenatchee Resource Area lands in eastern Washington from the Canadian border to the Oregon border, includes Okanogan, Chelan, Douglas, Kittitas, Yakima and Klickitat counties. These lands include both perennial and intermittent streams. There are approximately 17 miles of anadromous (salmon and steelhead) streams on BLM public lands within the Wenatchee Resource Area, and a total of 103 miles of fish bearing streams in the whole Spokane District. In most of those counties the grazing allotments do not directly adversely impact the streams and rivers because of geography, fencing, or highways. The following streams are the most significant salmon and steelhead spawning streams with some BLM ownership: Similkameen River, Okanogan River, Salmon Creek, Twisp River, Methow River, Entiat River, Yakima River, Cowiche Creek, Klickitat River, and Rock Creek. Other significant fish bearing streams without salmon and steelhead spawning include Douglas Creek, Burbank Creek, and Williams Creek. Most of the BLM ownership in these rivers is minimal with the exceptions of Rock Creek and Similkameen River. Other major fish bearing streams in the Border Resource Area are Crab Creek, Rock Creek at the Escure Ranch, and Wilson Creek. Most of the parcels are in good condition measured as PFC or functional-at-risk with an upward trend with a few notable exceptions.

Some of the streams on BLM-administered land, such as Douglas Creek, Crab Creek, and Rock Creek in Lincoln County, are spring fed and maintain good flows and cool temperatures throughout the summer.

In general throughout eastern Washington, stream health, water quality, and in-stream fish habitat have degraded over time. The most notable exception is Rock Creek in Klickitat County, which remains in pristine condition due to geography, isolation, and limited access through private property. Rearing and spawning habitat has been reduced by various practices. The Washington State Salmon Recovery Funding Board each year over the past 12 years has funded (through counties bordering the Columbia River) salmon habitat improvement projects. These have included riparian plantings, engineered log jams, coconut matting with willows, rock weirs, pools, culvert removal, fencing cattle out of riparian areas, and outright purchases of high quality habitat to preclude further development along salmon streams. The BLM fisheries program, using BLM funding, has built several of these salmon habitat improvement projects on lands they administer on the Entiat and Yakima rivers. Most of these projects are intact and functioning 10 to 12 years later. BLM regularly monitors most of these streams on BLM-administered land in the planning area for water quality, temperature, shade, riparian vegetation, effects of authorized grazing and recreation, and PFC. Many of these streams are listed by the Department of Ecology on the 303d list for having about 6 weeks of high water temperatures greater than 65°F as a limiting factor in August and September at the lowest flows. Some are listed for other degradation factors.

Characteristics of streams are different and riparian conditions are constantly changing depending upon both grazing and recreation activities. Natural events in conjunction with human

degradation can greatly impact streams and harm habitat and reduce productivity. Rain on snow events in agricultural lands or desert-like shrub-steppe conditions can cause extensive flood damage. Properly functioning riparian conditions are essential to bank stability, shade, temperature, and reduced sediment delivery.

Some native red band trout populations originally inhabited eastern Washington streams; but 80 years of stocking streams with hatchery-reared rainbow trout have resulted in extensive hybridization of the species.

Restored wetlands in PFC include Telford and Packer Creek. These are both examples of previously drained wetlands which have be acquired by BLM, recharged, and rehydrated by removing the drainage systems and installing flood control structures. Both function well for a variety of species especially waterfowl.

Trends

Over the past 100 years the general trends for salmon and steelhead populations have been in a slow decline in the Northwest primarily due to the major hydroelectric dams built on the Columbia River, over grazing, timber harvest, and loss of log jams, spawning gravel, and pools in the tributary rivers. The overall current trends in salmon and steelhead recovery are either stable or improving depending upon the river system. The Upper Columbia Salmon and Steelhead Recovery Plan has given direction and impetus to both private and State partners to implement salmon recovery habitat improvement projects. The Washington State Salmon Recovery Funding Board has reviewed and funded various habitat restoration or irrigation improvement projects. The recent record returns of various hatchery salmon and steelhead species to the Columbia River have resulted in increased sports fishing opportunities and an increase in the number of adult fish returning to spawn. Improved ocean conditions, hatchery returns, and good spawning and outmigration years have most likely been credited for the marked improvements in returns. Riparian habitat degradation on BLM public lands is the most serious problem for land managers. Degradation can be from OHV stream crossings, or recreational damage to stream banks and riparian areas within campgrounds. On BLM grazing allotments, riparian fencing, changing seasons of use, and closer supervision of grazing effects and utilization, should maintain good riparian conditions, but this is an ongoing responsibility. One season of lax supervision of a grazing lease can result in cattle inside the riparian exclosures and years of progress can be set back within weeks. This can also be the case for unregulated recreation uses, camping in the riparian zone, and OHV uses in or through creeks and streams.

Forecast

Continuing adherence to the standards and guidelines in PACFISH and INFISH or similar guidance provided in the new RMP, aquatic conservation strategies for any authorized activities on BLM lands should continue the good condition of riparian and water resources on BLM-administered lands. Constant field reviews will be necessary in grazing allotments that have significant portions of fish bearing streams, and where recreational activities occur with the potential to damage streams or riparian areas. Areas suitable for stream restoration or salmon habitat improvement projects are limited by the small number of actual BLM miles of stream bank.

Key Features

ESA listed fish species include Upper Columbia River Evolutionary Significant Unit (ESU) Steelhead (endangered), Lower Columbia River ESU Steelhead (threatened), Middle Columbia

ESU (threatened), and Upper Columbia Spring Chinook ESU (endangered). Occurrence of ESA listed bull trout on public land in the planning area is very limited.

Critical habitat designation by NOAA Fisheries (2005) includes: Upper Columbia Chinook, Lower Columbia Chinook, Middle Columbia River Steelhead, and Upper Columbia River Steelhead. This critical habitat designation would include all the above mentioned streams on BLM-administered lands in the ―Current Conditions" section with the exception of Similkameen River, Salmon Creek, and portions of Cowiche Creek. The USDI FWS has recently listed newly expanded critical habitat for bull trout which may impact a few streams on BLM.

2.1.2.10 Wildlife

The planning area is composed of landscapes in several different ecoregions of Washington, including the Columbia Plateau Ecoregion (primarily shrub-steppe), Eastern Cascades and Okanagon Ecoregions (primarily forested), and the San Juan Islands located in the Puget Trough Ecoregion. Specific habitats that correspond to Washington Department of Fish and Wildlife (WDFW) priority habitats and habitats identified in the ―Coordinated Implementation Plan for Bird Conservation in Eastern Washington" (IWJV 2005) are discussed below.

BLM's wildlife program emphasizes ensuring self-sustaining populations and a natural abundance and diversity of wildlife resources on public land (USDI BLM 1988). Nationally, the program has five goals relating to: (1) overall habitat management, (2) big game/upland game, (3) waterfowl, (4) raptors, and (5) riparian areas. Information on these resources will be presented below. Special status wildlife will be discussed in a separate section.

Indicators

Many factors affect wildlife and their habitats, but foremost among them is the quality and extent of their habitat. Other factors such as disease, predation, weather fluctuations (drought, severe winter), and disturbance are also important and can sometimes be correlated to habitat quality. Indicators of habitat quality vary by species depending on how the species uses its environment, but healthy communities of vegetation in a mosaic of seral stages will generally support healthy wildlife populations.

In rangelands, the BLM measures health using standards for rangeland health. These standards utilize a 17-factor evaluation sheet to determine the level of departure from expected (i.e., health) conditions for site stability, hydrologic function, and biotic integrity. Similarly, for riparian areas, a PFC (proper functioning condition) assessment utilizes a 20-factor checklist to evaluate whether hydrology, vegetation, and erosion/deposition indicators are functioning properly in wetlands, streams, and their associated riparian habitats. Standards for range health in Oregon and Washington are summarized into five overall standards:

(1) Watershed Function – Uplands

(2) Watershed Function – Riparian/Wetland Areas

(3) Ecological Processes

(4) Water Quality, and

(5) Native, T&E, and Locally Important Species.

Potential indicators (specific techniques have not been developed) for range health standard number 5 include (USDI BLM 1997):

- Plant community composition, age class distribution, and productivity;
- animal community composition and productivity;
- habitat elements;
- spatial distribution of habitat;
- habitat connectivity; and
- population stability/resilience.

For sage grouse, and likely many other shrub-steppe wildlife, ―meeting range health standards" does not necessarily mean that required components of shrub-steppe habitats are being provided because range health assessments focus on variables related to soil site stability, biotic integrity, and hydrologic function, and not wildlife habitat components (e.g., horizontal cover, preferred forb diversity, seasonal condition of habitats, shrub structure, patch size, etc.). Additionally, techniques for range health standard number 5 (i.e., native, T&E, and locally important wildlife) have not been developed and consistently applied. The Conservation Assessment for Greater Sage Grouse and Sagebrush Habitats (Connelly et al. 2004) recognized the difficulty applying range health assessments to shrub-steppe wildlife habitat. Problems interpreting and relating range health assessments to wildlife habitat aside, such assessments do provide a general indication of ecological health and thus a general indication of the condition of wildlife habitats.

In forested habitats, species composition (climax vs. early seral species), stand structure (single vs. multi-storied stands) and tree density (stems per acre) are indicators that, depending on site potential, will determine how resilient forests are to disturbances such as insects, disease, and other disturbances. Fire regime condition class is another indicator of the health of forest and rangeland habitats. Condition class 1 indicates conditions that are within the historic range of variability for vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern), fire frequency, severity, and pattern. Classes 2 and 3 are moderate and high departures from the natural range of variability where the risk of losing key ecosystem components is high.

In general, healthy forests, rangelands, and riparian areas that are in balance with their historic fire regime will support healthy wildlife populations. However, although general land health standards can indicate the quality of wildlife habitat, many wildlife species require certain habitat types that are considered ―priority habitats" by WDFW, and some habitats for migratory birds have been identified as priorities for conservation by the ―Coordinated Implementation Plan for Bird Conservation in Eastern Washington" (IWJV 2005). In addition to habitat quality, the effects of human disturbance, artificial structures, and connectivity among habitats are important indicators.

Priority Habitats

Indicators for the overall condition of wildlife habitat can be the conditions of habitats recognized by the WDFW as priority habitats. Priority habitats are habitat types or elements with unique or significant value to a diverse assemblage of species. A priority habitat may consist of a unique vegetation type (e.g., shrub-steppe) or dominant plant species (e.g., juniper savannah), or a described successional stage (e.g., old-growth forest). Indicators for WDFW priority habitats and INJV bird habitats are combined and discussed below.

Shrub-Steppe: Presence of dominant and characteristic shrubs (three species of sagebrush, bitterbrush, and rabbitbrush, depending on site potential), presence of native bunchgrass, absence of exotic and noxious weeds, degree of anthropogenic fragmentation (e.g., agricultural lands, roads, transmission lines, and other human infrastructure).

Eastside Steppe and Grasslands (includes basin wildrye): Presence of native bunchgrass, absence of exotic and noxious weeds, and absence of fragmentation.

Eastside Canyon Shrublands: Presence of a fire frequency that maintains mix of tall to medium shrubs (mallowleaf ninebark, bitter cherry, chokecherry) intermixed with bunchgrass.

Desert Playa and Saltscrub: Alkali- or saline-tolerant shrubs, bunchgrass cover, absence of exotic and noxious weeds.

Inland Dunes: Open/migrating and native anchored stages present, vegetated with native plants (e.g., lyme ryegrass, showy dock), adjacent vegetation largely natural and free of barriers allowing for wind dispersion and sand deposition.

Juniper Savannah: Presence of juniper trees, recruitment, presence of native bunchgrass, absence of exotic and noxious weeds.

Ponderosa Pine Forest: Late seral savannah-type structure, absence of shade-tolerant species (Douglas-fir, grand fir), understory not overly dense, absence of exotic understory plants.

Old Growth and Mature Forest: *Old Growth East of the Cascade Crest:* In general, stands will be greater than 150 years of age, with 10 trees/acre that are greater than 21 inches dbh (diameter at breast height), and 1–3 snags/acre that are greater than 12–14 inches diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or slight (WDFW 2008a). *Mature Forest:* Stands with average diameters exceeding 21 inches dbh; crown cover may be less than 100 percent; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old growth; 80–200 years old west and 80–160 years old east of the Cascade crest (WDFW 2008a).

Oregon White Oak Woodlands: Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is greater than 25 percent; or where total canopy coverage of the stand is less than 25 percent, and oak accounts for at least 50 percent of the canopy coverage present; stands greater than 5 acres in size, single oaks, or smaller stands are considered priority when found to be particularly valuable to fish and wildlife (i.e., they contain many cavities, have a large diameter, are used by priority species, or have a large canopy).

Aspen Stands: Presence of wildland fire to maintain aspen, absence of heavy grazing or ungulate browsing following fire.

Riparian: Presence of riparian trees (black cottonwood, quaking aspen, white alder, peachleaf willow, and in northeast Washington, paper birch), presence of a variety of native shrubs, recruitment of riparian trees and shrubs.

Freshwater Wetlands: Presence of cattail, bulrush, and a variety of sedges and native grasses, hydraulic regimes that preclude woody vegetation, absence of exotic and noxious weeds, cover for nesting, food availability (diversity of desirable insects and vegetation).

Montane Coniferous Wetlands: Hydrologic pattern unaltered by timber harvest or roads, natural disturbance (flooding, debris flow, wildland fire and wind) is present, presence of subalpine fir, Englemann spruce, western redcedar, as well as aspen and black cottonwood.

Open Water (lakes, rivers, stream, includes fresh deepwater): Proportion open water to emergent vegetation, amount and depth of permanently flooded land, underwater structures and features (e.g., woody debris, rock piles, caverns), water quality.

Nearshore (includes shoreline, rocks and bluffs of the San Juan Islands): Presence/absence of human-caused alteration of sedimentation processes, abundance and density of driftwood, presence of native, sparse, short grasses, ratio of native to invasive species, presence/absence of rare plant species on cliff habitats, human activity on or near cliffs, rocky and sandy/gravelly shorelines, presence/absence of rabbits or mammalian predators, presence/absence of marine debris or creosote-covered materials, degree of slope and friability of soil, percentage of vegetative cover at the beginning of the rainy season.

Savanna, Grassland, Herbaceous Balds (San Juan Islands): Areal extent, frequency, intensity, severity, and return interval of wildland fires, amount of fuel load, proportion of shrub/tree cover, proportion of native grasses, ratio of native to non-native species, presence/absence of butterfly host plants, presence/absence of priority resource of concern plant species, percent cover of invasive plants.

Forest and Woodlands (San Juan Islands): Areal extent, frequency, intensity, severity, and return interval of wildland fires, rate of regeneration (saplings/acre), percentage of canopy cover of trees (e.g., total canopy openness/closure and gap proportions), amount of snags and woody debris, ratio of cover of native to non-native understory species, presence/absence of late-seral or old-growth stands, percentage of invasive species cover, presence/absence of new noxious weed invaders, presence/absence of shrub layer between forest patches, intensity of human activity on or near forest and woodlands, potential for human-caused wildfires, presence/absence of deer, rats, rabbits, red fox, feral or domestic pets.

Wetland (San Juan Islands): Water source, depth, annual cycle, temperature, pH, alkalinity, conductivity, dissolved oxygen, and phosphorous, frequency, depth, and duration of saltwater intrusion and flooding of wetland, inventory plant community composition, proportion of native plant species, presence/absence of trees and shrubs, presence/absence of aquatic invasive animals and plants, presence/absence of human activity on or near wetlands, presence/absence of deer, rabbits, or mammalian predators, many of these indicators are captured in BLM Technical Reference 1737-16; ―A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas" (2003).

Migratory Birds

The ―Coordinated Implementation Plan for Bird Conservation in Eastern Washington" (IWJV 2005) reviews, merges, and synthesizes the goals and objectives of various bird conservation initiatives (North American Waterfowl Management Plan, Partners in Flight, U.S. Shorebird Conservation Plan, Intermountain West Regional Shorebird Plan, North American Waterbird Conservation Plan, and other bird conservation programs) into a single coordinated planning document for eastern Washington. The coordinated plan is a product of the Intermountain West

Joint Venture (IWJV), which is a public-private partnership that includes the BLM, other Federal and State wildlife agencies, and conservation groups. As part of the plan, the IWJV ranked the major bird habitats into three categories based on: (1) statewide importance to birds, (2) degree of threat, and (3) opportunities (funding, partnerships, and feasibility for habitat protection, restoration, and enhancement). Priority habitats represent those with high threat, high opportunity, and high value to birds Statewide.

Indicators for priority bird habitats are the extent of the habitat and abundance and trend of "focal species." Focal species are selected based on their conservation need, and/or degree of association with important habitat attributes. The habitat requirements of focal species are intended to be representative of important components in a functioning ecosystem, thereby serving as indicators of many other species and elements of biodiversity. The extent of the habitat, especially upland habitats, should be larger than 1,000 hectares (2,471 acres) to avoid decreased breeding success (Altman and Holmes 2000); however, smaller areas may also be important if they are the only available habitat, contain a significant habitat element, or contribute to connectivity.

Raptors

About 32 species of diurnal and nocturnal birds of prey are found in Washington, including the federally listed spotted owl (*Strix occidentalis*), State threatened ferruginous hawk (*Buteo regalis*), State sensitive bald eagle (*Haliaeetus leucocephalus*), and peregrine falcon (*Falco peregrinus*); and four identified as State candidates for State listing including the golden eagle (*Aquila chrysaetos*), flammulated owl (*Otus flammeolus*), merlin (*Falco columbarius*), and northern goshawk (*Accipiter gentilis*). Conservation of eastside raptors stems from the need to address management concerns related to the loss and degradation of their nesting and wintering habitats, including declines in prey, and potential impacts from environmental contaminants and windpower development. Additionally, because raptors are an apex predator at the top of the food chain, they can be excellent indicators of the abundance of their prey base (small mammals, birds, reptiles, etc.).

Bats

In the forested regions, mine adits (horizontal shaft) and shafts provide important habitat for many species of bats. Some species use these for maternity colonies, while others may use them for day roosts, night roosts, bachelor roosts or winter hibernation, with multiple species using the same adit in different ways or in different seasons. Indicators of good bat habitat in adits or shafts are: favorable temperature regime, airflow, size, roosting substrate, proximity to food and water, and the absence of human disturbance (Tuttle and Taylor 1998). Additionally, large, mature trees provide important roosting habitat.

In arid regions such as the shrub steppe, important indicators of bat habitat are wetlands, vegetated streams with large mature trees, basalt cliffs, and available maternity habitat such as old buildings. With the clearing of large hollow trees such as cottonwoods, old buildings are often the only maternity habitat available.

Big Game and Upland Game

Game species indicators in general include the condition of available food, water, cover, space, arrangement of desirable improvements, and competing land use practices. Direct human impacts to habitat (quality and availability) include oil, gas, and mineral exploration and extraction, urban growth, highway, road, railroad, and fenceline development, and other

impediments to migration. Indirect factors related to human population growth include recreation activities such as dispersed camping and OHV (off-highway vehicle) use. Vegetative communities important to mule deer are altered by land management practices including wildland fire suppression, livestock grazing, shrub eradication, and disturbances promoting cheatgrass and other exotic plant invasions. The most frequently identified limiting factor for elk and mule deer on BLM lands in the West is forage and distribution conflicts with livestock. Road densities and fire suppression are also important limiting factors (USDI BLM 1993). Based on agency questionnaire responses, competition with livestock and distribution of water resources were the most frequently identified limiting factors for bighorn sheep (USDI BLM 1995). Bighorn sheep are also susceptible to disease transmitted by domestic sheep, so proximity to domestic sheep and herd health are indicators. Other important factors for big game are access to water and permeability of fences. Upland game birds require cover and herbaceous vegetation (USDI BLM 1992c). Cover may be dense bunchgrass (e.g., prairie grouse), riparian shrubs (e.g., quail, pheasant), or even rocks (e.g., chuckar). Herbaceous vegetation along edges of meadows or streams provides moisture and nutritious forage in summer.

Connectivity

Safe passage within and between habitat areas is necessary for daily, seasonal, and dispersal movements of wildlife. Permeable landscapes are critical to the persistence of many native species. For example, in Washington State, at least 34 vertebrate ―species of greatest conservation need," and 22 additional vertebrate species are considered highly vulnerable to loss of habitat connectivity. The Washington Connectivity Working Group has identified core areas and linkages for ―focal" species in order to identify opportunities to maintain or enhance connectivity (table 2.1-13). Focal species can serve an ―umbrella" function in terms of encompassing habitats needed for other species. Focal species, by design, are sensitive to the changes of interest and serve as indicators of ecological sustainability (Lambeck et al. 1997), and many focal species are also BLM sensitive.

Table 2.1-13. Statewide focal species list indicating the vegetation classes the species represents

Focal Species[1]	Vancouver-ian Forests	Subalpine Forests	Alpine Habitats	Rocky Mountain Forests	Semi-desert Habitats
Sharp-tailed grouse [S]					X
Greater sage-grouse [S]					X
American badger					X
Black-tailed jackrabbit [S]					X
White-tailed jackrabbit [S]					X
Mule deer		*	*	X	X
Bighorn sheep				X	*
Black bear	X	*	*	X	
Elk	X	*	*	X	*
Northern flying squirrel	X			X	
Western toad	X	X	*	X	
Mountain goat [S]	*	X	X	*	
Wolverine [S]		X	X		
Lynx [T]		X			
American marten	X	X		*	
Western gray squirrel [S]	*			X	

[1] For each species, ―X" represents the vegetation classes where the species was selected; other vegetation classes where it occurs are noted as ―*". [S] = BLM sensitive species, [T] = federally threatened species.

Human Disturbance

Human disturbances and introduced structures can impact wildlife, and the absence of these can indicate higher quality habitat that can better support healthy populations.

Noise may alter animal behaviors, breeding populations, the abilities of some species to detect predators (through auditory cues); it can also stimulate aestivating animals to emerge from their underground burrows at inappropriate times (Ouren et al. 2007). Noise can reduce big game foraging efficiency, cause abnormal increases in their home range size and avoidance of areas, and lower reproductive outputs. Disturbance of nesting raptors can result in nest desertion and chick mortality even when disturbances are only temporary, so various buffers have been suggested (Sutter and Joness 1981; USDI FWS 2007). Noise may cause prairie grouse to abandon leks.

Road density can be a factor for big game; decreased use by mule deer has been reported within 0.25 to 0.50 miles of roads (Thomas 1979), and open roads can facilitate increased poaching. Roads also serve as corridors for coyote movement thereby increasing their effectiveness as predators.

Tall structures are anthropogenic features on the landscape (e.g., transmission lines, wind turbines, meteorological towers, old windmills, buildings, fences, etc.). These structures pose a collision hazard to raptors, migratory birds, bats, and other species. Fences can be designed to permit safe passage by big game. Structures in treeless habitats offer raptors and corvids artificial perches and nest sites that can cause detrimental predation on wildlife. Artificial structures in shrub-steppe may cause avoidance by prairie grouse.

Current Conditions

Land Health Assessments

As described in section 2.2.3 ―Livestock Grazing", about 103,890 acres in 32 grazing allotments have been evaluated for rangeland health. Twenty-nine allotments (91,987 acres) were meeting all standards or making significant progress toward meeting all standards. Three allotments (11,906 acres) were not meeting all standards, but were making significant progress toward meeting the standards due to changes in grazing management.

In 1982, 144,399 acres were inventoried for range condition. This inventory showed that 59,556 acres (41 percent) were in early-seral range conditions. The cause of early-seral rangelands and presence of invasive, exotic species we see today is a complex interaction between historic and current grazing practices. Severe, unregulated grazing occurred during the major period of expansion from 1880 to 1905 and resulted in a depletion of native forbs and bunchgrasses. Hull (1976), as cited in Connelly (2004), estimated that the decline of palatable forage species and increases in plant species of low palatability took only 10 to 15 years at any given site under heavy uncontrolled grazing.

Impacts of current grazing practices are difficult to generalize, vary considerably over time and space, and remain controversial. The extent to which current grazing practices influence habitats depends on the relationship between the level of grazing disturbance and the resiliency of the habitat (Connelly 2004). Clearly many impacts to rangelands are historic with current conditions reflecting lands that have not yet, or cannot without intervention, recover. The Spokane District is currently analyzing plot data to determine recent trend of range condition, but results are not yet available.

Forested BLM lands contain a mix of conditions that have not been fully mapped. The Northeast Lands Data Project assessed a portion of the BLM forested lands in Okanagan, Ferry, and Stevens counties. Forest habitats consisted of a variety of structural stages (including several dozen small stands of old growth). These old growth stands are typically irregularly shaped and 10 to 80 acres in size, but a few are 100 to over 400 acres. The largest is in the Little Vulcan Mountain ACEC and is 432 acres. Some forest stands exhibit moderate occurrence of insect or fungal pests, and may contain fuel accumulations. Forest health projects in other areas over the past 20 years have focused on large tree retention and have opened up once dense stands (from wildland fire suppression) resulting in more park-like conditions and better elk habitat in some cases.

Priority Habitats

Shrub-Steppe: Native shrub-steppe habitat is considered one of the most threatened in Washington State, with more than half lost due to conversion to agriculture (Jacobson and Snyder 2000), and much of the remaining degraded from fragmentation, livestock grazing, and the deliberate or accidental introduction of more than 800 exotic plant species.

Eastside Steppe and Grasslands: Palouse Prairie of southeast Washington is one of most endangered ecosystems in U.S.; highly fragmented, 99 percent gone, most of the remaining is highly fragmented. In other parts of eastern Washington, native grassland communities have been mostly replaced by exotic forbs and annual grasses; over half of native grassland communities are imperiled or critically imperiled. Major influences are dry-land wheat farming and altered fire regimes in Palouse, irrigated agriculture in Columbia and Yakima Basins, and overgrazing in drier grasslands with shallow soils, as well as riparian zones in all areas of eastern Washington.

Eastside Canyon Shrublands: These shrublands are generally found in deep canyons surrounded by grasslands or in a mosaic with ponderosa pine and woodland habitat. Generally a mix of tall to medium shrubs intermixed with bunchgrass or annual grasses. Dominant species include mallowleaf ninebark, bitter cherry, chokecherry. Many of these shrubs sprout following fire and will be maintained with presence of wildland fire. Periods with no fire will potentially result in succession to ponderosa pine or Douglas-fir forest.

Desert Playa and Saltscrub: This habitat type is often associated with herbaceous wetlands. Agricultural development is generally not feasible in these soils, so little is converted to other uses. The primary influences on this habitat type are climate and livestock grazing. Grazing often results in decreased bunchgrass cover and replacement of native grass and shrub species with undesirable exotics such as Russian thistle, tumble mustard, and cheatgrass.

Inland Dunes: The total extent of these dune systems has declined approximately 76 percent from the 1970s primarily due to agricultural conversion, reservoir flooding, and dune stabilization. Major threats include invasive species, agricultural conversion including effects from adjacent irrigation, OHV use, intentional sand dune stabilization, conversion to residential lots, mining activities, and livestock grazing (Hallock et al. 2007).

Juniper Savannah: Juniper savannah is a rare community restricted to south-central Washington. Unlike in Oregon, juniper in Washington is not invading shrub-steppe habitats; rather, it provides important wildlife habitat. Major threats include wildland fire and invasive exotic plants. In some areas there may be a lack of recruitment due to competition with exotics,

but young junipers can also be found. The largest concentration is in the Juniper Dunes Wilderness Area.

Ponderosa Pine Forest: Ponderosa pine forests are significantly less in distribution than pre-1900 and one-third of remaining forests are considered imperiled or critically imperiled. Forest composition has also changed due to selective harvesting of large trees, wildland fire suppression, and grazing practices in oak/pine communities. Late seral, savanna type forests have been replaced by younger and smaller trees, increased in density, and have an increase in exotic understory plants. These trends have resulted in replacement of ponderosa pine forests with shade-tolerant species such as Douglas-fir and grand fir and a general reduction in the quantity and quality of this habitat type. Residential development within this forest type is also affecting the character of the forest by creating artificial openings or placing dwellings among the trees. Additionally, based on WDFW observations at the Klickitat Wildlife Area, insect outbreaks are probably an unrecognized agent in the development of savannah-like pine stands. Forest managers usually try to harvest timber before it is lost to pest outbreaks; hence, none of the trees that might have survived live on to become the signature feature of these savannah-like stands.

Old Growth and Mature Forest: Old-growth forest structure is an important issue in managing for forest health and productivity in eastern Washington. Old growth forest structure is estimated to be as little as 3 percent of pre-settlement levels (Youngblood 2001); what remains is in isolated patches and is at risk of loss from less frequent, but more severe fires. Low-elevation ponderosa pine and Douglas-fir stands are more densely stocked with increased fuel, and often represent compositional shifts to more lodgepole pine (*Pinus contorta*) and grand fir (*Abies grandis*). The changes are attributed to changes in natural disturbance regimes as a result of management of wildland fire, grazing, timber harvest, wildlife, insects, and disease.

Oregon White Oak Woodlands: Most oak woodlands in the State are privately owned, and private parcels collectively comprise the largest contiguous tracts. Klickitat County, which harbors most of Washington's oak, contains approximately 195,000 acres of oak and oak/pine woodlands greater than 25 percent canopy coverage. Stand thinning and land conversion for conifer production, agriculture, fuelwood cutting, cattle grazing, and urban development are all considered significant contributors to the current decline of Oregon white oak—although their relative importance is largely unknown. Historically, wildland fires in the western portions of Klickitat County have influenced wildlife habitats, and the importance of wildland fire in the maintenance and health of Oregon white oak woodlands is evident. In the absence of wildland fire, open-canopy oak savannas become dense oak woodlands, which in turn will eventually be overtaken by conifers. In the central and eastern parts of the county, natural conditions (moisture regime and soil type) on many sites seem to limit the development of the oaks such that extensive stands of dense oak woodlands appear to be the climax habitat (i.e., not maintained by fire) for those areas. These dense groves of small oaks are a unique and valuable habitat type. They are used extensively by black-tailed deer for food and cover, as well as a variety of neotropical songbirds. Because of these differences management of oak may require different approaches on western versus the central and eastern portions of the county. Moderate human and livestock-related impacts may be compatible, as long as significant oaks are not cut down. Misguided habitat improvement efforts on unsuitable sites could do significant harm to valuable habitat.

Aspen Stands: Upland aspen groves are scattered throughout eastern Washington on well-drained mountain slopes, or canyon walls between 2,000 and 9,500 foot elevation. Although

widespread in North America, aspen is a minor, but important habitat type in the Pacific Northwest. Wildland fire plays an important role in maintenance of aspen habitat and modern wildland fire suppression policies have affected regrowth, as has heavy livestock browsing, especially by sheep. Aspen stands larger than 1 acre are considered a priority habitat in Washington.

Riparian: Riparian shrubland was never extensive in eastern Washington, but has declined more than 90 percent since 1900 to about 2 percent of the landscape now. The decline has been caused by many factors, including agricultural development, grazing in riparian zones, channelization, roading, and dams and other flood control activities; the loss is especially severe at elevations below 3,280 feet.

Freshwater Wetlands: Although the Columbia Basin irrigation project has resulted in raising the water table and creating new wetland habitats in localized areas, herbaceous freshwater wetlands have steadily declined throughout eastern Washington since 1900 due to filling, draining, grazing, farming, and trapping of beaver. Wetlands are also especially susceptible to exotic, noxious plant invasions. Wetlands are considered one of the most endangered habitat types in eastern Washington.

Montane Coniferous Wetlands: Occurs along stream courses or in patches, at mid-to high elevations throughout the mountains of eastern Washington. Flooding, debris flow, wildfires and wind are major natural disturbance factors. Roads and clearcut logging have altered the hydrologic patterns and composition of these riparian forests.

Open Water (lakes, rivers, streams; occurs throughout eastern Washington in the form of natural lakes, reservoirs, streams and rivers, including the Columbia and Yakima Rivers): Rivers and smaller streams provide important cover, feeding, and breeding habitat for many bird species. The mainstream Columbia River and many lakes and reservoirs are important resting and feeding habitat for waterfowl and other migratory birds.

Near Shore (San Juan Islands): The shoreline managed by the BLM within the San Juan Islands includes areas of Watmough Bay, Point Colville, and Iceberg Point on Lopez Island; Carter Point on Lummi Island; Kellet Bluff on Henry Island, Turn Point on Stewart Island, a piece of Cattle Point on San Juan Island; and the entire perimeter of Patos Island.

For simplification in this AMS, the near shore habitat type includes both the shoreline and associated rocks and bluffs classifications from NatureServe (2009). The shoreline habitat type comprises sandy/gravelly (unconsolidated) shoreline and rocky shoreline. Sandy/gravelly shoreline is defined by having substrata consisting of components smaller than cobble (10 inches diameter), including: gravel, sand, mud, and organic materials (Dethier 1990). Rocky shoreline is defined by having substrata composed of bedrock, boulders (rocks greater than 10 inches diameter that are large enough not to be rolled by moderate wave action), and/or hardpan. Steep, rocky cliffs can be associated with rocky shoreline and are generally devoid of vegetation with occasional wind sweep shrubs, succulents, and grasses growing from fissures. The North Pacific Maritime Coastal Sand Dune and Strand ecological system is associated with sandy/gravelly shoreline and spits (NatureServe 2009).

Focal wildlife species for this habitat type include the peregrine falcon, pelagic cormorant, double-crested cormorant, pigeon guillemot, glaucous-winged gull, black oystercatcher, and marine mammals. Other benefiting species include: brant, black and ruddy turnstone, dunlin,

black-bellied plover, sanderling, wandering tattler, western sandpiper, Heermann's gull, killdeer, Caspian terns, great blue heron, river otter, herring, and sand lance.

In general the physical structure and stability of the BLM managed nearshore habitats is stable. However, some natural processes such as erosion and subsequent sedimentation may be affected by altered upland conditions, roads, and houses within the watersheds. At this time there are insufficient data to quantify the degree to which these processes have been altered. However, due to the resistance of the basalt bedrock and the lack of significant wave action, the shoreline and rock cliffs within the BLM-managed parcels have largely undergone negligible erosion and retreat.

Savanna, Grassland, Herbaceous Balds (San Juan Islands): Savanna, grasslands, and herbaceous balds are associated with dry sites in lowland and mid-montane western Washington and Oregon. Approximately 61 acres of BLM-managed lands within the San Juan Islands currently have these habitats. These areas can be categorized into two ecological systems: Willamette Valley Upland Prairie and Savanna and North Pacific Herbaceous Bald and Bluff (NatureServe 2009). The prairie and savanna system differs from herbaceous balds in the following respects:

- Prairies and savannas occur on relatively level terrain, primarily on deep, well-draining gravelly/sandy glacial outwash (Chappell and Crawford 1997; Crawford and Hall 1997; Chappell et al. 2001a; NatureServe 2009).
- Herbaceous balds typically occur in small patches on relatively shallow soils with an underlying restrictive layer of bedrock, and relatively dry topographic positions (e.g., on slopes) and can be intermixed with rock outcrops and fringed by areas of forest and woodland (Chappell et al. 2001a; Chappell et al. 2001b; Chappell 2006).

This habitat is of particular importance for the rare island marble butterfly (*Euchloe ausonides*). Before its rediscovery on San Juan Island in 1998, the island marble was thought extinct for 90 years. The island marble is only known to occur in a few locations on San Juan Islands and nearby Lopez Island (NPS 2006). The majority of BLM-managed land where island marbles occur is found in the vicinity of Cattle Point on San Juan Island; however, suitable habitat may occur on portions of public land on Lopez Island. Further investigation is needed to determine the extent of their distribution on Lopez Island.

The life cycle of the island marble is closely associated with its host plants (tumble and field mustard and Puget Sound peppergrass). The host plant on which the eggs are laid provides food for larvae in their early stages of development. Its lifecycle begins in early April shortly after the emergence of leaves and flowering stalks on the host plants at which time adults begin to emerge from pupae. Adults live for 6 to 9 days, during which they mate and lay eggs. Eggs hatch in May, and by June larvae start searching for pupation sites where they wait until the following spring to emerge as adults (Lambert 2005).

An issue of management concern is that of the three species of larval host plants known to be utilized by the island marble, only one is native, Puget Sound peppergrass (*Lepidium virginicum menziesii*). The other two host plants (tumble mustard [*Sisymbrium altissimum*] and field mustard [*Brassica campestris*]) are invasive species (Pyle 2004; Lambert 2005). While controlling or eliminating non-native species in native-dominated habitat is generally preferred, the dependence of the island marble on invasive mustards may limit opportunities for restoration.

Another species of concern in this habitat is the Shaw Island vole (*Microtus townsendii pugeti*), which is a unique subspecies of *M. townsendii* found only in the archipelago. Although this species is endemic, it is widespread and locally abundant in grassland and wetland habitats in the archipelago. While this subspecies is State listed as sensitive, it is often considered a destructive pest in gardens and orchards due to its soil disturbing activities. This soil disturbance provides microsites which can favor the spread of undesirable non-native plants, including noxious weeds (Edgerton 1996).

Other wildlife associated with this habitat include northern harrier, American kestrel, savanna sparrow, and purple martin. In addition to the island marble butterfly, potential habitat for other rare butterflies such as the Taylor's checkerspot and valley silverspot may occur on BLM-managed lands where the plant host species for these butterflies are found.

Forest and Woodland (San Juan Islands): Forests and woodlands currently occupy roughly 760 acres of BLM-managed lands in the archipelago. North Pacific Maritime Dry-Mesic Douglas-fir-Western Hemlock Forest is the predominant forest type found on the public lands in the islands (665 acres). To a lesser extent, the following ecological systems comprise the remaining forest types: North Pacific Maritime Mesic-Wet Douglas-fir-Western Hemlock Forest, North Pacific Hypermaritime Seasonal Sitka Spruce Forest, and North Pacific Hypermaritime Western Red-cedar-Western Hemlock Forest.

Bald eagles nest on the San Juan Islands in greater concentrations than anywhere else in the lower 48 states, and are thus a focal wildlife species within the planning area. With approximately 120 bald eagle territories in San Juan County, more than one-third of Washington's eagle nests are found on the islands.

These forests are also home to North America's largest woodpecker, the pileated woodpecker. Many of the trees and snags on public lands show the characteristic rectangular cavities created by these birds as they search for ants and termites. Generally speaking, the BLM-managed forests host a multitude of migratory and resident birds, which, to name only a few, includes olive-sided and Pacific-slope flycatchers, brown creepers, and Townsend's warblers.

Wetland (San Juan Islands): Freshwater wetlands currently occupy only a small portion of the planning area. This includes portions of Chadwick Marsh on Lopez Island and some isolated wetlands on Patos. In addition to the actual wetlands, these areas also support stands of riparian woodlands, which can be categorized into two ecological systems: North Pacific Lowland Riparian Forest and Shrubland and North Pacific Montane Riparian Woodland and Shrubland.

Focal wildlife species for the wetlands include amphibians such as the Pacific tree frog, roughskin newt, and long-toed salamander. Various birds can also be found in the wetlands and the surrounding woodlands; these include (to name a few) the red-winged blackbird, Swainson's thrushes, Wilson's warblers, northern pintail, mallard, Canada goose, and great blue heron.

<u>Migratory Birds</u>

The USDI FWS identified "birds of conservation concern" (BCC) based on a ranking system that assesses population size, breeding distribution, non-breeding distribution, threats in the breeding season, threats in the non-breeding season, and population trend (USDI FWS 2008a). The resulting list of BCC are those for which there is a high level of concern and require management attention. Table 2.1-14 lists the BCC in eastern Washington.

Table 2.1-14. Birds of conservation concern in eastern Washington in two bird conservation regions (BCRs)

BCR 9 (Great Basin)	BCR 10 (Northern Rockies)
Greater sage-grouse	Bald eagle
Eared grebe	Swainson's hawk
Bald eagle	Ferruginous hawk
Ferruginous hawk	Peregrine falcon
Golden eagle	Upland sandpiper
Peregrine falcon	Long-billed curlew
Yellow rail	Yellow-billed cuckoo
Snowy plover	Flammulated owl
Long-billed curlew	Black swift
Marbled godwit	Calliope hummingbird
Yellow-billed cuckoo	Lewis's woodpecker
Flammulated owl	Williamson's sapsucker
Black swift	White-headed woodpecker
Calliope hummingbird	Olive-sided flycatcher
Lewis's woodpecker	Willow flycatcher
Williamson's sapsucker	Loggerhead shrike
White-headed woodpecker	Sage thrasher
Willow flycatcher	Brewer's sparrow
Loggerhead shrike	Sage sparrow
Pinyon jay	McCown's longspur
Sage thrasher	Black rosy-finch
Virginia's warbler	Cassin's finch
Green-tailed towhee	
Brewer's sparrow	
Black-chinned sparrow	
Sage sparrow	
Tricolored blackbird	
Black rosy-finch	

Source: USDI Fish and Wildlife Service (2008a).

Washington provides wintering habitat for approximately 850,000 ducks, 125,000 geese, and 8,000 swans annually. In addition, the State provides habitat for approximately 150,000 breeding ducks and 50,000 breeding geese each spring and summer. The Pacific Flyway waterfowl population contains almost 6 million ducks, geese, and swans, and many of these birds pass through the State during fall and spring. BLM-administered land in eastern Washington, especially northern portions of the Upper Crab Creek area, has been compared to the Prairie Pothole region in terms of the density of wetlands and waterfowl production. In some areas wetland density can be easily up to 10 or more wetlands per square mile. Wetlands and other waterfowl habitats are being lost throughout Washington due to development and conversion to other uses. However, in partnership with Ducks Unlimited, the BLM has restored five large wetland complexes along streams (Packer Creek, Lake Creek, and Smick Meadows) where wetlands were previously drained for pasture. There are 17 WDFW-designated ―priority" waterfowl concentration areas on BLM land. These are associated with larger waterbodies and total 2,344 acres on BLM-administered land.

The Spokane District BLM lands support important populations of many BCC and other migratory birds. Areas of disproportionate importance have been mapped through Audubon's Important Bird Areas (IBA) program. These IBAs, which hold significant numbers of one or more globally threatened species, are one of a set of sites that together hold a suite of restricted-

range species or biome-restricted species, or have exceptionally large numbers of migratory or congregatory species. BLM administers 69,350 acres of land within 18 IBAs in eastern Washington (see map 11, appendix A). Additionally, the Intermountain West Joint Venture has identified bird habitat conservation areas (BHCAs) in Washington where conservation projects would have the highest benefit to priority bird habitats. BLM owns 263,916 acres of land within 32 BHCAs in eastern Washington (see map 11, appendix A).

Migratory birds by nature travel over huge areas in their yearly home range; therefore, status and trends are best considered at the regional or nation level. The following is a national summary from the 2009 State of the Birds Report (NABCI 2009).

> *Wetlands*: Although many wetland birds show troubling declines, conservation programs have protected millions of acres and contributed to thriving populations of hunted waterfowl, herons, egrets, and other birds. Lesser Scaup, Northern Pintail, and several sea ducks are showing troubling declines, but most geese are increasing dramatically and many ducks have held steady. *Waterfowl*: On the whole, 39 species of hunted waterfowl have increased by more than 100% during the past 40 years. *Aridlands*: The aridland birds indicator shows a 30% decline over the past 40 years. Unplanned urban sprawl is by far the greatest threat to aridland birds. *Grasslands*: The grassland bird indicator shows nearly a 40% decline in the past 40 years, based on birds that breed exclusively in grasslands. *Forests*: The forest birds indicator dropped by roughly 10% from 1968 through 1980, then increased slightly.

Raptors

Currently, raptors are managed by protective buffers to limit the amount of noise and activity disturbance on a case-by-case basis during project development. When the bald eagle was delisted, the USDI FWS proposed regulations to create a permit program to authorize limited take of bald eagles and golden eagles where take is associated with otherwise lawful activities. Take permits (if applicable) and avian protection plans are currently required for all for all renewable energy projects under BLM IM-2010-156. The USDI FWS is limiting take for golden eagles due to population concerns and the present lack of identified measures to reduce take from activities, except in special cases. The USDI FWS does not anticipate issuing programmatic permits for golden eagles until Advanced Conservation Practices are established by the USDI FWS for an industry, company, or agency. The golden eagle has been identified as a State candidate for listing due to declines in the number of nesting pairs at historic nests. Take permits are available for bald eagles. The National Bald Eagle Guidelines are available as a tool to help people minimize impacts to bald eagles and provides general recommendations for land management practices that will benefit bald eagles (USDI FWS 2007).

The BLM in Washington has surveyed for goshawks in conjunction with forest projects and detected goshawks at four scattered tracts. However, only two of those represent nests, one in Stevens County and one in Okanogan County. Additionally, these surveys are dated and the current status of goshawk on BLM lands is unknown. Suitable habitat does exist in scattered forest tracts, but high levels of early mature forest on private land surrounding BLM makes fulfilling landscape-level habitat requirements difficult to accomplish.

Ferruginous hawks are addressed in section 2.1.2.11, ~~“~~Special Status Wildife.”

Bats

Bat habitat on the Spokane District includes over 100 documented adits (horizontal mine shafts) distributed over the forested and mountainous portions of eastern Washington. Several adits hazardous to the public were closed using bat-compatible gates, but most remain open and vulnerable. Backfilling of adits would remove this valuable habitat, and this method of closure has rarely been employed on the District. Recently, a disease called white-nose syndrome (WNS) has killed entire colonies on the east coast and is predicted to spread to western states. The BLM policy, as articulated by the ―Stay Out, Stay Alive" campaign, discourages the public from entering underground abandoned mine features on public lands, to prevent public injury or death, and to reduce the risk of transferring WNS among vulnerable bat populations (IM-OR-2011-010). The San Juan ownership provides foraging habitat for all the common species and roosting habitat for the tree roosting hoary and silverhaired bats.

Big Game and Upland Game

Mule deer and/or white-tailed deer occur on most BLM parcels in eastern Washington (map 12, appendix A). Black-tailed deer occur at most sites in the San Juan Islands. The total deer population in the State numbers approximately 300,000 to 320,000. White-tailed deer populations appear to be stable or increasing. Mule deer populations in northeastern Washington are below historical levels. Other mule deer populations in central and eastern Washington are stable, with the exception of the southern Cascades where mule deer numbers have declined the last 2 years.

Elk occurring in central and eastern Washington are Rocky Mountain elk that either avoided extirpation or were reestablished by reintroductions of elk originating from Montana and Wyoming. As European settlement expanded into this region, elk harvest increased dramatically. By the beginning of the 1900s, most if not all of the elk in eastern Washington had been eliminated. However, elk populations peaked in Washington in the late 1960s and early 1970s mostly due to habitat conditions, re-introductions, and forest management practices.

There are three recognized elk herds on BLM land in eastern Washington—the Selkirk, Colockum, and Yakima herds. However, there are small groups of elk throughout many other BLM parcels. The BLM administers over 9,000 acres of elk habitat identified by WDFW as ―priority" in the Yakima River Canyon and Colockum area (map 12, appendix A). Elk in the Huckleberry Mountains have been increasing on BLM land following forest thinning projects. The following herd information is from the WDFW 2009−2015 Game Management Plan (WDFW 2008b): The Selkirk elk herd is at population objective; the limiting factor for this herd is probably the amount of habitat created by active timber management and wildlife damage occurring on agricultural lands adjacent to elk habitat. Although there are still many unanswered questions related to the Colockum Herd, one of the primary limiting factors is probably related to direct mortality resulting from legal hunting, undocumented harvest, and kills related to resolving agricultural damage. The priorities for the Colockum Herd are habitat preservation, habitat enhancement, and road management. The Yakima Herd is at population objective; limiting factors affecting this herd will be better isolated when research pertaining to the carrying capacity for this herd is completed. The priorities for this herd include research, habitat preservation, resolving wildlife damage conflicts, and winter-feeding.

There are eight recognized big horn sheep herds that occur on BLM-administered land (map 12, appendix A; and table 2.1-15). The following herd information is from the WDFW 2009−2015 Game Management Plan (WDFW 2008b): Populations of Rocky Mountain bighorns are still recovering from the pasteurella die-off. However, habitat conditions are deteriorating in many

bighorn herds, primarily due to the spread of noxious weeds, poor forage growth, human development, and forest encroachment. To improve habitat quality for bighorn sheep there is a need to conduct various habitat improvement projects in several herds. Residential development is an issue for the Lincoln Cliff herd where large land holdings are currently for sale and BLM owns scattered tracts.

Table 2.1-15. Population size objectives for specific bighorn sheep herds that occur in part on BLM lands

Herd Name	2008 Population Size	Desired Population Size
Vulcan	21–27	80–110
Lincoln Cliffs	85–105	90–100
Mount Hull	59–72	55–80
Sinlahekin	27–33	50
Swakane	48–58	50–60
Quilomene	148–182	250–300
Umtanum (+Selah Butte)	156–190	250–300
Cleman Mountain	140–172	140–160

Source: WDFW (2008b).

The number of moose in Washington has increased from about 60 in 1972 to 850 to 1,000 in 2002; to 1,500 to 2,000 in 2008, corresponding to about a 9.6 percent annual increase in population size. Moose are a BLM sensitive species and hunted as big game. The BLM administers more than 6,000 acres of moose habitat identified by WDFW as "priority" in the Huckleberry Mountains (map 12, appendix A). Most of the other BLM lands in Ferry, Stevens, and Pend Oreille counties also provide moose habitat.

Mountain goat abundance has decreased dramatically over the last few decades, and it is listed as a BLM sensitive species. BLM land on Chopaka Mountain contains priority habitat for one small, unhunted herd. Since limited resources have caused WDFW to focus monitoring on other, hunted herds, little is known about the Chopaka Mountain mountain goat herd.

The current conditions for sage and sharp-tailed grouse will be discussed in the following "Special Status Wildlife" section. Other upland game bird species have also decreased, primarily from extensive areas of fire, invasion of exotic plants, livestock grazing, timber harvest, mineral and energy development, and intensive recreational uses (USDI BLM 1992c). The following upland game bird information is from the WDFW 2009–2015 Game Management Plan (WDFW 2008b). Habitats for mourning doves, band-tailed pigeons, coots, and snipe are being lost throughout Washington due to development and conversion to other uses. Turkey populations in some areas of eastern Washington have expanded substantially over the past 5 years. WDFW continues to receive damage complaints from residents in some of these areas. There are almost 8,000 acres of WDFW-designated "priority" turkey habitat on two BLM tracts; one in Chiliwist, Okanagon County, and a large tract in Klickitat County in the Simcoe Mountain Turkey Area. Little is known about mountain quail habitat in eastern Washington. Historic distribution has been estimated, but suitability and ability to sustain mountain quail populations is largely unknown. Forest grouse in Washington include dusky blue grouse, sooty blue grouse, and ruffed grouse, which occur throughout forested lands. There was an apparent decline in forest grouse in the 1980s, but populations have remained fairly stable since 1996. There are about 4,000 acres of "priority" dusky grouse habitat on BLM land scattered across the Huckleberries and Okanagon Highlands. According to harvest estimates (used as an index of population densities), pheasant populations in Washington have been declining since the early 1980s. The cause of the decline is

not definitively known, although several factors are thought to have contributed, with loss and degradation of habitat being a primary factor. Although variable from year to year, population estimates for quail and chukar have not dropped below 1993 levels. Currently, quail harvest levels are near the 22-year high. There are over 75,000 acres of ―priority" chuckar habitat on BLM lands across central Washington in Okanagon, Douglas, and Grant counties, and additionally along small scattered BLM tracts along the Snake River.

In 1992, BLM and State wildlife agency biologists identified key upland game bird areas that would receive increased management emphasis. Table 2.1-16 shows the key areas on BLM land and the primary species (map 12, appendix A). It is important to note that many of today's BLM lands did not exist in 1992, so recently acquired lands have not been addressed and may also meet the criteria for key areas.

Table 2.1-16. BLM's key upland game bird areas in Washington

Key Area Name	Acres	Primary Species [1]
Huckleberry Mountain	12,000	BG, RG
Juniper Forest	14,000	CQ, P, GP
Upper Crab Creek	28,000	SG, STG, P, GP
Little Vulcan Mountain	1,200	BG
Jameson Lake	5,000	SG, C, CQ, MD
Moses Coulee	20,000	SG, C, CQ, MD
Palmer Mountain	6,000	STG, C, CQ, P
Rattlesnake Hills	20,000	SG, GP, C, CQ, P
Saddle Mountain	23,000	SG, C, CQ, P
Similkameen	20,000	BG, CQ, P, C, GP

[1] BG = blue (dusky) grouse; RG = ruffed grouse; CQ = California quail; P = ring-necked pheasant; GP = gray partridge; SG = sage grouse; STG = sharp-tailed grouse; C = chucker; MD = mourning dove.

Connectivity

Changes in shrub-steppe communities have been particularly severe in Washington State, where half of the area historically in shrub-steppe has been converted to agriculture, resulting in high fragmentation of extant habitat and a disproportionate loss of deep-soil communities (Jacobson and Snyder 2000; Vander Haegen et al. 2000). The forested regions of eastern Washington are highly fragmented due to logging and a variety of natural factors (poor soils and high fire frequencies) (FEMAT 1993). Analysis of focal species and of landscape integrity yielded diverse patterns of landscape and wildlife connectivity (WHCWG 2010). Because BLM lands are concentrated in undeveloped lands, especially in the shrub-steppe, most BLM land in the shrub-steppe is identified as a corridor or habitat concentration area. This pattern is not as strong in the forested regions because BLM land is not so concentrated and the USFS owns most of the lands, but some BLM parcels are located in forested corridors. The analyses of landscape integrity and focal species revealed considerable habitat fragmentation, though a surprisingly extensive array of natural core habitat areas remains. The distribution of this array suggests that functional connectivity for many species may still occur, but it is likely to be highly vulnerable to additional fragmentation (WHCWG 2010).

Human Disturbance

The ―human footprint map," which focuses on shrubland ecosystems and combines models of habitat use by synanthropic predators and the risk of invasive plant presence, can be used to estimate the total influence of human activities on western landscapes (Leu 2008). The results of

this model showed that the Columbia Plateau was ranked as ―high-intensity" (in the top 7 percent of land in the Western States) (map 13, appendix A). The factor responsible for the high ranking was agriculture. This level of regional disturbance highlights the importance of the remaining patches being free from human disturbance.

The highest human disturbance on BLM lands is associated with OHV use in the Juniper Dunes and Saddle Mountains. Other areas that receive high use from multiple activities are Fishtrap and Yakima River canyons. In these areas human disturbance to wildlife is the greatest and in some cases is of concern. All the BLM lands in eastern Washington are relatively small parcels of land and are often highly fragmented due to some type of human disturbance. These lands have a relatively high density of artificial structures, roads, and fences. Many of these parcels have county roads that are fenced on both sides with transmission and distribution lines overhead. Scattered ranch buildings are common. Due to the small size of grazing allotments and their pastures, fence densities often exceed 3 miles per acre. These artificial structures contribute to an abnormally high amount of raptor perches that can cause abnormally high levels of predation on prey species.

Trends

Specific information on trend, when known, was included in the ―Current Condition" section above. However, there are few instances where trend can be quantitatively assessed. One exception may be range nested frequency data, which is specifically designed to detect changes in range condition over time. These data are currently being analyzed. Other information on trend tends to be qualitative and usually relates to the loss or reduction in habitats over time. Table 2.1-17 gives a general trend summary.

Table 2.1-17. Summary of trends on BLM lands for wildlife and their habitats

Attribute	Trend	Cause
Range Health	↔	No change in composition, slight increase in biomass.
Forest Health	↑	Increase in desired conditions due to thinning projects.
Shrub-Steppe	↔	Loss of shrubs from wildfire, but gains from restoration. (Statewide the trend for shrub steppe is downward due to very large scale fires (>200,000) in Yakima/Benton Counties in the last 15 years. Windfarms and ag conversions have also decreased functioning shrub steppe.)
Eastside Steppe and Grasslands	unknown	Minimal land and no management.
Eastside Canyon Shrublands	unknown	Minimal land and no management.
Desert Playa and Saltscrub	↑	More acres due to wetland drying.
Inland Dunes	↓	Stabilization by exotics and OHV disturbance.
Juniper Savannah	↔	Some recruitment of juniper, fire has killed few.
Ponderosa Pine Forest	↑	Increase in desired conditions due to thinning projects.
Old Growth and Mature Forest	↑	Increase in desired conditions due to thinning projects.
Oregon White Oak Woodlands	↓	Conifer encroachment, lack of wildland fire.
Aspen Stands	↓	Drought and competition with reedcanary grass.
Riparian	↓	Drought and competition with reedcanary grass.
Freshwater Wetlands	↔	Loss of potholes from drought and reed canary grass, but restoration of large instream wetlands. Encroachment of wetlands by cattails, bulrush and phragmites has significantly degraded large acres of wetlands on some lands.
Montane Coniferous Wetlands	unknown	Minimal land and no management.
Open Water – Lakes, Rivers, Stream	↓	Aquifer depletion for agriculture (e.g., Pacific Lake).
Nearshore (San Juan Islands)	↓	Threats facing the shorelines of BLM-managed parcels in the San Juan Islands include climate change-induced sea level rise, geologic events, invasive species, human intrusions and disturbance, and contaminants and marine debris.
Savanna, Grassland, Herbaceous Balds (San Juan Islands)	↔	5−10% of presettlement levels. Losses of prairie and savanna were primarily due to fire suppression, invasive non-native species, grazing, and urban and agricultural conversion. Current threats include conifer and shrub encroachment, especially fir and rose species at Iceberg Point.
Forest and Woodland (San Juan Islands)	↔	The current forest stands on BLM-managed lands are relatively healthy, but the recruitment of tree saplings may be limited due to deer herbivory and/or competition with non-native species. Additional concerns in this habitat include the alteration of the fire regime;
Wetland (San Juan Islands)	↑	The freshwater marsh around Chadwick Hill on Lopez Island seems to be recovering from previous alterations and appears to be in good condition.
Migratory Birds	↓	Grassland, shrubland, and forest birds declining regionally from loss of habitat, but waterfowl increasing nationally and at BLM restoration sites.
Big Game and Upland Game	↑	Moose, elk, and whitetail deer increasing, mule deer static, bighorn slight decrease due to disease, game

Attribute	Trend	Cause
		birds static except for forest grouse, chucker, gray partridge and pheasant, which are declining.
Connectivity	↓	Slight decrease due to wildfires in sagebrush, continued intensive logging on private land, slight conversion to agriculture. There has been significant conversion in Benton County largely on DNR land.
Human Disturbance	↑	Increase in population sizes, increased awareness and demand for activities on BLM land.

Forecast

Trends are expected to continue in the current direction, unless management intervention or outside factors change the conditions. Regional trends (such as those presented below) are typically beyond the control of BLM, especially when BLM manages disjunct parcels rather than entire ecosystems. However, local trends can be greatly influenced by BLM projects. Sage-steppe habitat restoration has and, may continue, to result in hundreds of new acres of shrub-steppe habitat. However, any gains by restoration are offset by the thousands of acres that burn most years. Large wind projects in Klickitat, Kittitas, and Columbia counties has fragmented and disturbed thousands of acres. Urban growth will continue to reduce acreage of shrub steppe. Wetland and forestry projects can also continue to increase desired conditions. However, demand for intensive recreational opportunities and renewable energy and associated infrastructure is increasing dramatically. Increased demands and continuation of land health projects will take place in the context of changed climate patterns resulting from global warming.

Climate Change

The National Wildlife Federation, WDFW, Washington Biodiversity Council, and others, summarized the effects of climate change on Washington's wildlife in ―Setting the Stage: Ideas for Safeguarding Washington's Wildlife in an Era of Climate Change" (Glick and Moore 2009). They present the expected changes, how they may manifest in various habitats, and potential management actions. The following is taken from that report.

> Higher temperatures and shifts in precipitation patterns will mean that some native plants and animals will no longer be able to thrive in their current ranges. Increased disturbances such as insect outbreaks and wildfires will facilitate expansion of invasive species. Significant declines in average snowpack will mean lower streamflows and less water for fish and wildlife in summer months when water resources are already stretched thin by competing uses. Rising sea levels will inundate beaches, marshes, and other coastal habitats particularly where bulkheads impede their movement inland.
>
> Increased acidification of ocean waters will harm shellfish and other invertebrates that are fundamental to the marine food web. Key impacts by habitat type are as follows:
>
> **Coastal and Marine Habitats:** Habitat erosion/inundation, changes in the food web, altered hydrology, effects on coastal and marine fish industries, inundation of coastal infrastructure.
>
> **Freshwater Habitats:** Increased water temperatures, reduced snowpack and shrinking glaciers, reduced base flows and increased peak flows, increased erosion and sedimentation, decreased forest cover/buffer zones/riparian areas.

Grassland and Shrubland Habitats: Altered hydrology including floods and drought, increasing fires, expansion of invasive species, changes in land use, loss of endemics and species diversity.

Forest Habitats: More frequent storm events, increased forest fires, expansion of invasive species, loss of high elevation habitats, carrying capacity, disease, and pine beetles.

Population Growth

Population growth has been a driving factor for landscape changes in Washington. This growth is positively correlated with habitat loss and degradation, pollution and contamination of the environment, water quality and availability problems, and the interruption of natural processes, such as species migrations and naturally occurring fires.

The population in the planning area has increased by 83 percent over the past 40 years (U.S. Department of Commerce 2010).

The average population density of the planning area is approximately 31 persons per square mile, with highest densities in San Juan and Spokane counties of 277 and 262 persons per square mile, respectively). The 2030 projection is almost 130 people per square mile. Population growth is expected to be greatest in four Puget Sound counties (King, Snohomish, Pierce, and Kitsap), as well as in Clark and Spokane counties. New buildings, roads, sewers, and water supply systems will be needed. All of these developments will add to the pressures on our wildlife species and ecosystems (WBC 2007).

Land Conversion

Land conversion resulting in the loss of suitable of habitat is arguably the single most significant factor responsible for the long lists of species and ecosystems of concern in Washington. Lands have been, and continue to be, converted for residential, commercial, and agricultural purposes, construction of roads and railroads, and construction of dams and other means of controlling the flow of water. Rates of conversion have been associated with both population growth and the development of technologies and transportation systems (WBC 2007).

Outdoor Recreation

Increased outdoor recreation pressure on natural and semi-natural environments will contribute to degradation of habitat. The WDFW reports that there are more than 2.5 million outdoor recreation days accumulated annually in Washington for hunting, fishing, and wildlife-related recreation. The Interagency Committee for Outdoor Recreation projects increases over the next 20 years for many outdoor-related activities; these are: hiking (20 percent), various nature activities (37 percent), visiting beaches (33 percent), and off-road vehicle riding (20 percent). Although these activities contribute to the economy, there are environmental costs. Construction of recreation-related infrastructure has left a footprint on the environment; these include beach resorts, ski areas, roads, trails, campgrounds and associated noise and light pollution. Furthermore, trampling of vegetation, compaction of soils, alteration of runoff and erosion patterns, an increased likelihood of non-native species invasions, and changes in animal behavior, are all impacts that have been associated with recreational uses. As our growing population seeks places for outdoor recreation opportunities, these impacts are likely to increase (WBC 2007).

Renewable Energy

Development of wind energy facilities (and perhaps other alternative energy sources) has the potential to impact the quality and suitability of the environment for species and ecosystems. Recent construction of wind farms has included new roads and enhancement of existing roads. Along with the construction of the tower pads, these activities result in ground disturbances that degrade the ecosystems, at least within the immediate vicinity. Of particular concern is the impact on nesting areas for shrub-steppe and grassland birds (WBC 2007).

Timber Harvest

Timber harvest practices have changed patterns of forest age, structure, and species composition across the landscape. Overall our forests are younger and more homogeneous as a result. Although timber harvest practices have improved in terms of their impacts on biodiversity, the improvement varies across the landscape. Localized impacts will likely continue to occur (WBC 2007).

Grazing

Livestock grazing has changed the relative mix of native species on our grasslands and shrub-steppe. Ecosystems in eastern Washington did not evolve with large numbers of heavy grazers. The introduction of large herds of horses, cattle, and sheep led to damage to and/or destruction of the cryptobiotic crust and the elimination in many places of native bunchgrasses. Those ecosystems hardest hit by past grazing practices, where there has been nearly total replacement of native by non-native species, may never fully recover (WBC 2007).

Invasive Species

Invasive species will likely increase in number and in economic and environmental impact. Non-native species often out-compete native species for resources (water, nutrients, pollinators, etc.), change nutrient cycling (in the case of nitrogen-fixing species such as Scot's broom), and alter disturbance patterns (e.g., cheatgrass is associated with increased fire frequency, severity, and size). Invasive species also have been identified as a threat to more than 25 percent of the State's plant species that are of conservation concern (WBC 2007).

Pollution/Contamination

Pollution and environmental contamination will likely accompany the projected growth in the population of the State. Increases in contamination of our environment, particularly via discharges of wastewater and stormwater runoff and atmospheric deposition of pollutants, such as those in automobile emissions, can be anticipated. As additional land in the Columbia Plateau ecoregion is converted to intensive agriculture, there is greater potential for contamination from the application of fertilizers and pesticides. With the on-going demand for petroleum, and with increased marine traffic of all kinds in Puget Sound waters, the danger of catastrophic oil spills increases. New chemicals and the inadequacy of assessing the impacts of chemicals on the environment are also risks (WBC 2007).

San Juan Islands

While much of the shoreline within the Puget Sound has been modified (historically and recently) for agricultural, industrial, and residential uses, San Juan County, with around 5 percent of its shorelines modified, has the lowest modification overall. This county is less heavily developed, and many of the shorelines are rocky, which do not tend to erode. In most cases where the BLM manages the shoreline, access from the ocean is limited due to the rocky terrain

and lack of safe landing sites. From the land, some portions of shoreline are accessible; however, steep drop-offs and rocks tend to deter access.

Threats facing the shorelines of San Juan Islands include climate change-induced sea level rise, geologic events, invasive species, human disturbance, contaminants and marine debris.

Some of the threats to the savanna, grassland, and herbaceous bald communities on BLM-managed lands within the San Juan Islands include climate change, lack of fire, invasive species competition with native plants and animals, and recreational use. Additional threats faced by the grasslands and herbaceous balds of the San Juan Islands potentially include overgrazing by native black-tailed deer, Canada goose, and non-native European rabbits.

Threats facing the forests and woodlands on BLM-managed lands in the San Juan Islands include climate change, storm events, invasive species, insect or disease infestation, altered fire regime, herbivory, and human intrusions and disturbance.

Due to lack of predation and hunting pressure, black-tailed deer populations within the San Juan Islands have expanded to such densities that they are having an influence on vegetative cover. Typically, deer browse helps to maintain herbaceous dominance by limiting sapling recruitment and retarding or delaying succession to forested habitats (Chappell 2006). The amount of water and, consequently, duration of wetland in Chadwick Marsh varies with precipitation. Therefore, the wetland could be sensitive to climate change and altered precipitation patterns. The current plant communities of the wetland may potentially be threatened by climate change.

Key Features

Key features are the geographic location, distribution, areas, or types of wildlife resources that should guide land use decisions. The priority habitats listed below support a unique or significant value to a diverse assemblage of species, and as such represent the types of habitats that should receive special management attention in order to ensure self-sustaining populations and a natural abundance and diversity of wildlife. Table 2.1-18 summarizes the key wildlife features in the planning area.

Table 2.1-18. Summary of key features for wildlife and their habitats

Priority Habitat/Attribute	Key Features
Shrub-Steppe	BLM manages roughly 300,000 acres. Quality varies over ownership. Significant, high-quality concentrations supporting dependant species include Moses Coulee and Upper Crab Creek, with many other areas locally important. BCC birds include sage grouse, sage sparrow, Brewer's sparrow, sage thrasher, loggerhead shrike, golden eagle, ferruginous hawk. Other shrub-steppe associates: burrowing owl, prairie falcon, sharp-tailed grouse, badger, black- and white-tailed jackrabbit, Merriam's shrew, Washington ground squirrel, Townsend's ground squirrel, pygmy rabbit, sagebrush lizard, and big game and upland game.
Eastside Steppe and Grasslands	Naturally occurring grasslands beyond the range of sagebrush or bitterbrush, such as the Palouse Prairie, are uncommon on BLM land, represented only on a few, 40 acres tracts. Other grassland systems on BLM-administered land include 5,000 to 10,000 acres of old agriculture fields replanted with native or non-native grasses, some of which are in need of restoration. Recovering burned areas provide grassland habitats. Important wildlife includes many of the same shrub-steppe species except those requiring shrub. Some grassland indicator species include vesper sparrow, grasshopper sparrow, northern harrier, long-billed curlew.
Eastside Canyon Shrublands	Occurs on BLM land as a mosaic within the shub-steppe, ponderosa pine, or woodland areas. Larger areas on BLM include Moses Coulee, Yakima River Canyon, Rock Creek, and on slopes of Chopaka and Palmer mountains. Many other areas with steep talus in the shrub-steppe support this habitat. BCC birds include mountain quail, green-tailed towhee, ferruginous hawk, and golden eagle.
Desert Playa and Saltscrub	These alkali vegetation types occur throughout BLM lands in the shrub-steppe, sometimes associated with wetlands. Saltgrass, greasewood, and alkali-tolerant bunchgrass are present. BCC birds and other wildlife are similar to those in shrub-steppe.
Inland Dunes	BLM manages two dune systems. Juniper Dunes (Franklin County) is a very large dune system where natural processes are intact and overall species diversity is high. It is the only dune in Washington with juniper. Rare wildlife include sagebrush lizard, black-tailed jackrabbit, grasshopper mouse, Ord's kangaroo rat, ferruginous hawk, and longbilled curlew. Juniper Dunes is composed of wilderness, an OHV area, and an ACEC; however, portions of the ACEC are effectively open, and portions of the open area are effectively closed due to fencelines not corresponding to area designations. As a consequence, portions of the ACEC have received heavy OHV impact. Sentinel Butte Dunes (Grant County) is an excellent example of the climbing dune type and contains a complex pattern of vegetation related to the varying terrain. Rare wildlife includes the sagebrush lizard. OHV use here is also extensive and of issue.
Juniper Savannah	Juniper Savanna is represented only at Juniper Dunes. Large, dense stands of juniper are protected in the Juniper Dunes Wilderness Area. Surrounding the wilderness, open savannahs of juniper dot the landscape; these are largely confined to BLM land and support ferruginous and Swanson's hawks and their prey. Ravens have increased and occupy many old hawk nests. Lack of juniper recruitment has been identified as an issue, but more information is needed.
Ponderosa Pine Forest	BLM manages nearly 50,000 acres of —dry coniferous forest" much of which is composed of ponderosa pine, or mixed conifer including pine due to wildland fire suppression. Major concentrations on BLM land are in the Huckleberry Mountains, and the Omak-Conconully area. BCC birds include bald eagle, golden eagle, peregrine falcon, flammulated owl, olive-sided flycatcher, Lewis's woodpecker, white-headed woodpecker, and Williamson's sapsucker. Other pine forest associates include northern goshawk, great gray owl, and pigmy nuthatch, and big game and upland game.
Old Growth and Mature Forest	The BLM manages over 2,000 acres in 22 stands of old growth in eastern Washington according to surveys for the Northeast Lands Data Project. The largest stand (342 acres) is on Little Vulcan Mountain ACEC in Ferry County. Other large stands include White Creek (378 acres), Granite Mountain (192 acres), Lambert

Priority Habitat/Attribute	Key Features
	Creek (120 acres) in Ferry County, and North Fork Chamokane Creek (242 acres) in Stevens County. Additional areas of old growth or late seral forest may be present on BLM lands that were not part of this survey. The WDFW identifies Embrey Hill (80 acres of BLM) in Stevens County as old growth/mature forest.
Oregon White Oak Woodlands	The oak and associated habitats are common in Klickitat County, which has the largest remaining acreage of Oregon white oak habitats in the State of Washington and perhaps the largest contiguous distribution of oak in the Pacific Northwest. BCC birds include Lewis's woodpecker, white-headed woodpecker, olive-sided flycatcher, Williamson's sapsucker, and flammulated owl. Other oak woodland associates include western gray squirrel, California Mountain kingsnake, sharptail snake, southern alligator lizard, Nashville warbler, band-tailed pigeon, rufus hummingbird, orange-crowned warbler, and chipping sparrow.
Aspen Stands	Aspen groves are a limited habitat type but have high wildlife use. Aspen makes up less than 1 percent of forest cover within the planning area, and occurs as pure stands in the shrub-steppe and as individuals and in clumps in association with various conifers such as Douglas-fir in upland areas. BCC birds include Williamson's sapsucker, peregrine falcon, northern goshawk, and green-tailed towhee. Sharp-tailed grouse and acorn woodpeckers are also associated with aspen, and big game and upland game benefit from aspen stands.
Riparian	BLM manages over 150 miles of major streams, over 100 major waterbodies, and many more minor streams and waterbodies, most of which support riparian habitats. Riparian habitats are well distributed over most BLM lands. Although riparian areas constitute a small portion of the surface landscape, approximately 85 percent of Washington's wildlife species have been known to use riparian habitat associated with rivers and streams.
Freshwater Wetlands	Freshwater wetlands are widely distributed over BLM lands, occurring where there is a water supply at or near the surface. There is a major concentration of wetlands on BLM land in northern Lincoln County where densities may exceed more than 10 per square mile. Larger wetlands are associated with stream restoration projects in Lake Creek, Packer Creek, and Smick Meadows at Fishtrap. Additionally, larger wetlands can be found on BLM parcels in the San Juan Islands including Watmough and Chadwick on Lopez Island. These habitats are critically important to waterfowl populations, shorebirds, and like riparian areas, support many other species.
Montane Coniferous Wetlands	Montane coniferous wetlands are generally not mapped and little is known about them on BLM land. They are recognized as often supporting moose, beaver, and great blue heron rookeries, and provide productive foraging grounds for bats, goshawks, and other raptors.
Open Water – Lakes, Rivers, Streams	BLM manages over 150 miles of major streams, over 100 major waterbodies, and many more minor streams and waterbodies, most of which support open water habitats. River otter, beaver, amphibians, waterfowl, wading birds, and many species of bats use open water. All the bald eagle nests on BLM are near open water.
Nearshore and Shoreline (San Juan Islands)	This feature applies only to those BLM parcels in the San Juan Archipelago and supports a variety of wildlife. The rocky shorelines are utilized as ~~h~~aul-outs" by marine mammals while the exposed rocks and cliffs provide nesting habitat for peregrine falcons. Additionally, the exposed rocky shoreline supports communities of California mussels and goose barnacles.
Savannah, Grassland, and Herbaceous Balds (San Juan Islands)	This habitat is found scattered throughout the BLM-managed parcels in the Archipelago and is included in the ACEC on Lopez Island. These habitats support a variety of birds, the rare island marble butterfly, and one of the island's endemic subspecies—the Shaw Island meadow vole.
Forest and Woodlands (San Juan Islands)	Exceptional examples of these forest types can be found at Point Colville, Iceberg Point, Chadwick Hill on Lopez Island, Turn Point on Stuart Island, Patos and Little Patos Islands, Carter Point on Lummi Island, and Eliza Island. With the exception of Chadwick Hill, these forested areas were previously withdrawn for Coast Guard use and protected from logging. Due to the low precipitation and abundance of vegetation, the San Juan Islands are rated as having the highest wildfire danger rating in northwestern Washington.

Priority Habitat/Attribute	Key Features
Wetland (San Juan Islands)	Freshwater marsh around Chadwick Hill on Lopez Island.
Migratory Birds	The Birds of Conservation Concern list (table 2.1-14) lists the migratory birds that require management attention under the Migratory Bird Treaty Act. Important bird areas (IBA) identify places where migratory birds are of special significance.
Big Game and Upland Game	Regularly occurring concentrations and winter habitat are important features for big game. BLM land supports these in many locations over the planning area. Upland game is also well distributed over the BLM lands.
Connectivity	The WDFW Connectivity Working Group has scheduled to develop core area and corridor maps for focal species late in 2010. It is expected that many of the BLM lands, especially in the shrub-steppe, will be identified as important corridors primarily because most other lands surrounding BLM is developed.
Human Disturbance	The Saddle Mountains and Juniper Dunes receive high levels of continuous OHV disturbance. Fishtrap and Yakima River Canyon receive high levels of non-motorized public use. In other areas where public access is difficult or not permitted, disturbance is nearly absent. Small anthropogenic features that affect wildlife (ranches, fence lines, distribution lines, old windmills) are well distributed over the BLM lands, but the large energy developments are not common. However, areas of high wind power potential are in many cases also areas of high raptor, migratory bird, and bat use, so conflicts may occur in the future.

2.1.2.11 Special Status Wildlife

Indicators

Indicators for sensitive and special status wildlife include general habitat quality, such as range and forest health and fire regime condition class, as well as human disturbance as described in the general wildlife section (see ―Wildlife," section 2.1.2.9). However, in addition to those, specific habitat requirements are usually more refined for special status wildlife species; their locations are more closely tracked, and in some cases special management areas or recovery zones, recovery actions, and plans (as in the case of State or federally listed species) have been developed. Indicators that are most commonly used include number and extent of occupied sites, population size, population trend, habitat quality, and level of human disturbance or anthropogenic structures.

Current Conditions

Federally Listed Wildlife

There are six wildlife species occurring or potentially occurring in the RMP planning area that have been federally listed under the Endangered Species Act (table 2.1-19). Because the BLM land is so dispersed over eastern Washington and the San Juan Islands, the BLM does not manage large tracts of land in any of these animals' habitats. However, there are usually small parcels of BLM land that occur scattered among these habitats. In most cases these small parcels are not intensively managed or surveyed. In many cases BLM land may fall with the range of a federally listed species, but actual presence is either unknown, or in the case of large ranging species (lynx, grizzly, wolf), presence may be only transitory and not well understood.

Table 2.1-19. Federally listed wildlife within the planning area

ESA Listed, Proposed & Candidate Species	Federal Status[1]	State Status	Border Field Office	Wenatchee Field Office
Canada Lynx (*Lynx canadensis*)	T	T	X	X
Gray Wolf (*Canis lupus*)	E	E		X
Grizzly Bear (*Ursus arctos*)	T	E	X	X
Marbled Murrelet (*Brachyramphus marmoratus)*	T	T		?
Northern Spotted Owl (*Strix occidentalis caurina*)	T	E		X
Pygmy Rabbit, Columbia Basin DPS (*Brachylagus idahoensis*)	E	E	?	?
Washington Ground Squirrel *(Urocitellus washingtoni)*	C	C	X	X

[1] E = Endangered, T = Threatened, C = Candidate, X = Species occurs in Field Office, ? = Species may occur.

Canada Lynx. There are five parcels of BLM land totaling approximately 1,960 acres within lynx analysis units in Washington (map 14, appendix A). Two of these are within the Wenatchee Field Office (Chopaka Mountain WSA and near Conconully at Mineral Hill) and three are within the Border Field Office (North Fork Goosmas Creek, Lambert Creek, and Sherman Creek adjacent to Sherman Creek Wildlife Area). Lynx analysis units are management areas that contain suitable lynx habitat, and were created using guidelines outlined in the ―Canada Lynx Conservation Assessment and Strategy" (LCAS) (Ruediger et al. 2000). The parcels on Chopaka Mountain and Mineral Hill were also designated critical habitat in 2009 (74 FR 8615) (map 14, appendix A).

Lynx populations require large boreal forest landscapes to ensure that sufficient high quality snowshoe hare habitat is available and to ensure that lynx may move freely among patches of suitable habitat and among subpopulations of lynx. The LCAS describes an inclusive list of 17 programs and activities under the authority and jurisdiction of Federal land management agencies that were determined to be potential risk factors in regard to conserving lynx. Conservation measures were developed for each risk factor to reduce potential effects to lynx and are available for adoption during land use planning.

In order to address livestock management and lynx conservation in the north Cascades, the BLM consulted with the USDI FWS to develop conservation measures for 84 existing grazing leases totaling approximately 46,493 acres. The conservation measures focus on resting pastures after fire and monitoring shrub-steppe, riparian areas, and willow carrs.

Gray Wolf. All gray wolves in Washington are listed as endangered (75 FR 65574). Wolves are most common in forested areas with relatively flat, open spaces, such as river valleys and basins with abundant prey, and in areas where conflicts with humans are low. There is no recovery plan or critical habitat designated for gray wolf.

Wolves continue to re-colonize Washington from northwest Idaho and southeast British Columbia. In northeast Washington WDFW confirmed one new pack in 2010, bringing the number of packs re-colonizing northeastern Washington to two. In addition, there has been one pack in the north Cascades, but its status is in question due to poaching and other suspicious

disappearances of radio collared wolves. In southeast Washington, there are credible reports of wolves that indicate a pack may form here.

In order to address livestock management and wolf conservation in the north Cascades, the BLM consulted with the USDI FWS to develop conservation measures for 84 existing grazing leases totaling approximately 46,493 acres. The conservation measures focus on removing sick or dead livestock and preventing disturbance to any den sites.

The WDFW has initiated development of a State wolf conservation and management plan with a final decision due during or before June 2011. Areas of controversy involve concerns over conservation/recovery of wolves and management of conflicts with livestock and big game ungulate species. The goal of the State's plan is to ensure the reestablishment of a self-sustaining population of wolves in the State and to encourage social tolerance for the species by reducing and addressing conflicts. At this time, the preferred alternative includes (1) a moderate geographic distribution of conservation/recovery objectives for downlisting and delisting, (2) an emphasis on adequate numbers being present in the Southern Cascades/Northwest Coast recovery region, (3) does not require establishment of wolves in a fourth Pacific Coast recovery region to achieve delisting, (4) a range of proactive, non-lethal and lethal control options for addressing livestock conflicts, and (5) recommends generous compensation for dealing with confirmed and probable depredations (WDFW 2010).

Grizzly Bear. Critical habitat for grizzly bear was proposed in 1976 to include two townships in the northeast corner of Washington where BLM owns no land (41 FR 48757), but this proposed rule was never finalized. However, according to the "Grizzly Bear Recovery Plan Supplement: North Cascades Ecosystem" (USDI FWS 1997b), BLM manages 10,992 acres in the North Cascades recovery zone. A current GIS query shows 12,238 BLM acres in this recovery zone (map 14, appendix A). These lands include the Chopaka Mountain WSA, near Conconully at Arlington Ridge, and dozens of scattered tracts in Okanogan, Chelan, and Kittitas counties. There are no BLM lands in the Selkirk recovery zone in the northeast corner of Washington.

The grizzly has a broad range of habitat tolerance. Contiguous, relatively undisturbed mountainous habitat having a high level of topographic and vegetation diversity characterize most areas where the species remains. Because the grizzly is known to range beyond the recovery zones, it is possible for it to move though BLM lands across northeast Washington. However, the BLM lands outside the recovery zones fall into "Management Situation 5" as defined by the Grizzly Bear Recovery Plan (USDI FWS 1993) where consideration for grizzly bears and their habitat is not directed. No management situation determination has been made for BLM lands in the North Cascades recovery zone.

In order to address livestock management and grizzly bear conservation in the north Cascades, the BLM consulted with the USDI FWS to develop conservation measures for 84 existing grazing leases totaling approximately 46,493 acres. The conservation measures focus on adopting the Interagency Grizzly Bear Guidelines, removing sick or dead livestock, and resting pastures after fire.

Marbled Murrelet. There are no known occurrences of marbled murrelets on BLM lands in Washington (WDFW 2008). Critical habitat was designated in 1996 (61 FR 26255-26320), but there is no critical habitat on BLM in the planning area. Marbled murrelets use forests that primarily include typical old-growth forests (characterized by large trees, a multistoried stand, and moderate to high canopy closure), but also use mature forests with an old growth

component. Trees must have large branches or deformities for nest platforms, with the occurrence of suitable platforms being more important than tree size alone (USDI FWS 1997a).

Forests and woodlands currently occupy roughly 760 acres of BLM-managed lands in the archipelago. North Pacific Maritime Dry-Mesic Douglas-fir-Western Hemlock Forest is the predominant forest type found on the public lands in the islands (665 acres). The last remaining relatively undisturbed stands of Douglas-fir-White fir timber on Lopez Island are located at Iceberg Point and Point Colville (currently under ACEC designations; 91 and 420 acres respectively). The age of some of these trees is estimated at well over 300 years. These stands are not known to be occupied, although formal surveys have not been conducted. There are no known nesting occurrences of murrelets on any of the islands in the Puget Sound. The stands on Lopez Island appear to have low potential for occupancy because of poor habitat conditions; they are open, have little screening cover above, lack suitable platforms and epiphytes, and have high numbers of potential predators. Patos Island is wetter than Lopez Island, but still seems marginal according to WDFW biologists who conducted an evaluation. Some areas on the eastern portion of Patos Island have the best potential for supporting nesting murrelets (Milner, R., WDFW, *personal communication*).

Northern Spotted Owl. Critical habitat was finalized for the northern spotted owl in 2008. Although table 2.1-19 in the *Federal Register* notice (73 FR 47325) shows there is no critical habitat designated on BLM lands in Washington, the GIS layer shows approximately 110 acres of BLM land near Cashmere as within the designation. There are no known or documented occurrences of spotted owls on BLM lands. In general, BLM lands are too small and fragmented and in pure ponderosa pine forest that is too dry to support spotted owls (Krupka, J., USDI FWS, *personal communication*). The insignificance of BLM lands to the recovery of the spotted owl is also reflected in the omission of BLM lands in Washington from the Northwest Forest Plan, which set forth a strategy for the management of Federal lands within the range of the owl. However, there are instances where small tracts of BLM provide habitat within the 1.8-mile-radius activity centers of individual owls. According to WDFW's spotted owl database there is approximately 1,250 acres of BLM land within 11 spotted owl activity centers in Chelan (near Cashmere), Kittitas (near Liberty and Cle Elum), and Klickitat (mostly on the Klickitat River) counties (map 14, appendix A).

The Recovery Plan for the Northern Spotted Owl (USDI FWS 2008b) identifies ―fire-prone landscapes" within the range of the spotted owl. BLM manages 9,864 acres of land in this designation with relatively large concentrations in the upper Klickitat River and lower Entiat River (map 14, appendix A). In these areas, the recovery plan recommends that ―treatments to reduce risks of wildfires and insect outbreaks in spotted owl habitat should be done in the larger context of restoring broader ecological functions and processes." The Draft Revised Recovery Plan for the Northern Spotted Owl (USDI FWS 2010) establishes a recovery implementation work group to address scientific and technical matters related to managing and recovering spotted owls in the dry-forest landscapes previously referred to as ―fire prone landscapes." Spotted owls generally rely on mature and old-growth forests because these habitats contain the structures and characteristics required for nesting, roosting, and foraging.

Pygmy Rabbit, Columbia Basin Distinct Population Segment (DPS). There are no known pygmy rabbits in Washington or on BLM lands in the RMP planning area. The last known wild Columbia Basin pygmy rabbits were captured from Douglas County and incorporated into a captive breeding program. There is a remote chance that pygmy rabbits persist undetected within their historic range. The core of their range was centered on Sagebrush Flat Wildlife Area

(WDFW land) in southeast Douglas County. BLM owns several small parcels in this area totaling approximately 800 acres. Larger parcels in Moses Coulee could, but are unlikely to, support undetected pygmy rabbits. BLM parcels further abroad in southwest Lincoln County near Odessa are within the historic range.

The pygmy rabbit was State listed as a threatened species in Washington in 1990 because of declines in population size and distribution due to habitat loss. It was reclassified to State endangered status in 1993 (WDFW 2007). In March 2003, the Columbia Basin pygmy rabbit was federally listed as an endangered species. Historically, pygmy rabbits occurred in native shrub-steppe habitat in five Washington counties. Six populations were known as recently as 1997. Surveys in 2004 found no rabbits at historic sites. It is possible that future surveys may find additional rabbits in the wild. Causes of the sudden declines in the Columbia Basin pygmy rabbit are largely unknown. Two of the populations were affected by wildfire. Genetic work found a loss of genetic diversity in the Columbia Basin DPS since the mid-1990s. Other potential factors may include habitat degradation, disease, and predation (WDFW 2007).

Washington Ground Squirrel. In Washington, most of the currently occupied sites occur in Grant, Adams, and Douglas counties, but there are also isolated, scattered sites in Lincoln, Franklin, and Walla Walla counties. The Washington ground squirrel occurs in shrub-steppe and grassland habitat with sandy or silt-loam texture soils that are deep and supportive enough to accommodate its burrow structures. It seldom constructs burrows in areas of heavily disturbed soils, such as areas affected by plowing, disking, and crop production. The Washington ground squirrel is an important component of ecosystems. It serves as a prey base for predator food chains, and its burrowing activity reduces soil compaction, loosens and aerates soils, and increases the rate of water infiltration into soil. There are 107 known colonies on BLM land that are recorded in the State's WSDM database. These occur primarily in the Moses Coulee Management Area, Beezley Hills, Saddle Mountains, and near the towns of Marlin and Odessa. According to the USDI FWS's species assessment form, approximately 36,480 acres of potential squirrel habitat on BLM lands in Washington remains unsurveyed. Isolation of existing colonies further threatens this species by increasing its vulnerability to a variety of natural and manmade factors.

State Listed Wildlife

In addition to those federally listed species discussed above, there are six more State-listed species known to occur on BLM land in the planning area (table 2.1-20). All of these species are also categorized as BLM sensitive species managed under BLM's 6840 policy. In many cases BLM lands contribute significant habitat so they are discussed in more detail here. WDFW undertakes major conservation initiatives and recovery planning efforts for these species.

Table 2.1-20. Additional State-listed species known to occur on BLM land in the planning area[1]

State Listed Species	Federal Status[2]	State Status	Border Field Office	Wenatchee Field Office
American White Pelican (*Pelecanus erythrorhynchos*)	None	E	X	X
Columbian Sharp-Tailed Grouse (*Tympanuchus phasianellus columbianus*)	FCo	T	X	X
Ferruginous Hawk (*Buteo regilis*)	FCo	T	X	X
Greater Sage-grouse (*Centrocercus urophasianus*)	FC	T	X	X
Sandhill Crane (*Grus canadensis*)	None	E		X
Western Gray Squirrel (*Sciurus griseus*)	FCo	T		X

[1] Other State-listed species are addressed in the federally listed species section.

[2] E = Endangered, T = Threatened, FCo = Federal Species of Concern, FC = Federal Candidate.

American White Pelican. American white pelicans currently breed at only one location in Washington, Badger Island in Walla Walla County (McNary National Wildlife Refuge). However, inland waters of arid eastern Washington, including major waterbodies on BLM land, support a significant number of non-breeding American white pelicans throughout the year. Historically, white pelicans were presumed to breed on Sprague Lake (Lincoln/Adams County), in which BLM owns three islands totaling 7.5 acres. Currently, non-breeding pelicans are known to use Sprague Lake, which is designated by the Audubon Society as an ~~"i~~mportant bird area." Regular concentrations are mapped on BLM land at Bob's Lake and Coffeepot Lake (Lincoln County), South Banks Lake (Grant County), and on the Columbia River at Wells Pool (Douglas/Okanogan Counties).

Habitat destruction and human disturbance appear to be the most important factors limiting American white pelican populations in Washington. Currently, all five sites where breeding colonies were thought to have historically been located no longer exist or are in areas of high human activity. American white pelicans are susceptible to pesticides and other toxic contaminants. Aquatic pollution contributes to accumulations of toxic compounds in warm water fish species, which can adversely affect pelicans. In Washington, management of American white pelican populations should focus on protection of breeding colonies and protection of feeding and loafing areas of both breeding and non-breeding birds (Doran 2004).

Columbian Sharp-Tailed Grouse. Columbian sharp-tailed grouse exist in eight populations in Washington, and BLM manages 30,038 acres in six of these areas. Most of this land (27,647 acres) occurs in the Twin Lakes/Telford area of Lincoln County where BLM land is intermingled with the WDFW Swanson Lakes Wildlife Area. Approximately 50 sharptails occur in this area, and two of the five or six leks occur on BLM land. Augmentation efforts led by WDFW have been underway since 2005 to increase the population of these birds, and grass field restoration has been an emphasis of both BLM and WDFW. Other BLM lands within the occupied range include small tracts around the Wells Wildlife Area in Douglas County, Scotch Creek Wildlife Areas, and near Bonaparte Creek in Okanogan County.

Good sharp-tailed grouse habitat contains perennial bunchgrass, forbs, and key deciduous shrubs and trees with adequate cover. The most important areas are in the more mesic grassland and

steppe types where annual precipitation is at least 11 inches. The ―Draft Columbian Sharp-tailed Grouse Recovery Plan" (Stinson and Schroeder 2010) identified 22 recovery units in Washington, and BLM manages 122,722 acres in 18 of these of these recovery units (map 15, appendix A). The recovery plan ranks the recovery units by priority based on sharptail occupancy and potential to contribute toward recovery:

- **Priority 1:** Recovery units are occupied by sharp-tailed grouse. BLM manages land in seven priority 1 recovery units including parcels at Twin Lakes/Telford and portions of Lakeview in Lincoln County, and small tracts in northern Douglas County and the Okanogan Valley. Management in priority 1 units should focus on maintaining and restoring sharp-tailed grouse habitat and populations, and reducing or eliminating threats.
- **Priority 2:** Recovery units are important for providing habitat to connect populations. BLM manages land in six priority 2 recovery units including Rocky Ford/Crab Creek, small tracts in northern Lincoln County and the Okanogan Valley, and portions of Palmer Mountain. Management should focus on maintaining suitable conditions for connectivity.
- **Priority 3:** Recovery units with high potential to support re-introductions. BLM manages small tracts in one priority 3 recovery unit in the Methow Valley. Management should focus on maintaining and restoring sharp-tailed grouse habitat and populations, and reducing or eliminating threats in strategic areas that would support a re-introduced population.
- **Priority 4:** Recovery units that may provide habitat for populations to expand. BLM manages land in four priority 4 recovery units including Douglas Creek and Jameson Lake in Douglas County, small tracts in northeastern Chelan County, and land along the Similkameen River, Okanogan County. Management should focus on maintaining habitat conditions and evaluating potential habitat.

Ferruginous Hawk. Ferruginous hawks exits in low numbers in shrub-steppe and grassland habitats of the Columbia Plateau. Numbers of hawks are gradually declining from 50 to 60 pairs in the 1990s to approximately 35 pairs in a comprehensive re-survey coordinated by WDFW in 2010. The recovery objective is 60 breeding pairs over 5 years. Quantity of ferruginous hawk nesting habitat in Washington (and elsewhere) has diminished significantly over the past several years primarily because of conversion of shrub-steppe to agriculture. Quality of habitat has diminished largely from loss of key prey species due to poisoning of ground squirrels and reduced jackrabbit/squirrel populations from wildfire converting shrub-steppe into cheatgrass and prolonged drought. Other causes include direct mortality and passive displacement due to wind turbines and mining activities and increased competition and predation (red-tailed hawks and ravens, respectively) (Watson, J., WDFW, *personal communication*).

To recover and maintain Washington's population of ferruginous hawks, sufficient shrub-steppe and native grassland must be preserved (and/or restored) and disturbance to nesting areas must be reduced or eliminated (WDFW 1996). Management should also focus on maintaining and restoring sustainable populations of prey species.

Nearly all BLM land in the Columbia Plateau (excluding small tracts in northern Douglas and northern Lincoln counties) are in the recovery zone. The Okanogan Valley is not in the recovery zone. Within the Columbia Plateau four concentrations of BLM land represent the most important areas: Juniper Dunes, Horse Heaven Hills, Saddle Mountains, and Rattlesnake Hills

(Watson, J., WDFW, *personal communication*). Juniper Dunes supported 17 breeding pairs in 1987, by the mid 1990s there were 10 to 12 pairs in the dunes, and by 2008−2010 there have been 3 to 4 breeding pairs. The largest ACEC on the District is at Juniper Dunes, and its purpose is to protect the ferruginous and Swainson's hawks and their prey base. However, many areas of the ACEC are not fenced and receive high levels of OHV disturbance. In the adjacent Juniper Dunes Wilderness, there are no known ferruginous hawk nest sites; it is unclear if this reflects a lack of survey effort or if the dense juniper forest is not suitable habitat. Typically, nesting occurs in solitary trees or isolated tree clusters. In the 1980s and 1990s there were ferruginous hawks in the OHV open area, but none of these territories have been active recently, undoubtedly because this species is sensitive to disturbance. There have been as many as five breeding pairs at Horse Heaven Hills in 2006, but 2010 re-surveys resulted in only one. As many as three territories are known in the Rattlesnake Hills, but re-surveys could not be accomplished. Three territories are known in the Saddle Mountains, but the 2010 re-survey found none to be active. A few breeding pairs of ferruginous hawks occur on scattered BLM tracts in Whitman County.

Greater Sage-grouse. Sage grouse have been declining in Washington from 1,011 birds in 2004 (Stinson et al. 2004) to 632 in 2008 (Schroeder et al. 2008). There is an estimated 1,300 sage-grouse in Washington in 2010. The recovery target is 3,200 birds over a 10-year period. The major threats on BLM land in Washington are wildfire and past and possibly on-going grazing practices. There is not currently enough information to fully evaluate the effects of current grazing practices on BLM land, and there is controversy regarding spring grazing, utilization levels, stocking rates during drought, monitoring methods, and the development of water sources. Historic overgrazing degraded the habitat by increasing cheatgrass, medusahead, and other exotic weeds. Sage grouse recovery will require protecting remaining shrub-steppe habitats from wildfire, harmful grazing, and further conversion or development, and some areas of degraded shrub-steppe will need to be restored in order to support nesting sage grouse (Stinson et al. 2004).

"Habitat concentration areas" (HCAs) for sage grouse were based on grouse distribution data and used by the Washington Connectivity Working Group to identify areas where the focal species regularly occur and aggregations of connected habitat maintain their populations. Four sage grouse HCAs occur in Washington, and BLM manages land in three of these (Douglas County, Yakima Training Center, and Upper Crab Creek) (see map 16, appendix A). The fourth HCA is the Yakama Indian Reservation where re-introductions have occurred, but BLM manages no land. BLM manages 81,307 acres of land in HCAs including Sulphur Canyon, Douglas and Duffy Creeks, south Moses Coulee area; and small tracts in northern Douglas County (44,807 acres), scattered tracts between Highway 24 and the Yakima Training Center, and south of Highway 24 where BLM manages scattered tracts in Yakima County (4116 acres), and the Twin Lakes/Telford area in Lincoln County (32,384 acres). These areas are considered occupied by sage grouse.

In addition, the "Washington State Recovery Plan for Greater Sage-Grouse" (Stinson et al. 2004) identifies 14 management units in which BLM manages 217,672 acres of land in all but two of these (Bridgeport Point and Yakama Indian Reservation) (see map 16, appendix A). All large tracts of BLM in the Columbia Basin portion of the planning area are in a sage grouse management unit except Fishtrap, Escure, and Juniper Dunes. Three of the management units (Yakima Training Center, Mansfield Plateau and Moses Coulee) support breeding greater sage-grouse populations, and BLM lands within these management units make up 0.1, 1.6, and 9.6 percent of the ownership, respectively. One management unit (Upper Crab Creek) supports a re-introduced population.

The Sulphur Canyon area consists of a 4,900-acre block of BLM land in Douglas County, north-central Washington, just north of State Highway 2 and southeast of Jameson Lake. Sulphur Canyon is near the southern edge of the Mansfield Plateau Greater Sage-Grouse Management Unit, which is considered occupied by resident, breeding sage grouse (Stinson et al. 2004). Two active sage grouse leks (Sulphur Canyon and Davis) are within 4 miles of the Sulphur Canyon area. Sulphur Canyon appears to be in the best condition for greater sage-grouse, and is occupied year-round. It has a relatively low density of fences and roads, which were the main fragmenting factors, and it also has the least amount of slopes greater than 30 percent.

The South Moses Coulee area is in northern Grant County of central Washington. The South Moses Coulee area lies within the Moses Coulee Greater Sage-Grouse Management Unit, which is considered to be currently occupied by resident, breeding sage grouse (Stinson et al. 2004). Pine Canyon is the nearest active lek to the South Moses Coulee area, approximately 8 miles to the north. Sagebrush Flat, a lek active until the early 1990s, is adjacent to the South Moses Coulee area. The Douglas-Duffy Creek area, where BLM manages over 16,000 acres, is adjacent to Moses Coulee and lies within the Moses Coulee Greater Sage-Grouse Management Unit. Alstown is the nearest lek to the Douglas-Duffy Creek area, approximately 2.5 miles to the east. Of the 15,698 acres evaluated at south Moses Coulee, just over 5,200 acres were considered suitable for greater sage-grouse habitat. Perennial grass height was the most common limiting factor, which is a result of historically heavy grazing utilization and subsequent changes in species composition to the low statured Sandberg's bluegrass, which increases with heavy grazing. Sage cover was also indicated as a limiting factor. Of the 16,130 acres evaluated at Douglas-Duffy Creek approximately 2,800 acres were suitable habitat. The most common limiting factors for this area were steep slopes, lack of sagebrush cover, and high annual grass cover.

In Lincoln County, re-introduction efforts have been underway since 2008 in the Upper Crab Creek Management Unit to re-establish a population in this area, which was occupied as recently as 1986. The BLM and Swanson Lake Wildlife Area lands are the center of the re-introduction. The area was chosen because of the relatively recent extirpation of grouse, occasional sightings of a potential undocumented population, large blocks of suitable habitat, and the recent acquisition of lands by WDFW and BLM that increase management potential. Approximately 1,000 to 2,000 acres of old farm ground has been restored and grazing has ceased on WDFW and improved on BLM lands. There are 20 to 40 re-introduced sage grouse in this area. Multiple successful nests have been monitored on both ownerships. Habitat conditions are generally good with suitable amounts of shrub and herbaceous vegetation (although there have not been formal evaluations for sage grouse habitat suitability). However, multiple wildfires have resulted in the loss of shrub in some areas and continue to be a concern. Fragmentation from roads and agriculture and structures such as powerlines, fences, homestead trees, barns, and windmills that favor coyotes and raptors are detrimental to the species.

Saddle Mountain BLM land has had several reports of sage grouse using Saddle Mountain during spring and summer 2005 from BLM employees, the rancher that leases BLM managed land on Saddle Mountain, and WDFW. However, the Saddle Mountain Unit is not considered to be currently occupied by resident, breeding sage grouse (Stinson et al. 2004). BLM manages almost a quarter of the potential sage grouse habitat within this management unit (26,570 acres), a higher proportion than any other unit in Washington. The nearest lek to Saddle Mountain (Borden) is on the Yakima Training Center, approximately 6.5 kilometers (4 miles) across the Columbia River to the west, however it may not have been active for several years recently (Livingston, M. WDFW, *personal communication*). There was an active lek on Saddle Mountain

until the early 1980s. The Saddle Mountain area faces many challenges in the recovery of sage grouse habitat. Of the 25,909 acres evaluated, just over 9,000 acres were considered suitable habitat for greater sage-grouse. The most common limiting factors for this area were steep slopes, perennial grass heights due to dominance of Sandberg's bluegrass, and lack of sagebrush cover. Additionally, over half the habitat still suitable for nesting is in an area designated for OHV use, and transmission lines in the western area of the Saddle Mounatins may also reduce habitat suitability. In its current condition, the area is probably acting as a population sink by providing marginal habitat with many detrimental qualities, but with proper management, it has the potential to be a large block of habitat in an important location between existing populations.

BLM's national greater sage-grouse habitat conservation strategy (USDI BLM 2004) identifies the following 5 steps to conservation of greater sage-grouse populations and habitats:

1. Map populations and habitat.
2. Establish goals for greater sage-grouse habitat conservation at the local level.
3. Select, prioritize, and implement management activities.
4. Monitor progress towards goals and objectives.
5. Adjust activities to improve progress towards reaching goals and objectives.

A new policy (BLM-IM-OR-2010-071) requires that in RMP revisions and amendments, BLM must analyze one or more alternatives that would exclude priority habitat from energy development and transmission projects. Generally speaking, ―priority habitat" is the habitat of highest conservation value relative to maintaining sustainable sage-grouse populations range-wide. Priority habitat will be areas of high quality habitat supporting important sage-grouse populations, including those populations that are vulnerable to localized extirpation, but necessary to maintain range-wide connectivity and genetic diversity. In coordination with the WDFW, BLM has identified all 14 sage grouse management units as priority habitat. To assist in identifying the appropriate combination of management actions that would be applicable to a certain land use authorization, it was decided to identify the relative conservation values of each of the management units by using a tiered approach to identify areas of the highest conservation priority and help decision makers develop stipulations relative to the priority tier affected.

1. **Tier 1 (Regularly Occupied Habitat):** Mansfield Plateau, Moses Coulee, Crab Creek, Yakima Training Center (YTC), and those portions of the Rattlesnake Hills and Umtanum Ridge Management Units adjacent to YTC north of Highway 24 and east of the Yakima River. These additional portions were included because sage grouse are known to regularly use these areas and they are considered to be of highest conservation value.
2. **Tier 2 (Connectivity Habitat):** Dry Falls and Colockum Management Units.
3. **Tier 3 (Occasionally Occupied Habitat):** Bridgeport Point, Umtanum Ridge, Saddle Mountains, and Rattlesnake Hills Management Units.
4. **Tier 4 (Expansion Habitat):** Potholes, Hanford, Ahtanum Ridge, and Toppenish Ridge Management Units.

Sandhill Crane. Three subspecies of sandhill crane occur in Washington, the lesser, Canadian, and greater subspecies. Lesser sandhill cranes comprise the majority of the 20,000+ cranes that migrate through eastern Washington annually. In addition, up to 1,000 sandhill cranes (believed to be of the Canadian subspecies) have wintered on the lower Columbia bottomlands. Approximately 50 greater sandhill cranes summer in Klickitat and Yakima counties, including 19 breeding pairs (Littlefield and Ivey 2002). There are no recorded occurrences of breeding on BLM lands (WDFW 2009); however, on April 9, 2010, a flock of 10 sandhill cranes was observed flying low in the vicinity the Telford Management Area. On April 18, 2010, a flock of 40 were observed flying low near the Lone Pine Management Area (Thorburn, K., *personal communication*). Sandhill cranes have also been seen at Packer Creek in Whitman County and associated with Grimes Lake in Douglas County. Crane observations in these areas suggest that the cranes were using wetlands as stopover habitat during the spring migration. The Telford, Lone Pine, and Packer Creek areas have undergone wetland restoration projects and could continue to provide habitat for migrating sandhill cranes. Additionally, there are 70 acres of priority sandhill crane stopover habitat located on the BLM's portion of Homestead Island on the Columbia River, which is currently designated as an ACEC.

Factors affecting Washington's breeding greater sandhills include predation, incompatible grazing and haying practices, water availability and management, and habitat loss. Crane habitat on the lower Columbia bottomlands between Vancouver and Woodland is threatened with industrial development, conversion of agricultural lands to cottonwood plantations, tree nurseries, or other incompatible uses, and crane use is affected by disturbance by hunters and other recreationists. The goal of the recovery plan is to restore a healthy breeding population of cranes and to maintain the flocks that winter or stop in Washington. To reach this goal, this plan calls for expansion of the breeding range of greater sand hill cranes into former breeding areas in eastern Washington and protection of habitat for crane wintering and staging during migration (Littlefield and Ivey 2002).

Western Gray Squirrel. BLM owns 3,855 acres of scattered tracts in the range of western gray squirrels in southwest Okanogan County. These areas are a mosaic of dry coniferous forest, montane shrubland, and riparian woodland. Gray squirrels occupy many of these parcels, especially along the Methow River and Black Canyon Creek. Klickitat County is another important area for gray squirrels, and BLM owns a small amount of occupied habitat (43 acres) on Rock Creek and over 740 acres on the Klickitat River. A similar mosaic of dry forest types and riparian exist in this area, along with white oak woodland.

The western gray squirrel is vulnerable because of the small size and isolation of remnant populations. Major threats to the western gray squirrel in Washington include habitat loss and degradation, road-kill mortality, disease, and competition with exotic eastern gray squirrels, fox squirrels, California ground squirrels, and wild turkeys, which are expanding. Conifer dominated stands of large diameter and mast-producing trees of pine and oak with interconnected crowns are particularly important to the western gray squirrel. Western gray squirrel recovery strategies include protecting and monitoring populations, restoring depleted populations and degraded habitat, and protecting suitable oak-conifer habitat from harmful timber practices, catastrophic wildfires, and loss to development (Linders and Stinson 2007).

BLM Sensitive Species

BLM sensitive animal species are designated by the State director under section 6840 of the BLM manual as those species undergoing a downward trend or those species that depend on specialized habitat that could be threatened by alteration such that the viability of the species or

distinct population segment is as risk. The objective for sensitive species management is to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA. The following are actions that BLM may take in furtherance of this goal.

1. Determining, to the extent practicable, the distribution, abundance, population condition, current threats, and habitat needs for sensitive species, and evaluating the significance of BLM-administered lands and actions undertaken by the BLM in conserving those species.

2. Ensuring that BLM activities affecting Bureau sensitive species are carried out in a way that is consistent with its objectives for managing those species and their habitats at the appropriate spatial scale.

3. Monitoring populations and habitats of Bureau sensitive species to determine whether species management objectives are being met.

4. Working with partners and stakeholders to develop species-specific or ecosystem-based conservation strategies.

5. Prioritizing Bureau sensitive species and their habitats for conservation action based on considerations such as human and financial resource availability, immediacy of threats, and relationship to other BLM priority programs and activities.

6. Using Land and Water Conservation Funds, as well as other land tenure adjustment tools, to acquire habitats for Bureau sensitive species, as appropriate.

7. Considering ecosystem management and the conservation of native biodiversity to reduce the likelihood that any native species will require Bureau sensitive species status.

8. In the absence of conservation strategies, incorporate BMPs, standard operating procedures, conservation measures, and design criteria to mitigate specific threats to Bureau sensitive species during the planning of activities and projects. Land health standards should be used for managing Bureau sensitive species habitats until range-wide or site-specific management plans or conservation strategies are developed. Off-site mitigation may be used to reduce potential effects on Bureau sensitive species.

There are 43 sensitive species documented to occur on BLM lands in the planning area and 21 more that are suspected to occur. BLM sensitive species occur in all vegetation types present in the Spokane District (table 2.1-21).

Table 2.1-21. BLM sensitive species, status, and habitat association

Group	Species	Status [1]	Habitat Association
Bird	Harlequin Duck (*Histrionicus histrionicus*)	D	Forested riparian, shoreline
	Mountain Quail (*Oreortyx pictus*)	S	Dense brush
	Sharp-tailed Grouse (*Tympanuchus phasianellus*)	D	Sagebrush-steppe, steppe, riparian
	Common Loon (*Gavia immer*)	D	Nearshore marine, lakes
	Eared Grebe (*Podiceps nigricollis*)	D	Lakes and ponds
	Clark's Grebe (*Aechmophorus clarkia*)	S	Shallow lakes, marine
	American White Pelican (*Pelecanus erythrorhynchos*)	D	Lakes and rivers
	California Brown Pelican (*Pelecanus occidentalis californicus)*	D	Nearshore marine, islands
	Bald Eagle (*Haliaeetus leucocephalus*)	D	Riparian/open water
	Ferruginous Hawk (*Buteo regalis*)	D	Shrub-steppe
	Gyrfalcon (*Falco rusticolus*)	D	Open lowland agricultural areas, river deltas
	American Peregrine Falcon (*Falco peregrines anatum*)	D	Sagebrush-steppe, ridges, cliffs, and rock outcrops
	Peale's Peregrine Falcon (*Falco peregrines pealei*)	D	Sagebrush steppe, Ridges, cliffs and rock outcrops
	Sandhill Crane (*Grus Canadensis*)	D	Open fields, river bottomlands
	Upland Sandpiper (*Bartramia longicauda*)	D	Grasslands
	Long-billed Curlew (*Numenius americanus*)	D	Riparian, grasslands
	Burrowing Owl (*Athene cunicularia*)	D	Sagebrush-steppe, grasslands
	Great Gray Owl (*Strix nebulosa*)	D	Aspen, coniferous forest
	Acorn Woodpecker (*Melanerpes formicivorus*)	S	Oak woodlands
	White-headed Woodpecker (*Picoides albolarvatus*)	D	Coniferous forest
	Gray Flycatcher (*Empidonax wrightii*)	D	Open pine forests
	Ash-Throated Flycatcher (*Myiarchus cinerascens*)	D	Oak woodlands, riparian
	Slender-billed Nuthatch (*Sitta carolinensis aculeata*)	S	Oak, Douglas-fir oak woodlands
	Cedar Waxwing (*Bombycilla cedrorum*)	D	Open woodlands
	Oregon Vesper Sparrow (*Pooecetes gramineus affinis*)	S	Remnant prairies
	Black-throated Sparrow	D	Grasslands, shrublands

Group	Species	Status [1]	Habitat Association
	(*Amphispiza bilineata*)		
	Bobolink (*Dolichonyx oryzivorus*)	D	Grasslands
	Lesser Goldfinch (*Carduelis psaltria*)	S	Open habitats, garry oak woodland
Invertebrate	Western Ridged Mussel (*Gonidea angulata*)	S	Streams
	Chelan Mountain Snail (*Oreohelix sp.*)	S	Coniferous forest
	Island Large Marble (*Euchloe ausonides insulanus*)	D	Grasslands
	Meadow Fritillary (*Boloria bellona*)	S	Moist meadows, aspen parklands, prairies
	Barry's Hairstreak (*Callophrys gryneus barryi*)	S	Rocky Mountain juniper
	Yuma Skipper (*Ochlodes yuma*)	S	Edges of marshes
	Great Basin Fritillary (*Speyeria egleis*)	S	Montane meadows, forest openings
Mammal	Pygmy Shrew (*Sorex hoyi*)	D	Mesic forest, various
	Spotted Bat (*Euderma maculatum*)	D	Cliffs, open forest, shrub-steppe, open habitat
	Townsend's Big-eared Bat (*Corynorhinus townsendii*)	D	Sagebrush-steppe, juniper woodlands, pinyon woodlands, ridges, cliffs and rock outcrops
	Pallid Bat (*Antrozous pallidus*)	D	River canyons, cliffs, caves, steppe
	Black-tailed Jackrabbit (*Lepus californicus*)	D	Sagebrush, rabbitbrush
	White-tailed Jackrabbit (*Lepus townsendii*)	D	Bunchgrass, rabbitbrush
	Townsend's Ground Squirrel (*Urocitelluss townsendii*)	D	Open sagebrush-grass
	Red-tailed Chipmunk (*Tamias ruficaudus*)	D	Dense montane coniferous forest
	Western Gray Squirrel (*Sciurus griseus*)	D	Open forests of nut-bearing trees
	Kincaid Meadow Vole (*Microtus pennsylvanicus kincaidi*)	D	Marsh, moist meadow, riparian
	Shaw Island Vole (*Microtus townsendii pugeti*)	D	Marsh, wet meadow, riparian
	Moose (*Alces americanus*)	D	Forest, wetlands, riparian
	California Wolverine (*Gulo gulo luteus*)	S	Coniferous forest
	Mountain Goat (*Oreamnos americanus*)	D	Cliffs, talus, forest, meadow
	Night Snake (*Hypsiglena torquata*)	D	Cliffs, talus, grasslands, shrub-steppe, riparian, wetlands
Reptile	Striped Whipsnake (*Masticophis taeniatus*)	D	Grasslands, sagebrush, dry rocky canyons

Group	Species	Status [1]	Habitat Association
	Sagebrush Lizard (*Sceloporus graciosus*)	D	Grasslands, shrublands
	Side-blotched Lizard (*Uta stansburiana*)	D	Cliffs, talus, grasslands, shrublands
	Sharptail Snake (*Contia tenuis*)	S	Lakes, riparian with rocks/woody debris
	California Mountain Kingsnake (*Lampropeltis zonata*)	S	Forests, cliffs, riparian

[1] D = documented, S = suspected on BLM land.

Trends

Trends in federally listed species are typically downward due to loss of habitat, overutilization, disease or predation, inadequacy of existing regulatory mechanisms, or other factors. In some cases federally listed species have been delisted, such as in the case of the peregrine falcon and bald eagle, which were listed in the planning area. However, trend for other listed species are difficult to obtain except for those that receive the greatest research and monitoring. For example, spotted owls in the Cle Elum Demographic Study area have declined approximately 74 percent in the number of owls detected since 1992 (Forsman et al. 2009). For marbled murrelets, trend is unclear with population estimates oscillating over the last 10 years between 18,000 and 23,000 birds, but the amount of suitable habitat has continued to decline throughout the range, primarily due to commercial timber harvest (USDI FWS 2009). Other species like the grizzly bear, gray wolf, and Canada lynx exist in such low densities that evaluating trend is not possible. The trend in Columbia basin pigmy rabbits has been so dramatically downward that none are thought to persist in the wild, and no purebred strains are left in captivity.

Sage grouse have been declining in Washington especially at the Yakima Training Center over the past 10 years. Habitat restoration has resulted in over 1,000 acres of improved habitat in Lincoln County. Projects on BLM land in Douglas County also are improving conditions. Newly acquired lands in the range of sage grouse now under BLM management are benefitting from lighter levels of grazing compared to private land grazing. The re-introduction project in Lincoln County is holding promise for establishing a new population with successful nesting taking place in 2010. Sharp-tailed grouse appear to be stable in Washington since the mid 1990s at approximately 500 birds. The current estimate is more than 900. Trends following augmentation at Scotch Creek have been upward for the years following adding birds to that population and are now in the process of stabilizing. Sharp-tail populations at Dyer Hill are increasing and Swanson Lakes seems to have stabilized or is in slight decline. Augmentation at Swanson Lakes may improve this trend. The amount of habitat has increased due to restoration, but ongoing predator problems have limited recovery.

A very serious decline was detected in ferruginous hawks in 2010 during the State's resurvey of historic territories. The current State-wide estimate of 35 pairs represents a loss of nearly one-third of the population in the last 10 years causing species experts to consider changing their State status from threatened to endangered. American white pelicans have declined to only one breeding colony in the State, but more specific numbers are not available. Pelicans and sand hill cranes would be affected by the trend in wetland. Drought, deep-well irrigation, and reed canarygrass have aggravated this situation; however, wetland restoration, especially on Lake Creek, has created additional habitat and sand hill cranes have been detected nearby.

The trend for BLM sensitive species is variable and tied to habitats and specie locations where they occur. BLM does not closely track trend of sensitive species to the extent that State and Federal wildlife agencies do. Instead, most efforts focus on locating these species on BLM lands. In general there has been a high level of concern among biologists regarding the loss of ground squirrels and jackrabbits in the State. Both Washington and Townsend's ground squirrels, as well as the more common Columbia ground squirrels, appear to be declining, which has implications for other sensitive species such as ferruginous hawk, golden eagle, and burrowing owl.

Forecast

All of the Federal- and State-listed species are expected to remain listed for some time into the future. None of these are showing promising trends that would indicate a rapid recovery. Forecasts complicating recovery for these species are similar to those described in the general wildlife section: climate change, population growth, land conversion, outdoor recreation, renewable energy, timber harvest, grazing, invasive species, and pollution/contamination. Trends are expected to continue in the direction they are currently followed, unless management intervention or outside factors change the conditions. However, in many cases BLM lands are only a minor portion of the habitats, such as in spotted owl, marbled murrelets, lynx, grizzly bear, gray wolf, pelicans, sand hill cranes, and gray squirrels. In these cases BLM can only assist with and manage in a manner that does not aggravate the situation. In other cases, especially in shrub-steppe habitats, the BLM is the dominant public land entity and can implement important recovery actions that can at least result in local benefits to listed and sensitive species.

Key Features

The key features of special status species and their habitats are the locations where they occur, any regularly occurring breeding concentrations, recovery plan areas, and critical habitats. The following is a summary of important areas for special status species in the planning area (table 2.1-22).

Table 2.1-22. Important areas for special status species in the planning area

BLM Area	Key Features
Chopaka Mountain	Lynx Analysis Unit, Lynx Critical Habitat, Grizzly Bear Recovery Zone, Mountain Goat Priority Habitat
Mineral Hill	Lynx Analysis Unit, Lynx Critical Habitat
Arlington Ridge	Grizzly Bear Recovery Zone
North Fork Goosmas Creek	Lynx Analysis Unit
Lambert Creek	Lynx Analysis Unit
Sherman Creek	Lynx Analysis Unit
Scattered Tracts in Methow Valley	Wolf Occurrence Area, Possible Re-introduction Recovery Unit for Sharp-tailed Grouse, Occupied by Western Gray Squirrel
Lopez Island	Low Potential for Marbled Murrelets
Patos Island	Low Potential for Marbled Murrelets
Scattered Tracts near Cashmere	Spotted Owl Activity Centers
Scattered Tracts near Liberty	Spotted Owl Activity Centers
Scattered Tracts near Cle Elum	Spotted Owl Activity Centers
Klickitat River	Spotted Owl Activity Centers, Spotted Owl Fire Prone Landscape, Occupied by Western Gray Squirrel
Entiat River	Spotted Owl Fire Prone Landscape
Huckleberry Mountains	Moose Priority Habitat
Scattered Tracts near Sagebrush Flats	Pygmy Rabbit Core Range
South Moses Coulee	Pygmy Rabbit Historic Range, Occupied Management Unit for Sage Grouse, Washington Ground Squirrel Colonies
Southwest Lincoln County	Pygmy Rabbit Historic Range, Washington Ground Squirrel Colonies
Sprague Lake	American White Pelican Concentrations
Bob's Lake	American White Pelican Concentrations
Coffeepot Lake	American White Pelican Concentrations
South Banks Lake	American White Pelican Concentrations
Columbia River at Wells Pool	American White Pelican Concentrations
Telford/Twin Lakes	Occupied Sharp-tailed Grouse Recovery Unit, Occupied Management Unit for Sage Grouse, Possible Stopover for Sand Hill Crane
Fishtrap Lake	Possible Stopover for Sand Hill Crane; Expansion Recovery Unit for Sharp-tailed Grouse
Lakeview	Occupied Sharp-tailed Grouse Recovery Unit; Occupied Management Unit for Sage Grouse; Ferruginous Hawk Concentration (3−4 historic nests; 1 active nest in area) , Washington Ground Squirrel Colonies
Scattered Tracts in Northern Douglas County	Occupied Sharp-tailed Grouse Recovery Unit; Occupied Management Unit for Sage Grouse
Scattered Tracts in Okanogan County	Occupied Sharp-tailed Grouse Recovery Unit, Connectivity Recovery Unit for Sharp-tailed Grouse, Occupied by Western Gray Squirrel
Scattered Tracts in Northern Lincoln County	Connectivity Recovery Unit for Sharp-tailed Grouse
Rocky Ford/Crab Creek	Connectivity Recovery Unit for Sharp-tailed Grouse
Palmer Mountain	Connectivity Recovery Unit for Sharp-tailed Grouse
Douglas/Duffy Creek	Expansion Recovery Unit for Sharp-tailed Grouse, Occupied Management Unit for Sage Grouse, Washington Ground Squirrel Colonies

BLM Area	Key Features
Sulphur Canyon	Expansion Recovery Unit for Sharp-tailed Grouse, Occupied Management Unit for Sage Grouse, Washington Ground Squirrel Colonies
Scattered Tracts in Northeast Chelan County	Expansion Recovery Unit for Sharp-tailed Grouse
Similkameen River	Expansion Recovery Unit for Sharp-tailed Grouse
Juniper Dunes	Ferruginous Hawk Concentration
Horse Heaven Hills	Ferruginous Hawk Concentration
Saddle Mountains	Ferruginous Hawk Concentration, Occasionally Occupied Management Unit for sage Grouse, Washington Ground Squirrel Colonies
Rattlesnake Hills	Ferruginous Hawk Concentration, Occasionally Occupied by Sage Grouse
Scattered Tracts in Yakima County	Occupied Management Unit for Sage Grouse
Yakima River (east of river)	Occupied Management Unit for Sage Grouse
Rock Creek, Klickitat County	Occupied by Western Gray Squirrel

2.1.2.12 Wildland Fire Ecology and Management

Indicators

National and State BLM wildland fire policy requires current and desired resource conditions related to fire management be described in terms of five fire regimes (see table 2.1-23) and three condition classes (see table 2.1-24). The Fire Regime Condition Classification (FRCC) system measures the vegetation's degree of departure from reference conditions, or how different current vegetation is from a particular reference condition (Hann et al. 2008). This could result in changes to key ecosystem components such as vegetation characteristics, fuel composition, fire frequency, fire severity and pattern, and other associated disturbances, such as insect and disease mortality. The BLM uses the FRCC system to classify existing ecosystem conditions to determine priority areas for treatment as mandated by national direction.

The FRCC system is not an appropriate indicator for wildland urban interface (WUI) areas since these areas may be maintained in an altered vegetative state to protect life and property.

Table 2.1-23. Historic fire regime definitions

Historic Fire Regime	Fire Frequency	Severity
I	0−35 years	Low and mixed severity with less than 75% of the dominant overstory vegetation replaced
II	0−35 years	Replacement severity with greater than 75% of the dominant overstory vegetation replaced
III	35−200 years	Mixed and low
IV	35−200 years	Replacement severity
V	200−years	Replacement and mixed severity

Table 2.1-24. Fire regime condition class definitions

Condition Class	Fire Regime	Example Management Options	Species Composition and Structure	Invasion By Non-native Species	Smoke Production, Hydrology, and Soils	Insects and Disease
1	Fire regimes are within the natural (historical) range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition, structure, and pattern) are intact and functioning within the natural (historical) range.	Where appropriate, these areas can be maintained within the natural (historical) fire regime by treatments such as fire use.	Species composition and structure are functioning within their natural (historical) range at both patch and landscape scales.	Non-native species are currently not present or present in limited extent. Through time or following disturbance sites are potentially vulnerable to invasion by non-native species.	Functioning within their natural (historical) range.	Insect and disease populations functioning within their natural (historical) range.
2	Fire regimes have been moderately altered from their natural (historical) range. Risk of losing key ecosystem components is moderate. Fire frequencies have departed from natural frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity, and severity, and landscape patterns. Vegetation and fuel attributes have been moderately altered from their natural (historical) range.	Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the natural fire regime.	Species composition and structure have been moderately altered from their historical range at patch and landscape scales. For example: Grasslands – Moderate encroachment of shrubs and trees and/or invasive exotic species. Shrublands – Moderate encroachment of trees, increased shrubs, or invasive exotic species. Forestland/Woodland – Moderate increases in density, encroachment of shade-tolerant tree species, or moderate loss of shade-intolerant tree species caused by fire exclusion, logging, or exotic insects or disease.	Populations of non-native invasive species may have increased, thereby increasing the potential risk for these populations to expand following disturbances, such as wildfires.	Have been moderately altered from their natural (historical) range. Water flow is typically less. Smoke and soil erosion following fire are typically greater.	Insect and disease populations have been moderately altered from their natural (historical) range.

			Replacement of surface shrub/grass with woody fuels and litter.			
3	Fire regimes have been substantially altered from their natural (historical) range. The risk of losing key ecosystem components is high. Fire frequencies have departed from natural frequencies by multiple return intervals. Dramatic changes occur to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been substantially altered from their natural (historical) range.	Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the natural fire regime.	Species composition and structure have been substantially altered from their historical range at patch and landscape scales. For example: Grasslands – High encroachment and establishment of shrubs, trees, or invasive exotic species. Shrublands – High encroachment and establishment of trees, increased shrubs, or invasive exotic species. Forestland/Woodland – High increases in density, encroachment of shade-tolerant tree species, or high loss of shade-intolerant tree species caused by fire exclusion, logging, or exotic insects or disease.	Invasive species may be common and in some cases the dominant species on the landscape. Any disturbance will likely increase both the dominance and geographic extent of these invasive species.	Have been substantially altered from their historical range.	Insect and disease population have been substantially altered from their natural (historical) range. Typically higher mortality or defoliation.

Table 2.1-25. Spokane District fire history

Fire Year	# of Fires	BLM Acres Burned	Total Acres Burned	Fire Year	# of Fires	Acres Burned	Total Acres Burned
1985	22	1,837.4	34,440.7	1998	17	12,840.8	62,027.8
1986	5	879.0	1,531.0	1999	14	1,042.5	6,470.6
1987	15	5,146.0	43,158.0	2000	14	2,000.3	16,551.3
1988	8	4,158.1	38,063.1	2001	11	2,500.0	18,509.0
1989	18	1,056.8	8,356.8	2002	21	4,359.2	12,780.2
1990	17	626.1	29,977.2	2003	10	10,428.2	17,295.2
1991	15	1,348.4	14,900.8	2004	10	1,706.2	21,624.2
1992	16	5,014.8	23,431.5	2005	11	783.5	10,597.5
1993	16	809.3	3,132.0	2006	14	3,497.1	12,094.1
1994	28	8,832.6	192,911.6	2007	25	11,693.1	71,788.2
1995	14	22.3	174.1	2008	26	8,675.0	44,117.5
1996	33	14,322.3	113,035.8	2009	26	5,354.9	59,335.9
1997	14	997.8	13,777.8	2010	20	2,054.1	36,338.4
Total # of Fires (1985–2010) = 440							
Total # of Fires with BLM Jurisdiction = 379							
Total BLM Acres Burned = 111,985.8							
Total Acres Burned (Including BLM) = 906,420.3							

Source: BLM Wildland Fire Management Information System (USDI BLM 2011).

Current Condition

Fire History

Between 1985 and 2010, wildfires burned an average of 4,307.1 acres of BLM-managed lands per year in the decision area, with a total of 111,985.8 BLM acres burned. In the last 26 years 440 fires burned a total of 906,420.3 (including BLM acres) acres in Washington State (table 2.1-25). The majority of the wildfire starts within the decision area have been caused by humans (table 2.1-27). During the past 26 years the Spokane Districts has had an average 83 percent initial attack success rate with 31 structures being burned or destroyed (USDI BLM 2011). Initial attack success fires are controlled in less than 48 hours or the control acres are less than 300. Between 1985 and 2010, 6,465 acres within the decision area burned more than once (table 2.1-26).

Table 2.1-26. Fire frequency, 1985–2009

Fire Frequency	Acres	Percent
Acres burned only once	100,520.8	89.7
Acres burned twice	9,144	8.2
Acres burned three times	2,321	2.1
Total	**111,985.8**	**100**

Source: BLM cooperative database.

Table 2.1-27. Fire ignitions by source, 1985–2009

Cause	Number	Percent
Natural (Lightning)	150	34.1
Human	290	65.9
Total	**440**	**100**

Source: BLM Wildland Fire Management Information System (USDI BLM 2011).

Fuels Management

The number of fuels and restoration projects is increasing to help address vegetation issues within the decision area. Projects within the fuels program in the past 5 years have focused on achieving two goals, (1) reducing fire hazard with an emphasis on WUI areas and (2) restoring and/or improving FRCC within the decision area. Treatment types include chemicals, seeding, prescribed fire, and mechanical methods. These treatments were completed for a variety of reasons including fuels reduction, protecting WUI areas, post-fire emergency stabilization and rehabilitation (ESR), and range infrastructure.

Emergency Stabilization and Rehabilitation (ESR)

There is an active ESR program within the decision area. The size of the ESR program is in proportion to the severity of the wildfire season. Emergency stabilization is defined as "planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life and property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources" (620 DM 3.3E). These actions must be taken within 1 year following containment of a wildland fire. The objective of emergency stabilization is "to determine the need for and to prescribe and implement emergency treatments to minimize threats to life or property or to stabilize and prevent unacceptable degradation to natural and cultural resources resulting from the effects of a fire" (DM 620 3.4A).

Rehabilitation is defined as "efforts undertaken within three years of containment of a wildland fire to repair or improve fire-damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by fire" (620 DM 3.3M). The objectives of rehabilitation are to:

1. Evaluate actual and potential long-term post-fire impacts to critical cultural and natural resources and identify those areas unlikely to recover naturally from severe wildland fire damage;

2. Develop and implement cost-effective plans to emulate historical or pre-fire ecosystems consistent with approved land management plans, or if that is not feasible, to restore or establish a healthy, stable ecosystem in which native species are well represented; and

3. Repair or replace minor facilities damaged by wildland fire (620 DM 3.4B).

Restoration, the continuation of post-fire rehabilitation beyond the initial 3 years following a wildfire, is outside the scope of the ESR program (620 DM 3.3N).

Fire Management Plan

The Spokane District Fire Management Program covers BLM lands within the planning area (USDI BLM 2004). The fire staff handles fire management responsibilities such as preparedness,

suppression, and extended attack, with dispatching occurring from the Northeast Washington Interagency Communication Center (NEWICC), in Colville, Washington, and Central Washington Interagency Communication Center (CWICC) in Wenatchee, Washington.

The response strategy currently in place for the planning area calls for appropriate management response (AMR) on all wildland fires in accordance with management objectives and based on current conditions and fire location. Every wildland fire is assigned an AMR to protect firefighters, the public, values-at-risk, and to minimize suppression cost. The protection of human life is the single overriding priority, with the other priorities being communities, property and improvements, natural and cultural resource values, human health and safety, and the costs of suppression. AMR can vary from aggressive initial action to monitoring. Wildland fire use (WFU) management involves the management of naturally ignited fires to achieve resource benefits where fire is a major component of the ecosystem. Currently, there are no WFU areas in the decision area.

The BLM's Fire Management Plan (FMP), an implementation plan for the fire management direction established in the RMP, which the BLM updates periodically, describes fire and fuels management activities in the planning area. The FMP provides for firefighter and public safety and includes fire management strategies, tactics, and alternatives for AMR (AMR to wildland fires and identification of areas for WFU) based on direction outlined in the RMP. The FMP identifies values to protect and public health issues, describes fuels and restoration projects, and is consistent with resource management objectives. Suppression tactics outlined within the Spokane District FMP vary by vegetation type and resource values at risk. The Spokane District RMP (USDI BLM 1985) did not address WUI issues. These issues emerged as the human population has expanded. *Note:* We recognize that our terminology and FMP is outdated; this is being corrected in the RMP revision and the new FMP that will follow.

Fire Ecology

The decision area has seen a significant lengthening of the historic fire return interval (> 100 years) within conifer forest, woodland, and higher elevation sagebrush perennial grass communities. As a result, there has been an increase in live and dead fuel loading within conifer forest stands and an increase in conifer encroachment into sagebrush and aspen plant communities. This has the potential to result in uncharacteristic fire size and/or fire severity should a wildfire occur. Fires would historically occur in the conifer forests and higher elevation sagebrush-perennial grass communities at a return interval of 5 to 35 years with a result of low and mixed severity fire effects.

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning. The five natural (historical) fire regimes within the planning area are classified based on the average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on dominant overstory replacement. Table 2.1-28 describes the natural fire regimes within the planning area.

Table 2.1-28. Natural fire regime in the planning area

Fire Regime	Frequency (years)	Severity	Number of Acres
I	0−35	Low and Mixed	31,567
II	0−35	Replacement	14,413
III	35−200	Mixed and Low	287,057
IV	35−200	Replacement	97,246
V	200+	Replacement and Mixed	3,269

Table 2.1-29 describes the dominant potential vegetation types within the planning area and the historic fire regime they occupy by using Landscape Fire (LANDFIRE) and Resource Management Planning Tools Project Biophysical Settings (BpS). The BpS represents the vegetation that may have been dominant on the landscape prior to Euro-American settlement and is based on both the current biophysical environment and an approximation of the historical disturbance regime.

Table 2.1-29. Dominant vegetation BpS historic fire regimes

Potential Vegetation Type	BPS	Historic Fire Regime
Bluebunch Wheatgrass/Mountain Big Sagebrush	Inter-Mountain Basin Montane Sagebrush Steppe	II
Idaho Fescue/Mountain Big Sagebrush	Inter-Mountain Basins Montane Sagebrush Steppe	II
Idaho Fescue Grassland	Columbia Plateau Steppe and Grassland	II
Bluebuch Wheatgrass/Wyoming Big Sagebrush	Inter-Mountain Basin Big Sagebrush Steppe	IV
Bluebunch Wheatgrass Grassland	Columbia Plateau Scabland Shrubland	II
Idaho Fescue/Wyoming Big Sagebrush	Inter-Mountain Basin Big Sagebrush Steppe	IV
Wetlands/Riparian Areas/Sedges/ Willows/Rushes	Inter-Mountain Basin Montane Riparian Systems	IV
Aspen	Rocky Mountain Aspen Forest and Woodland	III
Dry Mixed Conifer Forest	Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest	I
Moist Mixed Conifer Forest	Northern Rocky Mountain Mesic Montane Mixed Conifer Forest	III
Ponderosa Pine	Northern Rocky Mountain Ponderosa Pine Woodland and Savanna – Xeric	II
Ponderosa Pine	Northern Rocky Mountain Ponderosa Pine Woodland and Savanna – Mesic	I
Juniper Woodland	Columbia Plateau Western Juniper Woodland and Savanna	V

Coarse-scale FRCC classes have been defined and mapped by Schmidt et al. (2001) and include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the natural (historical) fire regime. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (e.g., composition, structural stages); fuel composition; fire frequency, severity, and pattern; and other associated disturbance (e.g., insect-induced and diseased mortality, grazing, and drought).

The three condition classes within the planning area are based on low (FRCC1), moderate (FRCC2), and high (FRCC3) departure from the central tendency of the natural (historical) regime. Low departure is within the natural (historical) range of variability, while moderate and high departures are outside. To determine FRCC for the decision area, an analysis of LANDFIRE National Data was completed. Currently, approximately 371,586 acres, or 83 percent of the decision area, are moderately to highly outside the historical range of variability (FRCC 2 and 3). This means that the historic fire regimes have been moderately to highly altered from their historic timeframes by either increased or decreased fire frequency and are at moderate to high risk of losing key ecosystem components. Table 2.1-30 shows the condition classes within the planning area.

The LANDFIRE FRCC mapping tool treats FRCC as a pixel attribute when it is a landscape attribute. It currently deals only with vegetation departure and not fire regime departure. Further, certain successional classes are rated as departed from the historical range of variability even though a certain amount of all successional classes were historically present, resulting in an over-estimation of the amount of FRCC 2 and 3. Unless we actually evaluate FRCC as it was originally intended to be used—as a landscape assessment tool—we do not know the degree of over-estimation.

Table 2.1-30. Spokane District FRCC in the planning area

Fire Regime Condition Class	Acres
1	38,841
2	245,914
3	125,672
Other (agriculture, water, sparse, barren)	39,573

Source: LANDFIRE and BLM corporate database.

Fire Management Units

Fire management units (FMUs) are specific land management areas defined by fire management objectives, management constraints, topographic features, access, values to protect, political boundaries, and fuel types. The FMUs were created based on similarities of the specific resource objectives identified in the Spokane District RMP (1985).

The Spokane District Fire Management Officer (DFMO) developed two FMUs that serve to define public fire management objectives, physical characteristics, resource values, and treatment actions necessary to achieve resource management objectives, as identified in the current Spokane District land use plan. These FMUs, which are listed below, have dominant management objectives and pre-selected fire suppression strategies assigned to accomplish these objectives.

A-1 Shrub-Steppe FMU. These lands are located throughout the planning area and consist of scattered BLM land parcels, intermixed with private, WDFW, and State lands. The FMU is located south of State Highway 2 and consists of land within the Columbia Basin area of Washington to the Oregon border, west to the Yakama tribal lands and Okanogan/Wenatchee National Forest, and east to the Idaho border (USDI BLM 2004).

B-1 Ponderosa Pine-Mixed Conifer FMU. This FMU consists of District lands on which the primary species are ponderosa pine or mixed conifer. Ninety-five percent of this unit is located North of Highway 2 and is under protection agreements with Colville, Okanogan/Wenatchee

National Forests, DNR, and local fire protection districts. This FMU represents approximately 141,000 acres scattered across eastern Washington and the San Juan Islands (USDI BLM 2004).

Wildland Urban Interface

Wildland urban interface (WUI) is the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Much data is lacking across the district for a uniform analysis of the WUI. Several counties throughout Washington State have developed community wildfire protection plans (CWPP) that identify the WUI. Although these plans have identified the WUI, no common methology was used to map the WUI. The current assumption based on CWPPs, Silvus WUI data, and profesional judgment places roughly 98 percent of the Spokane District in the WUI.

Trends

See the previous discussion on fire history in the ―Current Condition" section for the overall trend in wildfires in the planning and decision areas, especially table 2.1-25 (Spokane District Fire History) which identifies the number of wildland fires and acres burned within the decision area during the last 25 years. From 1985 to 2010, 440 wildland fires have burned 111,985.8 acres (26.3 percent) of the decision area. The average yearly occurrence of fires in the decision area is 17 fires for 4,307.1 acres between 1985 and 2010.

Although there has not been a significant increase in the annual number of fire ignitions or acres burned over the past 24 years, the potential for more acres burned certainly exists (see figure 2.1-2). Fire frequency and fire severity are expected to be higher than what occurred historically due to the majority of the planning area being in FRCC 2 and 3. Invasion of annual grasses and conifer woodlands into shrub and grassland BpS as well as increased live and dead fuel loads within conifer stands are the primary factors for this potential trend.

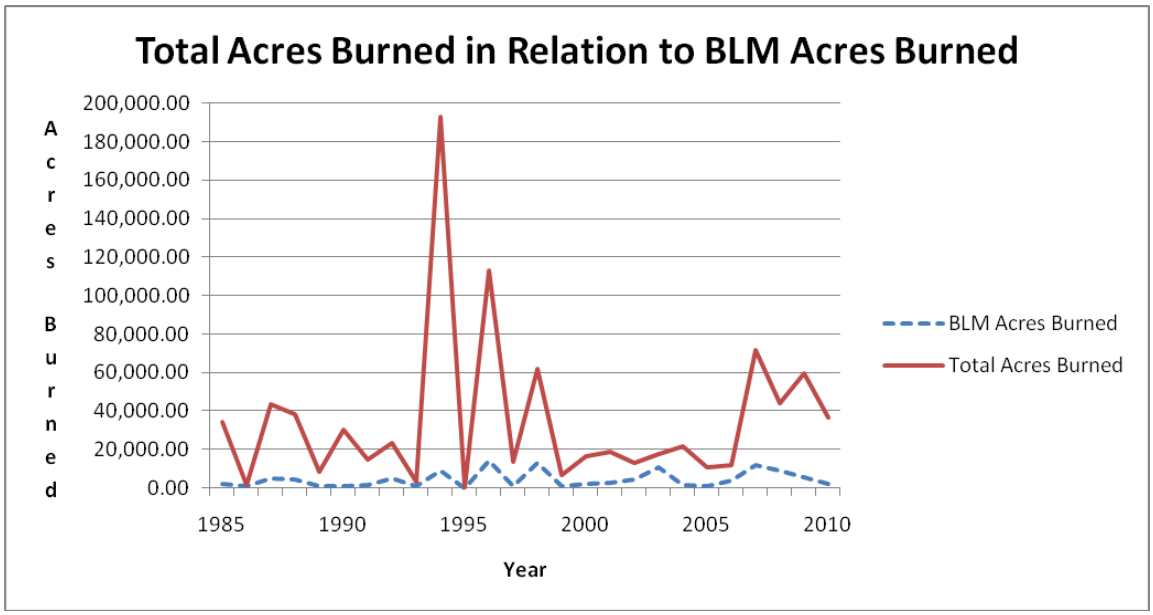


Figure 2.1-2. Total acreas burned in relation to BLM acres burned

The WUI trends and interactions fluctuate based the changing demographics throughout the planning area. Currently the trend is stable and/or increasing depending on the regional location within Washington State. As the metropolitan areas expand, the interactions between the BLM managed lands and development will likely increase.

Forecast

Wildland fire management options for the Spokane District typically include a variety of potential responses to unplanned fires (wildfires); use of prescribed fire; mechanical, biological, and chemical fuels treatments including removal of some fuel for utilization in wood products, fuelwood, and pulp; post-fire rehabilitation and restoration; and community protection and assistance including rural fire department assistance. Use of unplanned fires to meet RMP objectives may be considered in the future. In an effort to minimize the impact of wildland fire and reduce the spread of invasive and noxious weeds, the Spokane District has available the ESR program. Collectively, the fire management program addresses current FRCC and impacts to other resources. It is expected that due to the current fire regime conditions within the planning area and factors outside the control of the fire program (e.g., invasive weed control, vegetation management issues, drought, grazing), FRCC categories would be maintained at or near their current condition.

Based on prolonged drought conditions and establishment of invasive species, it is anticipated that the potential for uncharacteristic wildfire effects will continue under present management in the lower elevation sagebrush plant communities. It is also anticipated that under continued management, live and dead fuel loadings within forest stands and conifer encroachment into aspen and higher elevation sagebrush communities will continue to occur, increasing the risk for wildfires with potentially uncharacteristic fire effects. Management actions to reduce fire severity, including green strips, hazardous fuel reductions, grazing, and rehabilitation, could slow the decline of resources.

Key Features

Key features include WUI areas and special management areas within the FMUs. Special management areas include ACECs, wilderness study areas (WSAs), communication sites, and special status plant habitats. Juniper Dunes is the only wilderness area on the Spokane District; it is located in Franklin County (A-1 FMU). Little Chopaka is the only wilderness study area and is located in Okanogan County (B-1 FMU). There are several ACECs within each FMU (see section 2.3.1, Areas of Critical Environmental Concern). Community wildfire protection plans across the State have identified BLM-administered lands as 95 percent WUI. Virtually all of the lands managed by the BLM are in some condition of WUI (high, moderate, low).

2.1.2.13 Cultural Resources

Indicators

Cultural resources include expressions of human culture and history manifest in associated objects and locations of human activity, occupation, or use. Examples include archaeological, historic, or architectural sites, buildings, structures, or places with historical or cultural values, and uses including locations (sites or places) of traditional cultural or religious importance to specific social or cultural groups. Cultural resources are managed according to their relative importance, to protect historically and culturally significant cultural resources from inadvertent loss, destruction, or impairment, and to encourage and accommodate the appropriate uses of these resources through planning and public participation.

Elements critical to assessing the relative importance of cultural resources include those that contribute to a property's eligibility to the National Register of Historic Places (NRHP) such as integrity of setting, feel and appearance and the scientific, cultural, or historical values that contribute to its significance. Protection and conservation of those elements are vital to managing archaeological and historic sites, traditional cultural properties, and other properties of traditional importance to the tribes or other traditional communities that value them. Indicators would include the condition of the resource and the extent those values that contribute to the significance of the property are lost or diminished. Factors influencing site condition include, but are not limited to, natural weathering, erosion, wildfire, grazing, recreation, weeds, unauthorized uses, and vandalism.

Current Conditions

The age of cultural resources documented on public lands in the planning area extends back more than 11,000 years before the present (BP). The records of documented sites in the State of Washington are maintained in a statewide GIS database. A review of the database indicates approximately 1,300 cultural sites have been recorded on BLM-administered land in the planning area. The number of recorded sites varies as new site records are added to the database. Recorded sites are widely distributed across the planning area and include archaeological sites, historic structures, features, objects, and multi-component sites (i.e., sites having both archaeological pre-contact and historic era components). The surface area of sites ranges from a few square yards to several acres.

An assessment of condition is often identified when a site is recorded. The condition of the resource is affected by numerous natural and cultural processes that can mix, churn, damage, and destroy cultural materials and features that contribute to the scientific and cultural values of site. Efforts are under way to review site records in the decision area and systematically assign site condition from data contained in the records. Condition assessments in the site records are often subjective and are described in the context of the surface evidence available at the time the site was recorded and are not necessarily indicative of current site condition. In addition, surface conditions are not necessarily indicative of subsurface condition, content, or information value. Subsurface testing is often necessary to identify and assess the integrity of the site and to evaluate its potential to contribute important information about the past, an important element in evaluating eligibility to the NRHP.

Few sites in the planning area have been tested or formally evaluated for listing in the NRHP. Archaeological sites with potential to yield important information about the past are considered eligible in most instances and are avoided during surface-disturbing activities. Sites that have been formally evaluated may need to be re-evaluated and updated as site conditions change or actions are proposed that may impact the site. Current management measures for Federal undertakings generally seek to avoid impacts to cultural resources and implement measures to protect or mitigate effects to threatened resources. As a result, regulatory compliance activities and pro-active cultural resources management actions in general ensure site conditions in the project area are stable.

<u>Pre-contact Cultural Resources</u>

The BLM-administered lands in the planning area are located within the Northwest Coast and Columbia Plateau culture areas and four physiographic and geological provinces including the Columbia Basin, Okanogan Highlands, Northern Cascades, and Puget Lowlands provinces (see map 2, appendix A). Although the earliest human occupations in the region date to around 11,500 years ago (Ames et al. 1998), most archaeological sites in the decision area likely post-

date 8,000 years ago. Most documented occupations on BLM-administered lands in the San Juan Archipelago likely date to less than 3,000 years ago. Early occupations in the region indicate people were highly mobile, moving seasonally to acquire a broad array of resources. Relatively few early sites have been identified in the planning area.

Columbia Plateau cultures generally followed a riverine settlement pattern that entailed a complex subsistence strategy to procure a diverse array of seasonally available resources in geographically localized areas. The settlement pattern utilized for thousands of years included semi-permanent occupations along the river systems and temporary camps placed strategically to procure resources as they became available for harvest. For example, camps would be situated near seasonally available root and berry collecting areas and hunting grounds in the uplands, and near fishing stations along the rivers or tributaries for access to seasonal runs of anadromous fish. Trade routes with neighboring groups facilitated trade of goods including obsidian, olivella and dentalium shells, as well as opportunities for social interaction and exchange.

Northwest Coast cultures, in general, occupied year-round permanent villages and towns and followed a specialized maritime subsistence strategy with elaborate and complex social and material culture. Although salmon production was an important element of the Northwest Coast economy, a wide range of resources and habitats were utilized. Specialized technologies were developed to better utilize the abundant natural resources available in many of the habitats and sustain the subsistence wealth of the societies. Trade and exchange were also important features of Northwest Coast economies and included interaction with interior groups through established trade routes.

Common types of pre-contact archaeological sites recorded in the decision area include lithic artifact scatters, tool stone procurement localities, rock features (i.e., cairns, blinds, walls, and pits) and in the San Juan Archipelago, shell middens. Less common types of sites include rockshelters, pictographs, petroglyphs, and pit houses.

Historic Cultural Resources

Exploration and trade began as early as the 1500s along the west coast of North America. By the late 1700s, Spanish, Russian, British, and American expeditions had extended across much of the West Coast trading metals, guns, beads, textiles, and other goods for pelts (Ames and Maschner 1999; Cole and Darling 1990; Schwantes 1996). In 1777, Captain Cook sailed along the Pacific Coast eventually landing on Vancouver Island in British Columbia. His logs became the basis for British claims along the West Coast (Schwantes 1996). By the early 1800s, explorers, including the Lewis and Clark expedition, fur traders of the Hudson Bay Company, Pacific Fur Company, and the North West Company, and others began exploring inland areas and building trade relationships with interior Native American groups. By the 1830s, missionaries and settlers were entering the Northwest.

Prospectors and miners were drawn to the region in search of gold and other precious metals by the 1850s. As treaties and agreements with Native Americans were established, lands were opened for mining and settlement. Numerous mining districts were quickly established across the Okanogan Highlands as prospectors, miners and associated communities began to develop. Remnants of historic mining activities still evident on BLM-administered lands in the mining districts include adits, shafts, prospects, structures, foundations, waste rock piles, and debris scatters. Historic placer and lode mining dates from the 1850s to the 1950s in the decision area.

Expansion of immigration into the interior Columbia Basin in the 1850s contributed to conflicts with Native American tribes. Among the conflicts was a skirmish in McLoughlin Canyon in 1858 between members of a supply train and a group of Native Americans. The cattle and pack train lead by David McLoughlin was travelling north on the Cariboo Trail to gold fields near the Fraser River when the party was reportedly ambushed on a section of the Cariboo Trail that passes through McLoughlin Canyon. The battle site is located within the McLoughlin Canyon Rural Historic Landscape located largely on BLM-administered lands within the decision area.

Mining and development of agriculture, timber, and fisheries drew more settlers and expanded the need for improved transportation through the region. Trails originally used by Native Americans and early fur traders were often incorporated into a network of wagon roads constructed for transport of a growing numbers of prospectors, immigrants, and goods through the region. Examples of roads and trails in the decision area include segments of the Mullan Military Road, White Bluffs, Colville, and White Stone roads and the Cariboo Trail.

By 1883, the Northern Pacific Railway was completed connecting Seattle to Saint Paul facilitating the movement of people and goods through the region. Numerous spurs were added to the railway system to carry goods to market. Examples of historic railways that occur in the decision area include a section of the Mansfield spur of the Great Northern Railway in the Douglas Creek Canyon and a section of the Washington and Great Northern Railway corridor through the Similkameen River Valley.

The Homestead Act and other similar programs were instrumental in transferring much of the agriculturally productive land into private ownership. By the 1860s, ranches and farmsteads were established and livestock operations and hay and grain farming began to expand into the region. Large sheep operations were established early in eastern Washington, but were soon overshadowed by a growing cattle industry. Remnants of livestock operations and farming are evident on BLM lands in the decision area. Examples of farming and ranching properties include Escure Ranch, Folsom Farm, and Olighre Ranch.

Common historic sites in the planning area include properties associated with historic mining and ranching. The properties date from the late 1800s to the mid-1900s and include remnants of historic mine sites, cabins, ranches, ditches, wagon roads, trash scatters. Less common sites include aids to navigation facilities, historic cemeteries, farmsteads, historic mining camps, peeled trees, and irrigation systems.

Trends

Cultural resources are in large part nonrenewable resources affected by numerous natural and cultural processes. Natural processes including erosion, weathering, soil conditions, and animal activity can affect the resource. Human activities, whether intentional or inadvertent, can also influence the condition of the resource. The degree to which the condition of cultural sites is affected depends on a number of factors including the nature of the site, setting, and the process or activity. Natural processes, particularly weathering and erosion, are ongoing processes that are dynamic, sometimes exposing, removing, or altering cultural elements while at other times burying and preserving them but continually influencing the condition of the resource. The following factors were commonly identified as affecting site condition: livestock or wildlife trampling; stream or shoreline erosion; recreational activities including rock collecting, OHV and motorized vehicle impacts; wildfire and/or suppression efforts; animal burrowing; vandalism or looting; and natural weathering, erosion, and decay.

Proactive cultural resource inventories are conducted to identify resources at risk from looting, vandalism, or natural processes that might not otherwise be identified before the resources are significantly impacted or lost. However, most cultural resources in the planning area are identified in response to compliance with section 106 of the National Historic Preservation Act. Current management measures for Federal undertakings generally seek to avoid impacts to cultural resources and implement measures to protect or mitigate effects to threatened resources. As a result, regulatory compliance activities and pro-active cultural resources management actions in general ensure site conditions in the project area are stable.

Forecast

Projected increases in recreational and commercial use may increase risk to cultural resources through increased human activity resulting in inadvertent damage, increased looting, and vandalism. Natural processes, including weathering and erosion from wind, water and temperature, will continue to influence site conditions. Although management measures seek to avoid adverse impacts to cultural resources through project design, avoidance, or mitigations, increased commercial use and development may contribute to impacts and loss of traditional cultural landscapes and associated values. Implementation of management plans for OHV and other recreational uses would likely reduce the effects of projected increases in recreational use of public lands. Efforts to identify, document, evaluate, and assess sites would ensure that cultural resources are adequately protected, conserved, or otherwise managed before their values are diminished or lost to deterioration or vandalism.

Key Features

Pre-contact and historic archaeological sites and historic structures occur throughout the planning area, but are unevenly distributed across the landscape. Archaeological sites are often located in association with access to water and/or resources important to subsistence or other cultural practices. Terrain and natural features also affect site location. For instance, habitation sites would be expected to occur near sources of fresh water particularly along streams, lakes, ponds and springs. Sites associated with resource procurement would be expected to occur near the resources being utilized such as lithic procurement areas would be located near sources of stone suitable for making stone tools.

Historic properties located within the decision area include light house facilities in the San Juan Islands, ranches, farmsteads and wagon roads in the central Columbia Basin, mining sites in the Okanogan Highlands, numerous archaeological sites including rockshelters, village sites, graves, lithic scatters, quarries, shell middens, rock features, and other cultural resources of traditional importance to the tribes. Prominent historic properties eligible for the NRHP include Turn Point Light Station on Stuart Island, Patos Light Station on Patos Island in the San Juan Islands, McLoughlin Canyon Historic Rural Landscape in Okanogan County, Escure Ranch and the Mullan Military Road in Whitman and Adams counties, and Folsom Farm and the Olighre Ranch in Lincoln County.

2.1.2.14 Paleontology

Indicators

On public lands, paleontological resources are considered a fragile and non-renewable resource. Paleontological resources include fossil remains or traces of plants and vertebrate and invertebrate animals. Locations where fossils occur on the landscape are known as ―localities.”

In addition, the geological setting where fossils are known to occur or where processes important in the formation of fossils have been identified may also constitute paleontological resources.

Fossil exposures often result from natural processes including chemical or mechanical erosion that break down and or remove overlying matrix. The same processes that expose the fossil contribute to its degradation or loss. Disturbance, whether from natural processes or human activities, can result in loss of context, negatively affecting the scientific and educational values of the fossil specimens.

The primary resource indicator for paleontological resources is the characteristics of the fossil locality or feature that contribute to scientific or educational values. Natural processes including weathering and erosion, or human activities, including improper or unauthorized excavation and removal, can damage, alter, or destroy the characteristics that contribute to the scientific or educational importance of the resource. For instance, natural processes including weathering and erosion expose the fossil and aid in the deterioration or loss of elements of the physical structure necessary for identification of the fossil. In addition, processes that remove the fossil from its geologic context, also compromise the inherent information value of the specimen. Similarly, ground-disturbing activities or unauthorized collection destroys or removes fossils from their context and results in the loss of scientific and education values of the resource.

The BLM is responsible for managing the public lands and their various resources to meet both present and future needs of this Nation. As a natural heritage resource, fossil localities must be considered in developing land use management decisions. The fossil record in the Western U.S. includes almost all of the geologic periods from the Cambrian (500+ million years ago) to the Holocene (about 10,000−12,000 years ago to present). Many of the fossil deposits contain specimens of national and international importance and were first made known to the scientific world from deposits found in the Western U.S.

The BLM manages fossils in accordance with the Paleontological Resources Protection Act (PRPA) of 2009 and the general guidance of FLPMA and NEPA to promote their use in research, education, and recreation.

Current Conditions

Four botanical fossil localities are identified on BLM-administered lands within the decision area. Additional localities are known but not documented. Known fossil localities are composed primarily of botanical specimens though insects and vertebrates were identified in exposures of the geological formations on non-Federal lands. Most localities were exposed by natural erosion and weathering. In some areas human activity including tool stone procurement by Native Americans, quarrying by rock collectors, or incidental exposure from construction or other activities contributed to exposure and discovery of fossilized wood and other lithic materials.

The paleontological resources most prominently represented in the decision area date from the late Miocene to early Pliocene epochs, dated approximately 17 million years ago to 1.8 million years ago, and the Eocene Epoch, approximately 34 million years ago to 56 million years ago. Formal academic studies of paleontological resources are not known to have been conducted on BLM-administered land in the decision area, though the fossil bearing formations are better known from studies of more prominent exposures on non-Federal lands.

On BLM-administered lands, the collection of vertebrate or other scientifically important fossil specimens, including trace fossils, is regulated by a permit system. Qualified paleontologists and academic institutions can obtain permits from the BLM for investigation and collection of

vertebrate and other scientifically important paleontological resources. Recreational collection of some fossils types is allowed in accordance with 43CFR3620 – Petrified Wood, and 43CFR8365 – Common Invertebrate Fossils.

Fossilized wood otherwise known as petrified wood is actively collected by the public on BLM lands, including Saddle Mountains. The quantity of petrified wood to be collected without permit is regulated in accordance with 43 CFR 3620. Exposures of fossilized wood often occur near exposed interbeds, and often within archaeological sites where Native Americans procured tool stone for thousands of years. Ongoing collection of fossilized wood and other associated lithic materials from archaeological sites impacts cultural resource values in these areas. In accordance with 36 CFR 3622.4(1), the maximum quantity of petrified wood that any one person is allowed to remove without charge per day is 25 pounds in weight plus one piece, provided that the maximum total amount that one person may remove in one calendar year shall not exceed 250 pounds. Pooling of quotas to obtain pieces larger than 250 pounds is not allowed.

Trends

Paleontological resource localities will continue to be exposed and affected by ongoing natural processes and erosion resulting from human activities. Erosion exposes fossils and reveals them for discovery and study, but it also rapidly degrades and breaks down the fossil reducing its scientific and educational values through loss of integrity and context. Unauthorized collection and vandalism also contribute to loss of the resource. Increased recreation, particularly OHV use, can result in increased disturbance and erosion in areas where fossil materials are on or near the ground surface.

Forecast

Projected increases in OHV and other recreation activities may contribute to increased exposure and risk of damage to paleontological resources. Increased exposure and increased recreational use may also increase risk of unauthorized collection or vandalism in areas where fossils are exposed. Collection of fossilized wood is expected to continue on lands in the decision area, particularly in the Saddle Mountains. Management actions to identify and protect sensitive fossil areas or to mitigate impacts to paleontological resources would reduce impacts to the resource. Except for locations where activities are ongoing, the demand for further academic study and investigation is undetermined.

Key Features

Paleontological resources are documented in association with the Ellensburg Formation of the Columbia River Basalt Group in central Washington and in association with the Klondike Mountain Formation in Ferry County.

In accordance with BLM Handbook H-8270-I, locations likely to contain vertebrate fossils or exceptional invertebrate or plant fossils are to be identified on BLM-administered land. A variety of sources including geological maps and reports, soil surveys, and other geological or paleontological investigations, reports and reference materials can be used in conjunction with surveys to identify potential areas of paleontological resources.

A prominent location of fossil materials in the decision area is the Saddle Mountains in Grant County. The Saddle Mountains include exposures of late Miocene and early Pliocene basalt flows from the Columbia River Basalt Group which underlie much of the interior Columbia River Basin. Ice age floods near the end of the Pleistocene exposed the basalt flows in great canyons, gorges and coulees. The sedimentary interbed units found in the flood basalts in the

Yakima Fold Belt Region make up the Ellensburg Formation. Fossils, particularly petrified wood, occur in the some members of the formation. The lithic material including fossilized wood found in or near the interbeds was utilized for tool stone by Native Americans for thousands of years. Additional fossil localities may occur where the interbeds of the Columbia River Basalt Group are exposed in the planning area.

Exposures of botanical fossils from the Klondike Mountain Formation are present on BLM lands in the decision area. The Klondike Mountain Formation dates to the early to middle Eocene and is known to have numerous botanical and insect specimens of scientific interest. The fossils of this formation are remnants of sedimentation of subtropical/ temperate highland lakes that occurred in the Washington State and British Columbia Region some 50 million years ago.

In the San Juan Archipelago, formations in the Nanaimo Series from the Upper Cretaceous have potential to yield plant fossils of scientific interest, but fossil localities have not been identified on BLM land. Later geologic events in the planning area east of the Cascade Range include Pleistocene flood deposits from the Missoula and Bonneville floods from 19,000 to less than 13,000 years ago. Late Pleistocene age fossils may be present in glacial flood deposits and other Pleistocene age deposits on BLM lands in the planning area.

2.1.2.15 Visual Resources

Indicators

The BLM Visual Resource Management (VRM) system consists of the visual resource inventory (VRI) phase, the VRM planning phase, and the subsequent VRM plan implementation phase, where project proposals are analyzed using the visual contrast rating system. The inventory phase involves identifying the visual resources of an area and assigning them to VRI classes using BLM's visual resource inventory process. The process (described in detail in BLM Handbook H-8410-1) involves rating the visual appeal of a tract of land, measuring public concern for its scenic quality, and determining whether the tract of land is visible from travel routes or observation points. Through BLM's Resource Management Planning process, VRI results are considered in multiple use analyses and are ultimately assigned to Visual Resource Management classes with established objectives, as follows:

- **Class A:** Distinctive, high degree of visual variety;
- **Class B:** Common or typical, moderate degree of visual variety; and
- **Class C:** Minimal value or below average, low degree of visual variety.

The area's visual resources are then assigned to VRM classes with established objectives, as follows:

- **Class I Objective:** To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II Objective:** To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.
- **Class III Objective:** To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.
- **Class IV Objective:** To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

During RMP implementation, project proposals are assessed for impacts to visual resources and conformance with assigned VRM class objectives through use of the visual resource contrast rating system (described in BLM Handbook H-8431-1). This system compares proposed project features with the major features in the existing landscape using the basic design elements of form, line, color, and texture. In addition to conformance with VRM objectives, the contrast rating system also informs potential mitigation of visual impacts to bring proposals within VRM class objectives or to further reduce impacts where VRM objectives are being met.

Current Condition

The variety of landscapes across the decision area provides visitors and residents with a large variety of visual features in all classes of VRM management. This variety provides viewers with scenery that ranges from broad vistas of rolling sage brush/grassland to rugged basalt canyons, to mountain peaks flanked by forests and maritime islands.

VRM class I, the most protective class, is usually associated with special areas such as wilderness areas, WSAs, some wild and scenic rivers, and some ACECs. Class II and III areas are generally the scenic mountain ranges near communities and along high use waterways, interstates, State highways, and other well-traveled corridors in the decision area as well as some of the remaining ACECs.

According to the 1987 Spokane Resource Management Plan Record of Decision, ―Recreational activities and visual resources will be evaluated as part of the specific activity plans and will be evaluated to determine their appropriateness in relation to the land use allocations made in the Resource Management Plan" (USDI BLM 1987). Except for areas in the Yakima Canyon and Horse Heaven Hills, no other areas of the decision area have been inventoried according to BLM Visual Resource Inventory guidelines. However, BLM is currently conducting an inventory that is due for completion in November 2010.

Public perception of and concern for visual resources is critical in land use planning. The visual character of the planning area is valuable to a spectrum of recreation users and sightseeing travelers. Populations sensitive to visual resources on public lands include people recreating and areas of human settlement. Recreation on public lands includes, but is not limited to, picnicking, wildlife watching, camping, biking, hiking, OHV use, fishing, hunting, rafting, power boating, and photography. The primary areas of human settlement in the decision area are along I 90, Highway 20, Highway 82, U.S. 2, and U.S. 97, and include Spokane, Moses Lake, the Tri-Cities, Wenatchee, Yakima and Omak. In the San Juan Islands, areas include Friday Harbor, Eastsound, and Lopez Village. There are numerous other smaller towns throughout the decision area. In addition to these communities, people who recreate in the decision area represent other populations sensitive to the quality of visual resources.

Trends

While much of the decision area still consists of areas with relatively undisturbed characteristics, decades of grazing, wildfire suppression, road building, logging, mineral extraction, uncontrolled motorized use, and the creation of infrastructure such as roads and utilities have left an imprint on the land and on the overall scenic quality. For the most part, however, relatively small population centers have left much of the region relatively natural appearing. Exceptions are areas close to Spokane, Wenatchee, the Tri-Cities, and Yakima, where disturbance and infrastructure are more prominent.

Portions of the decision area not easily accessible by the public either through the lack of legal public access or due to terrain characteristics, have generally retained a higher level of natural appearance. In areas accessible by motorized vehicles, increased and in some cases unauthorized OHV use has created a proliferation of new routes and trails, impacting scenic quality in some areas. The degree of such impacts varies with the amount of use and the accessibility of the areas.

The BLM analyzes all proposed projects in the decision area on a project-by-project basis for their impact to VRM classifications and includes, where possible, mitigation and minimization measures to design structures that blend in with the natural background to minimize disturbances to the visual landscape. This form of visual management has been and continues to be effective where VRM classes exist. Due to the disposal or acquisition of lands over the last 20 years, the need for a visual resource inventory, descriptions, and mapping of these areas is a necessary component of the RMP process.

Forecast

The scattered lands administered by Spokane District BLM are often surrounded by private land and population centers. Anticipated future recreation, population growth, and commercial growth will coincide with the need to address potential impacts to visual resources. Recreational use (motorized and non-motorized) and commercial activities could result in increased adverse impacts to scenic vistas and natural settings, especially foreground scenes, throughout the decision area. The numbers of new roads, trails, and routes will increase over time and authorized and unauthorized motorized recreational use could eventually impact locations that are currently in near-natural condition. The scenic quality of areas desired by recreationists (e.g., popular campsites, easy access areas, and areas near water) would continue to degrade as use and method of access to these areas increases.

The future construction of long-term commercial developments and facilities, such as power lines, communication sites, mines, and wind farms, could adversely affect the visual resources of the fore-, middle-, and background landscapes.

Assuming increasing commercial development and recreation use, greater long-term visual impacts will occur within the decision area. As more and more demands are placed on public lands by developers and recreationists, the BLM needs to complete the visual resources inventory for the decision area, determine VRM classifications, and develop management actions to protect sensitive visual resource values into the future.

Key Features

The condition of visual resources are more noticeable in certain parts of the decision area, including areas of high public use and visibility areas, such as those along interstate and State highways, marine waterways, rivers, reservoirs, or recreational areas. Other key features of the visual landscape that receive greater public attention include unique landforms, scenic trails, pristine areas, and marine locations.

The majority of the decision area in the eastern part of the planning area is comprised of shrub-steppe ecosystem, a unique habitat characterized by grass and sagebrush-covered hills and meadows, basalt cliffs and outcroppings, and drainages supporting streams and small lakes. Within the shrub-steppe is the Channeled Scablands landscape, named for trenches and outcrops of ragged, scarred rock interspersed with wet meadows and wheat fields, carved by the Great

Missoula Ice Age Floods that scoured the region about 12,000 years ago. Other habitats in the region include Palouse grasslands, and pine forests.

Vegetation in the non-coastal portion of the decision area ranges from fir and pine trees in the uplands, to communities of sagebrush and perennial bunchgrass grasslands in the lower plains. Ranches intermingled with public lands also add an interesting contrast to the landscape.

The planning area's northern boundary is the United States-Canada border. Much of the land in this area of the State is remote, with low population density. Small towns are tucked into the rural landscape of cattle ranches, fruit orchards, and hay fields along the valley bottoms. High, rolling mountains and rocky cliffs overlook these landscapes. Dense, higher elevation forests cover the slopes and tops of the mountains and surround high lakes and river valleys.

The Yakima, Columbia, Similkameen, Pend Oreille, and Kettle Rivers, as well as Rock Creek, Douglas Creek, and Crab Creek drainages, are some of the key visual elements within the decision area, although in some cases these water corridors on BLM-managed lands are located outside of, but within view of, the decision area. With the exception of the Yakima River Canyon, these water corridors on BLM-administred land are generally primitive and undeveloped, with few public access points, except where access is easier when they pass through urban areas or parallel roads. Riparian vegetation near the edge of the water corridor contrasts with hills of grass, sagebrush, and pockets or stringers of timber that provide distinct color changes associated with the seasons.

In the San Juan Archipelago decision area most areas can be viewed while travelling through the Salish Sea area from smaller private and commercial aircraft. Several BLM properties can be seen via the Washington State Ferry, when travelling from Anacortes, Washington, through the island network. Recreational boating activities such as sailing, power boating, whale watching and kayaking place all BLM islands within areas of high public use and visibility. These rock islands and headlands are predominantly undeveloped and offer stunning vistas of wildflowers, rocky bluffs, open prairie, tide-pools, rocky and sandy beaches with lush vegetation and barren rocks colored with brilliant displays of dust lichens and seaweeds, as well as several historic buildings.

2.1.2.16 Wilderness Characteristics

Indicators

Section 201(a) of FLPMA directs BLM to ―prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values…[T]his inventory is to be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values." Section 603(a) directed BLM to ―review areas identified during the inventory required by section 201(a)…as having wilderness characteristics described in the Wilderness Act of…1964." Wilderness characteristics are therefore a resource to be identified through Section 201 inventories that are ―to be kept current."

Secretarial Order 3310 (December 23, 2010) reinforces this FLPMA responsibility by establishing a policy for inventory of lands with wilderness characteristics (LWCs) and prioritizing protection of LWCs in project analyses and through designation as wild lands in resource management plans. In compliance with the Secretarial order, BLM has issued manual guidance to address inventories (6300-1), land use planning (6300-2), and project analyses affecting LWCs that have not yet been considered for protection in a planning process (6300-3).

The Wilderness Act definition provides criteria to assess public lands for wilderness characteristics that are not currently managed for such characteristics (i.e., other than existing wilderness areas or WSAs). Such assessments determine whether certain tracts of public land meet the minimum size requirement (5,000 acres or one of the size exceptions) and possess the minimum wilderness characteristics of naturalness and outstanding opportunities for solitude or for primitive and unconfined recreation, which are defined below:

- **Naturalness:** An area must generally retain its ―primeval character." It should be an area where the earth and its community of life are untrammeled by humans and their activities. The area generally appears to be affected by the forces of nature, with the evidence of humans substantially unnoticeable.
- **Solitude:** The state of being alone or remote from others; isolation. A lonely or secluded place.
- **Primitive and unconfined recreation:** Non-motorized, non-mechanized (except as provided by law), and undeveloped types of recreational activities. Bicycles are mechanical transport.

Public lands identified as LWCs may be managed to protect these characteristics through a wild lands designation. LWCs are a part of the land use planning process and will be evaluated and addressed along with all other resource values and uses. The BLM is obligated to consider this information when developing the affected environment section and the range of alternatives, and to analyze the environmental impacts of alternative actions on LWCs and from wild lands designation on other resources.

Current Condition

FLPMA required a review of roadless areas and islands administered by the BLM to identify those which had wilderness characteristics. As a result, a wilderness inventory covering 5.7 million acres of BLM land in Oregon and 14,931 acres in Washington was completed in 1980. This included the inventory of 44 units in the Spokane District. On July 3, 1984, 7,100 acres in the Juniper Dunes Wilderness was designated under the Washington State Wilderness Act, Public Law 98-339. In February 1986, the 5,518-acre Chopaka Mountain Wilderness Study Area (WSA) was designated.

At the time of the 1980 Wilderness Inventory in Oregon and Washington, the Spokane District managed approximately 310,000 acres scattered across the State. In the 30 years since this report, BLM-administered public lands have increased by over 100,000 acres, resulting in new parcels of 5,000 acres or more, and/or islands that were never inventoried. The public lands in the decision area consist of scattered parcels over an expansive geographical area, few sections of which meet the minimum 5,000-acre or island size criterion identified in the inventory process for consideration as containing wilderness characteristics.

To date, the Spokane District is conducting wilderness characteristics inventories on 14 parcels of public lands in the planning area which have never been inventoried. These parcels are outside of the existing wilderness and WSA and are a minimum of 5,000 acres. In addition, BLM will be conducting wilderness characteristics inventories on any BLM-managed rocks and islands in the decision area. Rocks and islands do not need to meet the size criteria of a minimum of 5,000 acres. Thus, in the San Juan Archipelago, for example, all rocks and islands were assessed for their wilderness characteristics. All inventories are scheduled for completion by November 2010.

Trends

The possibility for wilderness characteristics to exist within the decision area is limited due to the small, scattered nature of public lands as well as due to intersecting roads created for agriculture/range management and rural/residential access and OHV use. Roads which intersect larger parcels reduce those parcels to below the 5,000-acre minimum size criterion. In addition, because there have not been specific management actions to protect the potential wilderness characteristics of the planning area (outside the WSA), both authorized and unauthorized activities occurring in these areas may have reduced such characteristics.

In the San Juan Archipelago, due to the size exception, remote access, and limited recreational activities, many of the rocks and islands have the possibility to meet and be managed for wilderness characteristics as established by the wilderness inventory and planning manuals (6300-1 and 2).

Forecast

Future commercial development, and increased recreation and other uses associated with population growth, may reduce or eliminate naturalness, solitude, and primitive recreation values in areas with wilderness characteristics that lie outside the established wilderness and WSA, if they are not managed specifically to preserve such values.

Key Features

The key features that determine wilderness characteristics (i.e., roadlessness, size, naturalness and outstanding opportunities for solitude and primitive and unconfined types of recreation) are identified above under the ―Indicators" section. Currently, the Spokane District is conducting wilderness characteristics inventories on land within the planning area. A full inventory has not been completed at this time.

2.1.2.17 Cave and Karst Resources

Indicators

Cave and karst resources are associated with carbonate (limestone and dolomite) rock formations. Pahoehoe lava (Hawaiian term for lava flows with smooth, billowy, or ropey surface) commonly have associated lava tubes which are sometimes referred to as caves (such as Ape Cave located southeast of Mount St. Helens). Littoral or sea caves occur in many different rock types along the ocean coast wave zone. Although there are numerous ―rock shelters" present in eastern Washington, they are not considered caves and principally occur in basalt, so are not related to karst resources. Therefore rock shelters will not be addressed in this section.

Current Condition

Currently BLM does not manage any cave or karst resources within the planning area and no inventory has been completed by BLM. Washington Department of Conservation, Division of Mines and Geology Information Circular No. 40 entitled ―Caves of Washington" (Halliday 1963) was reviewed for any significant cave or karst resources located on BLM-managed lands. Principal carbonate deposits occur in northeastern Washington in Okanogan, Pend Oreille, and Stevens counties. Cave and karst deposits are found in all three of these counties but none that were noted in Information Circular 40 (Halliday 1963) are located on lands managed by BLM. Some lava tubes, which are noted as caves, occur in northeast Klickitat County, but there are no Federal lands managed by BLM within the vicinity. Some small littoral caves may occur on or

near BLM parcels within the San Juan Island portion of the planning area. None of the caves documented in Information Circular 40 are located on BLM-managed lands.

Trends

Since the available information (Halliday 1963) documenting the location of caves in Washington shows no caves on the BLM-managed lands, the trend will be not to manage any of the public lands for cave or karst resources.

Forecast

Should future data/resources indicate cave resources located on BLM managed lands, BLM may adopt a management policy to protect these resources.

Key Features

There will be no anticipated change and no special future management of cave or karst resources on BLM-managed lands within the RMP planning area.

2.2 Resource Uses

2.2.1 *Facilities*

Current Level/Location of Use

The Spokane District Office manages and administers approximately 425,000 acres across Washington State. Recreational activities across the landscape are varied and the number of visitors who are seeking recreation and leisure experiences on public land are increasing. Visitors to BLM lands within the planning area are local, regional, national and international visitors. Often the visitor's first impression of the BLM, and the Spokane District, is from their direct experience at one of our recreation sites or areas.

Facilities throughout the planning area include numerous capital improvements such as road and informational signs, interpretive sites, access roads, boat ramps, trailheads, staging areas, campsites, bulletin boards, kiosks, and vault toilets. Most facilities developed within the planning area are associated with recreational or administrative activities. Additional "improvements" in the form of cattle guards, fencing spring developments, and gates, are not generally considered "facilities." See section 2.2.3, "Livestock Grazing" for a discussion of these improvements.

Developed recreation sites of the Spokane District Office typically consist of parking areas; paved and graveled road and access points; campground facilities, such as picnic tables, open air shelters, fire rings; accessible features such as picnic table, pathways, fire rings, vault toilets, informational kiosks, fee boxes; and garbage collection and other service-oriented features.

Undeveloped recreation sites have minimal improvements, typically consisting of graveled parking areas and access roads, informational kiosks, and signing. There are also occasions where picnic tables, fire rings, and other features may be present to reduce resource impacts.

Access to recreation sites within the planning area is predominately via major State highway networks and then supplemented by local county roads. Access to many of the undeveloped sites is via county roads and undeveloped, primitive road networks. Recreational areas in the San Juan Archipelago are accessed by water and or by air. Once visitors make their way to the main

islands such as San Juan, Lopez, Orcas, Shaw and Stuart, there are paved and graveled county roads which provide access to BLM recreation areas. Predominately all BLM recreation areas located in the San Juan Archipelago are located in San Juan County.

Forecast/Anticipated Demand for Use

Overall trends show a gradual increase each year in visitor use at BLM developed and undeveloped recreation sites, regardless of the amount of development. This use fluctuates from time to time due to weather patterns, water levels, fuel prices, and national economic indicators. Regardless of these fluctuations, it is expected that the demand for public campgrounds and other facilities or the improvement of existing campgrounds and facilities will increase. The increase in visitation means an increase in visitor demand for adequate facilities and services, as well as a greater need to expend funds to protect natural and cultural resources—the resources that are often the very reason visitors are drawn to a particular site.

Anticipated population increases, both within Washington and neighboring states, will result in an increased demand for public lands available for recreation activities. To accommodate this increase, additional recreation facilities or improvements to existing facilities will be required. These would include, but would not be limited to, restrooms, picnic and camping areas, boat ramps, trails, and parking/staging areas necessary for remote recreational pursuits such as equestrian, mountain bike, and OHV uses.

Key Features/Areas of High Potential for Use

Areas of high priority for recreation facility development or maintenance in the Border Field Office include locations in the eastern Washington shrub-steppe ecosystem along Fishtrap Lake, Rock Creek, and Crab Creek in the Lake Creek drainage, and the Juniper Dunes area near the Columbia River. Wenatchee Field Office locations include the Yakima River Canyon, Cowiche Canyon, numerous areas in Okanogan County, along the Pacific Northwest National Scenic Trail and in the Moses Coulee area. Areas in the San Juan Archipelago include Patos, Blind, and Posey islands, along with the Turn Point Light Station Historic Complex, Watmough Bay, Iceberg and Cattle Point. In addition, a number of locations throughout the planning area support a variety of dispersed recreational activities. Although few areas in these dispersed settings have been identified for capital improvements, as demand for recreational activities on public lands increases, developed campgrounds, day use areas, and trails could improve recreation experiences and provide necessary resource protection.

2.2.2 *Forestry and Woodland Products*

Current Level/Location of Use

The Spokane RMP (USDI BLM 1985) provides for the harvest and sale of various products including timber (sawlogs and clean chips) and special forest products such as firewood, posts, and poles. The RMP stated an allowable sale quantity (ASQ) of 3.98 MMBF (million board feet) per year to be harvested from a commercial forestland base of 36,000 acres. The RMP also restricted harvest on 13,000 acres to emphasize other resource values.

The total forested land base within the decision area is currently estimated at 52,275 acres. This figure includes both the 36,000-acre commercial land base and 8,072 acres considered woodlands. Woodlands are comprised of Oregon oak, aspen, cottonwood and less productive coniferous forest not capable of producing a minimum of 30 cubic feet per acre of new growth

per year. Woodlands are considered for the production of special forest products, but not timber products. Map 18, appendix A, shows the location of forests and woodlands in the decision area.

The percentage of commercial forestland in the decision area is minimal (less than 1 percent) in relation to the total commercial forestland within the Interior Columbia Basin, in which the-BLM oversees management of approximately 6 million acres of commercial forestland (USDA FS 1996).

At the time the Spokane RMP was approved in 1987, the Spokane District had a very active timber management and sale program. From 1950 to 1989, records indicate that approximately 63 MMBF of timber was harvested from the decision area for a decadal average of 6.3 MMBF. This volume was achieved through even-age management and/or overstory removal of the large, old trees (the 1985 RMP outlined partial cutting as the preferred strategy).

Soon after the RMP was to be implemented, the approach to public lands forestry experienced a paradigm shift, which has been called ―new forestry," "ecosystem management," and most recently ―managing for forest health." This shift in forestry management reflects the public's recent demands that their forests be managed for a variety of resource values and not just as a timber crop. As a result, the goal of harvesting 39.8 MMBF per decade of timber from the decision area has not been achieved every year. During the last decade, timber harvest has averaged approximately 2.0 MMBF per year.

While forest products are still being produced from the decision area's forests, they are mainly a by-product resulting from the greater goal of forest health. This management strategy uses silvicultural prescriptions designed to restore forests to something reminiscent of their historic range of variability. These prescriptions concentrate on reducing understory stocking, while leaving the large, older tree component of the forest canopy intact. This type of management has yielded smaller diameter logs over the past 5 years

Eastern Washington was once a thriving timber area with numerous mills operated throughout the eastern half of the State. However, eastern Washington's timber industry, like many regions throughout the west, is now greatly diminished. Northeastern Washington still supports five mills, but in north-central Washington only one mill remains. There are numerous reasons for this downturn, including the paradigm shift in forest management on public lands. While there are few commercial lumber mills operating in north-central Washington, a small infrastructure remains for timber harvesting and logs harvested from the decision area are trucked to neighboring counties where a few mills still operate.

Special Forest Products

The special forest products program is currently a minor component of the decision area's forestry program. This program primarily consists of fuelwood harvesting. Since BLM forestlands tend to be intermingled with USFS lands, most people tend to acquire these products from the latter. A productive year of special forest products sales for the decision area amounts to approximately 16 to 20 cords of fuelwood. However, the number of fuelwood permits has doubled in the last several years as fuelwood becomes available from fire hazard reduction treatments.

Forecast/Anticipated Demand for Use

Timber harvest volumes have declined across the planning area since the early 1990s, with the decline having been the most pronounced on Federal lands during that period. Thinning stands

and removing tree species more vulnerable to prolonged drought and insects may well be needed to aid development of resistance/resilience to changing climate, particularly in the Dry Forest, probably in the Warm Moist Forest, and possible in the Cold Forest. As conditions warm, and there is high confidence that conditions will warm, chilling requirements for seed germination may no longer be met for certain species, such as many of the Cold Forest species. However, as mentioned above, forest management does continue in the decision area. In fact, there is likely more forest and woodland acreage being actively managed today than before 1990, although the direction of management is much different. While current management includes some commercial timber harvest, the emphasis is now on restoring forest health through thinning of smaller trees and reduction of fuels to reduce wildfire hazard. It can thus be anticipated that this form of forest management will continue over the next few decades.

Demand for timber, while currently at a level below historic demands, should continue in the foreseeable future. Active management should continue in the present manner of forest restoration and fuels reduction. While changing political demographics affect forest policies on public lands, it is unlikely that the pursuit of healthy forests and the reduction of hazardous fuels will be abandoned.

Special Forest Products

The availability of firewood material is expected to increase due to the increase in mortality from insects and diseases. As stressed trees die, they lose their commercial value and are often available for firewood; however, only a small percentage of these dying trees are within a reasonable distance of open roads and accessible for firewood use. Demand for firewood is often linked to energy costs; however, the overall demand for firewood in the planning area has remained minimal and is not expected to increase dramatically over the next few decades.

Key Features/Areas of High Potential for Use

Most of the decision area's forestlands are in scattered parcels that are difficult to manage due to difficulty in gaining access across private lands. There are a few "blocks" of forestland where BLM ownership is contiguous (i.e., the parcels are grouped together), such as the Huckleberry Mountains, and areas in northern Okanogan County.

2.2.3 *Livestock Grazing*

Current Level/Location of Use

There are currently 365 livestock grazing allotments containing 313,534 acres of public lands in the Spokane District. All of the grazing allotments lie east of the crest of the Cascade Mountains. No livestock grazing has been authorized to date in the area west of the Cascades which includes the San Juan Archipelago.

Current Authorized Use

The total permitted use for the Spokane District BLM is approximately 32,000 AUMs. One AUM is the amount of forage necessary to sustain one cow or its equivalent for one month. Permitted use is the forage allocated in an allotment under a lease. There are currently 261 active grazing leases administered on BLM lands under section 15 of the Taylor Grazing Act. Section 15 of the Taylor Grazing Act specifies the administration of the public lands outside of a grazing district. Table 2.2-1 shows the number of active leases and permitted AUMs by county. Eleven allotments are located in more than one county and some lessees hold more than one lease. Some leases authorize grazing use on more than one allotment.

Table 2.2-1. Active livestock grazing leases and permitted AUMs by county

County	Number Of Active Leases	Leased Acres	Permitted AUMs
Adams	3	7,906	1,447
Asotin	3	280	70
Benton	7	1,904	191
Chelan	14	6,774	608
Douglas	45	40,911	4,917
Ferry	10	5,025	685
Franklin	7	7,244	1,028
Grant	23	38,264	3,711
Kittitas	7	8,530	943
Klickitat	21	13,007	1,566
Lincoln	40	63,863	6,915
Okanogan	79	43,529	5,538
Spokane	2	1,505	198
Stevens	7	1,707	292
Whitman	5	7,734	1,313
Yakima	13	22,082	2,658
Totals		**270,265**	**32,079**

Table 2.2-2 shows the number and acres of allotments by county within the planning area. Over half the allotments are less than 300 acres and most of the allotments (82 percent) contain less than 1,000 acres. There are 274 allotments that are currently leased for grazing. As noted above, 11 allotments are located in more than one county. Table 2.2-2 includes approximately 91 allotments that are currently not leased for grazing where grazing was authorized in the past, hence the table includes acres and AUMs that are not currently being used. Most of currently unleased allotments are smaller allotments where the public lands are intermixed with the private lands that are also no longer being grazed.

Table 2.2-2. Number and acres of grazing allotments by county (Washington State)

County	# of Allotments	Acres	AUMs
Adams	3	7,906	1,447
Asotin	5	360	80
Benton	11	8,169	578
Chelan	20	12,590	1,281
Columbia	1	200	27
Douglas	58	44,765	5,486
Ferry	19	6,799	910
Franklin	11	14,328	1,666
Grant	28	40,829	4,462
Kittitas	12	10,808	1,032
Klickitat	24	13,405	1,620
Lincoln	47	66,151	6,918
Okanogan	99	48,046	7,288
Spokane	2	1,505	204
Stevens	15	4,902	669
Whitman	6	8,217	1,774
Yakima	17	24,555	2,890
Total		**313,534**	**38,332**

Management Categories

The 1985 Spokane District RMP, through a process called ―selective management" assigned all allotments in the planning area to one of three management categories based on resource conditions, economic feasibility of investments in range improvements, resource conflicts, and the landownership pattern as it affected the manageability of the BLM lands. The purpose of the categorization process was to prioritize allotments so management effort could be directed to the areas of the greatest need. The three categories are I (improve), M (maintain) and C (custodial).

Custodial (C) category allotments: Most of the C allotments are unfenced, small tracts which are intermingled with larger acreages of non-BLM rangelands which limit BLM's management options. Due to the small amounts of public land involved in these allotments, often with limited public access, significant investments in their management are not justified.

Maintain (M) category allotments: M allotments were allotments where present management appeared suitable, resource conditions were considered satisfactory and no serious resource conflicts existed. Often M allotments were areas where proper management had been achieved through conservation plans, coordinated resource management plans, or cooperative agreements with adjoining landowners.

Improve (I) category allotments: The I allotments are areas where BLM controls enough land to implement changes and have a potential for resource improvement. Other I allotments have ongoing intensive management planning efforts which are being cooperatively developed by all landowners in the allotment. These allotments are either in unsatisfactory condition or contain significant sensitive resources, making them the BLM's highest priority for management including monitoring and range improvements. To focus effort on the establishment of management plans, most of the allotments that contain newly acquired lands were classified as I

allotments. Table 2.2-3 shows the current numbers and acres of grazing allotments in each management category.

Table 2.2-3. Current numbers and acres of grazing allotments in each management category

Category C	Category I	Category M
281 allotments (77% of all allotments)	49 allotments (13% of all allotments)	35 allotments (10% of all allotments)
120,614 acres (39% of the total acreage)	155,791 acres (49% of the total acreage)	37,129 acres (12% of the total acreage)

Allotment Management Plans

Allotment management plans (AMPs) have been developed to establish grazing systems which specify season of use, numbers of livestock, and range improvements and treatments designed to meet resource objectives. AMPs have been implemented on 25 allotments. Effort has been focused on developing AMPs for allotments containing newly acquired lands. AMPs have been implemented on about 111,000 acres of public lands administered by BLM. The BLM plans to continue to develop and implement AMPs on I allotments and allotments containing acquired lands.

Rangeland Health Standards

The BLM, through the development of grazing regulations in 1995, was directed to develop State or regional standards for rangeland health and guidelines for livestock grazing management. The objectives of these regulations were to promote healthy, sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions; and to provide for the sustainability of the western livestock industry and communities dependent upon productive, healthy rangelands. After a process that incorporated public participation and assistance from the resource advisory councils in Oregon and Washington, the BLM developed standards and guidelines for Oregon and Washington (USDI BLM 1997).

Oregon/Washington Standards for Rangeland Health.

Standard 1 Watershed Function – Uplands: Upland soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate, and landform.

Standard 2 Watershed Function – Riparian/Wetland Areas: Riparian-wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform.

Standard 3 Ecological Processes: Healthy, productive and diverse plant and animal populations and communities appropriate to soil, climate and landform are supported by ecological processes of nutrient cycling, energy flow and the hydrologic cycle.

Standard 4 Water Quality: Surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.

Standard 5 Native, T&E, and Locally Important Species: Habitats support healthy, productive and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate and landform.

Roughly, 103,890 acres in 32 grazing allotments have been evaluated for rangeland health. Twenty-nine allotments (91,987 acres) were meeting all standards or making significant progress toward meeting all standards. Three allotments (11,906 acres) were not meeting all standards, but were making significant progress towards meeting standards due to changes in grazing management. Two of the allotments contained newly acquired lands. One of the allotments containing acquired lands is not being grazed. Grazing management changes on the other allotment with acquired lands included reduction in livestock numbers and duration of grazing use and implementation of a rotational grazing system. Changes in grazing management on the allotment not containing acquired lands were made to address localized riparian condition and included periodic rest and limiting the season of use of the pasture containing the riparian area.

BLM will continue to complete rangeland health assessments as part of the environmental assessment and grazing lease authorization processes. In the cases of the allotments not meeting standards, the BLM will take appropriate actions to ensure achievement of rangeland health standards.

Vegetation Inventory

The BLM completed a vegetative inventory on most of the larger grazing allotments in the Spokane Planning Area in 1982. The BLM used the data collected to determine the ecological condition of plant communities. Ecological condition is described as successional stages of plant communities. Table 2.2-4 shows the results of the inventory.

Table 2.2-4. Ecological condition of plant communities in acres (1982)

Climax	Late Seral	Mid Seral	Early Seral	Seeding
7,493	35,376	40,725	59,556	1,249

A plant community in climax stage is a community which exhibits little change in species composition when compared to the potential climax plant community for the site. Communities in late-seral stage produce between 51 and 75 percent, middle-seral stage produce between 26 and 50 percent, and early-seral produce between 0 and 25 percent of the kinds and amounts of vegetation found in climax plant communities.

Season of Use and Kind of Livestock

All allotments currently grazed have defined periods of use designated in the conditions of 10-year grazing leases and annual authorizations. The date of turnout of livestock varies across the eastern Washington as the climatic conditions conducive to rangeland grazing and growth of forage plants varies across this large area. Grazing in the southern portion of the State and at lower elevation generally starts earlier. Livestock generally start grazing on allotments in March and April and are taken out by the end of October. Some allotments are grazed in the spring and then livestock are moved usually in June to private irrigated pasture or lands administered by other agencies, primarily the USFS or the Washington Department of Natural Resources.

Cattle are the kind of livestock that are authorized to graze on most of the allotments. Sheep are authorized to graze on three allotments, and horse use is authorized on 17 allotments.

Allotment Monitoring

Forage utilization and actual use records are used to monitor grazing use. Forage utilization by livestock and wildlife following the grazing season is taken every 1 to 2 years on I allotments; every 3 to 5 years on M allotments; and as needed on C allotments.

Actual use reports, which are reports grazing lessees submit each year to record their actual livestock numbers and periods of use, are used to calculate the AUMs of use each year for I and M allotments.

In addition, plant community trend data is collected on I allotments. Most allotments including C allotments are visited prior to lease renewal to review resource condition, especially those with special status species or cultural resource concerns.

Rangeland Improvements

The BLM will continue to construct rangeland improvements including fences, cattle guards, water pipelines, wells, spring developments, and stock ponds in the planning area, but limited funding has allowed only a few projects each year. Lessees privately fund a few more projects, but most rangeland improvement expenditures are currently going into maintenance of existing projects. Rangeland manipulation projects, including seedings and prescribed burns, are occasionally implemented for rangeland rehabilitation or improvement. Since the implementation of the Spokane District RMP, range improvements have been constructed primarily for the implementation of grazing systems and protection of resources, particularly on allotments containing newly acquired lands (see table 2.2-5).

Table 2.2-5. Range improvements since implementation of Spokane RMP (1987)

Improvement	Unit of Measure[1]
Fence (miles)	200
Spring developments	58
Exclosures	19
Pipelines	31
Cattle guards	28
Wildlife guzzlers, catchments	17
Seedings and other vegetation treatments (acres)	9,500

[1] The values in this table are estimates.

Forecast/Anticipated Demand for Use

Public land grazing privileges, particularly on the larger blocks of public lands that would support larger numbers of animals, are expected to become more important and more valuable to livestock producers in eastern Washington. This is in response to trends such as (1) higher costs of alternative forage, such as hay or private land grazing; (2) higher costs of grain, resulting in long-term trends to minimize time in feedlots and rely more on rangelands; (3) higher costs of fuel, lessening opportunity to truck cattle away to distant locations for alternative forage; and (4) loss of agricultural land to urban development. Demand for late winter and early spring forage is high. Livestock operators who winter cattle in the Columbia Basin on corn stubble and other crop remains and graze cattle in the summer on irrigated or high elevation pastures continue to seek early spring pasture.

In the last 10 years there have been an estimated 100 grazing leases that the grazing lessee requested not be renewed because they no longer wanted to graze the public land and the intermixed private land. This is due to many factors including the subdivision of ranches, conversion of hay and grazing lands to other agriculture practices, aging of ranchers and the poor economic return from small livestock operations. While the grazing leases on some allotments have been assumed by other livestock operators, many allotments remain unleased. Most of the

dropped grazing leases are on smaller allotments where the public lands are intermixed with the private lands that are no longer being grazed. However, recent subdivision of rural properties has created a demand from new property owners for pasture particularly for horses and goats on public lands adjacent to their private lands.

The demand for public land grazing will probably increase, particularly on large allotments, because livestock production costs will likely increase and the availability of grazing lands will decrease due to residential and agricultural development. However, season of use and grazing levels on these allotments will likely be reduced due to concerns for fish and wildlife habitat, particularly sage-obligate species like sage grouse, and special status plants. The most likely outcome is a moderate decline in the total number of AUMs authorized in the planning area due to management changes to protect resources. Climate change may alter the livestock carrying capacity of the public lands. Increases in temperatures and shifts in precipitation patterns may reduce livestock forage production, particularly in the more arid portions of the planning area. Allocation of grazing to small property owners will likely not occur at a significant rate due to workload, resource concerns, potential impact on adjacent property, and cost of range improvements such as fencing and range improvements needed to graze smaller tracts.

Key Features/Areas of High Potential for Use

Where livestock grazing occurs in areas of intermingled public/private landownership patterns (with public lands acreage generally being relatively small and surrounded by private lands), there usually is lower opportunity for intensive management. Livestock grazing is typically managed on a custodial basis on these allotments. Grazing use may be modified or restricted on these allotments if resource concerns are identified, for example by fencing to protect stream banks and exclude grazing from riparian areas. Placement of salt or water developments have been prohibited in some areas with special status plant species.

Grazing is more intensively managed on larger blocks of public land to accommodate other public land uses and protect resource values. For example, grazing is managed to provide for special status species habitat requirements, meet the growth requirements of forage species, and reduce grazing impact on riparian areas. Grazing is excluded from areas which have special status species, riparian resources, or cultural sites in some allotments. The level of grazing use of allotments containing newly acquired lands has been reduced from historic levels. Development of range improvements to facilitate grazing management has also occurred in the new acquisition allotments. Although herding is used in one allotment to avoid grazing a special status plant species, riding and herding are not common practices on the public lands in the planning area. There are opportunities to improve resource conditions particularly in riparian areas through these practices. Other practices such as placement of salt or mineral supplements or development of water to improve grazing distribution are employed by some livestock operators. As a general practice, grazing lessees are often required to place salt at least 0.25 mile from livestock water sources.

As stated earlier, the date of turnout of livestock varies across the eastern Washington because the climatic conditions conducive to rangeland grazing and growth of forage plants vary across this large area. Grazing generally starts earlier at low elevations and in the southern portion of the State. In addition to the allotments that are grazed only in the spring and early summer, some allotments are grazed in the spring and fall with livestock spending the summer months in other areas often irrigated pasture.

Unlike other states in the West, most of the rangelands in Washington were homesteaded or granted to Washington State. The lands that remained as public lands often were not suitable for agricultural or homesteading because they were steep, and/or rocky, and lacked water sources. Although these lands are in grazing allotments, actual grazing use of these lands is limited by these conditions.

A few large blocks (over 5,000 acres) of public land are currently not leased for grazing in the planning area. Demand for grazing on these parcels is high. One block, the Grimes Lake parcel, acquired in 2008, was grazed prior to the acquisition. Another block, Horse Heaven Hills, was grazed in the past, but is not currently grazed due to frequent wildfires and resource concerns. Opportunities exist for these blocks to create reserved allotments that could be used by lessees whose allotments are being rested from grazing due to wildland fire or during restoration activities.

2.2.4 *Minerals*

Current Level and Locations of Use

The production of mineral resources within the eastern Washington portion of the planning area is important to the local and regional economies, but currently there are little leasable, locatable, or saleable mineral commodities being mined on public lands administered by BLM. A mineral potential report is being prepared as part of this RMP planning process and will contain more detail on mineral occurrence and potential.

The Columbia Basin encompasses the area east of the Cascades Mountains and south of the Okanogan Highlands and covers a majority of eastern Washington. The following are important mineral resources associated with the Columbia Basin:

- Construction aggregates
  - Sand and gravel
  - Crushed rock, basalt predominately (CRBs)
- Diatomaceous earth, interbeds between CRB
- Natural gas: Rattlesnake Hills Gas Field near Benton City, Washington (1929−1941)
  - Exploration for gas reserves in Tertiary age sediments below CRBs (drilling 1980s and 2004−2007)

In the northeast corner of the State is the Okanogan Highlands. The following are important mineral resources associated with the eastern Okanogan Highlands:

- Industrial minerals
  - Dolomite and magnesite (Stensgar Formation–Deer Trail Group) mined near Abby, Washington
  - Silica mined from the Addy Quartzite in Stevens County, Washington
  - Barite is interbedded with argillite has been mined predominately in Stevens County and to a lesser extent in Pend Oreille County
- Limestone (high purity) mined for cement for the Cambrian/Ordovician Metaline Formation near Metaline Falls, Washington
- Zinc and lead mined from Cambrian/Ordovician Metaline and Letbetter Formations (Mississippi-Valley type deposit); Pend Oreille Mine

- Uranium associated with Cretaceous granite intrusives has been mined (Midnite and Sherwood Uranium Mines) on the Spokane Indian Reservation

This western Okanogan Highlands region has produced more than 3 million ounces of gold and almost 15 million ounces of silver from predominately the Republic Mining District. The Buckhorn Mountain Mine is currently the only active gold mine in Washington State. Gold ore is being trucked from the underground mine near Chesaw, to the Kettle River Mill in Republic, Washington. An extensive drilling program on Federal, State and private lands is proposed in the next several years at the Buckhorn Mine to try and delineate additional ore reserves. Porphyry copper-molybdenum deposits have been delineated near Oroville and Keller, Washington. The Mt. Tolman deposit, located on the Colville Indian Reservation, is one of the largest molybdenum reserves in the U.S.

Forming the spine of the State is the Cascade Province which is subdivided into northern and southern areas. The following are important mines and mineral resource deposits associated with the northern Cascade Province:

- Holden Mine: Copper (zinc, silver, and gold) mined (1938−1957) from Triassic metamorphic rocks was Washington's largest producer of copper (207 million pounds of copper)
- Miners Ridge and Mazama porphyry copper deposits: Washington's largest copper resource (now in wilderness area)
- Cannon Mine: Produced 1.25 million ounces of gold and 2 million ounces of silver (1985−1994) and was the second largest underground mine in the U.S.

Only a few isolated BLM-managed parcels occur within the eastern portion of the southern Cascade Province. There is no mineral exploration/mining on BLM-managed lands within the southern Cascades Province. Table 2.2-6 outlines recent mines and exploration in eastern Washington State.

According to Lasmanis (1991), the oldest rocks (limestone, argillite, black shale, siltstone, and andesite tuff) in the San Juan Islands are Devonian of which the limestones have been historically mined principally for cement.

Leasable Minerals

Oil and Gas. Brownfield (2006) has assessed the undiscovered natural gas resources of the eastern Oregon and Washington Province of which almost 90 percent of gas are contained within the hypothetical Columbia Basin Continuous Gas Assessment Unit (AU). The majority of this unit lies within south-central Washington State and is within the Eastern Washington RMP planning unit. Brownfield (2006) and Meyers (2008) have estimated a mean total of 2,400 billion cubic feet (bfc) for this AU. Table 2.2-7 estimates the undiscovered natural gas reserves for the Columbia Basin and Eastern Oregon/Washington Conventional Gas AU.

Much of this area is covered by basalt flows associated with the Columbia River Basalt Group of Miocene Age (7 to 17 million years old). In the central portion of the Columbia Basin the total accumulation of these basalts (flows) can exceed 12,000 feet or well over 2 miles thick. The targets for gas are the underlying Tertiary sedimentary rocks, principally the Roslyn, Swauk, Chumstick, and Wenatchee Formations, which have both source materials (organic matter and coal seams) and sandstone reservoir units.

According to Meyers (2008) and Lingley (2006) unconventional ―over pressured basin-centered gas model" may contain the larger accumulations of natural gas reserves in the Columbia Basin. Typically, natural gas is contained by conventional ―stratigraphic or structural" traps, but within this area, pressure differentials may physically separate water/gas interfaces and thus may make it difficult to test for natural gas shows within exploration wells.

During the last 10 years there has been an explosion of leasing of Federal and State lands related to exploration for natural gas within the Columbia Basin. The height of Federal oil and gas leases issued was in 2004, but has gradually tapered off with no leases issued in 2009. Currently there are about 500,000 acres of Federal lands leased, including Bureau of Reclamation (acquired and withdrawn), BLM, and private surface/Federal mineral reservation which are commonly referred to as ―split estate" lands. Table 2.2-8 shows leases issued and acreage per year from 2000 to 2009 and the total cumulative active leases and acreage leased for that same time period. The principal lessees were D.M. Yates, Savant Resources, Exxel Energy (USA), Shell Western Exploration and Production, Inc. (SWEPI), and Energy Investment Inc.

The thick basalt layer over the underlying sedimentary rocks often makes conventional geophysical exploration techniques difficult to use in the Columbia Basin. A majority of initial Magneto Telluric or ―MT" surveys, which measure the Earth's electrical and magnetic fields for a short 24-hour duration, were used as a method to determine the interface between the basalt, underlying sedimentary rocks, and basement or crystalline/metamorphic rocks occurring at depth. About 250 MT sites were set up on Federal lands within the Columbia Basin with hundreds if not thousands of others conducted on State and private lands. Limited seismic line work has been conducted during this latest exploration and drilling phase within the last 5 years, as compared to the previous exploration phase during the early to mid-1980s when literally hundreds of miles of vibroseis or ―thumper truck" surveys were conducted.

From 2004 to 2007 five natural gas exploration wells were permitted by the State of Washington-Department of Natural Resources on private lands within the Columbia Basin. Energy Canada (EnCana) USA, Inc., permitted the Anderville Farms 1-6 and Anderson 11-5 wells, while Exxell Energy permitted the Brown 7-24, to a total estimate depth of 14,000 feet. Delta Petroleum Corporation followed by permitting the McBride 28-13 and Gray 31-23 wells to a total estimated depths in excess of 15,000 feet. All but the McBride 28-13 well, which the permit was cancelled, were drilled to completion on private lands. According to Norman (2010) all four wells have been plugged and abandoned (P&A). Table 2.2-9 shows the information about the wells and map 20, appendix A, shows the natural gas exploration well locations.

Table 2.2-6. Recent mines and exploration in eastern Washington (RMP Planning Area), 1996–2006

Commodity		Company	Mine Name	County	Significant Mining Events	Notes
Precious Metals						
Gold/Silver	M	Echo Bay Minerals Co.	Kettle River Mine Project	Ferry	Milling and processing gold[1]	1996−2002, acquired by Kinross Gold in 2003
	M	Kinross Gold Corporation			Milling and processing gold from 2003−2006[1]	Closed in 2006, no ore reserves
	MP	Battle Mountain Gold	Crown Jewel Project, Buckhorn Mountain	Okanogan	Mine permit applications[1]	
	MP	Crown Resource Corp.			Took back from BMG-UG Mining Development[1]	
	M	Kinross Gold Corporation	Buckhorn Mountain Mine Project		Underground mine, 2008[1]	Truck ore to mill site in Republic, Washington
	E	Sante Fe Pacific Gold Corp.	Golden Eagle Deposit	Ferry	Exploration drilling	
	E	Echo Bay Minerals Co.	Black Hawk Property	Ferry	Exploration	
	E	Echo Bay Minerals Co.	Mires Creek Property	Ferry	Exploration	
	E	Yamana Resources, Inc.	Palmer Mountain, Blue Lake and Schuer Properties	Okanogan	Exploration drilling[1]	
Lead/Zinc	E, MP	Cominco American, Inc.	Pend Oreille Mine	Pend Oreille	Surface and underground exploration, drilling, EIS	
	M	Teck Cominco American, Inc.			Mining resumed 2004	
Magnesium Metal	P	Northwest Alloys		Stevens	Producing magnesium metals	Ceased production in 2001
Industrial Minerals						
Clay	M, P	Mutual Materials Company	Mica Mine (Pit)	Spokane	Making bricks and related products	
	M, P	Mutual Materials Company	Usk Mine (Pit)	Pend Oreille		
Diatomite	M, P	Celite Corporation	Various open pits in Grant County	Grant	Mining and processing diatomite	
Dolomite	M, P	Northwest Alloys	Addy	Stevens	Mining and processing dolomite	
	M, P	Allied Minerals, Inc.	Gehrke Quarry	Stevens	Mining and processing dolomite	

Commodity		Company	Mine Name	County	Significant Mining Events	Notes
	M, P	Pacific Calcium, Inc.	Brown Quarry	Okanogan	Mining and processing limestone	
Limestone	M, P	Pacific Calcium, Inc.	Tonasket Quarry	Okanogan	Mining and processing limestone	
	M, P	Columbia River Carbonates	Wauconda Quarry	Ferry	Mining and processing carbonite	
	M, P	Northport Limestone Co.	Sherve Quarry	Stevens	Mining and processing limestone	
Quartzite-Silica	M, P	Lane Mountain Silica Company	Addy Quartzite, Lane Mountain Quarry	Stevens	Mining and processing silica[1]	

E = Exploration, MP = Mine Permitting, M = Mining, P = Producing.

[1] Indicates BLM lands involved—Notice or Plan of Operations.

Table 2.2-7. USGS Assessment of undiscovered oil and gas resources of eastern Oregon and Washington

Total Petroleum Systems (TPS) and Assessment Units	Field Type	Oil (MMBO)[1]				Gas (BCFG)			
		F95	F50	F5	Mean	F95	F50	F5	Mean
Cretaceous-Tertiary Composite TPS									
Eastern OR and WA Conventional Gas AU	Oil	0	0	0	0				
	Gas					0	242	857	305
Columbia Basin Continuous Gas AU						1,179	2,013	3,436	2,122
Total Undiscovered Oil and Gas Resources		**0**	**0**	**0**	**0**	**1,179**	**2,255**	**4,293**	**2,427**

Source: U.S. Geological Survey National Oil and Gas Assessment, Assessment of Undiscovered Gas Resources of the Eastern Oregon and Washington Province, 2006.

[1] MMBO = Million barrels of oil; BCFG = Billion cubic feet of gas; F95 represents a 95 percent chance of at least the amount tabulated (same for F50 & F5).

Table 2.2-8. Summary of oil and gas leases issued and acres leased by year on Federal lands[1] from 2000−2009

Year	Yearly		Cumulative		Royalty
	Leases Issued by Year	Acres Leased by Year	Total Active Leases	Total Acres Leased	Lease Sale Values[2]
2000	33	33,891	66	77,744	$51,945
2001	20	16,298	84	91,014	$205,517
2002	8	7,982	94	102,558	$38,056
2003	119	210,136	204	303,026	$1,119,558
2004	145	220,837	345	520,797	$1,994,870
2005	21	24,652	358	538,550	$1,178,060
2006	93	120,842	450	652,567	$3,685,567
2007	4	2,632	451	654,977	$13,876
2008	2	3,804	416	579,156	$11,398
2009	0	0	341	483,368	$0

[1] Federal Lands include BLM, USBR, and Federal mineral estate.

[2] Includes filing fees, first year rental, and bonus bids.

Source: Data Compiled from OR/WA State Office-Competitive O&G Lease Sale Results.

Table 2.2-9. Recent natural gas exploration wells drilled in eastern Washington

Company	Well Name	Section	Township	Range	County	Depth (ft)	Year
EnCana Oil & (USA) Inc.	Anderville Farms 1-6	6	14N	25E	Grant	14,250	2004
EnCana Oil & (USA) Inc	Anderson 11-5	5	14N	25E	Yakima	13,863	2006
Exxel Energy (USA)	Brown 7-24	24	16N	23E	Grant	12,668	2007
Delta Petroleum Corp.	McBride 28-13[1]	28	5N	23E	Klickitat	NA	2007
Delta Petroleum Corp.	Gray 31-33	31	6N	22E	Klickitat	12,430	2007
Delta Petroleum Corp.	Federal 10-21[1]	10	15N	25E	Grant	NA	2009

[1] McBride Well was permitted but never drilled; Federal 10-21 was never permitted or drilled.

An application for permit to drill (APD) was received from Delta Petroleum Corporation for the Federal 10-21 in December 2008. The application was for a well location 1 mile east of the Burlington Northern 1-9 (BN 1-9) drilled by Shell Oil Company in 1982−83 and P&A in October 1984. The BN1-9 is one of the exploration wells that had encountered significant gas shows and several gas horizons were extensively tested by Shell. In the spring of 2009, Delta Petroleum stopped the APD approval process with BLM, thus the well was never permitted.

Based on the geologic information reviewed, much of the area underlying the Columbia Basin within the eastern Washington planning area would have a high potential of occurrence for natural gas (see map 21, appendix A). There continues to be interest for nomination of previously leased parcels to be added to the BLM OR/WA State Office quarterly competitive O&G lease sales within the eastern Washington portion of the planning area.

Those lands in the western portion of the San Juan Island planning area associated with the Nanaimo Group (a thick sequence of sedimentary rocks), would also have a high potential for occurrence for oil and gas accumulations. The remainder of the San Juan Island planning area would have a low to no potential for hydrocarbons due to the metamorphism of the rocks in those areas.

Geothermal. Currently there are no geothermal leases that have been issued by the BLM for any Federal lands within the RMP planning area. Most of the high potential geothermal areas, high temperature waters, wells or springs 100ºC/212ºF or higher (WADNR-Korosec et. al. 1981), are associated predominately with the Cascade Mountain Volcanoes, principally Mt. Adams, Mount St. Helens, Mt. Rainier, Glacier Peak, and Mt. Baker. The Wind River and Indian Heaven areas in Skamania County also have high geothermal potential (WADNR-Korosec et. al. 1981). All these areas (map 22, appendix A) are outside this RMP study area and many occur on lands that are congressionally or administratively withdrawn (i.e., national parks and monuments and wilderness areas).

According to a study contracted by BLM in 2001, the western portion of Yakima and Klickitat counties have a medium/moderate geothermal potential, but only a few scattered public land parcels managed by BLM occur within that area along the Klickitat River corridor. The majority of this area in western Yakima County is encompassed by the Yakama Indian Reservation where no geothermal leasing has occurred in the past.

A large portion of the southern Cascade and Columbia Basin physiographic provinces have wells or natural springs and drilled wells with low temperature geothermal resources (map 22, appendix A) considered low temperature (20ºC/68ºF or higher) geothermal resources according to Korosec (1981). The only BLM-managed lands within the Southern Cascades Province are isolated parcels in the Goldendale area. Although the low-temperature geothermal resource area outlined by Korosec (1981) encompasses a large portion of the Columbia Basin, only several BLM management areas including the Yakima Canyon, western half of the Rattlesnake Hills, Juniper Dunes Wilderness, Saddle Mountains, and Rock Creek-Escure Ranch, occur within this area.

Typically low temperature geothermal resources are used for direct application or use (such as heat pumps and warming structures). These direct uses could be applicable in many residential, commercial, or industrial uses. Currently there are no direct use applications of low temperature geothermal resources on BLM-managed lands in the RMP planning area (including the San Juan Islands). To date there has been no leasing of Federal lands for low temperature resources in the State of Washington.

Therefore, no Federal lands managed by BLM within the eastern Washington planning area would have high geothermal potential of occurrence. Some isolated BLM parcels in eastern Klickitat County may have a moderate potential of occurrence and those BLM lands, managed in the Columbia Basin, as outlined above, would have a low geothermal potential.

Solid Leasable. Currently there are no leases or activity associated with solid leasable commodities (including coal) within the planning area.

San Juan RMP Planning Area. There is no current leasing, exploration, or development of leasable minerals in the San Juan RMP planning area.

Locatable Minerals

Lands within the eastern Washington planning area have had a long history of mineral development dating back to the 1880s. To a large degree, the history of BLM's ―irregular" land pattern in northeastern Washington State is predominately related to ―fractions" of parcels not patented under the 1872 Mining Law, or Federal land that was actively staked with mining claims when BLM's previous mission was to actively sell-off (asset allocation) public lands. Some of the locatable minerals that have been explored for and mined in the eastern Washington planning area include gold, silver, copper, lead, zinc, molybdenum, iron, tungsten, uranium, barite, limestone and quartzite (silica).

There has been extensive exploration for precious (gold and silver) and base metals (lead and zinc) in northeast Washington since the issuance of the 1985 RMP. For the past 30 years mining and mineral exploration companies have actively explored for locatable minerals in Chelan, Ferry, Kittitas, Okanogan, Pend Oreille, and Stevens counties within the eastern Washington planning area. Table 2.2-10 lists active mining claims located in the counties listed above for the years 1988 to 2008. There was a significant reduction in the numbers of active claims from the early to mid 1990s. Even with the increased price of precious metals (i.e., gold above $1,200 per ounce), there does not seem to be any appreciable increase of new claim filings. Map 23, appendix A, shows active mineral claims in the eastern Washington planning area.

Since 1988 within the eastern Washington portion of the planning area, 261 notices of operations have been filed with the BLM, of which 228 have been closed, 15 have expired, 12 are pending further action, and currently 6 remain authorized or active. A total of 17 plans of operations have been filed with BLM, of which 6 have been closed, 3 have expired, 4 are pending further action, and currently 4 remain authorized or active (see table 2.2-11). Map 24, appendix A, shows the locatable mineral activities listed in table 2.2-11. Currently there is no mining for locatable minerals on lands administered by BLM within the eastern Washington planning area.

Table 2.2-10. Active mining claim locations in eastern Washington planning area by county from 1988 to 2008

	Chelan		Ferry		Kittitas		Okanogan		Pend Oreille		Stevens	
Year	**Placer**	**Lode**	**Placer**	**Lode**	**Placer**	**Lode**	**Placer**	**Lode**	**Placer**	**Lode**	**Placer**	**Lode**
1988	138	2,737	27	1,903	186	1,262	73	3,230	24	758	49	2,090
1989	136	1,520	11	2,003	159	1,198	52	2,750	27	638	35	2,180
1990	145	1,106	12	2,305	176	1,233	25	2,731	27	624	46	2,442
1991	117	892	11	2,479	170	792	28	3,305	27	672	45	2,290
1992	99	645	12	1,794	156	611	52	3,110	31	663	29	2,198
1993	62	263	5	755	119	314	32	1,325	14	621	22	694
1994	59	232	6	788	104	289	30	1,304	11	665	22	566
1995	64	231	7	834	99	272	18	1,068	9	594	19	420
1996	70	219	12	872	106	262	21	912	9	559	19	281
1997	63	191	28	864	111	227	149	853	8	498	32	246
1998	62	194	26	883	91	213	147	836	9	475	33	217
1999	65	154	25	458	96	222	80	873	7	498	39	218
2000	57	164	25	402	81	234	29	847	7	596	38	143
2001	55	104	29	388	64	226	31	884	5	604	37	121
2002	53	102	27	257	58	216	28	572	5	584	36	105
2003	55	83	22	265	51	183	27	386	5	560	32	107
2004	64	102	11	258	47	173	26	403	12	561	33	89
2005	57	101	11	295	56	212	24	516	9	659	29	98
2006	56	94	13	267	59	217	26	503	9	560	14	99
2007	64	70	16	365	57	147	34	940	9	549	17	133
2008	64	69	16	364	58	168	20	951	9	539	14	247
Total	**1,604**	**9,269**	**352**	**18,805**	**2,109**	**8,677**	**952**	**28,301**	**273**	**12,482**	**638**	**14,983**
Average	76	441	17	895	100	413	45	1,348	13	594	30	713

Table 2.2-11. BLM Spokane District mining law operations (43 CFR 3809; Notices and Plans of Operations)

	LR2000 Serial No. WAOR	District Serial Number	Operator	Date Approval	Plan/Notice	Commodity	Location		
							Township (N)	Range (E)	Section(s)
1	50901	WMP-130-87-029 B	Lane Mountain Silica	12/1/1990	Plan	Silica	31	39	34
2	50902	WMP-130-88-020 B	Lane Mountain Silica	12/1/1990	Plan	Silica	31	39	22
3	50898	WMP-130-88-008 B	Echo Bay Exploration	9/30/1992	Plan	Gold	37	34	8, 17, & 18
4	50899	WMP-130-89-019 B	Echo Bay Exploration	11/19/1991	Plan[1]	Gold	37	33	4 & 9
5	50903	WMP-130-84-009 B	Mountain Mineral Company	9/19/1991	Plan	Barite	39	39	4 & 9
6	64096-02	WMP-130-07-001 B	Kent Exploration, Inc.	7/16/2008	Plan[1]	Barite	39	39	9
7	65416-01	WMP-130-08-001 W	Echo Bay Exploration	3/15/2010	Plan[1]	Gold	40	30	13, 14, 23. & 24
1	60386	WMN-130-04-001 B	Teck Cominco American, Inc.	3/5/2005	Notice	Zinc	39	43	16
2	60926	WMN-130-04-002 W	Similkameen, LLP	10/13/2004	Notice	Placer Gold	40	26	10 & 11
3	62350	WMN-130-05-001 W	Tim Bednar	8/27/2005	Notice	Placer Gold	20	17	11
4	62891	WMN-130-06-001 B	Mike Inman	1/4/2008	Notice	Gold	29	37	1 & 12
5	64096	WMN-130-07-001 B	Kent Exploration, Inc.	12/14/2007	Notice	Barite	39	39	9
6	65416	WMN-130-08-001 W	Echo Bay Exploration	6/23/2008	Notice	Gold	40	30	13 & 24

[1] Pending approval or authorization.

Currently, exploration and mine development is concentrated in three areas of the Okanogan Highlands Geomorphic Province in northwestern Ferry County (Republic-Curlew, Washington, area), northeastern Okanogan County (Chesaw, Washington, area) and northwestern Pend Oreille County (Metaline Falls area).

Republic-Curlew, Washington, Area (K-2, Kettle River, Key East, Lamefoot & Overlook Mines). Gold, and to a lesser extent silver, has been mined within the Republic, Washington, area since the turn of the century. The Golden Promise Mine, operated by Hecla Mining Company, was in continuous production from 1938 until 1996 when ore reserves were exhausted and the mine closed. During the mid-1990s Echo Bay Mining Company began mining the Lamefoot deposit located northeast of Republic, Washington. The Lamefoot deposit is an exhalative/replacement-type deposit in Permian age rocks. To increase reserves, Echo Bay began extensive exploration at the K-2 deposit (epithermal Vein-type deposit-in Eocene Volcanic rocks) near Curlew, Washington, for several years (1995−96) until mine development occurred in 1997. Sante Fe Pacific Gold Corporation conducted extensive exploration drilling and development at the Golden Eagle deposit near Republic, Washington, in 1995. During 1996−97, mining continued at the Kettle River Mine (Lamefoot and K-2deposits) located northeast of Republic. Sante Fe Pacific continued exploration and development at the Golden Eagle deposit in 1996. In 2000, ore reserves were exhausted at the Lamefoot deposit and mining ceased at that location. Also in 2000, Echo Bay acquired a large interest in Sante Fe Pacific Gold's Golden Eagle deposit. Echo Bay conducted extensive exploration drilling northeast of the K-2 Mine to prove-out additional ore reserves in 2001, and continued to mine at the Kettle River Mine (K-2 deposit). Due to lack of ore reserves, Echo Bay closed down mining and milling operations at the Kettle River Mill in 2002, and Kinross Gold Corporation acquired Echo Bay in 2003. Kinross Gold Corporation resumed mining at the Kettle River Mine in 2004 and in 2005 completed mining the Emanuel Creek deposit associated with the Kettle River Mine near Curlew, Washington. In November 2005 the Kettle River Mill facility was once again closed, but it was anticipated that obtaining additional ore reserves from Kinross's newly acquired Buckhorn Mountain deposit (formally known as the Crown Jewel deposit) would soon allow the mill facility to be back up and running.

Chesaw, Washington, Area (Crown Jewel Deposit and Buckhorn Mountain Mine). In the far northeastern corner of Okanogan County, Crown Resources Corporation started exploration work and drilling on the Buckhorn Mountain area near Chesaw, Washington, in 1988. The target was a skarn-type gold deposit in Pennsylvanian-Triassic age clastic and carbonate rock adjacent to the Buckhorn Mountain Pluton. After several years of exploration drilling, Crown Resources entered into a joint venture with Battle Mountain Gold Corporation to develop an open-pit gold mine named the Crown Jewel Mine. As part of the agreement, Battle Mountain Gold would be responsible for mine permitting and development of the open-pit mine and the EIS process commenced in the early 1990s. After extensive work on the project, which had major opposition from the local environmental community, Battle Mountain was denied water rights and permits from the State of Washington Pollution Control Hearings Board. In 2001 Battle Mountain was acquired by Newmont Mining Corporation and dropped its option for mining the Crown Jewel deposit; thus, Crown Resources once again became the sole owner. Kinross Gold acquired Crown Resources in 2005 and began permitting and environmental work for developing the deposit as an underground mine and renamed the project the Buckhorn Mountain Mine. The new mine plan included underground mining and transporting the ore to the existing Kettle River Mill facility in Republic, Washington. No milling or tailings impoundment facility would be constructed in association with development of the Buckhorn Mountain Mine, therefore making the mine proposal more amiable to the environmental community. The round-trip haul distance is

just over 50 miles from the mine and milling facility in Republic. In the fall of 2008, underground mining commenced at the Buckhorn Mountain Mine after an almost 20-year-period, since Crown Resources discovered the Crown Jewel deposit and is currently the only active operational metal mine in Washington State. Mine reserves estimates are currently 7 years at Buckhorn and Echo Bay Exploration is planning an extensive exploration drilling program (118 acres of disturbance, 16 miles of roads, and 145 drillsites on BLM) within the next several years on Federal (USFS and BLM), State, and private lands within the vicinity of the existing mine to potentially prove out additional mineable ore reserves.

Metaline Falls, Washington, Area (Pend Oreille Mine). The Pend Oreille Mine, located in the northwestern corner of Pend Oreille County, was a major producer of zinc and lead in the Metaline mining district which was established in 1906. Lead and zinc are associated with the carbonaceous (argillite, limestone and dolomite) rocks associated with the Cambrian/Ordovician Metaline and Ledbetter Formations typical of the Mississippi-Valley type lead-zinc deposit.

As recent as 1994, Resource Finance Corporation was actively conducting exploration on the Yellowhead Horizon at the mine. In 1996 Cominco American Inc. acquired the mine, continued exploration, and in 1997 commenced initiating work on an EIS for re-activating mining in 1998. From 1999 through 2000 Cominco continued exploration drilling and development work to reopen the mine. Previous mining was from the Josephine Horizon, but in 2000 Cominco added reserves from a deeper Yellowhead 1 Horizon and discovered a deeper 3rd horizon named the Yellowhead 2. In 2001 Teck Cominco American Inc. acquired Cominco, but due to depressed zinc prices pushed the original start-up date of 2002 to 2004. Preparation was made to modernize the old mill and prepare the mill tailings facility. Final concentrates would go to the smelter located in Trail, British Columbia. In 2004 Teck Cominco started limited mining production of zinc-lead with a significant increase in production in 2005 and continued until 2008. In December 2008 Teck Cominco announced it would shut down the Pend Oreille Mine and would give layoff notices to its 165 workers (*The Spokesman-Review*, January 7, 2009) after producing 170,000 tons of zinc since it re-opened in 2004.

San Juan RMP Planning Area. There is no current exploration or mining of locatable minerals in the San Juan RMP planning area.

Saleable Minerals

Currently within the eastern Washington planning area saleable mining activity includes primarily supplying governmental agencies, such as county public works and the State of Washington-Department of Transportation (WSDOT), with principally two mineral commodities, sand and gravel and crushed rock (basalt). These governmental agencies are given ―free-use" of these saleable minerals for use on public roads and other projects. In the past 25 years (1985−2010) 36 free use permits were issued by BLM; 23 have expired or been closed and 13 remain authorized to a number of government entities in eastern Washington (see table 2.2-12 and map 24, appendix A).

Some permits are issued in conjunction with community pit locations, but the majority, especially in the Wenatchee Field Office, are stand alone sites. Some saleable minerals are also provided to irrigation districts for canal and road maintenance. Small sales of decorative landscape boulders within the proximity of the Spokane, Washington, metropolitan area have also occurred. Table 2.2-13 summarizes the tons and estimated value of the sand and gravel, and crushed and decorative rock produced from BLM lands within the last 10 years. Need for the

rock material is usually dictated by road maintenance or issuance of WSDOT resurfacing contracts.

About 30 community pit and common use areas have been established on BLM-managed lands in eastern Washington, predominately within the Border Field Office to supply free use sand and gravel and crushed rock to government agencies. Some small individual sales to private individuals also occur periodically from these sites. Although a majority of the community pits have not been authorized because of resource inventories, NEPA and final mine/reclamation plans have not yet been completed.

One priority is to complete the necessary archaeological and other resource inventories, NEPA, and finalize mine/reclamation plans so that the remaining community pits that have been designated can be authorized and material mined from the pits.

To date no large commercial sales have occurred from BLM-managed lands, but one site near Benton City, Washington, will be advertised for competitive bid within the near future.

San Juan RMP Planning Area. There are no current permits, exploration, development or mining of saleable minerals in the San Juan RMP planning area.

Forecast

Leasable Minerals

Eastern Washington Planning Area. The Columbia Basin will continue to be a focus area of interest for natural gas exploration due to its size, relatively small number of deeper wildcat exploration wells, and potentially large undiscovered natural gas resources. Difficulties in collecting accurate geophysical data and high costs of drilling exploration wells (through thick overlying basalt) will continue to make it difficult for natural gas exploration in the Columbia Basin. The recent drilling of four dry holes, with little or no shows of natural gas, has decreased exploration activities.

During the next planning cycle, if market conditions improve, there will probably be another round of leasing and additional natural gas exploration within the Columbia Basin. As part of the RMP planning process, a reasonable foreseeable development (RFD) scenario will be developed in conjunction with review of future oil and gas leasing (stipulations) and development on Federal lands within the Columbia Basin area.

Locatable Minerals

Eastern Washington Planning Area. It is anticipated that exploration and mining will continue in those areas outlined in the ~~"~~current level and location of use" section:

- Republic-Curlew, Washington – northwest Ferry County area
- Chesaw, Washington – northeast Okanogan County area
- Metaline Falls, Washington – northwest Pend Oreille County area

Extensive exploration will occur in both the Republic and Chesaw, Washington, area for gold to block out additional ore reserves that could potentially be a feed source for the existing Kettle River Mill facility in Republic, Washington. The priority within the next 5 years will be to conduct exploration drilling around the perimeter of the existing Buckhorn Mountain Mine. Some targets outlined by drilling may be close enough to be accessed by existing underground

mine development at the Buckhorn Mountain Mine. More distant ore reserves discovered that require new mine development to access the ore body(s) will require additional environmental review and permitting before additional mining occurs.

There will be additional exploration for gold in the Republic/Curlew area for similar deposits previously mined (see ―Current Level and Area of Use" section), but additional development work would be needed to access the ore bodies, thus requiring new environmental studies since previous mines in that area are currently being reclaimed or have had final reclamation completed.

If gold prices continue to be above $1,000/troy ounce, there may be additional exploration in areas of northeast Washington, but companies will need to weigh the cost and time frame for completing required environmental and permitting for mine development away from the Republic, Curlew, and Chesaw areas versus mining in other established areas of the western U.S. (i.e., Nevada), or from deposits in other countries.

Mining and continued exploration for predominately zinc and lead in the Metaline Falls, Washington, area (Metaline Mining District) will be dependent on zinc prices. If the price of zinc increases enough it may be again economically feasible to re-open the Pend Oreille Mine and to conduct additional exploration work (drilling).

Even with the recent price of gold reaching $1,200 per ounce, there does not seem to be any appreciable increase in claim locations or exploration activity on the BLM-managed lands. Proximity to the existing milling and tailings facilities is one of the biggest factors in exploration and future mine development within the eastern Washington planning area.

Saleable Minerals

Eastern Washington Planning Area. Within the next 15 years or so, demand for common variety mineral materials (saleable), such as sand and gravel and crushed rock, will increase slightly within the planning area. New construction and continued maintenance of road networks by WSDOT, numerous county entities, and local communities, will occur; thus, there may be a need for additional material sites to be permitted in close proximity to these transportation networks.

Continued growth around principal metropolitan areas such as Spokane, Tri-Cities, and Wenatchee, coupled with zone restrictions on private sources of rock products near these larger cities, may increase demand of mineral materials from public lands. Potential larger volume commercial sales could also result.

Leasable, Locatable, and Saleable

San Juan RMP Planning Area. Public lands managed by BLM within the planning area have restrictions, such as ACECs, to protect valuable resources associated with those lands. There has been no past or recent leasing, permitting, exploration, development, or mining of leasable, locatable, or saleable minerals within the San Juan Islands portion of the RMP planning area; therefore, the forecast is for no change in the future for this planning effort.

Key Features

Within the eastern Washington planning area, the highest potential for mineral and energy use are:

- *Natural gas leasing, exploration, and development:* Public lands within the vicinity of previously drilled wells that had significant gas shows, but were deemed non-commercial due to various economic conditions (i.e., price of natural gas, distant to gas transmission pipelines, etc.). Also new areas located with newly acquired geophysical data.
- *Locatable mineral exploration and development:* Public lands adjacent to existing mine and exploration targets with geologic similarities, as well as areas with concentrations of mining claim locations.
- *Saleable mineral disposal and development:* Public lands adjacent to existing mineral material sites and Federal, State, county local and BLM transportation networks. Also public lands with close proximity to larger population centers where current resource are being depleted or zoned out due to urban growth.

Leasable Minerals

Leasable mineral areas for natural gas exploration within the Columbia Basin will continue due to its vast size and potential for undiscovered resources. Key areas will concentrate on Federal lands near previously drilled deep exploration wells (Shell BN-1-9 and Yakima Minerals 1-33) located in the BLM Saddle Mountains and Yakima River Canyon management areas. Although future leasing, geophysical exploration, and proposed drilling operations may be restricted due to potential listing of the sage grouse and associated shrub-steppe habitat, and visual resources management (VRM) within the Yakima Canyon.

Locatable Minerals

Locatable mineral areas outlined in the previous ―forecast" section (Republic-Curlew, Buckhorn Mountain, and Metaline Falls) will be the key areas for continued mining or new mineral exploration.

Saleable Minerals

Saleable minerals (basalt and sand and gravel) are very abundant throughout the eastern Washington portion of the planning area, but development resources for commercial use, especially near population centers, are principally dictated by distance to market and transportation costs.

San Juan RMP Planning Area. There are no key features related to mineral resources within the San Juan RMP planning area. BLM lands within this planning area have a long-term mineral withdrawal to protect valuable resources associated with those lands.

Table 2.2-12. BLM Spokane District free use permit spreadsheet (expired, closed and authorized) 1985 to present

	LR2000 Serial # WAOR	Free Use Permit #	Permittee	Date Issued	Expiration Date	Commodity	Location			Case Disposition
							Town-ship (N)	Range (E)	Section	
1	44339	447	Okanogan County Roads Dept.	7/1/1988	8/28/2003	Sand & Gravel	36	27	3	Closed
2	44335	449	USBR-Yakima Project	2/7/1986	3/1/1989	Sand & Gravel	15	19	32	Expired
3	44344	450	State of Washington-DOT	6/3/1987	11/17/1994	Crushed Basalt	20	23	30	Closed
4	59664	451	Lincoln County Highway Dept.	8/27/1987	12/31/1996	Sand & Gravel	23	32	18	Expired
5	44333	452	BLM-Spokane District	9/28/1987	1/1/1988	Sand & Gravel	40	27	18	Closed
6	44334	453	BLM-Spokane District	9/28/1987	1/1/1988	Sand & Gravel	40	27	19	Expired
7	51616	454	BLM-Wenatchee RA	5/4/1988	6/1/1989	Sand & Gravel	14	23	24	Expired
8	44338	455	Ferry County Roads Dept.	5/19/1988	6/1/1993	Sand & Gravel	36	33	5	Closed
9	51611	456	State of Washington-WADFW	6/11/1989	6/30/1989	Basalt	28	27	17	Closed
10	51612	457	Douglas County-Dept. of PW	9/14/1989	11/27/1995	Basalt	25	26	18	Closed
11	51613	459	USBR-Yakima Project	11/27/1992	6/30/1993	Basalt Rip Rap	15	19	32	Expired
12	51615	460	Grant County PW Dept.	2/1/1994	1/31/2004	Sand & Gravel	24	29	30	Closed
13	51617	461	Roza Irrigation District	7/3/1995	7/31/2005	Basalt	11	21	24	Closed
14	53234-01	463	Lincoln County Highway Dept.	10/29/1996	11/1/1997	Sand & Gravel	21	39	23	Closed
15	53691-01	464	BLM-Border RA	5/29/1997	5/30/2007	Sand & Gravel	22	39	35	Closed
16	53692-01	465	BLM-Spokane District	7/3/1997	7/4/1997	Sand & Gravel	22	33	8	Closed
17	59665	466	Lincoln County Highway Dept.	7/14/1997	7/30/1998	Sand & Gravel	23	32	18	Closed
18	54065-02	467	Benton County Public Works	2/18/1999	6/30/1999	Crushed Basalt	8	27	12	Closed
19	55459	468	Douglas Co. Trans. Land Ser.	10/27/1999	10/31/2009	Basalt	22	22	10	Closed
20	53234-02	470	BLM-Spokane District	7/26/2000	8/25/2000	Gravel	21	36	23	Closed
21	53234-03	473	BLM-Border RA	9/24/2001	9/30/2002	Gravel	21	36	23	Closed
22	57749-01	477	BLM-Spokane District	5/15/2003	8/12/2003	Rock Boulders	30	37	8	Expired

	LR2000 Serial #	Free Use	Permittee	Date Issued	Expiration Date	Commodity	Location			Case Disposition
23	59766-02	489	BLM Spokane District	9/22/2009	8/4/2010	Sand & Gravel	18	39	31	Expired
1	57069	471	Roza Irrigation District	9/6/2001	11/30/2011	Basalt	11	21	24	Authorized
2	57070	472	Sunnyside Valley Irrigation Dis.	9/6/2001	11/30/2011	Basalt	11	21	24	Authorized
3	59666	474	BLM-Border RA	10/21/2002	10/31/2012	Sand & Gravel	18	38	14	Authorized
4	58481	476	State of Washington-DOT	6/12/2003	7/1/2013	Basalt	21	22	4	Authorized
5	59649-01	478	State of Washington-DOT	10/26/2004	10/31/2014	Sand & Gravel	35	26	3	Authorized
6	59717	479	Grant County Public Works Dept.	3/10/2004	3/1/2014	Sand & Gravel	24	29	30	Authorized
7	62011-01	481	Lincoln County Highway Dept.	3/26/2006	3/30/2016	Sand & Gravel	26	32	29	Authorized
8	62855	482	BLM-Wenatchee Field Office	10/24/2005	9/30/2015	Rock Talus	39	25	23	Authorized
9	63576	484	Sunnyside Valley Irrigation Dis.	1/19/2007	2/1/2017	Basalt	11	21	24	Authorized
10	59649-02	486	Okanogan County-Dept. of PW	6/7/2006	6/30/2016	Sand & Gravel	35	26	3	Authorized
11	65795	488	Douglas Co. Trans. Land Ser.	4/21/2009	10/31/2019	Basalt	22	22	10	Authorized
12	59649-03	490	Okanogan County-Dept. of PW	8/3/2009	8/31/2019	Sand & Gravel	35	26	3	Authorized
13	66162	491	Sunnyside Valley Irrigation Dis.	3/24/2010	3/30/2020	Basalt	10	23	4	Authorized

Table 2.2-13. Summary; mineral materials produced from BLM administered lands within the RMP planning area (2000−2009)

Commodity	2000		2001		2002		2003		2004	
	Tons Produced	Value ($)	Tons Produced	Value ($)	Tons Produced	Value ($)	Tons Produced	Value ($)	Tons Produced	Value ($)
Sand and Gravel	2,660	$1,410	330	$165	5,179	$5,179	5,283	$2,642	14,228	$7,114
Crushed Rock (Common Variety)	9,625	$4,813	9,030	$4,515	21,000	$10,500	427,217	$309,115	26,075	$17,019
Specialty Rock (Landscape Boulders)	0	$0	0	$0	95	$275	101	$390	0	$0
	2005		**2006**		**2007**		**2008**		**2009**	
Sand and Gravel	196,027	$137,517	40,904	$35,045	58,560	$45,760	21,328	$16,308	13,845	$13,845
Crushed Rock (Common Variety)	14,227	$14,277	45,738	$45,738	11,200	$11,200	107,433	$107,433	14,648	$14,648
Specialty Rock (Landscape Boulders)	100	$500	0	$0	0	$0	0	$0	0	$0

2.2.5 *Recreation*

Current Level/Location of Use

Public lands in the planning area provide opportunities for a wide variety of outdoor recreation activities and related benefits. While most recreation users participate in dispersed recreation activities, either individually or in small groups, others participate in organized events as participants or spectators. Many types of dispersed and organized uses provide for a diverse range of visitor needs and expectations. Although the BLM manages a small percentage of the land base in the planning area, these public lands are an important resource for providing recreation opportunities to visitors. Opportunities to participate in unique recreation activities attract visitors from not only local areas, but from across the country and internationally.

BLM public lands were classified within the1987 RMP into 12 management areas. The 1992 RMP amendment reduced that further to 10 management areas. No extensive recreation management areas (ERMAs) or special recreation management areas (SRMAs) were defined under the current RMP or RMP amendment. Statistics are given below for recreation visitation at recreation sites as they exist within their respective encompassing management areas. Recreation sites are matched as closely as possible to the representative management area, which is in some cases questionable since some recreation sites originally included within a single management area have since expanded into a bordering management area due to parcel size increase associated with land acquisition. Statistics also appear below for San Juan Islands recreation sites visitation. The current RMP/Amendment did not cover public lands in the San Juan Islands.

The Spokane District has been collecting recreational use data since the mid-1980s. However, most of the recreation data exists in the Recreation Management Information System (RMIS) program that was developed in the early 1990s. In addition, many of the newly acquired parcels and areas do not have historic recreation data, although efforts to collect indentified gaps are underway. A visit represents one person's trip or visit, while a visitor day represents one person engaging in an activity for any part of one day.

Table 2.2-14 shows visitation estimates for the planning area. Approximately 347,800 recreational users visited BLM public lands in the planning area in 2009. Table 2.2-15 shows total visitation to public lands in the planning area over a 9-year period by visits and visitor days. Table 2.2-16 shows the planning area total over a nine-year period, including all recreation sites and dispersed uses.

Table 2.2-14. Visitation estimates for the planning area

2009 Border Visits	2009 Wenatchee/SJI Visits	2009 District Total Visits
92,905	254,895	347,800

Table 2.2-15. Visitation to public lands in the planning area by visits and visitor days, 2001−2009

Border Visits	92,905	74,241	73,947	73,697	61,060	71,391	65,017	52,905	56,318
Wenatchee/SJI Visits	254,895	238,275	222,971	259,332	285,309	252,118	231,595	224,415	217,571
Total Visits	**347,800**	**312,516**	**296,918**	**333,029**	**346,369**	**323,509**	**296,612**	**277,320**	**273,889**
Border Visitor Days	123,838	100,451	98,758	119,838	92,282	105,258	91,480	60,778	63,065
Wenatchee/SJI Visitor Days	228,444	208,592	199,177	221,172	245,035	219,261	201,413	198,420	192,758
Total Visitor Days	**352,282**	**309,043**	**297,935**	**341,010**	**337,317**	**324,519**	**292,893**	**259,198**	**255,823**

Table 2.2-16. Planning area total recreation, including all recreation sites and dispersed uses, from 2001−2009

Management Area/Recreation Site	**Visits/Visitor Days**								
	2009	**2008**	**2007**	**2006**	**2005**	**2004**	**2003**	**2002**	**2001**
Border Field Office									
Badger Slope Management Area									
Horse Heaven Hills	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Juniper Forest Management Area									
Juniper Dunes Recreation Area (OHV —pen" + ACEC areas)	38,205/ 51,736	19,609/ 28,515	8,200/ 11,924	7,800/ 10,823	4,500/ 6,244	14,500/ 20,119	10,100/ 14,014	3,000/ 4,100	8,350/ 11,412
Juniper Dunes Wilderness Area	100/ 97	601/ 581	650/ 618	650/ 818	175/ 220	721/ 907	660/ 831	50/ 63	500/ 629
Northeast Management Area									
Boundary Reservoir	400/ 263	500/ 329	250/ 165	250/ 165	200/ 132	251/ 165	150/ 99	50/ 33	120/ 79
North Huckleberries	No data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
South Huckleberries	No data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Upper Crab Creek Management Area									
Fishtrap	11,159/ 17,897	11,790/ 18,849	11,800/ 19,229	11,854/ 23,538	11,070/ 20,168	10,829/ 19,619	8,215/ 13,090	7,536/ 9,023	6,510/ 7,833
Hog Canyon Lake	8,343/ 12,445	7,145/ 10,658	8,419/ 12,558	8,600/ 12,828	6,500/ 9,696	5,500/ 8,204	8,000/ 11,933	7,014/ 7,943	7,500 /8,500

Management Area/Recreation Site	Visits/Visitor Days								
	2009	2008	2007	2006	2005	2004	2003	2002	2001
Lakeview Ranch	2,625/ 3,174	2,025/ 2,385	2,500/ 3,729	2,523/ 3,745	2,500/ 3,729	2,500/ 3,729	2,000/ 2,983	2,000/ 2,167	6,000/ 6,500
Odessa Crater	100/ 64	600/ 381	750/ 477	750/ 477	750/ 477	750/ 477	750/ 477	500/ 318	0/ 0
Rocky Ford	500/ 360	1,000/ 721	1,000/ 721	1,000/ 721	1,000/ 721	1,000/ 721	1,000/ 721	1,000/ 721	0/ 0
Crab Creek	512/ 971	1,213/ 2,112	1,600/ 1,860	1,630/ 4,859	1,965/ 5,121	1,340/ 4,567	2,312/ 3,093	2,205/ 3,765	0/ 0
Telford	4,000/ 2,133	4,500/ 2,400	5,000/ 2,667	5,000/ 18,333	500/ 1,833	0/ 0	0/ 0	0/ 0	0/ 0
Twin Lakes	5,512/ 12,402	7,013/ 15,779	11,046/ 24,853	9,000/ 20,250	11,000/ 24,750	11,000/ 24,750	11,000/ 24,750	10,000/ 16,042	8,000/ 12,833
Coffeepot Lake	11,034/ 14,758	7,246/ 9,692	6,881/ 9,203	8,500/ 11,369	7,600/ 10,165	9,700/ 12,974	9,000/ 12,038	8,500/ 11,369	6,001/ 8,026
Wilson Creek	200/ 123	300/ 185	350/ 216	350/ 216	300/ 185	300/ 185	300/ 185	50/ 36	10/ 7
Marlin	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Scattered Tracts Management Area									
Rock Creek/Escure Ranch	4,715/ 3,702	4,199/ 3,476	9,000/ 6,150	9,290/ 7,310	8,000/ 5,467	8,000/ 5,467	8,000/ 5,467	8,000/ 3,933	8,000/ 3,933
Dispersed; Border	5,500/ 3,713	6,500/ 4,387	6,500/ 4,387	6,500/ 4,388	5,000/ 3,375	5,000/ 3,375	2,030/ 1,425	2,000/ 1,183	4,327/ 3,228
Total Border Visits / Visitor Days	**92,905/ 123,838**								
Wenatchee Field Office									
Moses Coulee Management Area									
Douglas Creek	8,500/ 9,315	8,000/ 8,767	8,000/ 8,767	8,000/ 8,767	8,000/ 8,767	8,000/ 8,767	8,000/ 8,767	8,000/ 8,767	8,000/ 8,767
Duffy Creek	1,500/ 1,125	1,000/ 750	1,000/ 750	1,000/ 750	1,000/ 750	1,000/ 750	1,000/ 750	1,000/ 750	1,000/ 750
Jameson Lake	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Okanogan Management Area									
Palmer Mountain	6,700/ 6,812	6,700/ 6,812	6,700/ 6,812	6,700/ 6,812	6,700/ 6,812	6,000/ 6,100	6,800/ 6,913	5,000/ 5,083	5,000/ 5,083

Management Area/Recreation Site	Visits/Visitor Days								
	2009	2008	2007	2006	2005	2004	2003	2002	2001
Chopaka Lake/Chopaka Mountain WSA	7,400/ 12,506	2,500/ 4,225	4,000/ 6,760	3,500/ 5,915	7,000/ 11,830	7,000/ 11,830	7,000/ 11,830	4,000/ 6,760	4,000/ 6,760
Similkameen	1000/ 717	1,000/ 717	1,000/ 717	1,000/ 717	1,000/ 717	1,000/ 717	1,000/ 717	1,000/ 717	1,000/ 717
Split Rock	1/ 1	15,000/ 11,063	15,000/ 11,063	15,000/ 11,063	15,000/ 11,063	15,000/ 11,063	15,000/ 11,063	15,000/ 11,063	15,000/ 11,063
Enloe Dam	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Miners Flat	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Ruby	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
McLoughlin Canyon	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Rock Creek Management Area									
Rock Creek	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Saddle Mountains Management Area									
Saddle Mountains	3,000/ 3,500	3,000/ 3,500	3,001/ 3,500	3,000/ 3,500	3,004/ 3,504	3,001/ 3,500	3,000/ 3,500	4,615/ 4,041	3,001/ 3,501
Yakima River Canyon Management Area									
Umtanum	35,000/ 37,421	30,000/ 32,075	30,000/ 32,075	29,000/ 31,006	35,000/ 37,421	25,500/ 27,264	20,080/ 21,437	45,000/ 48,113	45,014/ 48,120
Lmuma Creek	13,000/ 10,075	12,000/ 9,300	12,000/ 9,300	12,000/ 9,300	12,000/ 9,300	15,400/ 11,935	15,000/ 11,625	24,000/ 18,600	24,014/ 18,607
Big Pines	40,000/ 35,667	33,500/ 29,871	30,000/ 26,750	30,000/ 26,750	30,000/ 27,750	29,720/ 27,491	18,500/ 17,113	5,000/ 4,625	0/ 0
Roza	70,000/ 47,308	60,775/ 40,938	50,000/ 33,792	92,450/ 62,402	92,000/ 62,177	80,000/ 54,067	65,315/ 44,034	65,000/ 43,929	65,015/ 43,937
Ringer Road	3,100/ 1,757	3,000/ 1,700	2,000/ 1,133	2,000/ 1,133	2,000/ 1,483	1,000/ 742	1,000/ 742	1,000/ 742	1,000/ 742
Cowiche Canyon	13,000/ 8,883	12,500/ 8,542	12,500/ 8,542	16,225/ 11,087	20,000/ 13,667	9,793/ 6,692	12,200/ 8,337	8,000/ 5,467	8,000/ 5,467
Dispersed; Yakima Canyon	0/ 0	0/ 0	1/ 0	1/ 0	2/ 1	2/ 1	2,000/ 833	500/ 244	449/ 187
Scattered Tracts Management Area									
Liberty	11000/	10,000/	10,000/	10,000/	10,000/	10,000/	10,150/	10,800/	10,577/

Management Area/Recreation Site	Visits/Visitor Days								
	2009	2008	2007	2006	2005	2004	2003	2002	2001
	16,408	14,917	14,917	14,917	14,917	14,917	15,012	15,813	15,350
Dispersed; Wenatchee	0/ 0	0/ 0	1/ 0	1/ 0	2/ 1	2/ 1	0/ 0	0/ 0	0/ 0
Total Wenatchee Visits/Visitor Days	**213,201/ 187,995**								
San Juan Islands Management Area/Recreation Site									
Chadwick Hill ACEC	3,467/ 3,640	3,507/ 3,682	3,208/ 3,368	2,060/ 2,163	2,000/ 1,083	2,000/ 1,083	2,000/ 1,083	2,000/ 1,083	2,000/ 1,083
Iceberg Point ACEC	7,543/ 4,526	5,209/ 3,125	4,676/ 2,806	3,090/ 14,917	3,000/ 1,800	5,000/ 3,000	6,500/ 3,900	5,000/ 3,000	5,000/ 3,000
Patos Islands	7,128/ 10,217	7,030/ 10,076	7,204/ 10,326	6,695/ 9,596	6,500/ 9,317	6,500/ 9,317	8,450/ 12,112	6,500/ 9,317	6,500/ 9,317
Point Colville ACEC	3,102/ 1,732	3,074/ 1,716	2,897/ 1,617	2,060/ 1,150	2,000/ 1,117	2,000/ 1,117	2,600/ 1,452	2,000/ 1,117	2,000/ 1,117
Turn Point	10,239/ 9,855	10,112/ 9,733	9,673/ 9,310	6,180/ 5,948	6,001/ 5,776	8,500/ 8,181	8,700/ 8,374	6,000/ 5,775	6,001/ 5,776
Watmough Bay ACEC	10,215/ 6,980	10,368/ 7,085	10,110/ 6,873	9,370/ 6,343	23,100/ 15,785	15,700/ 10,728	17,300/ 11,822	5,000/ 3,417	5,000/ 3,417
San Juan Islands: Visits/Visitor Days	**41,694/ 36,950**								

Table 2.2-17. Recreation areas on public lands managed by Bureau of Land Management, Spokane District

		Facilities						Recreation Opportunities							
			Camping												
Site	County	Fees	Stay Limit (Days)	Units	Toil-ets	Picnic Area	Boat Launch	Hand-icap Ac-cess	Boat-ing	Fish-ing	Hik-ing	Horse-back Riding	Hunt-ing	Moun-tain Biking	Comment
Wenatchee Field Office															
Developed Recreation Sites															
Big Pines	Kittitas	✓	7	42	✓	✓	✓	✓	✓	✓	✓	✓		✓	
Lmuma Creek	Kittitas	✓	7	7	✓	✓	✓	✓	✓	S					Boat access is undeveloped
Roza	Kittitas	✓	7	5	✓	✓	✓	✓	✓	S	✓				Concrete boat launch
Umtanum	Kittitas	✓	7	6	✓	✓		✓	✓	S	✓	✓	✓		Yakima River, boat access is undeveloped
Liberty	Kittitas		14	9	✓					✓	✓	✓			Adjacent to USFS OHV roads
Chopaka Lake/Chopaka Mountain WSA	Okanogan		14	8	✓		✓[1]	✓	✓	S[1]	✓	✓	✓		Boat motors prohibited
Split Rock	Okanogan		Day Use		✓	✓	✓	✓	✓	✓					Concrete boat launch
Undeveloped Recreation Sites															
Cowiche Canyon	Yakima		Day use								✓	✓	✓	✓	Wildflower viewing
Douglas Creek	Douglas		14							✓	✓	✓	✓	✓	Wildflower viewing; rail trail
Duffy Creek	Douglas		14								✓	✓	✓	✓	
Jameson Lake	Douglas		14				[1]		✓	✓	✓	✓	✓	✓	Boat launch on WDFS
Enloe Dam	Okanogan		14				✓		✓	✓	✓				Takeout site at Enloe Dam
McLoughlin Canyon	Okanogan		14								✓	✓	✓	✓	Historic area
Miners Flat	Okanogan		14						✓	✓	✓				
Palmer Mountain	Okanogan		14	3					✓	✓	✓	✓	✓	✓	
Ringer Road	Kittitas		Day Use						[1]	S	✓	✓	✓	✓	Boat Launch on WDFD
Ruby	Okanogan		14								✓	✓	✓	✓	Historic area
Saddle Mountains	Grant		14								✓	✓	✓	✓	Petrified wood collecting
Similkameen	Okanogan		14							✓					
San Juans															

Site	County	Facilities						Recreation Opportunities							
		Fees	Camping		Toil-ets	Picnic Area	Boat Launch	Hand-icap Ac-cess	Boat-ing	Fish-ing	Hik-ing	Horse-back Riding	Hunt-ing	Moun-tain Biking	Comment
			Stay Limit (Days)	Units											
Developed Recreation Sites															
Blind Island	San Juan	✓	14	4					✓	✓					Boat access only
Patos Island	San Juan	✓	14	7[1]	✓	✓			✓	✓	✓				Campsites maintained by WSP; boat access only
Posey Island	San Juan	✓	14	3	✓	✓			✓	✓					Boat access only
Undeveloped Sites															
Cattle Point	San Juan		Day Use								✓				Wildflower viewing
Chadwick Hill, ACEC	San Juan		Day Use								✓		✓		Wildlife viewing and scenic vistas
Iceberg Point, ACEC	San Juan		Day Use								✓		✓		Viewing and scenic vistas
Point Colville, ACEC	San Juan		Day Use								✓		✓		Viewing and scenic vistas
Turn Point Lightstation	San Juan		Day Use		✓						✓				Boat, hike access only
Watmough Bay, ACEC	San Juan		Day Use		✓				✓	✓	✓				Viewing and scenic vistas
Developed Recreation Sites															
Coffeepot Lake	Lincoln		14	6	✓	✓	✓		✓	S	✓	✓			
Fishtrap/Hog Lakes	Lincoln/Spokane		14						✓	✓	✓	✓	✓	✓	Wildlife viewing station; wildflower viewing
Lakeview	Lincoln		14	6	✓	✓	✓		✓	✓	✓	✓	✓	✓	Odessa Lake Creek Trail
Rock Creek/Escure Ranch	Whitman		Day Use		✓					✓	✓	✓	✓	✓	
Twin Lakes	Lincoln		14	5	✓	✓	✓		✓	✓	✓	✓	✓	✓	
Undeveloped Recreation Sites															
Boundary Dam	Oreille		14						✓	✓	✓		✓		
Crab Creek/Rocky Ford															
Fishtrap Dispersed															
Harrington															
Horse heaven Hills															
Juniper Forest	Franklin		14								✓	✓	✓	✓	No public access; access by permission of private landowner
Juniper Forest, ACEC	Franklin		14								✓	✓	✓	✓	
Juniper Dunes Wilderness[1]	Franklin		14								✓	✓	✓		

Site	County	Facilities						Recreation Opportunities							
		Fees	Camping		Toil-ets	Picnic Area	Boat Launch	Hand-icap Ac-cess	Boat-ing	Fish-ing	Hik-ing	Horse-back Riding	Hunt-ing	Moun-tain Biking	Comment
			Stay Limit (Days)	Units											
Lamona															
Marlin															
Packer Creek															
Sprague															
Telford	Lincoln		14								✓	✓	✓	✓	
Wilson Creek	Lincoln		14								✓	✓	✓		

[1] Permit required for group camping.

OHV = Off-highway vehicle; ACEC = Area of Critical Environmental Concern; WSP = Washington State Parks.

Developed Recreation Activities

While BLM places an emphasis on resource-based versus facilities-based recreation activities, developed facilities do occur within the decision area, primarily in high use recreation zones. These ―developed" facilities vary in the form of the amenities associated with the site, ranging from primitive developments (an area with a kiosk or sign to identify the site) to fully developed sites (campgrounds with designated sites and vault toilets). See table 2.2-17 for more details on the specific recreation facilities in the planning area.

Dispersed Recreation Activities

Dispersed recreation activities are activities that occur on public lands but are not only located at developed sites or locations. Many of the dispersed activities listed below also occur at developed recreation sites. These dispersed activities include, but are not limited to, OHV use, camping, hunting and fishing, visiting interpretive and educational exhibits, touring historic trails, driving for pleasure, rock hounding, photography, picnicking, hiking, backpacking, mountain biking, rafting, motorized and non-motorized boating, beachcombing, tide-pooling, general water play, and nature studies. This wide range of activities is possible because the lands within the decision area are generally accessible and offer a variety of settings suitable for different recreation activities.

Using RMIS data, table 2.2-18 summarizes the amount of time people spent in 2009 engaging in various recreation activities while visiting public lands in the decision area.

Table 2.2-18. Planning area visitation by type of use (2009)

Visitor Use Activity Groupings	Number of Participants	Visitor Days
Boating/Motorized	40,672	13,074
Boating/Non-Motorized	128,869	48,789
Camping and Picnicking	175,105	83,976
Driving for Pleasure	6,727	1,682
Fishing	86,910	40,106
Hunting	69,942	42,307
Interpretation, Education and Nature Study	137,693	29,318
Non-Motorized Travel	146,665	48,909
Off-Highway Vehicle (OHV) Travel	76,672	34,507
Specialized Motor Sports, Events, and Activities	26	4
Specialized Non-Motor Sports, Events, and Activities	8,089	3,200
Swimming and Other Water-Based Activities	23,647	5,521
Winter/Non-Motorized Activities		
Total	**901,017**	**352,283**

Source: USDI BLM RMIS (2009).

Water-based Activities (Motorized and Non-Motorized Boating, Swimming, etc.). Within the decision area, water-based activities are common in the form of both motorized and non-motorized recreation and include motor boating, sailing, whitewater rafting, canoeing, kayaking, fishing (see ―Fishing and Hunting" subsection below), and swimming. Many recreationists also seek areas near water for picnicking, camping, and nature viewing. Such activities are much sought after in the arid setting of eastern Washington and the maritime archipelago of the San Juans.

Though located on the dry side of the Cascade Mountains in Washington, both the Wenatchee and Border Field Offices manage land and recreation sites along a number of rivers, lakes, and creeks. Because of the temperate climate, many of these locations are accessible all year round. The gentle Yakima River is a popular destination for non-motorized boaters and fly fishermen. Over 169,000 people a year (USDI BLM RMIS data for 2009) visit the river for day floats, and to camp, picnic, hike, or otherwise enjoy BLM's five river access sites. Douglas Creek, near Wenatchee, is a perennial oasis in the middle of the arid sagebrush-steppe country, offering camping, fishing, and nature study within its deep canyon walls. At the northern boundary of Washington, Okanogan County's mountains, forests, lakes, and rivers attract many visitors from the U.S. as well as Canada. Though not accessible during the snowy winter, BLM recreation areas at Palmer, Chopaka, and Washburn Lakes provide visitors with easy access into the Okanogan Highlands. The nearby Similkameen River is also popular for whitewater rafting and kayaking, and as part of the Greater Columbia Water Trail.

Farther east in the planning area, water sports including fishing, boating, swimming, picnicking, camping, and nature viewing are popular, especially at Fishtrap Lake, Coffeepot Lake, and Twin Lakes. Crab Creek and Rock Creek are favored for trout fishing. Water-based recreation at Pacific Lake is no longer available due to a dropping aquifer causing the lake to dry up.

Visitors to the San Juan Archipelago predominately arrive via some type of watercraft, usually either by the Washington State Ferry, private or charter boat, or smaller crafts such as canoes and kayaks. About 900,000 visitors utilized the Washington State Ferry system to reach the San Juan Islands in 2009 (Compilation of San Juan Visitors Bureau Surveys, 2005−2009; San Juan Visitors Bureau 2010). Visitors participating in motorized and non-motorized boating (including the Cascadia Marine Trail) comprise the greatest number of those recreating in the San Juan Archipelago. Boaters who visit BLM lands in the decision area may visit Watmough Bay, Patos, Blind, Posey, Stuart, Victim, Skull, Freeman, McConnell, and other rocks and islands. The exceptional maritime environment of the San Juan Archipelago provides outstanding recreational opportunities for all aspects of water-based recreation. The expansive marine environment with bays, harbors, beaches, and multiple access points, both public and private, allow access to nearly all BLM-administered rocks, headlands, and islands. Nearby marinas on each major island in the Archipelago, along with other marinas of Washington State and Canada, make the San Juan Archipelago a popular international boating destination.

Fishing and Hunting. Fishing is a popular recreation activity in Washington and in the decision and planning areas. Fishing for trout primarily occurs in the decision area on the Yakima, Kettle, Pend O'Reille, and Similkameen Rivers, and streams including Rock Creek, Douglas Creek, and Crab Creek. Trout are also fished, along with bass and crappie, in a number of lakes including Fishtrap, Hog Canyon, Coffeepot, Twin, Chopaka, Jameson, Palmer, and Washburn. The variety of warm and cold water fish species occurring within the planning area offers anglers the opportunity of fishing for targeted species, or enjoying the variety of many species within the same general area.

Saltwater fishing, crabbing, and shrimping are popular recreation activities which occur near BLM-administered headlands, rocks, reefs, and islands of the San Juan Archipelago. The dramatic exchange of tidal waters along with established natural channels and shelves provide a rich and diverse marine feeding system which attracts marine mammals and humans alike.

Big game hunting is a major recreational activity, and there are opportunities for hunting deer and elk, as well as limited opportunities for hunting bear, cougar, and bighorn sheep in a few areas. Local, statewide, and out-of-state hunters come to hunt big game and upland birds, including chukar, quail, waterfowl, and pheasants.

Hunting on BLM-administered lands in the San Juan Archipelago consists of big game hunting of black-tailed deer. Limited to shotguns and archery on BLM-administered lands, big game hunting is a recreational activity which receives a limited number of participants. Black-tailed deer and the non-native, Mouflon sheep found at the Turn Point Light Station Historic Complex lands on Stuart Island, are hunted as well. Due to the limited access and no ferry service to this area, the number of hunters to Turn Point is significantly less.

Camping and Picnicking. Camping and day-use activities, such as picnicking, occur throughout the planning area in both developed and dispersed sites and at all times of the year. Such activities are often associated with other forms of recreation, such as boating, hunting and fishing, driving for pleasure and OHV use, which partially explains the number of campers in the planning area. For many, however, camping or picnicking in the planning area is their main recreation pursuit. These individuals are attracted by the ―islands" of federally-managed lands in the planning area. Often, the BLM-managed lands offer the only public access to blocks of land in areas which are predominantly privately owned. These BLM landscapes offer a variety of settings from arid desert to subalpine mountains and timbered forest, which are conducive to many camping and picnicking opportunities.

The San Juan Archipelago likewise offers camping and other popular day-use activities. However, the limited acreage of Federal ownership and small size of the islands limit areas where these activities occur.

Interpretation, Education, and Nature Study. Especially near metropolitan areas and in the San Juan Islands, schools and universities, special interest groups, as well as interested members of the general public, use the unique and varied landscapes of the decision area for education, nature studies, and historic studies. The unique landscapes and geology, abundant plant and animal species, and historic settings, are enhanced in some locations by interpretive displays. The immense size of the decision area offers many opportunities for novices to enjoy and study the natural and historic surroundings. Interpretive trails at Wilson Creek, Umtanum, Douglas Creek, and Cowiche Canyon highlight wildlife and wildflowers, and tell the stories of surrounding landscapes. The wildlife viewing blind and interpretive panel at Folsom Farm at Fishtrap Lake allows visitors to quietly experience the abundance of life at a thriving wetland. An interpretive display at Rock Creek tells history of the now deserted Escure Ranch, and about localized channeled scablands formation.

The development of the San Juan Experiential Education Outdoor Classroom (SJEEOC) in the San Juan Archipelago has brought national recognition to this part of the planning area. Utilizing a broad range of partners and volunteers, the SJEEOC facilitates interpretation, education, and nature study in a variety of forms, methods, and delivery options. The diverse ecosystems, geologic formations, and extensive cultural history of the area provides special interest groups,

universities, and citizen-based science programs opportunities for research, education, and discovery.

Non-Motorized Travel (Hiking, Backpacking, Horseback Riding, Bicycling). The Spokane District BLM manages over 82 miles of non-motorized trails (see table 2.2-21). Trails are found throughout the decision area, and are often primitive and unmarked. Trails near recreation sites or metropolitan areas, such as Spokane, receive regular use, and overall trail use is increasing across the decision area, as populations increase. The Pacific Northwest National Scenic Trail, designated in 2009, extends 1,200 miles from Glacier National Park in Montana to the Pacific Ocean on the Washington coast. This trail crosses approximately 12 miles of BLM-administered lands in Okanogan County. Currently, approximately 800 miles of the trail have been completed. BLM is working with Okanogan County and other partners to complete other sections of the trail.

Specialized Non-Motor Sports, Events, and Activities. Other activities, including but not limited to, mountain bike races, volunteer events, extreme adventure races, hunting dog and tracking dog trials, horseback poker and endurance rides, photography, wildlife viewing, lighthouse celebrations, weddings, rockhounding, and rock climbing occur within the boundaries of the decision area.

Specialized Motor Sports, Events, and Activities. Activities including 4-wheel-drive rock crawling, motorcycle trials, motorcycle, OHV, and auto racing may occur in isolated areas within the decision area, but the full extent is unknown, mainly due to the size of the planning area and the scattered nature of the BLM land. Those wishing to do one of these activities will usually apply for a special recreation permit from the BLM. When this occurs, BLM has an opportunity to evaluate the activity and work with the applicant to minimize resource damage. There are opportunities for these types of uses in the planning area, though legal public access to many potential areas is limited.

Off-Highway Vehicle (OHV) Travel and Designations. The eastern Washington portion of the planning area has some outstanding opportunities for recreational OHV use on system roads, unmaintained ways, and ―open" OHV-use areas. The precise percentage of the visitors to the planning area who use OHVs at some point during their time spent in the planning area is unknown. All other OHV use in the planning area associated with other forms of recreation, ranging from hiking and hunting to fishing and sightseeing, is not specifically documented. Considering that Washington, along with Oregon and Idaho, account for 5 percent of OHV participants across the country (Cordell 2005), it can be assumed that OHV use is moderate throughout the decision area. Legal public access to many potential BLM areas throughout the planning area is limited, and the public does not always know that information about BLM areas is available.

With the exception of Juniper Dunes and Saddle Mountains, OHV use is dispersed throughout the decision area outside of the San Juan Planning Area. Most visitors use OHVs to access recreation destinations by road and to tour remote jeep trails. A large percentage of OHV use, however, occurs as support for other recreational pursuits. For instance, campers often bring along an OHV to explore or access otherwise inaccessible sites. Only a small number of OHV users are believed to travel cross-country (off roads or ways) as part of their recreation activity, such as to retrieve game or for challenging, off-road play, which has led to resource impacts and conflicts among user groups.

OHV Designation: Under the current Spokane District RMP (USDI BLM 1987, 1992a), most of the public lands throughout the planning area, but outside of the San Juan Planning Area, were classified as ―open" for OHV use. The RMP classified OHV use as ―limited" to existing roads and trails in some specially designated areas (e.g., ACECs), and in areas where management objectives favored natural resource protection, matched to complementary additional uses (such as ―wildlife based recreation"). Other areas classified as ―closed" include Juniper Dunes Wilderness, Chopaka Mountain WSA, or where resources were threatened or required additional protection. Additional discretionary closures can and have been made in emergencies, such as cases of imminent resource damage or for fire rehabilitation. Recently acquired public lands have been managed according to the OHV designations of nearby adjacent public land. This process has significantly altered the percentage of lands bearing the OHV ―limited" designation, so that they currently comprise nearly the same percentage of total acreage as OHV ―open" designated lands (map 25, appendix A). For much of the acreage designated OHV ―limited", no OHV trails have ever been designated, and consequently, OHV use in these areas is currently prohibited. Areas designated as ―closed" to OHV represent a small fraction of the decision area total acreage. See section 2.2.7, ―Transportation and Access" for more information about motorized use and access.

Winter Activities (Motorized and Non-Motorized). Higher elevations in the planning area offer a variety of winter activities in the form of cross-country skiing, snowshoeing, OHV and snowmobile use, scenic driving and sightseeing. All of these activities are dispersed in nature. Numbers of users in the pursuit of these types of recreational activities are not well documented within the decision area.

Commercial, Competitive, and Organized Group Recreation Uses. The BLM issues special recreation permits in the decision area that allow specified commercial uses of public lands and related waters. On average, approximately 15 permits are issued each year.

The special recreation permit program also administers a variety of commercial, competitive, and organized group uses within the planning area. Most are area- or activity-specific such as hunting or tracking dog trials, equestrian poker or endurance rides, fishing and sea kayak guide services, rafting and shuttling services, weddings, guided archery hunts, nature study and appreciation outings.

For the past 20 years, the Spokane District Office has been concerned with unauthorized commercial uses, which should otherwise be captured under the special recreation permit program. There continues to be a number of non-permitted outfitters within the boundaries of the planning area that avoid obtaining legal authorization for commercial activities, which primarily consists of fishing guide services in the Yakima River Canyon area and sea kayaking guides and charter boat operators in the San Juan Decision Area. Extensive efforts have been made to research and bring these unauthorized activities into compliance; however, the checkerboard ownership patterns of land within the planning area, the relative isolation of public lands, and the limited staff and law enforcement presence has made enforcement and monitoring difficult.

Forecast/Anticipated Demand for Use

Recreation use in both the planning and decision areas is expected to increase due to a combination of social and environmental conditions in Washington and neighboring states, overall population growth, and the growing trend of people seeking public lands and the opportunities they contain. Without active management, natural resource conditions and the quality of the recreation experience would decline with increased recreation use.

Developed Recreation Activities

Developed recreation sites are primarily concentrated near cities or towns and in higher use areas along bodies of water. See table 2.2-17 and map 25, appendix A, for locations of developed recreation sites. While information on the amount of use for these areas has been collected, there continues to be fluctuations of that use based on seasonal conditions, water flows, fuel costs, and accessibility. Generally, use patterns seem to be increasing in these areas as more people seek out recreational opportunities on public lands. Improvements made to developed sites in the planning area also aid in drawing recreational use, both local and non-local, to those areas, and is expected to aid in the continued increase of the use of these sites.

Dispersed Recreation Use

Dispersed recreation activities are activities that occur on public land, but are not only located at developed sites or locations. Many of the dispersed activities listed below also occur at developed recreation sites. Estimates have recreation use in the planning area increasing an average of 5 percent per year (BLM RMIS figures).

A number of factors contribute to the anticipated increase in use at developed and dispersed sites, including the following (State of Washington 2002):

- An increase in the population of Washington: population rates in Washington State have shown continuous growth over the last two decades. More than half of the State's population participates in some form of outdoor recreation. Roughly half of this activity is local, with the other half shared among State, Federal and private providers.
- Displacement from other recreation areas due to loss of opportunity or change in management.
- Increasing leisure time and disposable income for the working population.
- Increasingly active retired population with more disposable income.
- Rapidly evolving forms of recreation and new vehicles/gear for pursuing recreation activities.
- A focus on the importance of natural resource-based recreation due to the population becoming increasingly urbanized.
- Increasing importance of recreation as a component of the local and regional economic base, surpassing traditional industries in many areas.
- Increasing popularity of outdoor recreation as a family-oriented activity.

Taken together, these factors will likely increase recreation usage and demands on natural resources. Camping, fishing, hunting, visiting parks, boating, OHV use, hiking, and biking are generally the major outdoor recreation pursuits, with their associated facilities often located on public lands outside of local communities. There is also an increased demand for developed facilities, including campgrounds, trails, and interpretive and education opportunities. The growth in participation in the Pacific Region, including Washington State, for recreation activities is shown in table 2.2-19.

Tab le 2.2-19. Projected growth (percent increase of each activity) of participation in Washington State recreation activities

Activity	10 years	20 years
Walking and Hiking	23%	34%
Nature Activities (includes outdoor photography, wildlife viewing)	23%	37%
Sightseeing	26%	42%
Motor Boating	22%	32%
Hand-powered Boating (canoe/kayak)	21%	30%
Rafting	20%	30%
Fishing	12%	20%
Camping, Primitive	13%	23%
Camping, Developed	19%	32%

Source: State of Washington (2003).

If, as predicted, the number of participants in these various activities increases over time, increased pressure will be placed on existing recreation areas. New recreation areas and/or changes in management strategies in the region will likely be needed to accommodate increased future participation in outdoor recreation activities.

National BLM direction through ―The BLM's Priorities for Recreation and Visitor Services" (USDI BLM 2003) work plan directs public land managers to ensure public health and safety, and improve the condition and accessibility of recreation sites and facilities.

Water-based Activities (Motorized and Non-Motorized Boating, Swimming, etc.). Most recreational activities on public lands in the decision area are in some way associated with water, which attracts a variety of recreational activities. Use patterns along lakes, rivers, and streams in the planning area indicate fluctuating yet steady increases in recreational pursuits. This increase is evident in the number of dispersed campsites and new roads and trails to access water features. Newly developed water trails, such as the Cascadia Marine Trail and the Greater Columbia Water Trail, highlighting marine and river environments, are expected to draw additional visitors to explore these areas.

In the San Juan Archipelago, use patterns along beach and tidepooling access areas indicate a steady increase in a variety of recreational pursuits. Outer areas and other islands which are non-ferry served indicate a fluctuating number of smaller motorized and non-motorized crafts dependant on fuel prices. However, for larger motorized and non-motorized boats, numbers are steady and do not seem to be primarily dependant on fuel prices.

Fishing and Hunting. Washington Department of Fish and Wildlife (WDFW), who manages game and fish species as well as the numbers of licenses/tags issued for their take, partially influence the use numbers for hunting and fishing. Throughout Washington, the number of resident deer hunters has declined over the past 30 years. Overall, the sale of both resident and nonresident deer and elk tags are anticipated to decline over the next 5 years. Nevertheless, hunting for deer and elk will likely remain popular recreational activities in the planning area as they are historic and fundamental activities related to being in the ―great outdoors." In the San Juan Archipelago, hunting, fishing, crabbing, and shrimping numbers have decreased over the years. There are several factors which have contributed to the declining numbers, including increasing fuel costs, island-wide restrictions on modern rifles, limited catch quotas, and shortened seasons.

Camping and Picnicking. Overnight camping, as well as day-use activities such as picnicking, represent some of the primary uses of public lands. Usually associated with other recreational activities, camping and day-use activities are base activities that bring members of the public to the outdoors. These activities will likely show a steady upward trend over time as the population and recreational desires of that population increase.

Interpretation, Education, and Nature Study. The public demand for the maintenance or improvement of educational facilities will undoubtedly increase, because trends show this type of use is increasing more steadily than nearly any other activity (see ―Non-Motorized Travel" section below).

Non-Motorized Travel. Trails are important to outdoor recreation in Washington State. According to a study conducted by the Interagency Commission on Outdoor Recreation in 1986−87, 76 percent of all State households walk or hike for recreation (Washington State 1990). In addition, the IAC study also showed a strong hiker/walker preference for less developed settings, especially the semi-primitive and primitive. Trail miles have not increased significantly for decades, while the State's population has grown three-fold. Many trails are already overcrowded, and trail use is projected to grow 34 percent in the next 20 years (Washington State 1990).

Trail users invest not only time, but money, which makes trail use important to the State's economy. More communities are recognizing the community health and economic benefits of protecting, developing, and funding trail systems. In addition, hiking, walking, and cycling provide an affordable means of recreation for most people.

One of the most visible benefits is the attraction of visitors to the trails and the resulting economic input to the nearby communities. Tourism studies indicate that destination tourists seek authentic vacation and recreation opportunities that combine learning and experience based activities with assurances that their tourism activities will not compromise the natural qualities of the areas they visit. Trails have the advantage of being able to provide this economic activity while still contributing positive impacts to community, social development, education of citizens, and the environment. Equally important are the significant opportunities for physical activity that contributes to the physical and mental health of the population. Finally, trails create an opportunity to learn about the heritage and culture of the communities within which they exist (British Columbia Ministry of Tourism 2007).

Specialized Non-Motor Sports, Events, and Activities. Little data is available that would lead to speculation on the future use levels associated with specialized non-motor sports, events, and activities. However, as technology improves for traditional, non-motorized uses, access to public lands is secured, BLM land becomes more well known or new forms of non-motorized use develops, a slight, but steady increase in such uses is expected.

Specialized Motor Sports, Events, and Activities. Little data are available that would lead to speculation on the future use levels associated with specialized motor sports, events, and activities. However, as technology improves for traditional, motorized uses, access to public lands is secured, BLM land becomes more well known or new forms of motorized use develops, a slight, but steady increase in such uses is expected.

OHV Travel. Recreational OHV use in particular has increased throughout the planning area outside of the San Juan Archipelago. Across the U.S. as a whole, trail systems, touring routes, and OHV play areas are in high demand. In 1960, when the first U.S. national recreation survey

was conducted for the Outdoor Recreation Resources Review Commission, off-highway motorized recreation was not even considered as a recreational activity. From 1982 to 2000/2001, driving motor vehicles "offroad" became one of the fastest growing activities in the country, growing in number of participants over 12-years-old by more than 100 percent (Cordell 2005). Data on OHV use gathered by the 1999/2000 National Survey on Recreation and the Environment showed a 32 percent increase in such use when compared to data collected during the 1999/2000 survey. This represented a growth from about 27.3 million OHV users in 1994/1995 to about 36.0 million in 1999/2000. In addition, the proportion of people age 16 and older who said they participated in OHV recreation increased from 16.8 percent in 1999/2000 to 23.8 percent in 2003/2004. This resulted in a 42 percent increase in the number of OHV participants over the 4 years that elapsed between surveys, from 36.0 million to 51.0 million. Based on the latest data, more than 1-in-5 Americans (39.7 million people) age 16 and older participated one or more times in OHV recreation within the past year. Of these 39.7 million OHV users, Oregon, Washington, and Idaho accounted for 1.9 million users (Oregon 581,500; Washington 1,010,900; Idaho 320,800), or about 5 percent.

According to Motorcycle Industry Council reports, OHV annual sales more than tripled between 1995 and 2003, to more than 1.1 million vehicles sold in 2003 (Cordell 2005). Recreational enthusiasts are buying OHVs at a rate of 1,500 units per day nationwide, with nearly one-third of them doing so as first-time buyers of such vehicles. All-terrain vehicles (ATVs) continue to account for more than 70 percent of the OHV market. The number of OHVs in the U.S. grew nearly as fast, increasing 174 percent between 1993 and 2003. In just 10 years, the number of OHVs has grown from fewer than 3 million vehicles to more than 8 million in 2003. Similar to sales, the number of ATVs in the U.S. represents about 70 percent of the total number of OHVs, not counting 4-wheel-drive vehicles (Cordell 2005).

The trends documented in the U.S. suggest that OHV use and sales in and around the planning area will continue to increase into the future as well. Planning for this increased demand would aid in the effective management of OHV use and potential impacts to the natural resources within the planning area.

Winter Activities (Motorized and Non-Motorized). Though data on winter activities in the planning area is lacking, data from other State and Federal agencies indicate that both motorized and non-motorized winter activities have been on an increase over the last decade. Much like OHV uses, off-snow vehicles (OSVs) have seen technological developments that make this activity more desirable by a larger proportion of the public. These developments, ranging from tracked OHVs and more powerful snowmobiles to lighter and more user-friendly snowshoes, continue to draw recreationists into the winter activities and subsequently to the public lands. These forms of recreation will likely experience a moderate increase in use into the future.

Commercial, Competitive, and Organized Group Recreation Uses. In the planning area, an example of the above-mentioned response to the growth in tourism and recreation is the special recreation permit process used for competitive, organized, and/or commercial events. The demand for special recreation permits to perform commercial services on public lands has gradually increased over the past 10 years, and those activities are anticipated to increase in the future as the population continues to spend more time on public lands, BLM lands become more well-known, and access improves. The special recreation permit activities often offer a specialized opportunity for the recreating public to experience activities that they themselves do not have the skills, equipment, or financial abilities to perform independently.

There has been a ―growth" of tourism and recreation in the western states, especially on public lands. Region-wide, tourism is one of the fastest, and in many cases, one of the few growing industries. In response to this economic reality, State and local initiatives to promote tourist attractions involving BLM-administered lands are being developed with the stated objectives of attracting regional, national, and international visitors (USDI BLM 2000).

Key Features/Areas of High Potential for Use

The most popular recreation destinations include areas that contain water resources, developed facilities, play areas, and trails, as well as places that are easily accessible yet provide a primitive experience. Other features that attract visitors include areas with high game populations, fishing opportunities, and areas open to OHV use. These kinds of areas make them a high priority for recreation use. Management of recreation in some of these areas is implemented through activity level/management plans; however, several of these plans are either incomplete or in need of revision to address new issues or needs.

Developed and semi-developed recreation areas are scattered throughout the decision area, with most of the sites occurring in the Central/Eastern Washington Decision area. In the San Juan segment of the decision area, the developed and semi-developed recreation areas are Patos, Blind and Posey Islands, along with Turn Point Light Station and Watmough Bay ACEC (see map 25, appendix A). These dispersed sites and resources significantly contribute to the overall recreation opportunities available in the decision area, and BLM maintains and monitors them for recreation uses and benefits. The use of dispersed sites continues to be a source of desired recreation due to the primitive nature of these areas and the feeling of isolation they instill.

2.2.6 *Renewable Energy*

2.2.6.1 Biomass

Current Level (Including Potential) and Locations of Use

Currently there is one major biomass-to-energy generating facility within the planning area, located in Kettle Falls, Washington. This facility uses logging slash, sawmill waste, by products from primary or secondary wood processing facilities, recycled wood material from landfills such as pallets and boards, and land clearing wood debris such as stumps, chunks and brush. The facility produces 50 MW (megawatt) of electricity per hour. This facility receives approximately 48,000 green tons of wood fuel per year (15,000 truckloads), and needs 67 truck loads per day to maintain inventory. The BLM currently has two projects sending material to this biomass energy facility.

The planning area contains approximately 50,000 acres of forests containing various amounts of potential biomass for renewable energy.

Current Conditions

Currently most of the acres with biomass potential are not within an economically viable distance from resource use centers.

Forecast or Anticipated Demand for Use (Levels and Locations) – Reasonable Foreseeable Development

There is a need to restore these areas by reducing the density of vegetation to ecologically sustainable levels. This would involve the thinning and removal, where feasible, of overly dense vegetation to reduce the risk of catastrophic wildfire and improve forest health on these lands.

The Healthy Forests Restoration Act (HFRA) was enacted by Congress and signed into law in 2003. Title II of this law addresses forest biomass and authorizes certain programs to utilize biomass. The National Fire Plan encourages hazardous fuels treatments and the utilization of material generated from these treatments to be used as biomass.

More biomass material will become available for renewable energy use as management continues to implement fire hazard reduction and forest health treatments within the planning area.

While the demand for woody biomass for use as fuel in the renewable energy arena has increased nationally, there is currently limited demand at the local level. Demand is likely to increase as new entities enter the renewable energy market. More local infrastructure will be needed in order to process and utilize this material. The following are locations where renewable energy woody biomass material is planned:

Colville, Washington; Borgford Bioenergy, LLC: The Kulzer BioEnergy energy production facility generating electricity (9.4 MW), bio-oil (2,000 gallons per day), syngas (14,000 pounds per day), and bio-char. The long-term goal is to establish 10 facilities of this kind in the Northwest to speed up forest fuel reduction efforts.

Bingen, Washington; Parametrix: A mobile system that uses fast pyrolysis technology to rapidly convert forest biomass to liquid fuels and bio-char. Demonstration project, located at SDS Lumber, in Bingen, Washington. Project will be completed in 18 to 24 months (2011−2012).

Glenwood, Washington; Mt. Adams Resource Stewards: Integrated small log/biomass utilization.

Key Features, or the Areas of High Potential for the Use

Areas of high potential for biomass utilization as renewable energy would be located within 40 to 50 miles of the above utilization centers. Local area potential would be limited based on road access, condition, and specifications; steepness of slopes; environmental concerns; and the size and amount of useable material. Another potential conflict in utilizing biomass is where it would be incompatible with special status species and other wildlife habitat. For example, there are bird species in particular that require snags and small mammals that require down woody debris.

2.2.6.2 Wind Energy

Current Level and Locations of Use

The BLM published a Record of Decision (ROD) for a Programmatic EIS relating to the authorization of wind energy projects in June 2005. This EIS provides an analysis of the development of wind energy projects in the West. The ROD amended 52 land use plans to allow for the use of applicable lands for wind energy development. BLM offices are able to use this EIS as an aid in analyzing impacts for specific applications for the use of public lands for wind

energy use. As of July 2010, there were five authorized right-of-ways for wind testing and monitoring, and one pending wind development application on BLM land. The BLM also has direction and guidance for issuing rights-of-way for the development of solar energy development systems.

Forecast or Anticipated Demand for Use

The demand for alternative energy-related rights-of-way is predicted to increase nationally, including areas with the planning area that have potential for wind and solar energy. For over a decade, wind energy has been the fastest growing energy technology worldwide, achieving an annual growth rate of over 30 percent. In the U.S., as of June 2009, the total installed capacity is over 21,000 MW of wind projects. Laws recently enacted in most of the western states require energy companies to provide a portion their energy from renewable energy sources. As a result, the BLM anticipates an increase interest in the use of public lands for renewable energy development.

Key Features, or the Areas of High Potential for the Use

Approximately 7,200 acres of BLM land in the planning area have been classified has having good to superb wind resources (see table 2.2-20). The majority of this acreage is concentrated in nine areas: Saddle Mountains, Horse Heaven Hills (Badger Slope), Goodnoe Hills, Blue Mountains, Whiskey Dick Mountains, Moses Coulee, and Northern Huckleberry Mountains (map 26, appendix A, shows these wind energy potential areas on the BLM lands). An area on the map depicting good to superb wind potential is not the only factor industry uses in determining economic feasibility of a site. Other factors such as proximity to suitable transmission lines, topography, and access are also considered.

Table 2.2-20. Wind resource potential in the planning area

Wind Potential Class (WPC) (watts/m^2)	BLM Acres in WPC	General Location in Planning Area
4: Good (400−500)	6,358	Throughout
5: Excellent (500−600)	611	Throughout
6: Outstanding (600−800)	139	Blue Mountains and Northern Huckleberry Mountains
7: Superb >800	77	Northern Huckleberry Mountains

2.2.6.3 Solar Energy

Current Level and Locations of Use

There are two major methods of generating energy for solar radiation: (1) commercial concentrating solar power (CSP), and (2). photovoltaic (PV) electric generating facilities. The Department of Energy's National Renewable Energy Laboratory (NREL) has prepared solar insolation potential maps at the request of the BLM. The maps identify areas with 1 percent or less slope with high levels of solar insolation that have potential for commercial solar energy development. The areas meeting these requirements are located in the southwestern states. Solar radiation levels in the Southwest are some of the best in the world, and the BLM manages 23 million acres of public lands with solar potential. To date, there have been no applications for solar energy systems, CSP, or PV in the planning area.

Forecast or Anticipated Demand for Use

As the technology evolves there is always a possibility that commercial PV solar energy systems could be economically feasible in the northern states. An increasing small-scale, noncommercial use of PV is for generating power for BLM remote administrative and recreation sites and similar remote sites on private land. Because CSP systems require slopes of less than 1 percent, high levels of solar insolation, and large acreages, it is highly unlikely with today's technology that CSP systems would be commercially developed on public lands in Washington State. See maps 27 and 28, appendix A, showing the CSP PV resource potential.

Key Features, or the Areas of High Potential for the Use

The NREL has identified the most economically suitable lands available for deploying of large-scale CSP power plants as being in the southwestern U.S. because of CSP requirement for blue-sky radiation conditions which are limited to desert conditions found primarily in the southwest states. PV solar systems are not as restricted to slope (<5 percent vs. <2 percent) and high insolation rates as CSP systems. Any locations with an open canopy, mild slopes, and access to an electrical transmission system with suitable capacity could be considered potential areas of development for a PV solar system.

2.2.7 *Transportation and Access*

Current Level/Location of Use

Highways, Roads, and Trails

Access to recreation sites within the decision area is predominately via major State highway networks and then supplemented by travelling local county roads. Access to many of the undeveloped sites is via county roads and undeveloped, primitive road networks. Recreational areas in the San Juan Archipelago are accessed by water and/or air travel. Due to the scattered ownership patterns and the size of the decision area, numerous highways are used to access the majority of public lands therein. I-90, US 2, Highway 20, Highway 82, and Highway 28 travel across Washington from east to west. US 97 is the main north-south highway. Several smaller highways traverse the planning area, traveling in various directions, including Highway 821 in the Ellensburg/Yakima area (see map 25, appendix A).

In addition to the paved highways that traverse the decision area and provide access into portions of the decision area, a number of secondary roads are contained within either county or BLM road systems, some paved and some gravel/dirt. There are also numerous, mostly unimproved "trails" or roads open for OHV and/or non-motorized use that allow access into the decision area. Table 2.2-21 provides the historical number of miles of non-highway roads and trails that are currently found in the decision area. These roads and trails are currently being re-inventoried to confirm accuracy.

Table 2.2-21. Non-highway roads and trails in the decision area

Roads/Trails	Totals
Roads (Includes primitive roads) (miles)	772
Trails (miles)	82
Acres Open to Cross Country Motorized (acres)	213,000
Motorized Use Limited (Designated routes or other restrictions) (acres)	199,000
Closed to Motorized (acres)	13,000

After the completion of the Spokane District RMP, a detailed analysis of the roads and trails throughout the decision area will occur based on the inventory currently underway. Utilizing that information, the Spokane District will develop a comprehensive travel management plan to identify and designate road and trail systems that will be utilized, and to determine what management actions or restrictions will be required on those roads and trails.

Access

The BLM cannot effectively administer public lands without legal and physical access. Methods used to acquire legal rights that meet resource management needs include negotiated purchase, donation, exchange, and condemnation. Acquisition alternatives include purchase of fee or less-than-fee interest above, on, and below the surface, as well as perpetual exclusive and permanent or temporary nonexclusive easements. Acquisitions of road or trail easements are probably the most frequently encountered access needs. Types of easements include road easements, scenic or conservation easements, sign locations, trail easements, stream clearance projects, utility easements, hunting and fishing easements, and range improvements. Acquisition of access rights supports one or more of the following resources: lands, minerals, forestry, range, wildlife, recreation, and watersheds. Access should be closed or restricted, where necessary, to protect public health and safety and to protect significant resource values.

Currently, access needs are prioritized and subsequently initiated when there are landowners willing to sell land in order to provide access to public lands and when there are funds available to secure the access. Many of the isolated parcels of public land lack legal access. Public complaints and inquiries regarding access to public lands within the planning area have increased significantly within the last 20 years. Not only does the public have limited access to public lands for recreation purposes, in many cases the BLM does not have legal access to manage or monitor areas that have resource values or authorized or unauthorized uses occurring on them.

Current transportation and access routes into and through the decision area consist of Federal and State highways; BLM, USFS, and county road systems; as well as private roads. In addition, a proliferation of unmaintained roads and trails exist within the decision area. These roads and trails have developed over time due to increased public uses, improved equipment and technology, and motorized designations that allowed uncontrolled overland use. Efforts to locate and inventory all roads and trail systems are underway throughout the decision area to determine impacts to resources and to improve information for the future travel management plan that will be completed after this RMP.

Forecast/Anticipated Demand for Use

Highways, Roads, and Trails

Public demand on the existing transportation system including interstates, highways, roads, and trails will likely increase in proportion to the number of users of public lands. The combination of all the existing road systems serves as conduits that directly benefit the multiple use and enjoyment of the public lands in the planning area. Increased travel across public lands by motorized and non-motorized equipment will increase the need to manage, maintain, and in some cases improve the current transportation system.

More communities are recognizing the community health and economic benefits of protecting, developing, and funding trail systems. In addition, hiking, walking and cycling provide an affordable means of recreation for most people (see previous ―Non-motorized Travel" section).

Access

Public demand for access will likely increase as the numbers of users of public land increase. With the increased pressure on public lands by motorized recreational use, the need to address where, when, and how to manage this use will be essential. The level of production and sales of motorized recreational vehicles in the Pacific Northwest will likely continue its steady increase, which will mirror the amount of motorized recreational use on public lands. Scenic driving and motorized vehicle exploration by recreational users will increase the need to provide appropriate areas or road/trail systems for this kind of use. Many hikers and walkers have expressed the desire for close-in (local) facilities (Washington State 1990). These nearby trails provide easy access for the public to enjoy the natural environment. Demand for both local trails, as well as long distance trails such as the Pacific Northwest Trail, is expected to increase across the decision area in the future.

Key Features/Areas of High Potential for Use

Highways, Roads, and Trails

The highways and main roads that allow access to larger parcels of public lands receive the majority of use in the planning area. Some of these roads and highways include, but are not limited to, Highways I-90, US 2, US 97, Highway 20, Highway 82, Highway 28 and Highway 821. Secondary paved roads used heavily by the public primarily include the Loomis-Oroville Highway, Moses Coulee/Palisades Road, Highway 25, and many others. The combination of these road systems and water routes create the access web for current uses and will continue to be the main influence for future use.

Access

Within the decision area, key areas that contain potential for motorized use are the larger tracts of eastern Washington public lands, such as the Saddle Mountains and Moses Coulee. Potential areas for non-motorized trail use include areas that already contain existing road or trail systems, such as at Cowiche Canyon, the Lake Creek drainage (Lakeview Ranch, Twin and Coffeepot Lakes) near Odessa or Ringer Road. In addition, the BLM will need to address the need for potential public access to public lands that have lost access over time due to private land access closures so that these ―land locked" tracts of public lands are available for public use. All road and trails systems through public lands that create continuity or connectivity to road and trail systems managed by State, private, or other Federal entities have high potential for use. Trail opportunities near population centers provide economic development potential to small

communities, as well as provide easy access for the public to enjoy the natural environment. Many times, the opportunity exists to partner with existing agencies or organizations to expand existing trail systems or to create new trails linking communities.

2.2.8 *Utility Corridors, Land Use Authorizations, and Communication Sites*

Current Level, and Locations of Use

Utility Corridors

The 1987 RMP Record of Decision stated that all public land will be available and open for utility and transportation corridor development except the Hot Lakes RNA/ACEC, the Brewster Bald Eagle Roost and Juniper Forest ACECs, the Chopaka Mountain Wilderness Study Area, and the Juniper Dunes Wilderness Area. Corridors were identified and designated on BLM lands in Washington in the 1987 RMP. The major routes that were identified and designated as utility corridors (widths vary but are a minimum of 200 feet): Saddle Mountains Bonneville Power Administration (BPA) powerlines and Badger Slope BPA powerline.

Additional rights-of-way will be considered on a case-by-case basis. Applicants will be encouraged to locate new facilities within existing corridors or group compatible facilities to the extent possible. The remaining ACECs are designated as avoidance areas. Rights-of-way in those ACECs will only be permitted after all other alternative routes have been analyzed and found infeasible or to have greater natural resource impacts, unacceptable health, safety, or social impacts.

The West-wide Energy corridor EIS, authorized by the Energy Policy Act of 2005 (Public Law 109-58), designated a powerline corridor west of Entiat in Chelan County that connects into the State Highway 2 corridor. The corridor impacts two BLM sections and approximately 450 acres. Map 29, appendix A, shows the existing utility and designated energy corridors within the planning area.

Right-of-Way Authorizations

A right-of-way is an authorization to place facilities over, on, under, or through public lands for construction, operation, maintenance, or termination of a project. Public lands are made available throughout the planning area for rights-of-way and corridors. With the exception of wilderness areas, the planning area is open to right-of-way applications. Avoidance areas are areas where special environmental and/or management considerations exist, such as ACECs as defined in the current RMP (USDI BLM 1989, page 46).

Currently, the Spokane District administers over 600 rights-of-way. These authorizations include such uses as roads, water pipelines, natural gas pipelines, powerlines, telephone lines, fiber optic cables, railroads, canals, ditches, and communication sites. On average the district processes 10 new or amended rights-of-way applications per year.

Communication Sites

There are two main communication sites, Wahatas Peak and Tekoa Mountain, currently located on public lands in the planning area. Wahatas Peak has 10 communication site leases, and the Tekoa Mountain site has two communication site leases. Additionally, there are numerous single facility sites located in Cashmere, Chief Joseph, Electric City Ridge, Goodnoe Hills, Jump-off

Joe Butte, Mattawa, Steliko Peak, Wells site on Arbuckle Mountain, and Wells Dam. There are no sites located on public land in the San Juan Islands.

Short-Term Lease and Permits

The BLM authorizes permits when uses of public lands will be short term (3 years or less) and involve little or no land improvement, construction, or investment. Temporary land use permits have been used to authorize storage and stockpile areas, apiary sites, engineering feasibility studies, and other miscellaneous short-term activities. Temporary land use permits have also been used to temporarily permit unauthorized uses on public land until a permanent resolution is approved.

Currently, there are over 700 land use authorizations within the planning area. Table 2.2-22 shows the number of authorization and their distribution within the various authorization groupings.

Table 2.2-22. Land use authorizations in the planning area

Type of Use Authorization	Number of Authorizations
Communication site leases	20
Recreation & Public Purpose leases	10
Permits	7
Rights-of-way	
USFS easements	243
Powerline related	109
Roads	161
Water facilities & plants	23
Railroad related	60
Irrigation	38
Oil & gas pipelines	12
Wind energy testing & monitoring	5
Wind energy development	1

Recreation & Public Purposes Leases

The Recreation and Public Purposes Act (R&PP) authorizes the sale or lease (and potentially patent) of BLM-managed lands for recreational or public purposes to State and local governments and to qualified non-profit organizations. In the Spokane District there are currently 10 R&PP leases issued to municipalities and non-profit organizations for such uses as parks, schools, fire stations, and recreational areas. Many lessees have the option to convert their leases to patents. Once converted, the BLM continues to have compliance responsibilities for the R&PP patented lands to insure the patentee complies with the terms of the patent.

Forecast or Anticipated Demand for Use

In general, the requests for rights-of-way throughout the planning area will continue to increase in the reasonable foreseeable future. According to current BLM guidance (BLM WO IM No. 2006216) and the President's National Energy Policy Act of 2005, the BLM's objective is to continue to make public lands available for needed rights-of-way where consistent with national, State, and local plans, and use right-of-ways in common to minimize environmental impacts and proliferation of separate rights-of-way. This guidance and policy also pertains to rights-of-way for alternative, renewable energy resources, such as wind, solar, geothermal, and biomass. It is

likely that the interest in establishing new renewable energy projects on public lands will increase as solar and wind technology advances are made that allow industry to economically generate and transport electricity from currently less that optimal sites.

There are few opportunities for communication sites along the I-90 corridor or State highways because of the lack of public lands along these routes. However, existing sites near cities and towns may see an increase interest by communication companies to expand these sites or modify them has technology changes and demands increase. These and other expansions may require BLM to consider application for new facilities on mountaintops and other structures to attain maximum coverage to meet the needs of Federal, State, and local governments and the public for reliable telecommunications service. In addition, new mandates from the State of Washington and Homeland Security for emergency telecommunications coverage may necessitate the need for additional sites.

Lands and realty actions will need to support resource objectives while providing customer service. Applications for R&PP leases will increase as communities expand, necessitating the need for more public purposes areas. The BLM will continue to authorize agricultural permits for agricultural trespasses on public lands until the land under the agricultural permits can be conveyed or permanently authorized under a long-term lease. Trespass is likely to occur in the planning area where the public lands are bordered by private lands.

Avoidance and exclusion areas for right-of-way development will be developed during this planning process. Avoidance areas, as defined by the land use planning guidelines, do not preclude the issuance of other rights-of-way, permits, and leases. These uses in avoidance areas may be available with special stipulations or mitigation measures. For such authorizations, the area's environmental sensitivity and other feasible alternatives will be considered. Right-of-way exclusion areas will not be available for location of rights-of-way, leases, or permits under any condition.

Key Features, or the Areas of High Potential for the Use

The location of communication sites is critical to attaining an optimum functioning telecommunications network. The communications wireless market is very competitive, with speed to market and location being important to all generation providers. Telecommunication companies locate their facilities on mountaintops and buildings, etc., at elevations that attain the most coverage for the consumers of digital products. The BLM plays an important role in meeting consumer demands for broadband coverage by permitting telecommunication companies to locate their communication sites on mountaintops, ridges, and in and on other locations on public lands.

The BLM encourages and prefers collocation at existing sites when possible and many sites have multiple users who are compatible with other users at the sites. However, there will be an increase in applications for new sites on public lands as these existing sites fill to capacity and more consumers utilize new and existing technology, especially in rural areas.

Through urban expansion, there is a high potential for communities to apply for R&PP leases for community parks; fire stations; recreational areas for picnicking, camping, and hiking; schools; golf courses; public works buildings; and other public uses. Any State or State agency or political subdivision of a State may purchase for recreational purposes up to 6,400 acres annually, and as many small roadside parks and rest sites, up to 10 acres each, as may be needed. In addition, any State agency or political subdivision of a State may acquire 640 acres annually

for each public purpose program other than recreation. Urban expansion along with an increase in interest in the long-term use of public lands is especially evident in the Tri-Cities area.

2.2.9 *Land Tenure*

Current Level and Locations of Use

The land tenure program has been an essential tool used in consolidating public lands in the planning area since the early 1970s. One of the major decisions of the Spokane District RMP ROD (May 1987, page i) was to ―Conduct land tenure adjustments to consolidate or otherwise promote the efficient management of the public land resources, protect and improve valuable wildlife habitat, enhance recreational opportunities, and provide access to public lands." Since 1987 BLM has conveyed approximately 31,600 acres, with the most acres conveyed in Stevens County, and acquire almost 145,800 acres, with the largest sum acquired in Lincoln County (table 2.2-23 and map 30, appendix A).

Table 2.2-23. Acquisitions and conveyances since 1987

County	Acres Acquired	Acres Conveyed	Total Acres Managed
Adams	8,251		9,958
Asotin			946
Benton		3,091	11,012
Chelan		210	21,406
Columbia			441
Douglas	16,877	320	54,543
Ferry		3,869	9,058
Franklin	4,236	3,679	23,804
Garfield			165
Grant	16,518	3,614	53,958
Kittitas	5,340	1,060	15,915
Klickitat	1,680	263	18,286
Lincoln	70,163	641	79,130
Okanogan	5,278	2,406	58,875
Pend Oreille		389	1,732
San Juan	365	77	903
Spokane	2,067		2,075
Stevens	4,566	10,623	25,074
Walla Walla			390
Whatcom			56
Whitman	7,691		9,236
Yakima	2,736	1,402	28,510
Total	**145,768**	**31,643**	**425,473**

Acquisitions

Acquisition of private land is authorized under section 205 (a) of FLPMA and can be pursued to facilitate various resource management objectives. Acquisitions, including easements, can be completed through exchange, Land and Water Conservation Fund (LWCF) purchases, donations, or receipts from the Federal Land Transaction Facilitation Act. In 1964, Congress established the

LWCF (Public Law 88-578) to provide for the acquisition of public lands to meet the needs of all Americans for outdoor recreation and open space.

Of the 28,000 acres acquired through purchase, all but 600 acres were purchased using $11,676,617 worth of LWCF funds.

Sales

The BLM manages public land sales 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, identified in the RMP, 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. Any lands to be disposed of by sale that are not identified in the current RMP require a plan amendment before a sale can occur.

Sale authority under 43 CFR 2710.0-3 (a) authorized by FLPMA allows the BLM to sell public lands where, as a result of land use planning, it is determined that (1) the tract was acquired for a specific purpose but is no longer required for that or any other Federal purpose, (2) disposal of such tracts shall serve important public objectives, including expansion of communities and economic development, and (3) such tracts are difficult and uneconomic to manage because of their location or other characteristics.

According to FLPMA, sales of public lands under 43 CFR 2710.0-6 shall be conducted under competitive bidding procedures. However, if the field manager determines it necessary and proper in order to assure equitable distribution among purchasers of lands, or to recognize equitable considerations or public policies, lands may be sold by modified competitive bidding, or without competitive bidding. There are three methods of sales: competitive, modified competitive, and direct sale. The Spokane District RMP ROD (May 1987, page 34) identified potential public lands for disposal. Since May 1987, five land sale transactions have been completed conveying 11 acres (table 2.2-24). The major purpose of the sales was to resolve an unintentional unauthorized use of public lands.

Table 2.2-24. Land tenure actions since 1987

Method of Acquisition/Conveyance	Number of Actions	Acres Acquired	Acres Conveyed
Exchanges (single transaction)	10	22,754	31,632
Exchanges (assembled)	7 (56 transactions)	88,808	
Purchases	42	28,290	
Donations	2	5,605	
Agency Transfer	1	311	
Sales	5		11
Totals		**145,768**	**31,643**

Forecast or Anticipated Demand for Use

Since the current RMP was issued the Spokane District has acquired 146,000 acres lands into larger consolidations of new public lands and conveyed 32,000 acres primarily through land exchanges. By establishing larger groupings of public lands, new land management opportunities and challenges have been generated. It is anticipated that the District's emphasis will change from processing large assembled land exchanges to a focus of managing the lands recently

acquired, and completing simpler single-phase land exchanges and acquisitions that enhance or enlarge existing land assemblages, or provide for other public interests.

Key Features, or the Areas of High Potential for the Use

The current RMP identified the criteria used in identifying public lands for retention or conveyance, as well as identifying acquisition and priorities (Spokane District RMP ROD May 1987, appendix B). The criteria that was used in the 1987 RMP included:

- Public resources values that will benefit and enhance resource programs;
- legal and physical accessibility of the land for public use;
- amount of public monetary investments in facilities or improvements on the public land and the potential for recovering those investments;
- difficulty or cost in time and money in the effective managerial administration of the lands; suitability or desirability of the land for management by another governmental agency;
- significance of any subsequent land use decisions in stabilizing, enhancing, or hindering existing or potential businesses, social and economic conditions, and/or lifestyles;
- need for future mineral development;
- encumbrances to the land including but not limited to land use authorizations and withdrawals;
- consistency of the decisions with cooperative agreements and plans or policies of other agencies; suitability and need for change in land ownership or use for purposes including, but not limited to, community expansion or economic development; and
- State and local governmental requests and recommendation for retention or disposal of BLM-administered public land.

The decision document also listed the various methods of conveying public land and the order of conveyance preference. The order of preference is: (1) State Lieu and State Grant selections, (2) State Exchanges, (3) Private Exchanges, (4) Recreation & Public Purposes (R&PP) patents, (5) BLM/USFS jurisdictional transfers, (6) Withdrawals to other Federal agencies, (7) Public sales, (8) Indian allotments, or (9) Desert Land Entries.

2.2.10 *Withdrawals*

Current Level

Withdrawals are formal actions that set aside, withhold, or reserve Federal land by statute 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 four major categories of formal withdrawals:

1. Administrative withdrawals are made by the President, the Secretary of the Interior, or other authorized officer of the Executive branch of the Federal government. Examples include Executive orders, Presidential proclamations, Secretarial orders, Public Land orders, Departmental orders, U.S. Geological Survey orders, BLM orders, etc. Currently, only the public land order signed by the Assistant Secretary of the Interior is used for administrative withdrawals; although the President still has authority to make emergency withdrawals.

2. Congressional withdrawals are legislative actions by Congress in the form of public laws (Acts of Congress). Examples are wilderness designations, national parks, and wild and scenic river designations, etc.

3. Presidential proclamation withdrawals are made by the President pursuant to the authority under the section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431). The President may use the authority to designate historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. Examples include Cascade-Siskiyou National Monument and Hanford Reach National Monument.

4. Federal Power Act (FPA) or Federal Energy Regulatory Commission (FERC) withdrawals are established under the authority of the Federal Power Act of June 10, 1920. Such withdrawals are automatically created upon filing an application for hydroelectric power development with the Federal Energy Regulatory Commission (FERC). Power site reserves, power site classifications, waterpower designations, and reservoir site reserves are all types of administrative withdrawals and should not be confused with FERC power project withdrawals.

Withdrawals accomplish one or more of the following:

- Transfers total or partial jurisdiction of Federal land between Federal agencies.
- Segregates (closes) Federal land to some or all of the public land laws and/or mineral laws.
- Dedicates land for a specific public purpose.

Withdrawals are often used to preserve sensitive environmental values, protect major Federal investments in facilities or other improvements, support national security, and provide for public health and safety. Withdrawals segregate a particular portion of public lands, suspend operation of the public land laws (i.e., withdraw from settlement, sale, location, or entry), and prevent any disposal of public lands or resources involved in certain types of land use application. Withdrawals remain in effect until specifically revoked.

Under FLPMA, withdrawal reviews are mandated, requiring the BLM to eliminate all unnecessary withdrawals and classifications. The BLM must ensure that a definite show of need support withdrawals, recommending revocation of withdrawals that lack sufficient justification. Before recommending a withdrawal continuation, the BLM must explore alternatives such as rights-of-way and interagency agreements. The current Spokane RMP ROD identifies withdrawal review (USDI BLM 1987, page 27) and provides for continuation of the withdrawal review program. Examples of these withdrawals include power site reserves, FERC power projects, public water reserves, and USFS administrative sites. Since 1940 over 140,000 acres have been withdrawn for use by other Federal agencies, including 101,000 acres of public land withdrawn from public use in eastern Washington. The withdrawals were basically for military purposes (65,000 acres, Department of Energy, Hanford Reservation; 27,000 acres, Department of the Army, Yakima Firing Center). In June 1993, the Spokane RMP was amended to permit processing of the Army's application for an additional withdrawal of 9,746 acres of public lands and public mineral estate (including private surface/Federal minerals) within the expansion area.

Federal Energy Regulatory Commission Withdrawals. The authority of the Federal Power Act of 1920 established Federal Power Act or FERC (formerly the Federal Power Commission) withdrawals. Filing an application for hydroelectric power development with FERC

automatically create such withdrawals. Section 24 of the Act provides the means to open power projects and waterpower withdrawals to settlement, sale, location, or entry subject to the potential future use of those lands for power development.

There are seven FERC hydroelectric projects within the planning area that are in various stages of licensing. The Boundary, Wells, and Enloe projects are currently in the relicensing phase. Table 2.2-25 summarizes the projects.

Table 2.2-25. FERC hydroelectric projects

Project Name	Owner Name	River	County
Boundary	City of Seattle	Pend Oreille	Pend Oreille
Wells	Douglas County PUD #1	Columbia	Okanogan
Enloe Hydroelectric	Okanogan County PUD #1	Similkameen	Okanogan
Rock Island	Chelan County PUD #1	Columbia	Chelan
Rocky Reach	Chelan County PUD #1	Columbia	Douglas
Cedar Creek	Cominco American Inc.	Cedar Creek (Pend Oreille)	Stevens
Priest Rapids	Grant County PUD #2	Columbia	Grant

Forecast

Currently there are five preliminary permits applications within the Spokane District (table 2.2-26). Two preliminary permits, Sentinel Mountain and Shanker's Bend, have been issued and may progress to the licensing process. The BLM will need to evaluate potential project impacts and participate in the licensing process to assure achieving appropriate mitigations for resources on public land.

Table 2.2-26. FERC preliminary permits

Project Name	Owner Name	River	County
Enloe Dam	Okanogan County PUD #1	Similkameen	Okanogan
Sentinel Mountain Pumped Storage	United Power Corporation	Crab Creek	Grant/Adam
Shankers's Bend Hydro	Okanogan County PUD #1	Similkameen	Okanogan
Umtanum Ridge Pumped Storage	BPUS Generation Development, LLC	Columbia	Yakima/Grant/ Benton
Green Hydro Rocky Reach	Green Hydropower, Inc	Columbia	Douglas/ Chelan

The Department of Energy (DOE) has approached BLM to enter into an agreement to allow private industry to develop withdrawn public land within the Hanford Reservation for renewable energy testing or production.

Key Features

The preliminary permit and licensing processes are client driven, and it is difficult to determine where and when new projects will originate. Licensed projects are always prone to modifications which would require BLM to evaluate them for possible impacts to public resources and submit terms and conditions that are necessary to protect public land and its uses.

2.3 Special Designations

2.3.1 *Areas of Critical Environmental Concern*

Existing ACECs

ACECs (areas of critical environmental concern) highlight areas where special management attention is needed to protect important values. These values may be biological, geological, cultural, historic, scenic, or safety-related. The ACEC designation indicates to the public that the BLM recognizes that an area has significant values and has established special management measures to protect those values. The Spokane District has 16 ACECs (table 2.3-1).

Table 2.3-1. ACECs within the Spokane District

Name	Acres	Values Present[1]
Border Field Office		
Juniper Forest (Franklin County)	11,600	For the protection of ferruginous hawk (ST, SOC, S) and Swainson's hawk (SM), their prey base, and *Cryptantha leucophaea* (SS, SOC, S); largest sand dunes in the State of Washington; approximately 20% of the State's population of ferruginous hawks was historically found here; long-billed curlew (SM, S) and *Astragalus sclerocarpus* also occur.
Coal Creek (Lincoln County)	710	For the protection of *Polemonium pectinatum* (ST, SOC, S), which is restricted to riparian bottomlands in Crab Creek; riparian habitat and cultural values; *Silene spaldingii* (FT, ST, S) also occurs.
Little Vulcan Mountain (Ferry County)	600	Protection and restoration of big horn sheep habitat; old growth forest also occurs.
McCoy Canyon (Benton County)	100	To provide protection for *Astragalus columbianus* and *Lomatium tuberosum* (SOC, SS, S) and *Erigeron piperianus* (SS, S).
Yakima & Columbia River Islands (Benton and Franklin Counties)	640	Waterfowl nesting; mainly Great Basin Canada geese (*Branta canadensis moffitti*); mule deer fawning areas; staying areas for the long-billed curlew (SM, S); and one small population of *Rorippa columbiae* (SOC, SE, S).
Wenatchee Field Office		
Hot Lakes (also an RNA) (Okanogan County)	80	A saline meromictic lake supporting a population of brine shrimp; the normal cycle of lake water turning over does not occur and it does not freeze in the winter; this lake is the only one of its type in the U.S.; the surrounding lands support plant species that usually are limited in their distribution to the salt marshes of the sea coast or to alkaline spots in the interior (halophytes).
Brewster Roost (Douglas County)	200	Mature and old growth trees that provide roosting habitat, staging areas, day perches, and potential nest sites for as many as 31 bald eagles (CM).
Colockum Creek (Chelan County)	80	To preserve *Astragalus sinuatus* (SE, SOC, S).
Rock Island Canyon (Douglas County)	1,200	For the preservation of *Astragalus misellus* var. *pauper* (SS, S) and *Phacelia lenta* (SOC, ST, S) with 50% of its occurrence in BLM ownership), both endemic to the Northwest.

Name	Acres	Values Present[1]
Yakima River Cliffs & Umtanum Ridge (Yakima County)	320	For the preservation of *Erigeron basalticus* (ST, S) and *Lomatium tuberosum* (SS, SOC, S).
Earthquake Point (Chelan County)	40	To preserve *Petrophytum cinerascens* (SOC, SE, S).
Sentinel Slope/Trail Creek ACEC (Grant County)	200	To preserve *Lomatium tuberosum* (SS, SOC, S); this is one of five known populations.
Cowiche Canyon (Yakima County)	480	For the preservation of *Tauschia hooveri* (SOC, ST, S) endemic to 2 counties in central Washington; this occurs in 3 parcels including uplands, canyon slopes and a 3-mile-segment of Cowiche Creek, a perennial tributary of the Naches River; *Phacelia lenta* (SOC, ST, S) and *Astragalus misellus* var. *pauper* (SS, S) also occur.
Yakima River Canyon (Yakima and Kittitas Counties)	4,200	For the protection of *Tauschia hooveri* (SOC, ST, S), *Erigeron basalticus* (ST, S), and *Lomatium tuberosum* (SS, SOC, S), and high density of nesting raptors big horn sheep; also for protection of the travel corridor of Native Americans and fur trappers.
Keystone Point (Chelan County)	360	For the protection of a significant population of *Trifolium thompsonii* (SOC, ST, S); *Iliamna longisepala* (SS, S) also occurs.
Iceberg Point and Point Colville (San Juan County)	116	For the protection of important wildlife habitat including bald eagle (CM) and cultural values; the last remaining relatively undisturbed stands of Douglas-fir-white fir timber on Lopez Island are located on these two sites; the age of some of these trees is estimated at well over 300 years.

[1] SE = State endangered; ST = State threatened; SM = State monitor; S = BLM sensitive; SS = State sensitive; SOC = Federal species of concern; FT = federally threatened; CM = Federal candidate (in delisted monitoring status).

Potential ACECs

Coal Creek: The present ACEC includes 710 acres along Coal Creek near the town of Lamona. The Coal Creek Management Plan (USDI BLM 2002) recommended that an additional 460 acres along Coal Creek near Mohler be designated as an ACEC. Relevant and important values of the Mohler parcel include occupied habitat for a federally listed plant (Spalding's catchfly), occupied habitat for a Federal species of concern and State-listed plant (Washington polemonium), riparian wildlife habitat, and fish habitat.

Wilson Creek: This 460-acre parcel in T25N, R31E, section 12, includes riparian habitat along 1 mile of Wilson Creek, and associated upland shrub-steppe habitat. The parcel has not been grazed for at least 20 years, and both the uplands and riparian area are in good to excellent condition. Relevant and important values of this parcel include wildlife habitat and a large (500+) population of a Federal species of concern and State-listed plant, Washington polemonium. This area has been highlighted as a "Watchable Wildflower Area," and is a favorite destination of eastern Washington birders because its woody riparian corridor supports a diversity of songbirds.

Horse Heaven Hills: The relevant value of the Horse Heaven Hills in Benton County is the presence of an extensive example of the big sagebrush/bluebunch wheatgrass plant association in very good to excellent condition. Although this is a common vegetation type in eastern Washington, there are very few examples of this type that are this large in area and in as good an ecological condition (WDNR 2007, in Schuller 2009). The largest high quality examples of this

vegetation are on U. S. Department of Energy lands to which access is highly restricted, whereas Horse Heaven Hills is accessible for the public to observe.

Sentinel Butte Dunes: Relevant values are the presence of rare plant communities, and the presence of rare geological features. The Wyoming Big Sagebrush/Needle-and-Thread Grass plant association and the Antelope Bitterbrush/ Needle-and-Thread Grass plant association occur on the property in moderate to high ecological condition. Two species of concern plant species, gray cryptantha and Geyer's milk-vetch, occur on BLM lands in this location The geological feature of interest is the existence of active dune formation processes. These values are important because the total extent of inland dune systems in Washington has declined by about 76 percent since the early 1970s. ACEC designation for this area was recommended by the Washington Department of Natural Resources (Hallock et al. 2007) and corroborated by Schuller (2010). The Sentinel Slope ACEC nearby does not include sand dune habitat, and was designated for the protection of Hoover's desert-parsley, a plant of open talus slopes.

2.3.2 *Back Country Byways*

Existing Back Country Byways

There are no roads or sections of roads on BLM lands in the planning area that are currently designated as part of the Backcountry Byways system.

Currently, the Coulee Corridor Scenic Byway (along Highway 155 and Highway 17) is one national scenic byway designated within the planning area. Several other Washington State scenic byways have been designated within the planning area, including the San Juan Islands Scenic Byway (which incorporates the islands of San Juan and Orcas and also designates the Washington State Ferry route as ―extended Highway 20"), Okanogan Trails Scenic Byway on Highway 97, the Yakima Canyon Scenic Byway along Highway 821, and the North Pend Oreille Scenic Byway along Highway 31 in northeast Washington.

Potential Back Country Byways

There are currently no roads or sections of roads identified for inclusion into the backcountry byways system. Any backcountry byway proposed during public scoping will be addressed in alternative development for the draft RMP.

2.3.3 *National Recreation Areas*

Existing National Recreation Areas

There are no existing national recreation areas designated within the decision area.

Potential National Recreation Areas

There currently are no plans to designate any national recreation areas in the decision area. If any potential areas are identified during public scoping, they will be addressed in the planning process.

2.3.4 *National Scenic, Historic, and Geologic Trails*

Existing National Scenic and Historic Trails

On March 30, 2009, President Obama signed into law H.R. 146, the ―Omnibus Public Land Management Act of 2009." The Pacific Northwest National Scenic Trail (PNST) and Ice Age

Floods–National Geologic Trail (IAFNGT) were authorized under the bill. The 1,200-mile-long Pacific Northwest National Scenic Trail (PNST), running from the Continental Divide to the Pacific Ocean, ranks among the most scenic trails in the world. The hiking trail runs from the Continental Divide in Montana, through the northern panhandle of Idaho, to the Pacific coast of Washington's Olympic Peninsula. The route includes the Rocky Mountains, Selkirk Mountains, Pasayten Wilderness, North Cascades National Park, and the mountains and wilderness coastline of Olympic National Park. The PNST crosses three national parks and seven national forests, and ends at the Pacific Ocean on Washington's Olympic Peninsula. On BLM-managed lands, this trail meanders through areas rich in Native American and pioneer history, along a historic railroad grade deep in the canyon of the Similkameen River, and high above the shores of Lake Chopaka in the heart of the Okanogan highlands of northern Washington. In total, approximately 12 miles of trail crosses land administered by BLM. As part of the Omnibus Public Land Management Act of 2009, the Forest Service will administer the trail in cooperation with other Federal (including BLM), state, and local entities, who will help develop the management plan for the trail.

As part of the Act the National Park Service (NPS) will administer the Ice Age Floods-National Geologic Trail. The management plan study will determine exactly how the trail will be managed and what features, interpretive facilities, etc., will be included. In conjunction with the NPS other Federal (including BLM), state, and local entities will be an integral part of development of the management plan.

The understanding and appreciation of the Ice Age Floods (see map 33, appendix A) is a relatively recent phenomenon. As recently as the 1960s, not all geologists accepted the hypothesis of catastrophic Ice Age flooding in the Pacific Northwest. It took decades for the geologic community to accept the hypothesis of J Harlen Bretz, who was instrumental in proposing the idea of catastrophic flooding. The visible remnants of the floods are on such a large scale and found at so many different sites that change has not dramatically affected them, but as the area continues to develop the region will experience accelerated changes. These changes may affect flood features. At the present time, there is an opportunity to develop a cooperative effort to educate the public about the Ice Age Floods, to contribute to existing cultural tourism programs in Montana, Idaho, Washington, and Oregon, and to develop a better understanding and appreciation of the remaining resources from the greatest documented floods on Earth.

No NPS lands will be physically acquired for the trail. Although NPS will be the managing agency over the trail, interpretation will be done cooperatively between NPS in concert with Federal (including BLM), state, and local entities. Since numerous Ice Age Floods features occur on federally managed lands a memorandum of understanding (MOU) between many of the Department of Interior (DOI) agencies and other Federal agencies (see table 2.3-2) was signed in 2010.

BLM has a unique opportunity to be involved in the ―ground up" collaborative interagency process for developing interpretation of the flood-related features and this nationally significant story. BLM has many features located on management areas located within eastern Washington.

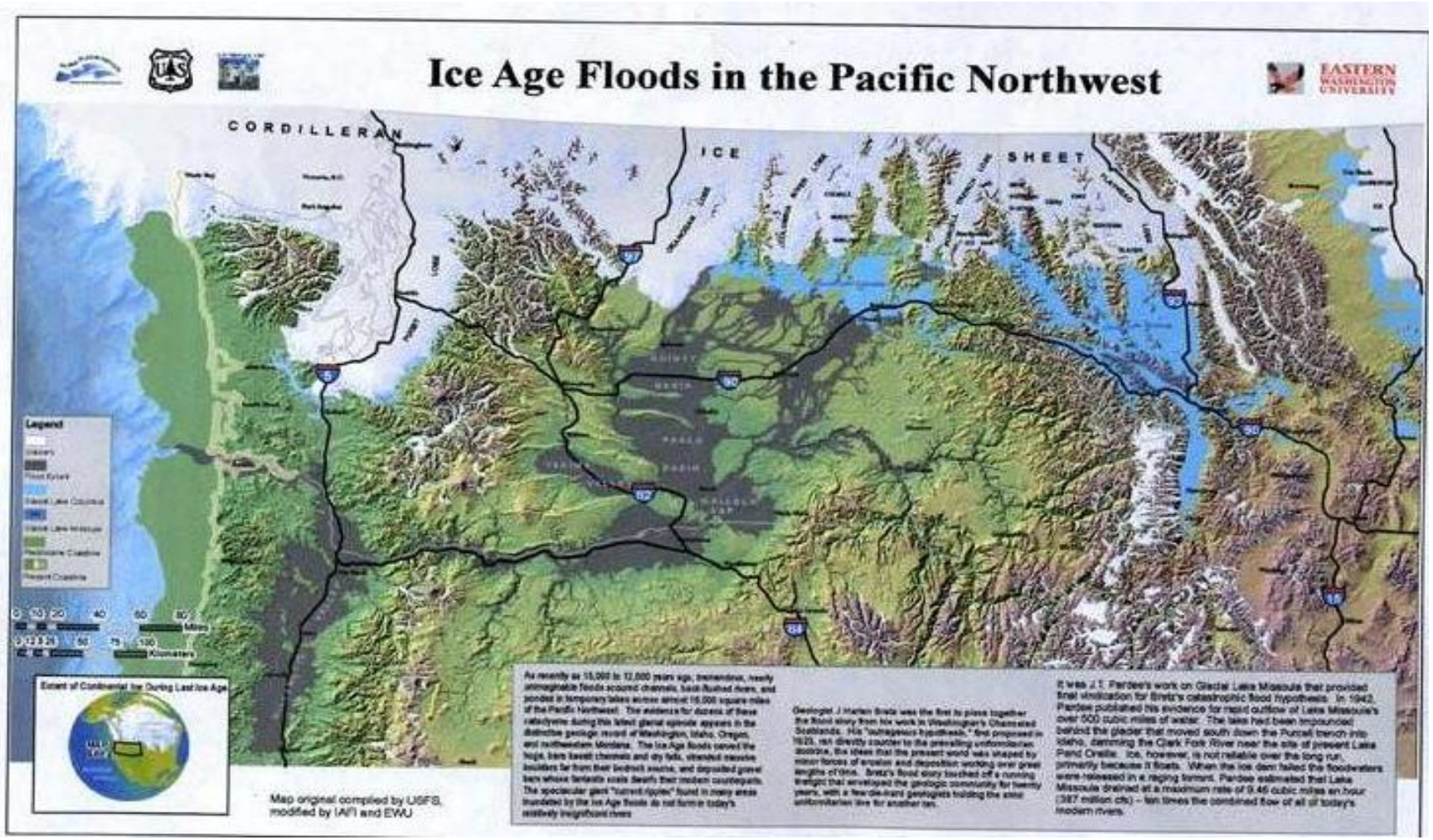


Figure 2.2-1. Ice Age floods in the Pacific Northwest

Table 2.3-2. Federal signatories for Ice Age Floods MOU

Agency	
National Park Service	Pacific West Region
U.S. Geological Survey	Western Region
Bureau of Land Management	Oregon/Washington State Office
	Montana and Dakotas State Office
	Idaho State Office
Bureau of Reclamation	Pacific Northwest Region
U.S. Fish and Wildlife Service	Region 1
U.S. Army Corps of Engineers	Northwestern Division
USDA Forest Service	Northern Region (MT)
	Pacific Northwest Region (OR/WA)

Potential National Scenic and Historic Trails

There currently are no plans to designate any national scenic or historic trails in the planning area. If any potential areas are identified during public scoping they will be addressed in the planning process.

2.3.5 *National Recreation Trails*

Existing National Recreation Trails

The Spokane District currently manages land along one national recreation trail. The Cascadia Marine Trail was designated to highlight marine areas along a water trail extending from Hood Canal to the Canadian border.

Potential National Recreation Trails

There is currently no pending legislation to designate any national scenic or historic trails in the planning area.

2.3.6 *Wild and Scenic Rivers*

Existing Wild and Scenic Rivers

In 1968, Congress enacted the National Wild and Scenic Rivers Act, which established a system for preserving outstanding free-flowing rivers. There are no wild and scenic rivers designated within the planning area. However, in 1988, during the comment period for the Yakima River Canyon Recreation Management Plan, multiple recommendations were made from the general public to conduct a study to include the Yakima River in the National Wild and Scenic River System. The eligibility study that was conducted identifies that —.due to the outstanding recreational values associated with fishery, recreation and wildlife, it does meet Eligibility Criteria number 3 for a Recreational River Area." (USDI BLM 1988). A suitability determination has not been conducted for this segment of the Yakima.

Potential Wild and Scenic Rivers

In November 2010, the BLM completed a wild and scenic river eligibility inventory and analysis. Results will be published in a separate report.

2.3.7 *Wilderness Areas*

Existing Wilderness Areas

There is currently one wilderness area within the decision area. The 7,140-acre Juniper Dunes Wilderness was designated in July 1984 (see map 31 appendix A), and is located approximately 12 miles from Pasco, Washington. It contains some of the largest sand dunes (up to 130 feet in height and 1,200 feet in width), and largest remaining natural groves of western juniper in the State. The wilderness also provides hunting and nesting habitat for ferruginous and Swainson's hawks, which are currently listed in Washington State as ―threatened" and ―monitor" status species, respectively. Management of the wilderness area is devoted primarily to recreational, scenic, scientific, and educational purposes. This unique remnant of an ecosystem which once extended to the Columbia and Snake Rivers, covering an area of nearly 250,000 acres, is now popular for a variety of recreational activities including picnicking, nature studies, camping, hiking, backpacking, horseback riding, and hunting.

The Juniper Dunes Wilderness is one of three different type areas conjoined to create the 22,240-acre Juniper Forest Management Area. The other adjoining areas are an 8,620-acre ACEC, and a 3,920-acre section designated ―open" to OHV recreational motorized use. The wilderness fence clearly marks the wilderness boundary and serves as a barrier against incursion by OHVs. The most difficult issues are first, how to appropriately manage ever increasing motorized recreation in a manner to ensure vehicles do not enter the wilderness, and second, managing to protect adequate populations of the endangered hawks and other sensitive wildlife, as well as important plant species, within the wilderness and adjoining ACEC.

The ACEC bears a ―limited" motorized recreational use designation (motorized vehicles must remain on designated trails). Although no OHV trails were ever designated in the ACEC, lack of enforcement has resulted in continuous recreational motorized use in the ACEC on a growing number of user-created trails, which in turn results in stress to protected wildlife, and an increasing, yet still quite low number of OHV incursions into the wilderness, mostly in spots where blowing sand has undermined the fence.

Potential Wilderness Areas

While the WSA discussed in the following section could be considered a potential wilderness area, only Congress has the authority to designate it as a wilderness area.

2.3.8 *Wilderness Study Areas*

Existing Wilderness Study Areas

There is currently one WSA containing public lands within the decision area. This is the 5518-acre Chopaka Mountain WSA, which was designated in 1980 (see map 31, appendix A). The WSA lies along the slopes of Chopaka Mountain in a remote area of Okanogan County with its northern boundary along the United States-Canada boundary. The area's rugged, steep topography supports a wide variety of wildlife, including mountain goats and bighorn sheep. The northern half of Chopaka Lake lies within the WSA, and is a popular quality flyfishing lake. The southern half of the lake extends beyond the boundary of the WSA, and BLM and Washington Department of Natural Resources (WDNR) each manage small campgrounds along the edge of the lake outside the WSA. Most of the recreation activity in the area occurs on or around the lake. Camping and flyfishing begin after the snow melts in spring, and these activities continue throughout the fall. Hunting is popular in this area during the fall. The Chopaka Mountain

WSA's remote location and size does not lend itself to be a large attraction to recreational users of the area by its designation alone. However, the size of the block of BLM lands associated with this area and the lake are large draws to visitors. Therefore, the lake and WSA are sought out by recreational users for fishing, camping, hunting, horseback riding, and hiking. The main access into the WSA is fenced to restrict vehicle use, but occasional evidence of OHV use can be observed, and fence repairs occur each year.

The future of this WSA is unknown. Only Congress can designate it as wilderness, or release it from further wilderness consideration. Until that time, BLM's interim management policy (IMP) for WSAs will continue to guide management of the Chopaka Mountain WSA. The possibility that this area may be designated as wilderness will continue to be recognized in all affected land and resource use decisions.

Potential Wilderness Study Areas

The BLM historically has had the authority to inventory, assess, and recommend suitable public lands as WSAs; however, recent guidance clarified that this authority expired in 1991. With the passage of FLPMA in 1976, the BLM had 15 years to inventory and identify lands suitable for designation as wilderness by Congress. The BLM completed that inventory and review in 1991 and submitted it to Congress in 1993. Many of the WSAs identified Bureau-wide are still managed today under the IMP.

In 2001, the BLM issued new policies in the Wilderness Inventory and Study Procedure Handbook (H-6310-1). The handbook reiterated the BLM's authority to inventory, assess, and designate public lands as WSAs. These lands would then be available at any time for Congress to consider for designation as wilderness areas. The State of Utah and others challenged the authority of the DOI/BLM to designate and manage new (post-1993) WSAs, arguing that BLM completed the wilderness suitability process for public lands with the submission of recommendations to Congress in 1993. In the ensuing Utah Wilderness Settlement (April 2003), the DOI/BLM agreed that FLPMA does not allow identification or protection of new WSAs after 1993. In 2003, the BLM formally rescinded the Wilderness Inventory and Study Procedures Handbook. Therefore, in this planning process, the BLM cannot consider or recommend additional public lands for designation as WSAs. However, BLM can maintain its prior wilderness inventories for areas outside existing wilderness and WSAs, and can decide to protect areas found to possess wilderness characteristics through the land use planning process (see "Wilderness Characteristics" section).

2.3.9 *National Park Service National Natural Landmarks Program*

The National Natural Landmarks Program was established in 1962 by the Secretary of the Interior under the authority of the Historic Sites, Buildings, and Antiquities Act of 1935. National Natural Landmarks (NNL) are nationally significant areas that have been so designated by the Secretary of the Interior. To be nationally significant, a site must be one of the best examples of a type of biotic community or geologic feature in its physiographic province. Examples include terrestrial and aquatic ecosystems, as well as features, exposures, and landforms that record active geologic processes and fossil evidence of biological evolution.

The goal of the NNL program is to identify, recognize, and encourage protection of sites containing outstanding examples of geological and ecological components of the Nation's landscape. The landmarks have been designated to obtain concurrence on the owner or administrator for the landmark's status. In the State of Washington there are 17 NNLs, 5 of

which, listed below, contain public lands managed by the BLM within the Eastern Washington RMP Planning Area.

- Grande Ronde Goosenecks: The lower course of the Grande Ronde River has many excellent examples of entrenched meanders or goosenecks. These features record regional uplift and forced entrenchment of a stream in its pre-uplift meandering pattern. Two localities along the Grande Ronde make up the landmark.
- Sims Corner Esker and Kame Complex: This site contains the best examples of Pleistocene ice stagnation landforms in the Columbia Plateau and western United States. Although the Great Lakes Region and New England contain similar features, those at Sims Corner are well preserved due to the arid climate.
- Withrow Moraine & Jameson Lake Drumlin Field: Withrow Moraine is the only Ice Age terminal moraine in the Columbia Plateau Natural Region. The Drumlin Field is the best example of those features within the region. Together they provide dramatic evidence of depositional and erosional processes that accompany continental glaciation.
- Grand Coulee: Grand Coulee is the largest coulee in the Columbia Plateau and is probably the world's finest example of a recessional cataract gorge.
- Umtanum Ridge Water Gap: Water gaps have been cut through several anticlinal ridges between Ellensburg and Yakima, Washington, by the antecedent Yakima River. State Route 821 passes through the gap, where folded rocks illustrate results of tectonic stress and stream cutting.

2.4 Social and Economics

2.4.1 *Resource-Specific Information for Tribal Interests*

<u>Tribes with Interests in the Planning Area</u>

Native American people have occupied the region for more than 10,000 years utilizing lands in the planning area for hunting, fishing, plant gathering, trade and exchange, and other cultural, social and religious activities. Descendants of the first inhabitants continue to utilize the public lands and resources in their traditional use areas. Many are represented by tribal governments located in Washington, Oregon, Idaho, and Montana.

Twenty federally recognized Native American tribes have interests in public lands managed by the Spokane District in the planning area; these are:

- Confederated Tribes of the Colville Reservation
- Confederated Tribes of the Umatilla Indian Reservation
- Confederated Tribes of the Warm Springs Reservation
- Coeur d'Alene Tribe
- Confederated Salish and Kootenai Tribes
- Kalispel Tribe
- Kootenai Tribe of Idaho
- Lower Elwha Klallam Tribe
- Lummi Nation
- Nez Perce Tribe

- Nooksack Tribe
- Port Gamble S'Klallam Tribe
- Samish Indian Nation
- Skokomish Tribe
- Snoqualmie Tribe
- Spokane Tribe of Indians
- Stillaguamish Tribe
- Swinomish Indian Tribal Community
- Tulalip Tribe
- Upper Skagit Tribe
- Confederated Tribes and Bands of the Yakama Nation

Federally recognized tribes retain rights and/or interests in public lands through treaties, Executive orders, and/or Federal statutes. Treaty rights are pre-existing rights specifically reserved (retained) by tribes in the treaty or agreement between the tribe and the Federal government. As a Federal land managing agency, the BLM has a trust responsibility to ensure healthy habitats and water quality for maintaining treaty resources and access to public lands for practicing treaty rights including hunting, fishing, and gathering activities, as well as resources important to cultural and socioeconomic needs and interests of the tribes.

The areas of interest to Indian tribes include areas of historical or traditional use, particularly lands ceded to the Federal government during treaty negotiations or other agreements with specific tribes and/or bands that historically occupied lands in the region. Historically, some ceded lands were occupied exclusively by a single tribe or band, while others were used by several tribes or bands. Although treaties were negotiated with representatives of numerous tribes in the region, not all were ratified by Congress. In many instances where treaties were not ratified or negotiated, reservations were created by Executive order, and off-reservation rights and interests were identified in other agreements or statutes. Disputes regarding aboriginal territories were adjudicated by the Indian Claims Commission in the 1950s through the 1970s. Most of the Federal lands managed by the BLM within the planning area are ceded lands and are located in the interest areas of one or more tribes.

Protecting and maintaining vegetation communities, habitats for animals and fish, and water quality on public lands is an important responsibility of the Federal government. As a land management agency, the BLM has a responsibility to ensure that meaningful government-to-government consultation is conducted with federally recognized tribes to discuss and consider the effect that any proposed action may have on treaty rights and resources, and traditional uses in their areas of interest. Although tribal members may use public land resources for cultural and subsistence purposes, specific locations of resource use on public lands may not be known to BLM.

Treaty Rights and Interests

Native American rights and interests in the decision area include a wide array of cultural, social, and economic activities and practices. Hunting, fishing, and gathering of roots and berries in usual and accustomed places, and grazing on open and unclaimed lands, are examples of specific rights reserved to some tribes by treaties or agreements. As a Federal agency, BLM has a trust obligation to consult with tribes to identify and consider potential impacts of plans, projects,

activities or other actions that may adversely affect reserved tribal rights, resources, and other tribal interests.

The BLM is responsible for ensuring meaningful consultation and coordination is conducted with tribes on a government-to-government basis. Through the consultation process, the BLM and tribes identify issues to be considered in land use or project plans. Issues and concerns may include treaty rights and resources, sacred sites, traditional uses including areas of traditional cultural and religious importance, and any other areas that may affect tribal interests. In some instances, agreement documents have been developed to guide consultations between the BLM and a tribe. For example, expectations regarding coordination and consultation are outlined in a memorandum of understanding between the Oregon/Washington BLM and the Confederated Tribes of the Umatilla Indian Reservation.

Geographic areas of interest are defined through consultation with tribes and encompass a broad range of tribal interests and concerns. Interest areas, sometimes referred to as aboriginal areas, traditional use areas, or zones of influence, may be exclusive to a specific tribe or band, or overlap those of several tribes or bands. ―Usual and accustomed areas" identified in Steven's Treaties also may assist in defining the spatial extent of tribal areas of interest (USDA FS and USDI BLM 1997). Identification of the areas of tribal interest is open to ongoing interpretation, discussion, and project-by-project consultation.

Maintaining healthy habitats for fish and wildlife and access to locations of traditional procurement activities is essential to the exercise of reserved rights and tribal interests. However, opportunities to exercise reserved rights and the availability of resources have changed since the signing and ratification of treaties and agreements. Increased settlement and changes in land use practices including agriculture, irrigation, ranching, and resource extractive practices continue to alter the landscape and natural habitats. The changes contribute to reductions in resource availability and access to the locations of traditional use. Decreased availability of culturally and economically important resources such as native fish (including salmon), game, or plant species, and loss of access to areas of traditional use, affects the traditional socio-cultural activities and practices essential to the exercise of reserved rights and tribal interests.

Traditional Use and Sacred Sites

Habitats for fish, wildlife, and plants of traditional cultural value to the tribes occur on public lands within the decision area. Habitats supporting wildlife species that were traditionally hunted, gathered, or fished, and where culturally important plants were gathered for subsistence, medicinal, and ceremonial practices, and other uses are available for access and use. However, the specific locations of traditional use or the resources utilized while exercising tribal rights and interests in the decision area is largely unavailable. Identification of traditional uses or properties of traditional cultural and religious importance is an ongoing process addressed during consultation between the BLM and tribes and is often specific to individual projects.

Several locations important to gathering of traditional resources, particularly plants, have been identified on lands in the decision area. However, BLM may be unaware of many traditional resource procurement locations and their ongoing use. Traditional root gathering, a critical resource for ancestral peoples living in the Columbia Plateau, continues to be important to the tribes for its nutritional values and the added benefit of perpetuating tribal traditions. Locations of root gathering, often passed down through families, continue to be utilized in many areas. Collection ceases when access is prohibited or the root grounds are altered through environmental changes, particularly those resulting from land use practices. In addition to plant

gathering areas, villages, graves, prayer sites, pictographs, petroglyphs, talus/cache pits, rock cairns and alignments, and various other sites may be considered traditionally important.

Sacred sites or specific locations of ongoing ceremonial or religious practices have not been formally identified to BLM on lands in the decision area. This might be attributed in part to the culturally sensitive nature of the values at those locations or the practices or ceremonies conducted. The BLM is unaware of sacred sites or locations of ceremonial or religious practices that may occur on lands in the decision area.

Forest products traditionally used in construction or manufacture of tools, utensils, or other uses include western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*), red alder (*Alnus rubra*), Rocky Mountain maple (*Acer glabrum*), Pacific yew (*Taxus brevifolia*), big leaf maple (*Acer macrophyllum*), ocean spray (*Holodiscus discolor*), and various other woody plants (Suttles 1990) occur in the San Juan Archipelago Planning Area. Lodgepole pine (*Pinus contorta*), ponderosa pine (*Pinus ponderosa*), Rocky Mountain juniper (*Juniperus scopulorum*), western juniper (*Juniperus occidentalis*), serviceberry (*Amelanchier alnifolia*), mock orange (*Philadelphus lewisii*), red-osier dogwood (*Cornus stolonifera*), and various willows (Hunn et al. 1998) are a number of woody plants used traditionally in forested environments on BLM lands east of the Cascades.

Various roots, bulbs, berries, seeds, and nuts are important components of the traditional diet. Important traditional food plants include many varieties of fruits and berries, particularly salmonberry (*Rubus spectabilis*), salal (*Gaultheria shallon*), strawberry (*Fragaria lesca*), huckleberry (*Vaccinium parvifolium*), Oregon-grape (*Mahonia aquifolium*), rose (*Rosa* spp.) (Suttles 1990). In addition to the fruits and berries, a variety of traditional roots and bulbs including wapato (*Sagittaria cuneata*), camas (*Camassia quamish*) and various lilies occur on BLM-administered lands in the San Juan Archipelago Planning Area.

In the planning area east of the Cascades, numerous plants can be found important to tribes for subsistence, religious, or ceremonial activities, or other cultural purposes (Hunn et al. 1998; Turner et al. 1980). Plants important to traditional use occur in a number of cultural plant ethno-habitats. Ethno-habitats are plant habitats of importance to tribes for plant gathering. Geophytes such as biscuit roots (*Lomatium* spp.), bitterroot (*Lewisia rediviva*), and yampa (*Perideridia* spp.) are plants of particular prominence in traditional use and are often found in shallow rocky soils known as lithic soils. Cultural plants occurring in moist/meadow and woodland environments include camas (*Camassia quamish*), sedge (*Cyperaceae* spp.), western spring beauty (*Claytonia lanceolata*), tule (*Scirpus acutus*), and various lilies. Cultural plants commonly found in dry slopes and grasslands include onion (*Allium* spp.), balsamroot (*Balsamorhiza* spp.), brodiaea (*Brodiaea* spp.), and various lilies. Plants commonly found in riparian areas include chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier alnifolia*), elderberry (*Sambucus cerulea*), currant (*Ribes* spp.), rose (*Rosa* spp.), red osier dogwood (*Cornus stolonifera*) and various willows. In forested environments, huckleberry (*Vaccinium membranaceum*), thimbleberry (*Rubus parviflorus*), raspberry (*Rubus idaeus*), black tree lichen (*Bryoria fremontii*), mushrooms, and various woody species are commonly available. Activities impacting ethno-habitats may also affect cultural plants important for maintaining cultural traditions and exercise of treaty rights and tribal interests. The occurrence of culturally important plant species may be measured through identification of vegetation communities and/or associations with soil types.

Habitats supporting larger terrestrial species important to subsistence and traditions including deer, elk, mountain sheep, bear, mountain goats, and numerous smaller mammals, fowl, and fish

are present in the planning area. Traditional marine subsistence resources, including salmon, halibut, cod, and various shellfish, sea mammals, and birds are available in the San Juan Archipelago Planning Area. Access to streams and lakes, and Puget Sound in the San Juan Archipelago is available for exercise of tribal fishing rights and interests in the planning area, but specific locations of ongoing traditional use for fishing related activities are largely unknown to BLM.

2.4.2 *Public Safety*

2.4.2.1 Abandoned Mines (Metal and Coal)

Metal Mines

Is eastern Washington there are literally hundreds of abandoned mines. Abandoned metal mines have two distinct public safety issues: physical hazards and contaminated water emanating from the mine workings or what is commonly referred to as acid mine drainage (AMD) or acid rock drainage (ARD).

The most common physical hazards include exploration and mine develop workings known as adits (horizontal) and shafts (vertical) which can sometimes be hundreds of feet deep. Bad air (lack of oxygen) and rock falls within these mine openings can also be fatal. BLM controls access by gating or fencing physical hazards.

A more complex and costly problem often associated with abandoned mine land is degraded water quality. Many abandoned mines have associated sulfide minerals (pyrite most commonly) that when exposed to air and oxidized and leached by water. As the pyrite or sulfides break down they can eventually form sulfuric acid, thus lowering the alkalinity or pH of the water below a normal pH of 7. As more acid is generated, pH of the water decreases (becomes more acidic) and the ability to leach metals (such as copper, lead, zinc, etc.) increases metal contamination and affects water quality and AMD occurs. It is often very expensive and may take many years to remediate AMD, or may need to be treated in perpetuity.

Table 2.4-1 lists abandoned mine projects on BLM-managed lands in the eastern Washington planning area and status of completed remediation efforts. Map 34, appendix A, shows the locations of the BLM inventoried abandoned mine land.

Table 2.4-1. BLM Spokane District abandoned mine land (AML) sites

	District Site/Mine Name	AML Site ID	BLM Field Office	Status of Remediation Activities	Location in Washington	Year Completed
1	Abe Lincoln Mine	11063	Border	Site designated, no inventory work completed yet.	7 miles NW of Northport	2001
2	Aquila Mine	11042	Border	Site designated, no inventory work completed yet.	6 miles N of Kettle Falls	2001
3	Bechtol	11049	Border	Site designated, no inventory work completed yet.	3 miles NE Spirit	2001
4	Brooks	11625	Border	Site designated, no inventory work completed yet.	2 miles SW of Turk	2001
5	Checops	11033	Border	Preliminary earthwork completed.	5 miles SW of Chewelah	2004
6	Chloride Queen	11051	Border	Assess, sample, quantify the degree of surface water contamination from a large volume of mill tailings and mine waste rock.	10 miles N of Colville	2005
7	Cleveland Mine	10018	Border	Repository 3 & 4 consolidated and isolated from contact with Hunters Creek.	10 miles E of Hunters	2001
8	Copper Butte	11035	Border	Preliminary earthwork to mitigate contamination from mine waste rock piles and improve water quality in Hunters Creek.	9 miles E of Hunters	2004
9	Deep Creek	11052	Border	Site designated, no inventory work completed yet.	3 miles SE of Northport	2001
10	Double Standard	11039	Border	Site designated, no inventory work completed yet.	6 miles NW of Northport	2001
11	Edna Mine	11038	Border	Site designated, no inventory work completed yet.	4 miles SE of Leadpoint	2001
12	Evening Star	11034	Border	Preliminary earthwork completed.	4 miles SW of Chewelah	2004
13	First Thought Mine	11053	Border	Site designated, no inventory work completed yet.	3 miles NE of Orient	2001
14	Flagstaff	11626	Border	Site designated, no inventory work completed yet.	3 miles W of Northport	2001
15	Fouress Mine	11004	Border	Preliminary earthwork completed.	16 miles N of Davenport	2003
16	Germania Mine	11050	Border	Assess, sample, quantify the degree of surface and groundwater contamination from percolation through mill tailings and mine waste rock.	8 miles SE of Hunters	2005
17	Glass Mountain Mine	11037	Border	Preliminary earthwork completed.	2 miles N of Newport	2004
18	Gold Mountain Mine	11044	Border	Site designated, no inventory work completed yet.	1 mile S of Danville	2001
19	Great Republic Mine	11032	Border	Assess, sample, quantify the degree of surface/groundwater contamination resulting from adit discharge onto and percolating through mine waste rock.	6 miles N of Northport	2007
20	Hidden Treasure Mine	10976	Border	Site designated, no inventory work completed yet.	2 miles NE of Orient	2001
21	Jay Gould Mine	10020	Border	Site designated, no inventory work completed yet.	5 miles NE of Chewelah	2001
22	Josephine Millsite #2	11017	Border	Assess, sample, quantify, and remediate a large volume of	1 mile N of Metaline	2004

	District Site/Mine Name	AML Site ID	BLM Field Office	Status of Remediation Activities	Location in Washington	Year Completed
				mine waste rock and mill tailings through removal or repository construction.	Falls	
23	Keystone Mine	11048	Border	Site designated, no inventory work completed yet.	3 miles SE of Leadpoint	2001
24	Lamchop Adit	11527	Border	Site designated, no inventory work completed yet.	9 miles SE of Hunters	2001
25	Lead King Mine	10979	Border	Site designated, no inventory work completed yet.	1 mile SE of Leadpoint	2001
26	Lookout	11018	Border	Assess, sample, quantify, and remediate a large volume of mine waste rock and mill tailings through removal or repository construction.	2 miles NW of Metaline Falls	2004
27	Lower Yellowhead Adit	11023	Border	Site designated, no inventory work completed yet.	2 miles N of Metaline Falls	2001
28	Metaline Falls Bridge	11041	Border	Site designated, no inventory work completed yet.	1 mile S of Metaline Falls	2001
29	Middle Yellowhead Adit	11022	Border	Site designated, no inventory work completed yet.	2 miles N of Metaline Falls	2001
30	O'Toole Mountain	11040	Border	Site designated, no inventory work completed yet.	7 miles SW of Northport	2001
31	Payne Mine	11030	Border	Site designated, no inventory work completed yet.	3 miles NE of Chewelah	2001
32	Queen Seal Mine	11008	Border	Preliminary earthwork completed, buildings removed, adits sealed and shafts filled.	7 miles SE of Hunters	2002
33	Sierra Zinc Mine	11031	Border	Site designated, no inventory work completed yet.	4 miles SW Spirt	2001
34	Stiles	11627	Border	Site designated, no inventory work completed yet.	8 miles SE of Hunters	2001
35	Tempest Mine (Daisy Mine)	10975	Border	Assess, sample, quantify the degree of surface water contamination resulting form adit discharge onto and percolating through mine waste rock and remediate a large volume of mine waste rock and mill tailings though removal or repository construction.	4 miles E of Daisy	2004
36	Tenderfoot	10021	Border	Site designated, no inventory work completed yet.	3 miles NE of Echo	2001
37	Togo Mine	11007	Border	Preliminary earthwork completed. XRF sampling program.	7 miles SE of Hunters	2004
38	Turk Mine	10019	Border	Assess, sample, quantify the degree of surface water contamination from a very large volume of mine waste rock.	6.5 miles SE of Hunters	2006
39	Valenti Mine	11036	Border	Preliminary earthwork completed. XRF sampling program.	2 miles N of Curlew	2001
40	Walla Walla Mine Area	11002	Border	Site designated, no inventory work completed yet.	1 mile SW of Danville	2001
41	Winnipeg Mine	11043	Border	Site designated, no inventory work completed yet.	7 miles E of Boundary	2001
42	Yellowhead Mine	11021	Border	Assess, sample, quantify and remediate a large volume of mine waste rock and mill tailings through removal or	2 miles NW of Metaline Falls	2004

	District Site/Mine Name	AML Site ID	BLM Field Office	Status of Remediation Activities	Location in Washington	Year Completed
				repository construction.		
43	Young America	11009	Border	Assess, sample, quantify the degree of surface/groundwater contamination resulting from adit discharge onto and percolating through mine waste rock.	10 miles N of Kettle Falls	2006
44	Bales Property	10965	Wenatchee	Site designated, no inventory work completed yet.	2 miles W of Carlton	2001
45	Bitter Lake	10980	Wenatchee	Site designated, no inventory work completed yet.	3 miles NW of Oroville	2001
46	Caribou	10972	Wenatchee	Site designated, no inventory work completed yet.	3 miles NE of Chesaw	2001
47	Forty Ninth Parallel	10981	Wenatchee	Site designated, no inventory work completed yet.	4 miles NW of Oroville	2001
48	Friday	10956	Wenatchee	Site designated, no inventory work completed yet.	4 miles NW of Pateros	2001
49	Ivanhoe	10998	Wenatchee	Site designated, no inventory work completed yet.	4 miles NE of Loomis	2001
50	Ivanhoe Tunnel	10999	Wenatchee	Site designated, no inventory work completed yet.	3 miles NE of Loomis	2001
51	Kaaba Texas Mine	11104	Wenatchee	Tailings removed from Similkameen River floodplain and placed in permanent repository on private land. Install bat gates.	10 miles W of Oroville	2001, 2003
52	Last Chance Mine	10961	Wenatchee	Site designated, no inventory work completed yet.	1 mile SW of Ruby	2001
53	Magnetic Mine	10971	Wenatchee	Site designated, no inventory work completed yet.	4 miles E of Chesaw	2001
54	Mohawk Mine	10964	Wenatchee	Site designated, no inventory work completed yet.	7 miles W of Ruby	2001
55	Nighthawk Mine	10016	Wenatchee	One-half acre of tailings (800−1,000 yards) encapsulated and capped with topsoil and planted.	10 miles N of Loomis	2001
56	Palmer Mountain Mine	10017	Wenatchee	Fence exclosures around shafts.	2 miles NE of Loomis	2003
57	Spokane Mine	10962	Wenatchee	Site designated, no inventory work completed yet.	6 miles SW of Oroville	2001
58	Star Molybdenum	10973	Wenatchee	Site designated, no inventory work completed yet.	7 miles SW of Loomis	2001
59	Triune Mine	10966	Wenatchee	Fence exclosures around shafts.	5 miles SW of Oroville	2003
60	Western Star	10970	Wenatchee	Site designated, no inventory work completed yet.	4 miles E of Chesaw	2001

Coal Mine (Subsidence)

When large deposits or seams of coal were mined underground historically it was not economic or technically feasible to backfill the mined out areas. After a period of time, eventually areas will subside. Very little coal mining (none on BLM-managed lands) has occurred within the Eastern Washington or San Juan Island planning areas; thus, this type of land subsidence does not exist.

2.4.2.2 Hazardous Materials

BLM Spokane District (Border and Wenatchee Field Offices) staff has discovered the following hazardous materials and wastes dumped on public lands since the 1980s: drug lab chemicals and apparatus, orchard and agricultural pesticides and containers, asbestos, petroleum wastes (diesel fuel, oil and gas, etc.), paint containers, batteries, and tires. BLM has removed 11 dump sites contaminated with hazardous material/wastes (see table 2.4-2). BLM actively inventories, investigates for responsible parties (dumpers), and removes sites contaminated with hazardous materials/wastes. All material/waste are removed to an approve disposal facility. Larger quantities are removed by a BLM-authorized hazardous material contractor certified to collect, transport, and properly dispose of hazardous material/waste.

Table 2.4-2. Hazardous material sites on BLM managed lands

Site Name	Location (WA)	Material/Waste	Year Removed	Size of Hazardous Material/Waste Dump
Buckhorn Mountain	3 miles E of Chesaw	One home heating fuel oil tank	1997	1 200-gallon tank removed
Duffy Creek	10 miles S of Waterville	Asbestos insulation	Ongoing	Less than 20 ft^2 Area
Escure Ranch-Rock Creek	5 miles SW of Revere	Agricultural chemicals, paint containers, petroleum products	2003	Removed hazardous material containers
Fishtrap-Miller Ranch	1 mile E of Sprague	Wood preservative	2004	1 partially filled 55-gallon drum
Howard Flats	6 miles N of Chelan	Car batteries, tires, diesel fuel from fruit smug pots	2009	Removed car batteries and tires and aerated soil to remediate diesel fuel
Miners Flat	6 miles W of Oroville	Hydrochloric acid	2001	2 5-gallon buckets removed
Old Vantage Highway	6 miles E of Vantage	Corn silage pile leaking acidic effluent onto BLM	2006	BLM land exchange; lands became private property
Oroville Dump	2 miles W of Oroville	Pesticide and herbicide residue from fire in plant in Oroville	1989	2 acres fenced and landfill capped and revegetated
Rock Island Grade	3 miles E of Rock Island	Methamphetamine Lab chemicals	2006	Several bags of chemical containers and waste from illegal drug lab
Telford	Telford	Tires	2004	Several hundred tires collected from site
Weeks Dump	3 miles NW of Vantage	Tires	1996	Several hundred tires collected from site

Solid Waste Dump Sites

Throughout eastern Washington, many public land parcels that are managed by BLM have been dumping grounds for solid wastes for many decades. When solid waste dump sites are found BLM law enforcement actively investigates the sites. Table 2.4-3 lists solid waste removal site actions.

Table 2.4-3. Solid waste removal actions on BLM-managed lands

Site Name	Location (WA)	Solid Waste	Year Removed
Bonnie Bess Mining Claim	1 miles N of Conconully	Car bodies, scrap metal, construction wood debris and household garbage	2006
Howard Flats	2 miles N of Chelan	Junk cars, trailers, apple bins, household appliances, scrap metal and household garbage	2009
Liberty	1 mile W of Liberty	Bulldozer, trailer, scrap metal and wood, household garbage	2002
McLaughlin Canyon	4 miles S of Tonasket	Junk cars, scrap metal, and household garbage	2004
Miners Flat	6 miles W of Oroville	Junk cars, miscellaneous scrap metal, and garbage left from several burned buildings and household garbage	2001
Old Vantage Highway	6 miles E of Kittitas	Dead sheep carcasses	2005
Salmon Creek	2 miles S of Conconully	3 car bodies, snowmobile and lawn implements, scrap metal, and household garbage	2004
Sheep Canyon	5 miles NW of Ephrata	Construction debris and household garbage	1989
Rock Island Grade	3 miles E of Rock Island	Freezer, TV's, computer parts, and household garbage	2008
Weeks Dump	3 miles NW of Vantage	Old appliances, wire, scrap metal and household garbage	1996

2.4.2.3 Geologic Hazards (Landslides, Earthquakes, Tsunamis, and Volcanoes)

Landslides

Landslides vary in size from very small, such as rock falls, to very large rotational slumps. Three factors that primarily determine landslides are topography (steepness of slope), climate (large rainfall events), and geology. Sometimes landslides can be triggered by other geologic hazards such as earthquakes or volcanic eruptions. Heavier rain events over an extended period of time can also trigger large landslides. Rain on snow events may also contribute to landslides in eastern Washington, but topography and geologic environments may be responsible for most of the landslides within the RMP planning area. Sometimes rapid fluctuations in water levels within man-made reservoirs can trigger landslides such as those on the shores of Lake Roosevelt in northeastern Washington.

Due to increase urban growth, especially in western Washington, some building may occur in landslide-prone areas where considerable property damage could result, sometimes in the millions of dollars. The Washington State Department of Natural Resources-Division of Geology and Earth Resources and the United States Geological Survey (USGS) have done extensive

landslide mapping and gathering data to help county planning departments zone areas prone to landslides.

Earthquakes

Earthquakes typically occur at depth within the Earth's crust along major faults or "plate boundaries" that suddenly move and releases enormous amounts of energy and often displace the ground surface. Major earthquakes have been associated with the convergent plate boundary along Washington's west coast also known as the "Cascadia Subduction Zone". The Juan de Fuca oceanic plate is being forced below or "subducted" under the North American continental plate; often the plates lock or do not move and pressure builds over time until eventually slipping to form earthquake(s).

Earthquakes may also be related to volcanic activity such as magma moving upward in the Earth's crust as was documented in the 1980 Mount St. Helens eruption. Many earthquakes were generated as magma moved from depth into the magma chamber(s) feeding the volcano.

The Pacific Northwest Seismic Network has been monitoring seismic (earthquake) activity in Washington State for many years. Map 35, appendix A, shows seismicity activity in Washington (1872–present), documenting larger (greater than 4.0) earthquakes. A majority of the earthquakes occur in conjunction with movements along the Cascadia Subduction Zone in western Washington. There are several areas within the eastern Washington planning area that have had numerous earthquakes. These include the area between Entiat, Washington, north to the southern end of Lake Chelan and in the central portion of Yakima County. The USGS is currently conducting detailed studies and mapping in the north-central Washington (Entiat and Lake Chelan areas) to better determine the cause of the numerous earthquakes.

Tsunamis

Tsunamis occur when large earthquakes occur underwater and usually a large block of the seafloor is displaced generating enormous waves. Tsunamis can move at the speed of a jetliner (500 to 600 miles per hour) across the open ocean with relatively little fluctuation in the ocean's surface. But as the waves approach the shallow water off the coastline the wave amplitude increases forming large waves that surge inland and inundate and devastate low lying areas. One only has to examine the aftermath of the December 26, 2004, Sumatra earthquake and accompanying tsunami to see the powerful forces, mass destruction, and great loss of life caused by the tsunami.

A tsunami could potentially affect low lying areas associated with the San Juan Islands, principally BLM-managed lands at Watmough Bay and Iceberg Point on Lopez Island, Henry Island, and Patos and Little Patos Islands.

Volcanoes

Major volcanoes along the west coast of Washington State are associated with a portion of the "Ring of Fire", the process by which the heavier Juan de Fuca oceanic plate is being subducted below the North American continental plate. At depth along the "Cascadia Subduction Zone" rocks eventually melt and magma forms. The magma migrates up through the Earth's crust and can erupt, often violently, forming conspicuous composite or stratovolcanoes (Mount Rainier, Mount Baker, Glacier Peak, Mount St. Helens and Mt. Adams) located along the crest of the Cascade Mountains. This type of volcanism is very explosive and is often accompanied by lahars or pyroclastics flows (superheated mixture of ash, rock and water which usually travel down valleys) and mud flows. Also large areas can be inundated by ash fall from the eruptions. There

could be significant disruption in commercial airline traffic should a major volcanic eruption occur within the Cascades and prevailing winds carry the ash aloft into the atmosphere for hundreds if not thousands of miles away, potentially creating a similar situation to what the Iceland volcanic eruptions created in Europe during 2010 causing major air traffic delays (including thousands of flight cancellations).

None of the BLM-managed lands are within close proximity to the major Cascade Range volcanoes, so they would not be directly be affected by a volcanic eruption. However, large ash falls could inundate public lands managed by BLM within eastern Washington.

2.4.3 *Social and Economic Conditions*

Certain defining features of every area shape the nature of local economic and social activity. Among these are the local history and population, the presence of or proximity to large cities or regional population centers, types of longstanding industries such as agriculture and forestry, predominant land and water features, and unique area amenities. The BLM operates as a steward of many of these area resources and opportunities, and thus plays a role in the community. This discussion gives further insight on the character and extent of these community connections.

Methodology for Analysis

The economic analysis focuses on changes in demand for goods and services from BLM lands within the planning area. These lands contribute a wide range of economic values to people. Market goods such as minerals, timber, 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 existence values of wild steelhead or other unique 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.

While a value for ecological or recreational goods may exist, they are difficult to quantify. Direction provided in the Land Use Planning Handbook (appendix D; pages 6, 7, and 10) suggests the use of ―benefit transfer" to evaluate the effects of these non-market values. In the absence of quantitative information for these goods, they are discussed qualitatively where appropriate. These are important considerations alongside contributions to local jobs and income from a change in demand for goods and services provided by the BLM. If demand exists for these products, employment and income would likely be supported in other areas if these goods and services are provided by other means. Therefore, it is important to consider non-market values alongside potential job and income generation from resource use.

Planning Area

To accurately portray the relationship of current BLM management and the community, the social and economic geographic scope of analysis must be defined. The social and economic effects from changes on BLM lands feasibly extend beyond the immediate vicinity of their location. In addition, the role of BLM lands within the larger region must be addressed while not masking change within smaller counties and communities in the planning area. A multi-dimensional approach is thus appropriate, examining both the role of BLM lands at a broad regional scale and smaller county-level scale.

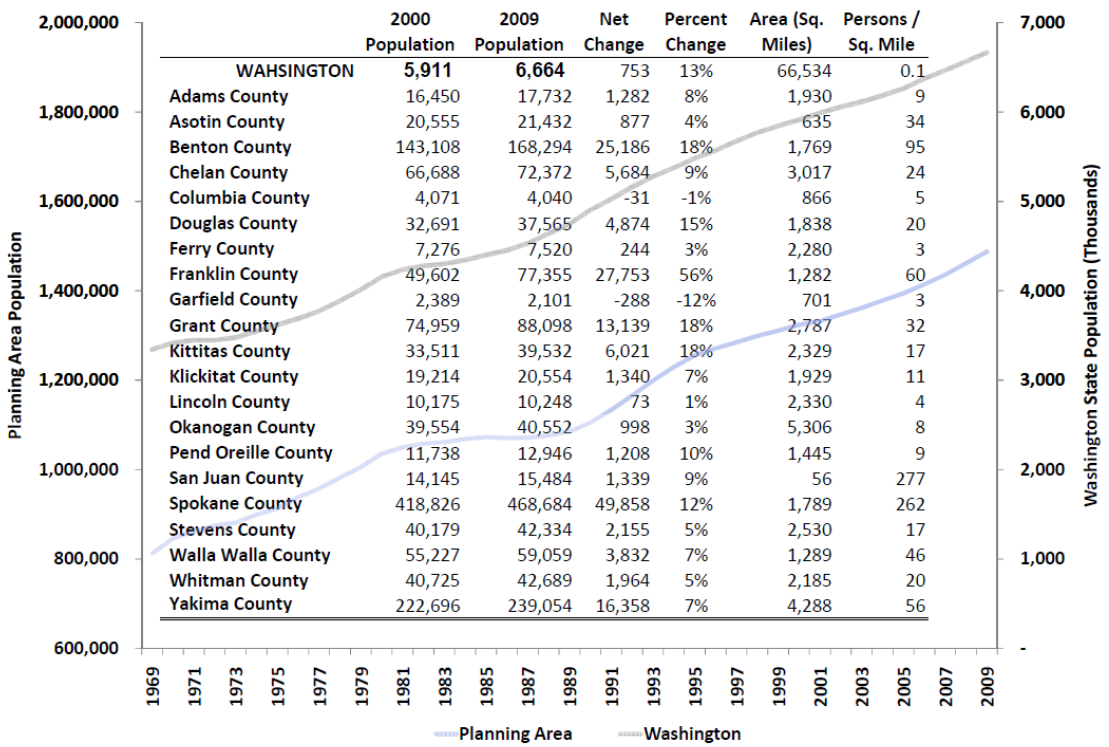
At the broad scale, the entire planning area is used to examine social and economic conditions, trends, and contributions from BLM. Analysis at only this scale would mask social and economic

relationships with BLM in smaller communities within the planning area. Consequently, social characteristics are presented for community human resource units (HRUs) characterized by James Kent Associates during recent community fieldwork performed in the area (JKA 2010). In addition, socioeconomic conditions and trends are presented for individual counties within the planning area. The planning area encompasses all of 20 counties, and portions of 3 others. However, since only 56 acres of BLM land are within Skagit County, and 0.5 acre of BLM land is within Whatcom County, this analysis will focus on the other 21 counties (see map 1, appendix A).

Population and Demographic Change

Population change in the 21 county planning area increased by 83 percent (675,269 persons) between 1969 and 2009, outpacing the nation, but not the State which increased by 99 and 53 percent (3.3 million and 106 million persons), respectively. Population change specific to individual counties is displayed in figure 2.4-1 for the period between 2000 and 2009. The largest absolute increase occurred in Spokane County (49,858 persons) while Franklin County increased the most in percentage terms (56 percent). Columbia and Garfield counties saw decreases in their populations over this period (1 and 12 percent, respectively) (figure 2.4-1).

The population density of the planning area (31 persons per square mile) and its individual counties was greater than the State of Washington in 2009. San Juan and Spokane counties had the highest population densities (277 and 262 persons per square mile, respectively) while Garfield and Ferry counties had the lowest (3 and 3.3 persons per square mile, respectively) (U.S. Department of Commerce 2010).



	2000 Population	2009 Population	Net Change	Percent Change	Area (Sq. Miles)	Persons / Sq. Mile
WAHSINGTON	**5,911**	**6,664**	753	13%	66,534	0.1
Adams County	16,450	17,732	1,282	8%	1,930	9
Asotin County	20,555	21,432	877	4%	635	34
Benton County	143,108	168,294	25,186	18%	1,769	95
Chelan County	66,688	72,372	5,684	9%	3,017	24
Columbia County	4,071	4,040	-31	-1%	866	5
Douglas County	32,691	37,565	4,874	15%	1,838	20
Ferry County	7,276	7,520	244	3%	2,280	3
Franklin County	49,602	77,355	27,753	56%	1,282	60
Garfield County	2,389	2,101	-288	-12%	701	3
Grant County	74,959	88,098	13,139	18%	2,787	32
Kittitas County	33,511	39,532	6,021	18%	2,329	17
Klickitat County	19,214	20,554	1,340	7%	1,929	11
Lincoln County	10,175	10,248	73	1%	2,330	4
Okanogan County	39,554	40,552	998	3%	5,306	8
Pend Oreille County	11,738	12,946	1,208	10%	1,445	9
San Juan County	14,145	15,484	1,339	9%	56	277
Spokane County	418,826	468,684	49,858	12%	1,789	262
Stevens County	40,179	42,334	2,155	5%	2,530	17
Walla Walla County	55,227	59,059	3,832	7%	1,289	46
Whitman County	40,725	42,689	1,964	5%	2,185	20
Yakima County	222,696	239,054	16,358	7%	4,288	56

Figure 2.4-1 Population change for counties within the planning area

Source: U.S. Department of Commerce (2010).

The population in the planning area has slightly aged since 1990, as the median age in 2000 was 34.3 years, up from 32.6 years in 1990. The largest age category is 15 to 19 years. Between 1990 and 2000 age groups between 40 and 59, which include some of the baby-boomer population, showed increases in their share of the total population. The fastest growing age group was 50 to 54, which rose by 1.9 percent. Those aged 20 to 39 showed decreases in their share of the total population, with the largest decreases for those aged 30 to 34 years old, decreasing by 1.7 percent (U.S. Census 2000).

Estimates from the U.S. Census Bureau for 2008 indicate that many of the planning area counties contained shares of racial and ethnic groups that exceeded shares in the State (table 2.4-4)[1]. Within the planning area nine counties contained at least one minority group at higher concentrations than their respective shares Statewide. These minority groups are indicated in bold in table 2.4-4. Ten percent of the State's population identified as being of Hispanic origin, while nine individual counties within the planning area contained larger shares than the State (table 2.4-4). Adams County had the largest percent where 55 percent of the population was Hispanic while 49 and 41 percent of Franklin and Yakima County's populations was Hispanic (U.S. Department of Commerce 2009).

Table 2.4-4. Estimated racial and Hispanic composition of 2008 population (in percent of total population)

	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Two or More Races	Hispanic Origin
Washington	84.3	3.7	1.7	6.7	0.5	3.1	10
Planning Area	91.9	1.5	2.5	1.8	0.2	2.1	10
Adams County	94.0	1.0	**2.3**	1.4	0.2	1.2	**55**
Asotin County	95.6	0.4	1.5	0.7	0.0	1.8	3
Benton County	93.2	1.4	1.0	2.4	0.1	1.9	**16**
Chelan County	95.5	0.7	1.3	0.9	0.2	1.4	**23**
Columbia County	95.4	0.3	1.3	0.8	0.1	2.2	8
Douglas County	94.8	0.8	1.6	1.1	0.2	1.5	**25**
Ferry County	77.6	0.2	**18.4**	0.3	0.1	**3.4**	3
Franklin County	92.8	2.6	1.1	2.0	0.2	1.4	**49**
Garfield County	97.3	n/a	0.6	0.4	0.0	1.6	4
Grant County	94.7	1.2	1.5	1.1	0.1	1.4	**36**
Kittitas County	92.7	1.0	1.1	2.9	0.1	2.1	7
Klickitat County	92.8	0.4	**3.6**	0.8	0.2	2.2	10
Lincoln County	95.1	0.3	**2.5**	0.3	0.1	1.8	3
Okanogan County	85.0	0.5	**11.3**	0.7	0.1	2.4	**16**
Pend Oreille County	93.2	0.5	**3.0**	0.6	0.2	2.4	3
San Juan County	95.6	0.3	0.9	1.2	0.1	1.8	4
Spokane County	91.5	1.9	1.6	2.1	0.2	2.6	4
Stevens County	90.2	0.4	**6.0**	0.6	0.2	2.7	3
Walla Walla County	93.7	1.8	1.1	1.4	0.3	1.8	**18**

[1] Race and ethnicity are separated because Hispanics can be of any race.

	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Two or More Races	Hispanic Origin
Whitman County	86.6%	2.2%	0.9%	**7.4%**	0.3%	2.6%	4%
Yakima County	89.9%	1.6%	**5.2%**	1.3%	0.3%	1.6%	**41%**

Economic Specialization and Employment

Employment within the planning area is distributed amongst industry sectors and displayed below in figure 2.4-2 (IMPLAN 2008). The Interior Columbia Basin Ecosystem Management Project identified communities that were specialized with respect to employment. Their method used the ratio of the percent employment in each industry in the region of interest (counties within the planning area) to an average percent of employment in that industry for a larger area (the reference region; Washington State). 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 FS 1998). Using this criterion applied with 2008 data, counties within the planning area can be characterized as specialized with respect to Agriculture, Health Care & Social Assistance, and the Government sectors (shares of total employment in these sectors are respectively, 8.5, 1.7 and 0.9 percent greater than shares in the State) (IMPLAN 2008).

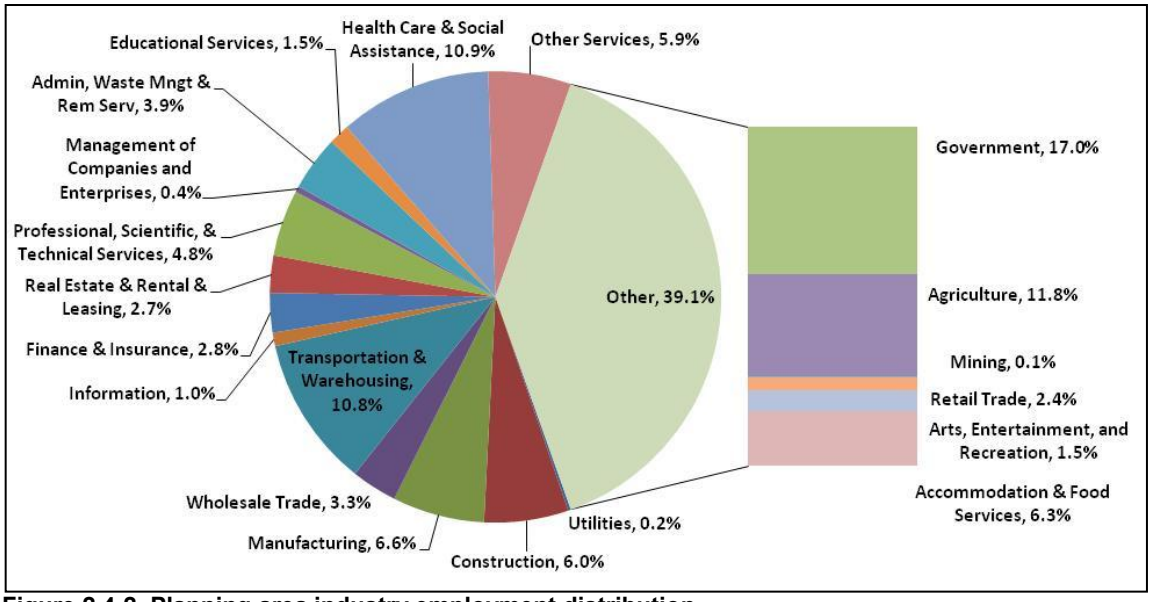


Figure 2.4-2. Planning area industry employment distribution

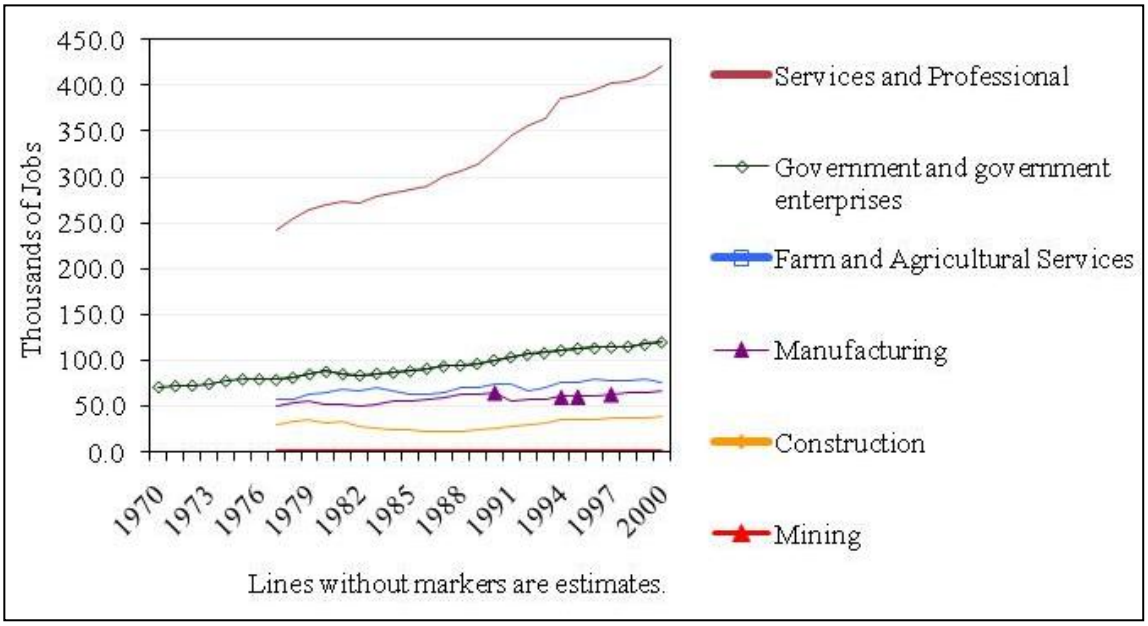
Source: IMPLAN (2008).

Of particular interest are counties where specialization occurs within industries related to BLM management (seen on the right of figure 2.4-3) [2]. Table C-1 in appendix C depicts the degree of specialization within planning area counties. The number shown is the metric used above (the ratio of the percent employment in each industry in each county to percent of employment in that

[2] It should be noted that the contributions from the BLM represent only a portion of the economic activity reflected in industry sectors.

industry in the State of Washington) per the convention used above (USDA FS 1998). Thirteen counties are specialized in Government sectors; 18 in Agricultural sectors; 2 in Mining sectors; 7 in Retail Trade sectors; 3 in Arts, Entertainment, & Recreational sectors; and 3 in Accommodation & Food Services sectors (appendix C, table C-1).

From 1970 to 2006, total employment in the planning area increased by 116 percent (from 369,285 to 427,549 jobs classified as full and part-time employment) which was less than the State, but greater than the nation (159 and 95 percent, respectively). The employment growth in the planning area was largely due to increases in service-related sectors; between 1977 and 2000 employment in the Service and Professional sector (includes Retail Trade, Health and Social Services and the combined Services sector) increased by 67 percent of new area employment[3]. In addition, the share of total employment attributable to this sector increased by 5.4 percent; from 52.6 to 58.1 percent. Thus, the Service and Professional related sectors have been an important



part of area employment (U.S. Department of Commerce 2000; EPS 2009).

Figure 2.4-3. Employment history of the planning area

Source: U.S. Department of Commerce (2000); EPS (2009).

Employment changes in the Farm & Agricultural Services, Mining and Manufacturing sectors translated into smaller portions of total employment in 2000, decreasing by 3.1, 0.1, and 1.7 percent, respectively. These natural resource- related sectors have provided a small and slightly decreasing portion of total area employment while the Service and Professional sector has maintained a steady increase. While the Government sector increased in absolute number of jobs, its portion of total employment decreased by 0.6 percent (U.S. Department of Commerce 2000; EPS 2009).

[3] Since IMPLAN data include farm and proprietor employment in addition to wage and salary employment. Similarly the IMPLAN data also includes estimates for non-disclosures that similarly include farm and proprietor employment in addition to wage and salary employment.

Economic Well-Being and Poverty

As noted above, the Service and Professional sectors increased in their share of total employment while the Farm and Agriculture Services, Mining and Manufacturing sectors experienced decreases between 1977 and 2000. The private sectors examined can be lumped into Goods- Producing sectors (Natural Resources, Construction, and Manufacturing) and Service-Providing sectors (Trade, Transportation, Utilities, Finance, Education, Health, etc.). In general the Service-Providing sectors do not pay as much as the Goods-Producing sectors (in 2006 they paid $48,539 and $40,801, respectively, throughout the Nation), thus increases in the percent of total employment attributable to these sectors could decrease area economic well being. However, within the planning area the Goods-Producing and Service-Providing sectors paid average annual wages of $29,718 and $30,415, respectively, in 2006 (U.S. Department of Labor 2006). From these statistics it is apparent that while the Service-Providing sectors account for smaller average annual wages in the Nation, they are greater than the Goods-Producing sectors in the planning area. Thus, increases in employment in sectors associated with higher wages could indicate an increase in area economic well-being.

Higher Service-Providing wages were found in Benton, Chelan, Douglas, Franklin, Garfield, Klickitat, Okanagan, and Yakima counties where the Agriculture, Forestry, Fishing and Hunting sector was found to be at least 20 percent lower than the average for all sectors in their county, while Service-Providing sectors such as Information, Financial Activities, and Professional and Business Services were at least 20 percent higher than the average. For the other 13 counties in the planning area where wages in the Goods-Producing sectors were greater than in the Service-Providing sectors, we cannot say that decreases in economic well-being have resulted from increases in service and professional sector employment; people might move to the area to take a service sector job, but exchange the lower wage they may receive for the unique natural and cultural amenities. In this manner some may benefit from a ―secondary income" not provided by their place of employment, but by the benefits they gain from living in the area.

Total personal income (TPI) and per capita personal income (PCPI) are useful measures of economic well-being. From 1970 to 2006, annual TPI in the planning area increased by $23 billion to $39,769 billion, and annual PCPI increased from $19,312 to $28,103 (all measures adjusted for inflation to 2006 dollars). Average PCPI in the planning area was lower than the State ($38,212) and lower than the Nation ($36,714) in 2006 (U.S .Department of Commerce 2006).

While PCPI is a useful measure of economic well-being it should be examined alongside changes in real earnings per job. Since PCPI includes income from 401(k) plans as well as other non-labor income sources like transfer payments, dividends, and rent, it is possible for per capita income to rise, even if the average wage per job declines over time. While PCPI rose between 1970 and 2006, average earnings per job rose from $34,958 to $36,588 (values adjusted for inflation to 2006 dollars), indicating a possible increase in area economic well-being (U.S. Department of Commerce 2006b).

From 1992 to 2000, the average annual unemployment rate in the planning area fell to 6.1 percent along with national and State rates. After 2000, unemployment continued to follow State and national trends rising to 8.1 percent in 2003 and then falling to 5.8 percent in 2007. With the recent national economic downturn, unemployment rose again and increased to 6.3 percent in 2008 (figure 2.4-4). New jobs created in an area are filled from two principal sources; local unemployment and in-migration. If unemployment remains high, new jobs are likely to be filled by local area residents; however, if unemployment is persistently low, new jobs could be filled more often by new area residents.

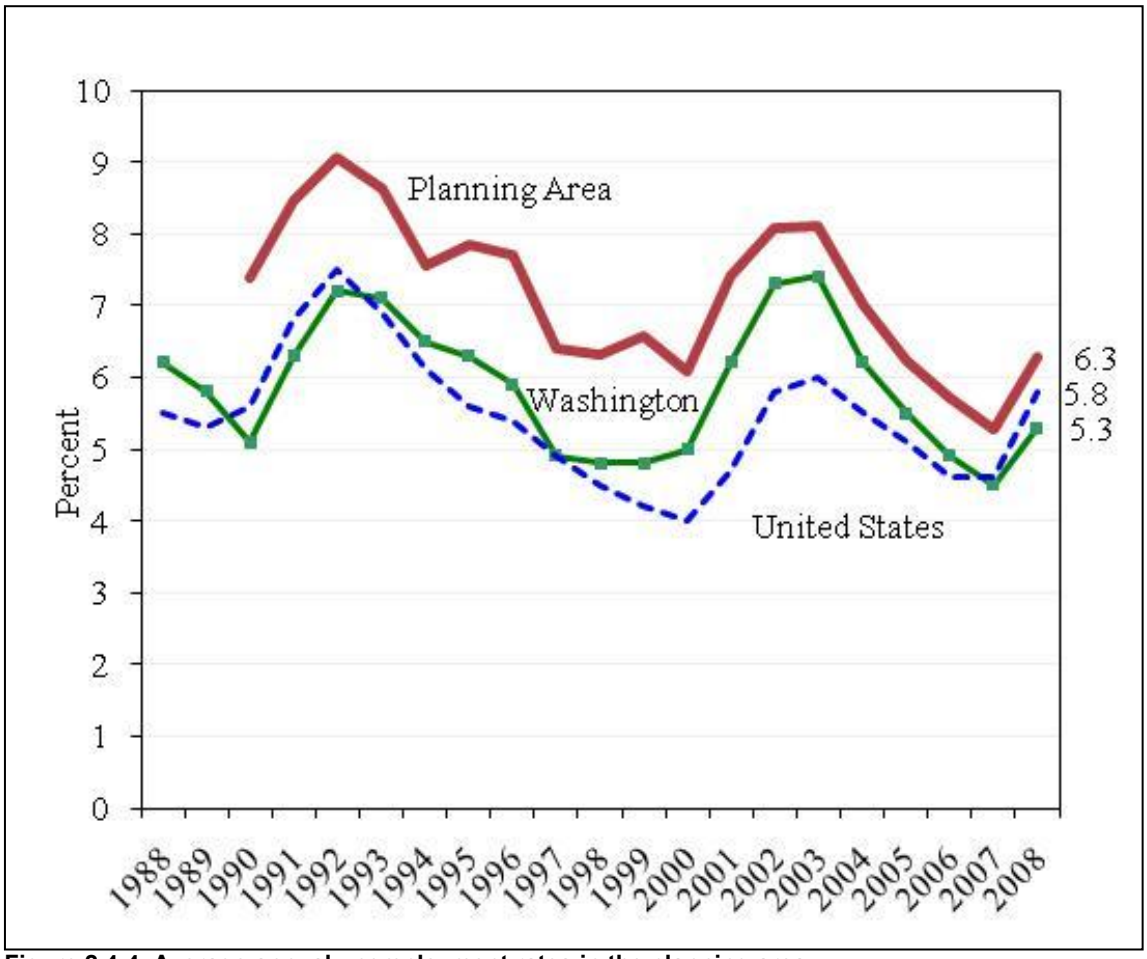


Figure 2.4-4. Average annual unemployment rates in the planning area

Within the State of Washington, the planning area, and many individual counties, the number of people living below the poverty level increased between 1989 and 1999. However, the share of those persons, from the number of persons for whom poverty status was assessed, remained stable within the State and decreased in the planning area and many individual counties (table 2.4-5). The largest decreases occurred in Columbia County where the level fell by 7 percent. Despite these decreases in the share of individuals living below the poverty level, shares in many counties increased over this period and remained greater than the State in 1999 (U.S. Census Bureau 2000).

Table 2.4-5. Share of population living below poverty level and change

	1999	1989	Net Change	Change In Share
Washington	11%	11%	94,437	-0.3%
Planning Area	16%	15%	21,049	-1.1%
Adams County	**18%**	**18%**	591	0.7%
Asotin County	**19%**	**15%**	-199	-3.9%
Benton County	11%	10%	2,115	-0.8%
Chelan County	**15%**	**12%**	303	-2.8%
Columbia County	**19%**	**13%**	-250	-6.7%
Douglas County	**12%**	**14%**	1,470	2.2%
Ferry County	**24%**	**19%**	-116	-4.7%
Franklin County	**23%**	**19%**	789	-3.8%
Garfield County	11%	**14%**	103	3.7%
Grant County	**20%**	**17%**	2,178	-2.2%
Kittitas County	**20%**	**20%**	1,209	-0.6%
Klickitat County	**17%**	**17%**	450	0.1%
Lincoln County	**12%**	**13%**	189	0.3%
Okanogan County	**22%**	**21%**	1,234	-0.2%
Pend Oreille County	**20%**	**18%**	319	-2.0%
San Juan County	7%	9%	558	1.9%
Spokane County	**14%**	**12%**	1,832	-1.4%
Stevens County	**17%**	**16%**	1,067	-1.2%
Walla Walla County	**16%**	**15%**	423	-1.0%
Whitman County	**24%**	**26%**	1,200	1.4%
Yakima County	**20%**	**20%**	5,584	-0.6%

Components of Personal Income

Further examining trends within personal income provides insight to the area economy and its connection to the lands administered by the BLM. There are three major sources of personal income: (1) labor earnings or income from the workplace, (2) investment income, or income received by individuals in the form of rent, dividends, or interest earnings, and (3) transfer payment income or income received as Social Security, retirement, and disability income or Medicare and Medicaid payments.

Labor earnings were the largest source of income in the planning area accounting for 64 percent of all income in 2006. The Government and Manufacturing sectors were the largest components of labor income in 2008 for the planning area (figure 2.4-5). It should be noted that the contributions from the BLM represent only a portion of the economic activity reflected in industry sectors seen in figure 2.4-5.

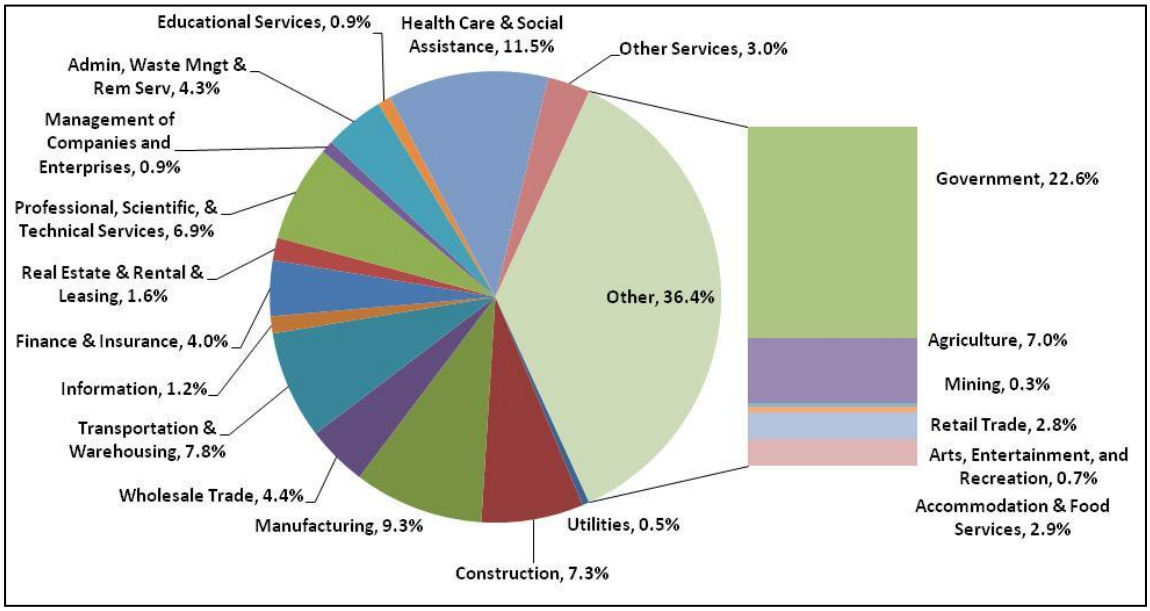


Figure 2.4-5. Planning area labor income distribution (IMPLAN 2008)

While labor earning's share of TPI has decreased from 1970 to 2006 (from 73 to 64 percent), the share of non-labor income has risen (from 27 to 36 percent). As a share of TPI, investment income and transfer payments rose from 15 to 16 and 12 to 20 percent, respectively, over this 37-year time period. The increase in transfer payments is not entirely due to increases in welfare- or unemployment-related payments. Data shows the share of transfer payments from unemployment payments decreased from 9 to 2 percent and the share from income maintenance benefit payments, or "welfare" decreased from 15 to 10 percent. In 2006 the largest component of transfer payments were the age-related payments (classified as Old Age, Survivors, and Disability Insurance and Medicare Benefits) accounting for 52 percent of total transfer payments (U.S. Department of Commerce 2006).

These patterns reflect the importance of the aging population noted above, who are more likely to have investment earnings than younger adults. As the population of the area continues to age, the share of income from these non-labor sources should continue to rise as long as residents continue to stay in the area after retirement or new retirees move in. Rural county population change and the development of rural recreation and retirement-destination areas are all 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). Many of the natural amenities in the area are managed by the BLM and thus, indirectly contribute to area labor and non-labor income.

Contributions to the Area from BLM Management

BLM-administered lands in the planning area contribute to the livelihoods of area residents through subsistence uses as well as through market-based economic production and income generation. Public lands provide products of value to households at no or low cost (permit fees) such as fuelwood, wood posts, and livestock grazing. Additional products with subsistence value may include fish, game, plants, berries, and seeds. Use of these products is often part of traditions that sustain local culture.

Contributions to the area economy through market-based production can be measured using the IMPLAN input-output model. Input-output models describe commodity flows from producers to intermediate and final consumers. The total industry purchases are equal to the value of the

commodities produced. Industries producing goods and services for final demand purchase goods and services from other producers. These other producers, in turn, purchase goods and services. This buying of goods and services continues until leakages from the region stop the cycle. The resulting sets of multipliers describe the change of output for regional industries caused by a change in final demand in an industry. The IMPLAN database describes the economy in 440 sectors using Federal data from 2008 [4]. These sectors are further aggregated below to better identify areas relevant to BLM management activities.

Using the most recent data available, IMPLAN response coefficients[5] were applied to BLM outputs and expenditures to estimate the economic contribution of the BLM within the planning area. While the discussion above examines the current situation and historical context, this analysis examines the linkages and interdependencies among businesses, consumers, and the planning area resources on which some area economic activity depends. IMPLAN allows a more complete examination of these linkages.

IMPLAN not only examines the direct contributions from the planning area but also indirect and induced contributions. Indirect employment and labor income contributions occur when a sector purchases supplies and services from other industries in order to produce their product. Induced contributions are the employment and labor income generated as a result of spending new household income generated by direct and indirect employment. The employment estimated is defined as any part-time, seasonal, or full-time job. In the following tables, direct, indirect and induced contributions are included in the estimated BLM contributions.

Table 2.4-6. Estimated annual employment and labor income contributions

Resource Program	Jobs (Number of Full and Part-time)	Labor Income (Thousands $)
Recreation[1]	43	$1,440
Grazing	3	$46
Timber	11	$657
Minerals	9	$501
Ecosystem Restoration	2	$63
Payments to Counties	22	$1,062
BLM Expenditures	153	$7,194
Total BLM Management[1]	244	$10,963

[1] Totals may not add due to rounding.

Source: IMPLAN 2008.

Tourism and Recreation

BLM land within the planning area provides a variety of recreational opportunities. District office staff estimate 144,000 recreational visits to the planning area on an average annual basis between October 2005 and September 2009. On their way to the planning area, 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 contribute to the local economy by attracting these visitors.

[4] IMPLAN data is derived from a variety of sources included the Bureau of Economic Analysis, Regional Economic Information System, Bureau of Labor Statistics, U.S. Census, etc.

[5] Rates of change in employment and labor income as final demand changes.

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 forest visited (Stynes and White 2005). Since expenditure information for the type of trip taken on BLM is not yet available, National Visitor Use Monitoring (NVUM) data from adjacent national forests will serves as a proxy. These six trip type segments are defined below.

Visitors who reside greater than 30 miles from visited BLM:

1. Non-local residents on day trips
2. Non-local residents staying overnight on BLM
3. Non-local residents staying overnight off BLM

Visitors who live within 30 miles of the visited BLM:

4. Local residents on day trips
5. Local residents staying overnight on BLM
6. Local residents staying overnight off BLM

A seventh category of trip types was not included, non-primary visits, since we are only interested in visitors whose primary activities are on BLM lands. An average of the visitation proportions for a national forest closest to the planning area (Colville, Okanagun, and Wenatchee National Forests [Stynes and White 2005, page 23−25]) was adjusted by BLM planning staff to fit BLM recreation use in the planning area. This process indicates approximately 15 percent of all visits to the BLM were wildlife-related and the largest trip-type segment was non-wildlife-related local day trips which numbered 37,000.

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. If BLM-related opportunities were not present, residents would likely participate in other locally based activities and their money would still be spent in the local economy. After separating the contributions made from local residents, Recreation contributes 43 jobs and $1.4 million in labor income to the planning area (table 2.4-6).

Livestock Production

Within the planning area, agriculture plays an important economic and social role; area residents identify with the tradition, land-use, and history (James Kent Associates 2010). The most recent U.S. Department of Agriculture Census of Agriculture (2007) reports Yakima and Grant counties were Washington's largest cattle producers containing 20 and 15 percent of the total State cattle inventory. In 2007 within the planning area there were 35,940 farms and ranches and of these, 4.7 percent (1,682 operators) were cattle producers with sales. While the number of total farms rose between 2002 and 2007 (from 32,885 to 35,940), the share of operations with cattle sales has remained stable over this period. On BLM land approximately 266 permittees operate in the planning area with the most in Okanagan (73), Douglas (43), and Lincoln (31) counties (2.8, 3.0, and 2.4 percent, respectively, of total county operations) (USDA 2007).

The established preference limit for AUMs in the planning area is currently 37,137 AUMs. This is the maximum number of AUMs that could be offered under ideal forage conditions. However, authorized use of AUMs has ranged between 53 and 65 percent (in 2000 and 2006, respectively;

see table 2.4-7) of the preference limit in the last 10 years due to factors such as drought, financial limitations on operators, market conditions, and implementation of grazing practices to improve range conditions. Grazing on a majority of the planning area allotments starts in early spring and continues through the fall. Some allotments are grazed during the spring growing period and livestock are moved off the BLM lands to irrigated pasture or higher elevation ranges managed by other landowners or agencies.

Table 2.4-7 provides authorized use numbers between 2000 and 2009. Authorized use of AUMs has remained relatively stable, and has increased compared to use in the year 2000. The 2007 authorized use level provided approximately 0.6 percent of the forage required for the 782,000 cattle inventoried within the planning area in the most recent agricultural census (DOI 2009 and USDA 2007).

Table 2.4-7. Annual AUM authorizations in the Spokane District Office

Year	Authorized	Preference	Authorized Share of Preference
2009	28,556	37,137	60%
2008	29,292	37,137	62%
2007	30,159	37,137	64%
2006	30,758	37,137	65%
2005	28,480	37,137	60%
2004	28,618	37,137	61%
2003	27,394	37,137	58%
2002	27,394	37,137	58%
2001	25,594	37,137	54%
2000	25,056	37,137	53%

Source: BLM Rangeland Administration System.

A thin profit margin often separates these livestock producers from negative net earnings. Often, employment outside the ranch augments livestock producer income. Federal grazing land is particularly valuable because of the low grazing fees charged for use of this land. Fees charged by BLM for grazing are calculated using the formula required under BLM grazing regulations found at 43 CFR 4130.81(a)(1), and are considerably less than those charged for private grazing land. In 2009 the statewide average AUM price for private land was $11 (U.S. Department of Agriculture 2008). The BLM formula yielded a fee of $1.35 per AUM in 2009, which is down from $1.56 in 2006. This Federal land is the least expensive grazing land available; hence, use and access is coveted by area ranchers even though additional costs are usually incurred to use these lands. It is estimated that in 2009 the benefit of low cost BLM AUMs used in the planning area was $262,500 to area ranchers. The active use levels of grazing on BLM currently support approximately three jobs and $46,000 in labor income on an average annual basis (table 2.4-6). While these numbers appears small, it must be remembered that BLM allotments provide an important complement to ranching operations that also occur on national forest, State, and privately leased land.

Forest Products

Sectors such as Forestry & Logging, Agriculture & Forestry Services, and Wood Products Manufacturing contributed approximately 3,300 jobs in the planning area in 2008, which made up less than 1 percent of total area employment. While relatively small, individual counties within the planning area are more dependent on these sources of employment and income.

BLM contributes only a portion of material used in the planning area. Between 2004 and 2009 BLM contributed an average of 1,400 thousand board feet (MBF) of sawtimber, 1,900 tons of softwood pulp, and 20 cords of fuelwood on an annual basis. Some of this volume was made available through stewardship treatments. Additionally, small diameter material has been made available for chip mills in the area and for electricity generation. While BLM is a small contributor of forest products to the area, it provides an important resource when other sources are scarce. Timber from BLM in the planning area provides approximately 11 jobs and $657,000 in labor income on an average annual basis (table 2.4-6).

Mining

From 1977 to 2000, estimated mining employment as a share of total employment never exceeded 0.5 percent in the planning area (U.S. Department of Commerce 2000). Given the small number of firms in the area within the industry, data are not available from the U.S. Department of Commerce; however, similar data depicted in figures 2.4-3 and 2.4-5 show that mining made up 0.1 percent of impact area employment and 0.3 percent of labor income in 2008 (IMPLAN 2008).

Mostly saleable mineral materials, such as sand and gravel, crushed stone, and dimensional stone are removed from BLM in the planning area. Speculative oil and gas leasing also occurs in the planning area; however, no development has been proposed or is anticipated. These activities on BLM lands in the planning area support approximately 9 jobs and $501,000 in labor income on an average annual basis (table 2.4-6). A portion of the revenues received by BLM from the sale of materials and the lease of land is distributed back to counties in the planning area. The contributions to area employment and income from these payments are discussed below under revenue sharing.

Externally Funded Ecosystem Restoration

A portion of the management activities occurring on BLM in the area are performed with funds not accounted for under general BLM expenditures discussed below. These funds often come from external sources such as stewardship grants. Examples within the planning area include the purchase and installation of traffic counters for recreation monitoring and trail work funded by ―Take It Outside" for Youth Corps engagement trail work. In addition, riparian restoration projects are often performed on BLM lands in the planning area and are funded by grants and partners such as Ducks Unlimited. These externally funded ecosystem restoration projects support two jobs and $63,000 in labor income in the planning area economy on an average annual basis (table 2.4-6).

Revenue Sharing

In 1976, Congress passed legislation to provide funding to counties through Payments in Lieu of Taxes (PILT) in order to compensate for tax revenues not received from Federal lands. These taxes would typically fund various services that are provided by counties (road maintenance, emergency services, and law enforcement). The PILT payments are determined using a formula which accounts for the county acreage of Federal land, county population, and the previous year's revenue sharing from resource uses on Federal land (timber, range, mining, etc.). In November of 2008 additional payments were authorized by the Emergency Economic Stabilization Act of 2008 (Public Law 110-343). The law authorized counties to receive their full entitlement level payment from 2008 through 2012. Table 2.4-8 depicts an average of 2008 and 2009 payments along with BLM entitlement acreage per county.

Table 2.4-8. PILT entitlement acreage and payments by county

	BLM Entitlement Acreage	Total Federal Entitlement Acreage	BLM Entitlement Acreage Share	Average of 2008 and 2009 Payment	BLM Share of Payment[1]
Washington	427,453	11,822,329	3.6%	$10,750,038	$731,408
Planning Area	425,912	6,213,775	6.9%	$7,470,600	$729,778
Adams County	9,698	20,974	46.2%	$47,231	$21,839
Asotin County	13,936	69,475	20.1%	$100,150	$20,089
Benton County	15,648	40,617	38.5%	$94,016	$36,220
Chelan County	20,631	1,432,482	1.4%	$1,564,897	$22,538
Columbia County	519	164,287	0.3%	$193,813	$612
Douglas County	53,778	59,989	89.6%	$129,477	$116,071
Ferry County	8,063	495,009	1.6%	$496,563	$8,088
Franklin County	20,218	64,132	31.5%	$148,516	$46,821
Garfield County	363	101,788	0.4%	$104,252	$372
Grant County	50,736	281,830	18.0%	$655,544	$118,013
Kittitas County	57,206	1,562,416	3.7%	$1,728,431	$63,284
Klickitat County	18,483	486,004	3.8%	$691,879	$26,313
Lincoln County	18,087	45,772	39.5%	$22,798	$9,009
Okanogan County	73,638	88,364	83.3%	$196,495	$163,749
Pend Oreille County	1,515	484,821	0.3%	$645,306	$2,016
San Juan County	416	2,401	17.3%	$5,563	$964
Spokane County	1,528	1,560	97.9%	$3,470	$3,399
Stevens County	26,068	240,847	10.8%	$371,237	$40,181
Walla Walla County	630	22,510	2.8%	$51,610	$1,444
Whitman County	9,065	21,744	41.7%	$49,059	$20,452
Yakima County	25,686	526,753	4.9%	$170,297	$8,304

[1] This is the average payment attributable to the share of BLM entitlement acreage from each counties' total entitlement acreage.

In addition to PILT, counties receive a share of range revenues under the 1934 Taylor Grazing Act. Together, contributions to counties from PILT payments and range revenues provide 13 jobs and $638,000 in labor income on an average annual basis within the planning area. Receipts from mineral material removal and revenues from leased land are also shared with counties under the 1920 Mineral Lands Leasing Act and the 1902 Reclamation Act. These payments support approximately 9 jobs and $424,000 in labor income on an average annual basis (table 2.4-6).

BLM Expenditures and Employment

BLM management in the planning area provides a direct contribution to the area economy by employing people who reside in the area and by spending dollars on project related goods and services throughout the planning area (table 2.4-9). In addition to full-time employees (FTE), seasonal staff work and live in the area (other than permanent, OTP). While FTEs have remained relatively stable, total expenditures and the number of OTP employees have decreased recently.

Table 2.4-9. District Office expenditures and employment

	Total Expenditures	FTE's	OTP's
2004	$7,044,790	48	59
2005	$7,895,619	50	43
2006	$7,621,368	47	43
2007	$7,513,401	46	34
2008	$6,846,632	47	33

Source: District Office Staff, 2010.

Project-related expenditures are attributable to project work for all BLM program areas listed in table 2.4-6. The contributions from the specific resource programs listed in each respective row of table 2.4-6 do not include these BLM expenditures. Thus, these contributions accrue to the area in addition to other program specific contributions. On an average annual basis, BLM expenditures and employment support 153 jobs and $7.16 million in labor income (table 2.4-6).

Renewable Energy Development

Wind generation is becoming a larger part of the Washington landscape and economy. The landscape has always been subject to strong winds which are now being harnessed by wind farms. Local businesses and counties are benefiting from the influx of resources and tax revenue from these projects. However, it remains to be seen whether BLM land can contribute to the planning area economy and community well-being through provision of energy leases.

Small community/cooperative projects sell power through power purchase agreements with regulated utilities. These projects are attractive because they can become community revenue generators, involve schools and local interests, and help supplement future power growth. Large commercial projects are sited in areas of strong winds, transmission access, and market demand. As suitable windy land becomes more saturated with development, the availability of leases on Federal land may play a larger role in the industry.

Installed wind power capacity in Washington State has increased from 180 megawatts (MW) of power in 2001 to 1,849 MWs as of December 31, 2009 (U.S. DOE 2010). The State ranked 5th in the Nation in installed wind power capacity and additional facilities are under construction off BLM in the planning area (American Wind Energy Association 2010). Currently no BLM land in the planning area is being leased for alternative energy; however, wind monitoring on BLM is currently being conducted in the Horse Heaven Hills area. If wind energy development were to occur on BLM in the planning area, employment and labor contributions would result. Per 1.5 MW turbine, 10 FTE jobs and $501,000 in labor income would result during construction, and less than one FTE and $16,000 labor income would be provided during normal operation on an average annual basis (DOE 2010b).

Spokane District Office Contributions by Industry

Table 2.4-10 shows the estimated employment and labor income by industry, generated by activities on BLM within the planning area. As previously discussed, the planning area related employment and labor income contributions listed here exclude those made from local resident recreation. In total, management activities in the planning area account for 0.03 percent of jobs and 0.03 percent labor income on an average annual basis (table 2.4-10).

The two largest employment and labor income contributions, in absolute value, would occur in the Government and the Accommodation & Food Services sectors. The industry sector with the

highest share of employment and labor income dependent on BLM planning area contributions is the Mining sector; relying on BLM for less than half of one percent of employment and income. Employment and income generated by activities on BLM account for less than a fifth of a percent of planning area totals in all other industry sectors (table 2.4-10). Biomass from BLM in the planning area has been utilized for electricity generation in the past and projects are planned in the future. About 10,000 tons of biomass will be removed from two projects: Lambert Creek project is a 1-year project and the Huckleberry Mountains project is a 6-year project. The biomass from both projects will go to Avista's CoGeneration plant in Kettle Falls (personal communication with District Office Staff).

Table 2.4-10. Current role of District Office contributions in the planning area economy

	Employment (Jobs)			Labor Income (Thousands of 2009 Dollars)		
Industry	**Area Totals**	**BLM Related**	**% of Total**	**Area Totals**	**BLM Related**	**% of Total**
Agriculture	92,784	6	0.01%	$2,319,276	$138	0.01%
Mining	1,108	5	0.48%	$105,454	$335	0.32%
Utilities	1,514	0	0.02%	$166,292	$29	0.02%
Construction	47,559	3	0.01%	$2,420,874	$190	0.01%
Manufacturing	51,953	7	0.01%	$3,077,405	$491	0.02%
Wholesale Trade	25,905	6	0.02%	$1,440,310	$337	0.02%
Transportation & Warehousing	85,113	3	0.00%	$2,564,543	$174	0.01%
Retail Trade	18,666	20	0.11%	$941,416	$592	0.06%
Information	7,619	2	0.02%	$400,932	$91	0.02%
Finance & Insurance	22,249	4	0.02%	$1,325,463	$238	0.02%
Real Estate& Rental & Leasing	21,002	4	0.02%	$532,721	$108	0.02%
Prof. Scientific, & Tech. Services	37,473	9	0.03%	$2,284,692	$422	0.02%
Mgmt. of Companies	3,431	1	0.01%	$299,666	$46	0.02%
Admin., Waste Mgmt. & Rem.	30,909	5	0.02%	$1,416,787	$159	0.01%
Educational Services	11,720	2	0.02%	$308,584	$65	0.02%
Health Care & Social Assistance	86,132	14	0.02%	$3,810,708	$662	0.02%
Arts, Entertainment, and Rec.	11,946	4	0.03%	$221,569	$76	0.03%
Accommodation & Food Services	49,746	26	0.05%	$956,592	$540	0.06%
Other Services	46,727	8	0.02%	$1,005,936	$206	0.02%
Government	134,121	112	0.08%	$7,485,747	$6,016	0.08%
Total	**787,679**	**244**	**0.03%**	**$33,084,967**	**$10,914**	**0.03%**

While these contributions by industry appear small, the labor income and employment generated from activities on BLM in the planning area may be more important to smaller communities within the planning area. For example, specialization in the Government, Health Care & Social Services and Agriculture sectors was noted above. Contributions to these sectors make up 46, 6, and 3 percent of the total contribution from BLM (table 2.4-10) and are likely higher at smaller scales within the planning area. Thus individual counties and communities may be more susceptible to changes within the planning area given their specialization in sectors connected to BLM. Table C-1, appendix C shows that 13 planning area counties are specialized in the government sector, 6 are specialized in the Health Care & Social Services, and 18 are specialized in Agriculture.

Non-market Economic Value

The value of resource goods traded in a market can be obtained from information on the quantity sold and market price; however; markets do not exist for some resources, such as recreational opportunities and environmental services. Measuring their value is important, since without estimates, these resources may be implicitly undervalued and decisions regarding their use may not accurately reflect their true value to society. Because these recreational and environmental values are not traded in markets, they can be characterized as non-market values.

Non-market values can be broken down 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 activities such as recreational fishing, hunting, and bird watching. The use of non-market goods often requires consumption of associated market goods, such as lodging, gas, and fishing equipment.

Non-use values of a non-market good reflect the value of an asset beyond any use. These can be described as existence, option, and bequest values. Existence values are the amount society is willing to pay to guarantee that an asset simply exists. An existence value of BLM lands within the planning area might be the value of knowing that undisturbed steelhead or bighorn sheep habitat exist on BLM. Other non-use values are thought to originate in society's willingness to pay to preserve the option for future use; these are referred to as option values and bequest values. Option values exist for something that has not yet been discovered; such as the future value of a plant as medicine. In the planning area bequest and option values might exist for numerous plant species.

Non-market use and non-use values can be distinguished by the methods used to estimate them. Use values are often estimated using revealed preference methods or stated preference methods while non-use values can only be estimated using hypothetical methods. While use and non-use values exist for the planning area, evaluation is not always feasible during the planning process. However this does not preclude their consideration in the planning process.

Environmental Justice

Environmental justice refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies. Executive Order 12898 requires Federal agencies to —identify and address the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

According to the Council on Environmental Quality’s (CEQ) Environmental Justice Guidelines for NEPA (1997) —minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) 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.” Table 2.4-4 shows that many planning area counties have shares of their population identified as Hispanic or of other minority groups that were greater than the State’s share in 2008. Thus, the U.S. Census data suggest minority populations within the planning area meet the CEQ’s environmental justice criterion.

CEQ guidance on identifying low-income populations states —agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group

experiences common conditions of environmental exposure or effect." The discussion above on poverty noted the share of those living below the poverty line was greater than the State in many planning area counties (table 2.4-5). Thus, the census data indicate low income populations, as defined by CEQ, exist within the planning area.

Community Character and Concerns of Human Resource Units within the Spokane District Office

The Spokane District Office contracted James Kent Associates (JKA) to collect information on communities in the planning area. They collected information within human resource units (HRU) which are roughly equivalent in size to a county, but seldom correspond to county boundaries. HRU boundaries are derived by JKA from seven cultural descriptors and by self-reporting of residents living in these areas. The cultural descriptors are Settlement Patterns, Publics, Networks, Support Services, Work Routines, Recreation Activities and Natural and Human caused Features of the Landscape. This document presents a synopsis of the information collected by JKA for each of the HRUs. More detail can be found at the RMP website where the full JKA report is posted.

San Juan HRU

Residents in the San Juan HRU described loving their island and their community, and the values of knowing neighbors, taking care of each other, and a sense of fun living because "we're all in it together." Lopez Island is known as the most rural and agricultural of the major islands. It has a slow pace of life which residents value. Numerous references were made about the bustle of Friday Harbor as if to underscore the quiet life.

Some visitors and many newcomers are related to residents on the islands. Other people come for the beauty, but other factors become important. One person said, "People come for the beauty, but they stay for the community." This quote reflects the long-held pull of the islands and the strong communities that make them up. However, staying on the islands has proven difficult for many. Displacement of people from the island has always occurred, local people said. People simply cannot afford to live here. Today, the perception is that locals are dying out, young people leave, and over time, the island gets wealthier and wealthier.

Okanogan HRU

Okanogan country has been a north/south corridor for hundreds of years. For example, for many years in the late 1800s, long cattle drives were conducted between Washington State and British Columbia to serve the economies of both areas. Moreover, residents confirmed the customary and routine contact across the border. The traditional culture in Okanogan has been ranching, mining, and timber. This culture is in decline. Omak lost its mill, for example. Only 9 percent of the county work force is now involved in forestry and agriculture while over 70 percent are involved in professional, service, or sales occupations. The recreation economy is growing. The Methow River Valley is becoming well-known and well developed in recreation amenities that serve the Seattle metropolitan area. There are a number of seasonal resorts along the lakes and other places. Agri-tourism has developed as a means to combine traditional agricultural lifestyles with a visitor economy in order to enhance both.

What local people call a "hippy" subculture has also been present for decades and it has evolved into a "new age" community promoting recreation and conservation. Tonasket, for example, seems to be a vibrant community that actively mixes all these elements with some success; whereas in Oroville, there is some, but much less, evidence of the newer culture.

Chelan-Douglas HRU

Chelan and Douglas counties are quite different even though they are part of the same HRU. Chelan County has many more people, more urbanization, more economic diversity, and more diverse geography and natural settings. Douglas County has a much lower population, it is very rural in outlook, agricultural in its economic base, and is mainly characterized by arid sage steppe lands. The area is agriculturally rich with a diversity of crops that includes winter wheat, spring wheat, and fruit crops which in recent years has expanded to include blueberries and wine grapes. The area is well-known for its diverse habitats, from upland forests to the sage-steppes of the lowlands. High technology firms are reported locating in the area as well, including Microsoft and Yahoo, apparently attracted to the low power rates.

People say different groups are coming into the area. Professional people, retired people, people who want out of the rat race on the ―Westside" are beginning to change the feel of the towns in this area. The perception here is that recreation development and the attractiveness of the areas ―outdoor lifestyle" is in part responsible for the growth. People are reportedly moving here from the coast and from California. Retirees are bringing money with them. There also seems to be a settlement pattern in which middle-age people come back to care for their aging parents and then stay.

Kittitas and Yakima HRUs

The Kittitas and the Yakima HRUs are separate geographic areas, but united by the Yakima River Canyon. BLM's actual holdings in these two separate HRUs are not great which warranted single treatment by JKA. The geography of the Kittitas HRU provides for diverse recreation including; Yakima River Canyon for rafting, fishing and camping, to Moses Lake trails, camping and OHV site, and of course the Cascade Mountain range for hiking, skiing, and biking. There has been population growth during the last couple of decades which local people attribute in part to the recreation appeal of the area.

Tri-Cities HRU

The Tri-Cities HRU is comprised primarily of Benton and Franklin counties. The Hanford facility of the Department of Energy has been a central part of the Tri-Cities economy since World War II. It is associated with the common perception that people in the area are highly educated. It is also blue collar with an industrial and agricultural employment component. The economic base of the area is primarily agriculture, retail, and nuclear-related industries related to the Hanford Site and the Energy Northwest power reactor. Tri-Cities has been undergoing steady to rapid growth. A Franklin County Commissioner said that the county was 17th in national growth in 2005−06 because of the presence of Hanford and cheap land. In 2008 the Hispanic population makes up 49 percent of the total in Franklin County, and 16 percent of the total in Benton County. The importance of the wine industry to the Prosser community has led it to become known as the wine capital of Washington State.

Upper Crab Creek HRU

The Upper Crab Creek drainage is known as a premier winter wheat growing area, an area for dryland farming noted for its productivity. BLM lands called Escure Ranch, properly in the Pullman/Moscow HRU, are considered along with this HRU because of their proximity. The JKA report noted a decrease in farm numbers and size within Lincoln County; however, also noted that people believe agriculture will stay a strong part of area lifestyle and tradition. Many noted that young people are sometimes coming back to work the land as the elders get older and die. Some land is getting broken up for development. Many people expressed a concern that this

trend will grow. Changing demographics and a changing way of life are being seen at the local level. Cheap rural housing is apparently attracting lower-income residents with social problems such as drug use. The nearby urban population of Spokane is active in the outdoors and makes use of the Upper Crab Creek area extensively to hunt, fish, ride horses, have dog trials, hike and bicycle, accentuated by the presence of BLM lands in the area; there is high awareness of BLM's role in recreation activity through its acquisition of hunting lands and development of recreation sites. This development appears most pronounced in Odessa.

Colville HRU

The Colville HRU includes Pend Oreille, Stevens, and Ferry counties and parts of Okanogan County. The JKA acknowledged longstanding family and social links between this area and British Columbia from the beginning of white settlement in the area. The economic driver of the region is primarily timber, agriculture, mining, recreation and tourism. Hunting, fishing, hiking, skiing, OHV use, and camping are all a part of the draw to this area. The Columbia River runs through the area from north to south and brings multi-recreation assets as well as employment. Spokane is the closest and largest city for the region and is valued for its, shopping, medical and other services. The Colville Indian Reservation and the Spokane Indian Reservation are contiguous to this region and have some influence across its boundaries. Area development trends emphasized during discussions with JKA were regional recreation planning, the EAST Wedge project (which has resulted in collaborative forest management resulting in recent increases in timber product availability), and the start of a biomass facility in Springdale. Pride was expressed that this area has been able to hold onto its timber mills better than other areas of the Northwest. Outdoor recreation is said to be increasing in this area although no studies were discovered by JKA to substantiate this. People said that most outdoor recreation is local and from the Spokane metropolitan area.

Chapter 3 Current Management

3.1 Land Use Plan Decisions for Lands and Resources in the Planning Area

Current land use plan decisions for lands and resources in the planning area can be found in the following BLM decision documents:

- Spokane Resource Management Plan Record of Decision and Rangeland Program Summary (Spokane RMP 1987)
- Spokane Resource Management Plan Amendment Record of Decision (Spokane RMP Amendment 1992)
- Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington (Standards for Rangeland Health 1997)
- Resource Management Plan Amendment for the Department of the Army, Corp of Engineers Application for Land Withdrawal, Yakima Firing Center Decision Record (RMP Amendment 1993)
- Iceberg Point and Point Colville Areas of Critical Environmental Concern Decision Record (ACEC DR 1990)
- Record of Decision, Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments (Wind Energy ROD 2005)
- Record of Decision and Resource Management Plan Amendments for Geothermal Leasing in the Western U.S. (Geothermal ROD 2008)
- Approved Resource Management Plan Amendments/Record of Decision for Designation of Energy Corridors on Bureau of Land Management Lands in the 11 Western States (Energy Corridor ROD 2009)
- Interagency Memorandum of Understanding between USDA Forest Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, Environmental Protection Agency, and DOC (NOAA) National Marine Fisheries Service, to Cooperatively Implement the Interior Columbia Basin Strategy (including interim implementation of PACFISH and INFISH) (Interagency MOU 2002).

3.2 Relevance to Current Issues, Laws, Regulations, and Policies

The BLM reviewed each of the applicable management decisions contained in the documents listed above to determine if the decisions were still relevant considering current issues, laws, regulations, and policies. The following table summarizes the results of this analysis.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Air Quality	The inventory and evaluation of soil, water, and air resources on public lands will continue.	Spokane RMP ROD 1987	Yes.
Air Quality	Water quality of perennial streams will continue to be monitored, and climatological data will continue to be gathered.	Spokane RMP ROD 1987	Partially; need to consider climate change.
Fire Management	The Spokane District will continue fire suppression activities. Fire management plans for the management areas will be prepared. These plans will identify the levels of suppression necessary to meet fire management objectives. They will take into consideration resource values, public concern and safety, private and/or public impacts, and intermingled landownership at the activity planning level. Prescribed fire planning will be coordinated with adjacent landowners. Fire management standard operating procedures are summarized in appendix C; fire suppression and management history are summarized in appendix E.	Spokane RMP ROD 1987	Partially; need to incorporate current fire management policy.
Forestry	Manage 54,757 acres of commercial forest land within 7 of the 13 management areas for the commercial trees species (see RMP tables 2-5 and 2-6).This includes 41,443 acres available for full timber production and 13,314 acres on which timber management practices and yields will be constrained for multiple use purposes. Major commercial tree species include ponderosa pine, Douglas-fir, grand fir, lodgepole pine western larch, Engelmann spruce, and western white pine.	Spokane RMP ROD 1987	No. Management needs to allow for a variety of commercial and non-commercial tree species, other vegetation, and other resources.
Forestry	Low Priority. Designate selected areas for post, pole, and fuelwood permit areas in lieu of preparation of woodland management plan.	Spokane RMP ROD 1987	See decision FO8.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Forestry	The basic process of monitoring for forest practices involves on-site inspection of the project. Generally, a pre-work conference is conducted to familiarize the contractor or purchaser with the project area, contract requirements, and other project specifics. During the project life, periodic inspections of the work performance and progress are conducted by the forester. At the end of the project, a final inspection is generally conducted to check for work quality and proper completion of all contract requirements. An assessment of the project is made at that point, and recommendations for amending future like projects are made to ensure future successes and streamlining.	Spokane RMP ROD 1987	Partially; monitoring and inspections of projects are adequate in the short term. Long-term monitoring is needed.
Forestry	Fire management support will be needed for management of natural fire in meeting forest management resource objectives. Acquisition of legal access to public land will be needed to open areas for commercial forest land management. Legal access to public land to open areas for fuel wood will be acquired only if the access also benefits other resource values.	Spokane RMP ROD 1987	Partially; management also needs to consider prescribed fire to meet forest management resource objectives.
Forestry	Exclude timber harvest on 6,198 acres.	Spokane District RMP 1985	No. This acreage was excluded due to economic non-operability and non-commercial areas due to topography reforestation problems, and fragile soils. The timber industry has evolved over the past 20 years and new technologies may exist that make managing these areas feasible.
Forestry	Exclude timber harvest on approximately 161 acres within ACECs.	Spokane District RMP 1985	No. Excluding forest management in ACECs precludes the ability to respond to poor forest health conditions that may threaten the continued existence of the forest structure that makes the area special.
Forestry	Forest management would generally be practiced using partial cutting on 91% of areas treated. Selection cutting, shelterwood cutting, and their various modifications are available options.	Spokane District ROD 1987	No. Forest management techniques should be designed to achieve objectives of treatments.
Forestry	On 9% of the area clearcutting may be used.	Spokane ROD 1987	No. While clearcuts are proven methods of forest

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
	Clearcutting (and clearcutting modifications) are available options. Mostly for roads, landings, blowdown, and salvage.		regeneration, they are rarely the preferred method when attempting to restore the historic range of variability of forests. Clearcutting could be reserved for situations requiring sanitation or salvage harvest.
Forestry	Site preparation to prepare for the natural regeneration of trees: Lop and scatter, broadcast burn, and mechanical. The main preparation treatment would be lop and scatter to reduce slash buildup. Burning would occur to reduce slash buildups. Mechanical site preparation would consist of scarification and piling and windrowing of slash, brush, and unmerchantable stems. Bulldozers with a brush blade would normally be used.	Spokane RMP 1985	No. Lop and scatter methods in most cases increase the fire hazard, and do not reduce slash buildup, only the configuration of the slash. Most plantings have included scalping a small area for each tree and /or herbicide around the tree during planting operations. Prescribed fire would aid in site preparation.
Forestry	No harvest of forest products in Chopacka WSA.	Spokane District RMP, Chopaka WSA	Partially. Although this complies with the BLM Interim Wilderness Management Policy for ecological sustainability, forest health, fire hazard, and maintaining habitat; excluding forest management in the WSA precludes the ability to respond to poor forest health conditions that may threaten the continued existence of the forest structure that makes the area special.
Forestry	Management of woodlands for forest products when consistent with other resource uses. (Woodland is forest land which is not included in commercial forest land intensive timber production base and also includes all fragile non-suitable land, non-commercial forest land, and non-suitable commercial forest land. Woodland forest products will only be sold from lands that are biologically capable of supporting a sustained yield of forest products.)	Spokane RMP ROD 1987	No. Woodlands should be managed to allow more opportunities for forest health and fuels management and other resource benefits with wood products as a byproduct. SFP sales are unpredictable and attempting to establish a target based on an unpredictable demand is futile. The current strategy for woodlands is one of forest and rangeland restoration. There is some utilization of this material as firewood and posts. In other regions, there is some use for other wood products and as hog fuel in biomass-fired power plants. There are no current management decisions that consider the conservation of aspen and Oregon oak woodlands. These areas need management to restore, maintain, or enhance plant communities to their historic range of variability. Management prescriptions should allow for reduction or removal of vegetation from sites where it has encroached and to expand aspen stands in

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
			all locations where it is found. Options for use of woodland products and biomass industries should be explored.
Forestry	No harvest of forest products In Juniper Dunes Wilderness.	Spokane District RMP, Juniper Dunes Wilderness Area	Yes.
Forestry	Prohibit fuelwood cutting and commercial timber sales in Iceberg Point and Point Colville ACECs.	SJI ACEC 1990. Titled —Final Planning Analysis, Environmental Assessment and Proposed Decision Record for the Proposed Iceberg Point and Point Colville Areas of Critical Environmental Concern".	No. Excluding forest management in the ACEC precludes the ability to respond to poor forest health conditions that may threaten the continued existence of the forest structure that makes the area special.
Forestry	A harvest level of 3.98 MMbf annually is planned based on existing inventories; however, a sustainable harvest level will be calculated in 1987 in conjunction with a forest inventory which is underway. The actual volume offered may be less than the full timber harvest potential, depending upon the number of acres allocated to other uses and the operational constraints built into this land use plan in order to meet multiple use objectives, especially critical wildlife forage and cover areas, streams identified as supporting fisheries, and areas of high visual sensitivity. Note the standard operating procedures and design features in appendix C.	Spokane RMP ROD 1987	No. Forestry management focus on public lands has changed from timber management to managing for forest health and fuels reduction. Having a timber —target" is thus no longer relevant.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Forestry	Manage forest land to minimize losses or damage to commercial tree species from insects and disease. Develop road systems and manage for harvest of commercial tree species.	Spokane RMP ROD 1987	Partially. Current insect and disease outbreaks and occurrences are happening faster than all forestland can be managed. Should consider Insect and disease impacts to all resources.
Forestry	Pre-commercially thin public forest land where feasible and when adequate funding allows. Slash will be removed near roads where it poses a potential fire hazard. The preferred method of disposing of slash will be with the use of prescribed fire. Heavy concentrations of standing dead and down material would be disposed of through a fuel wood sale program.	Spokane RMP ROD 1987	Partially. Most precommercial thinning is related to fuels reduction work. Prescribed fire is currently being used in areas where slash has been created from precommercial thinning and fuels reduction work. Suitable areas are opened up to fuelwood cutting of thinned material and other wood products uses.
Forestry	The 1,710 acres of uncut forestland, identified in RMP table 2-7, will not be subject to timber harvest until an interdisciplinary team of BLM natural resource specialists evaluate the attributes of these parcels. Areas that are identified as possessing unique or important natural resource values will be set aside, and appropriate interim protective measures would be undertaken. This evaluation would be made within 5 years from the time the RMP is adopted.	Spokane RMP ROD 1987	No. These decisions are made at the project level and occur on all projects, not just the 1,710 acres mentioned.
Forestry	Activity plans will define the resources for the planning area, state specific management objectives, specify planned actions, coordinate various resource values, and identify harvest levels, cutting cycles, and silvicultural practices for the commercial forest or woodland resource. Timber and fuel wood sales, timber stand improvement (e.g., thinning), reforestation, slash disposal, and road construction are examples of specific actions proposed in activity plans. Manuals and policy will offer other specific guidance for implementation of these actions. Environmental analyses and forest plans will further identify project implementation and mitigation measures. Commercial forest and woodland products will be offered for sale. Competitive bidding will be the preferred method for selling commercial timber.	Spokane RMP ROD 1987	Partially. Most sales involve stewardship projects, forest health projects, and fuels projects. Five-year sale plans are developed and maintained. Stand treatments are prescribed and implemented when a need is identified. Needs currently center on fire hazard reduction and forest health. All forest management activities assure adequate regeneration, including artificial regeneration if required. All forest management activities are performed to improve forest health and conduct restoration activities, and do not consider maintaining a future allowable cut.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
	Fuelwood, posts, poles, and boughs will be sold to the general public (see RMP table 2-6).		
Forestry	High Priority. Revise and update existing timber management plan to reflect management direction of the RMP.	Spokane RMP ROD 1987	No. Management direction has changed and emphasis is on forest health, restoration, and fuels reduction.
Forestry	Medium Priority. Prepare woodland management plan for large tracts of manageable woodland. Factors considered when determining the priority of management areas include: Accessibility to product and market; demand for woodland products; opportunities to complement other resources.	Spokane RMP ROD 1987	See response to FO8.
General Management	Protect or enhance water quality with particular attention to those watersheds with major downstream water uses including anadromous and other sport fisheries and agriculture.	Spokane RMP ROD 1987	Partially. Need to be more specific and address anadromous fisheries habitat, listed fish, and native fish habitat. Also, should reference PACFISH riparian habitat conservation areas and riparian management objectives.
General Management	Maintain and/or improve range productivity by providing available forage to maintain existing or target wildlife populations as estimated by the Washington State Department of Game. The remaining forage would be provided for livestock. Allow for the maintenance of all existing improvements. Implement management systems and all range improvements in allotments where projects and/or management systems are cost effective. Improve riparian habitat through management of livestock use.	Spokane RMP ROD 1987	No. Management practices focus on regulating forage utilization by livestock so as to maintain resource sustainability and cover as well as forage for wildlife. A specific "allocation" for wildlife is not general practice. Need to be more specific about riparian and listed fish habitats. This decision was based on vegetation inventory allocation and designations of specific big game wildlife populations by WDFW. The statement needs to be revised to reflect rangeland standards and guides and the need to provide wildlife habitat.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
General Management	Adjust the level of sustained yield timber production by restricting production on specific forest lands, where appropriate, to accommodate other resource values. Forest lands would be withdrawn from production only when stipulations and/or mitigation would not adequately protect the other resources.	Spokane RMP ROD, PACFISH ROD 1994 and S&Gs	Partially. Currently forest health and fuels reduction treatments are the major drivers of forest projects, not sustained-yield timber production. No. The Spokane District does not have the inventory or staff to implement a sustained yield for timber production. More appropriate would be the land health treatments on a yearly basis with timber volume from these treatments. While the BLM continues to manage forests on public lands under the principles of multiple use and sustained yield as required by FLPMA, these principles have taken on a different interpretation from when the current RMP was released. The Forest Management section of the Spokane RMP (USDI BLM 1985) and the Spokane ROD (USDI BLM 1987) focus on the sustained-yield component, which was the emphasis at that time. While the concept of sustained yield is still an important component of Spokane District Office's forestry program (as well as a basic tenet of forestry), there is more emphasis placed on managing forest health and fuels reduction for the benefit of all resources. This type of management results in restoring forests to some semblance of their range of historic variability, with timber production being a by-product. PACFISH standards and guidelines apply to any proposed timber harvests,
General Management	Keep public lands open for exploration/ development of mineral resources, rights-of-way, access, and other public purposes with consideration to mitigate designated resource concerns.	Spokane RMP ROD, and PACFISH ROD 1994 and S&Gs	Partially. Need to include specific policy direction for special status species, such as that found in PACFISH and BLM sage grouse policy.
General Management	Enhance BLM land pattern and resource management efficiency through land tenure adjustments. Identify opportunities for jurisdictional transfers and develop leases or cooperative management agreements with other agencies or private individuals to improve management efficiency.	Spokane RMP ROD 1987	Yes.
General	Manage upland habitat for nongame and game species	Spokane RMP ROD	Yes, except that the name of the State agency is

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Management	to meet Washington State Department of Game population targets.	1987	Washington Department of Fish and Wildlife.
General Management	Manage public lands and keep access routes open for a variety of recreational opportunities/experiences, including both motorized and nonmotorized recreation activities.	Spokane RMP ROD 1987	Yes.
General Management	Consider the protection and/or enhancement of State-listed threatened or endangered species habitat.	Spokane RMP ROD 1987	Partially. Need to revise to be consistent with BLM special status species policy and PACFISH.
Livestock Grazing	Continue present management on 182,424 acres (374 allotments) of public land to benefit livestock and wildlife. Existing structural and nonstructural range improvements will be maintained throughout the planning area. These allotments include the maintain (M) and custodial (C) category allotments.	Spokane RMP ROD 1987	No. Acreage and number of allotments is no longer accurate.
Livestock Grazing	High Priority. Implement CRMPs/AMPs on allotments with partially completed AMPs/CRMPs. Implement CRMPs/AMPs on Improve (I) category allotments. Monitor I category allotments to establish stocking rates and evaluate the effects of intensive management. Issue grazing decisions for I category allotments where adjustments in stocking rates are negotiated with the lessee.	Spokane RMP ROD 1987	No. Current policy dictates that allotments not meeting rangeland health standards and guidelines and new acquisition allotments where there is no AMP implemented will be high priority.
Livestock Grazing	Medium Priority. Monitor the effects of livestock grazing upon M category allotments. Implement CRMPs on Cl category allotments.	Spokane RMP ROD 1987	Partially. The new plan will determine whether C1 category will continue to be used.
Livestock Grazing	Low Priority. Monitor the effects of livestock grazing upon C category allotments.	Spokane RMP ROD 1987	Yes.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Livestock Grazing	The effects of implementation will be monitored and evaluated on a periodic basis over the life of the plan. The general purposes of this monitoring and evaluation will be to accomplish the following: 1. To determine if an action is fulfilling the purpose, need, and objectives for which it was designed or if there is a need for modification or termination of an action; 2. To discover unanticipated and/or unpredictable effects; 3. To determine if mitigation measures are working as prescribed; 4. To ensure that decisions are being implemented and scheduled; 5. To provide continuing evaluation of consistency with State and local plans and programs; 6. To provide for continuing comparison of plan benefits versus costs, including social, economic, and environmental; and 7. To determine livestock stocking levels.	Spokane RMP ROD 1987	Yes.
Livestock Grazing	A document entitled —Rangeland Monitoring in Oregon and Washington," has been developed and adopted as a guidance document. This document provides a framework and minimum standards for choosing the timing and study methods to collect the information needed to issue and implement specific management decisions which affect the grazing management, watershed, wildlife, and threatened and endangered species programs. Copies of this document are available upon request from the Spokane District and Wenatchee Resource Area Office.	Spokane RMP ROD 1987	No. This was superseded by Rangeland Health Standards and Guidelines.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Livestock Grazing	For the grazing management program, highest priority for monitoring will be focused on the I category allotments. Monitoring studies will be conducted annually for forage utilization, actual use (livestock numbers and periods of use), and climate. Vegetative trend studies were established and recorded in 1986. The trend studies will be recorded every 5 years (at minimum) after initial establishment to detect changes in the vegetal community. After 5 years of data collection, results will be analyzed and evaluated for each of the I category allotments. Where adjustments in stocking rates, seasons of use, and/or grazing systems are needed to achieve the objectives of the RMP and AMPS, the needed adjustments will be made through agreements with the grazing lessees or by decisions where necessary. The allotments will also be monitored beyond these 5 years to make adjustments as necessary. If it becomes apparent that objectives are being achieved, the I category allotments may be reclassified to the M category.	Spokane RMP ROD 1987	Partially. May need revision to reflect current policies and techniques for monitoring, to include rangeland health monitoring.
Livestock Grazing	M category allotments will receive less intensive monitoring to insure that management continues to be satisfactory. Minimum levels of monitoring will include: annual collection of actual use and climatic data, collection of utilization data every 3 years, and reading of trend studies every 10 years. If monitoring indicates that unexpected adverse impacts are occurring, the allotment(s) may be reclassified to the I category and corrective management actions taken.	Spokane RMP ROD 1987	Partially. May need revision to reflect current policies and techniques for monitoring, to include rangeland health monitoring.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Livestock Grazing	Custodial (C) category allotments will receive the least intensive monitoring. At a minimum, monitoring will include annual collection of climatic data and completion of trend studies on a 10-year schedule. If the analysis of monitoring data indicates a potential for improved management and/or critical resource values which are being threatened by livestock grazing, BLM will reclassify the allotment into the I category and intensify management.	Spokane RMP ROD 1987	Partially. May need revision to reflect current policies and techniques for monitoring, to include rangeland health monitoring. Also C category allotment field visits are conducted on most allotments prior to lease renewal.
Livestock Grazing	Fire management support will be required for project layout, design, and implementation for vegetative manipulation through prescribed fire. There would be a support need for survey and design features for range improvement and vegetative manipulation projects, and benefit/cost analyses for those range improvements (see RMP table 2-9). Water rights will be secured for water developments. Coordination would occur with lessees and affected parties on livestock manipulation and development or refinement of management plans.	Spokane RMP ROD 1987	Partially. Vegetation manipulation includes mechanical, chemical, and biological treatments in addition to prescribed fire. Also, cost benefit analysis of range improvements is not common practice.
Livestock Grazing	The material contained in this document (Standards for Rangeland Health and Guidelines for Livestock Grazing Management) will be incorporated into existing Land Use Plans and used in the development of new Land Use Plans. According to 43 CFR 4130.3-1, permits and leases shall incorporate terms and conditions that ensure conformance with 43 CFR 4180. Terms and conditions of existing permits and leases will be modified to reflect standards and guidelines at the earliest possible date with priority for modification being at the discretion of the authorized officer. Terms and conditions of new permits and leases will reflect standards and guidelines in their development.	Standards for Rangeland Health and Guidelines for Livestock Grazing Management for OR and WA 1997	Yes.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Livestock Grazing	The M allotments are usually those where satisfactory management has already been achieved through conservation plans, coordinated resource management plans, or cooperative agreements with adjoining landowners.	Spokane RMP ROD 1987	Partially. May need to revise categorization process.
Livestock Grazing	Most of the C allotments are unfenced, small tracts which are intermingled with much larger acreages of non-BLM rangelands, thus limiting the BLM's management opportunities.	Spokane RMP ROD 1987	Yes.
Livestock Grazing	During the analysis of the management situation of these lands, it became evident that a portion of the C category allotments have a potential for improved management to modify ecological conditions for livestock forage, wildlife habitat, and/or watershed protection. However, the costs of fencing these parcels and developing water so that they can be intensively managed for livestock forage are prohibitively high. These allotments do have a potential for more intensive management if cooperation with the grazing lessee and other landowners in the management of all lands in the allotment can be obtained or if BLM can gain sufficient manageability by acquiring land within the allotment through land exchanges. Once cooperation or manageability is attained, those respective allotments may move to the I category. Therefore, the C category was further divided into CI and C2 allotments. The CI designation will allow, through increased cooperation or improved manageability through land acquisition, for improved management and BLM investment in range improvements. Allotments categorized as C2 would remain under custodial management.	Spokane RMP ROD 1987	No. Need to re-categorize allotments and revisit designation of C1 and C2, especially considering the amount of land acquired since the last RMP.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Livestock Grazing	Implement range improvements such as fences, pipelines, water developments, springs, seedings, and brush control actions in Improve (I) category allotments to benefit range and riparian habitat conditions. This would affect a total of 50,385 acres of public land in the 16 I category allotments.	Spokane RMP ROD 1987	No. Number of I allotments has changed and there is need to re-categorize allotments.
Livestock Grazing	The I allotments are usually areas which have a potential for resource improvement where BLM controls enough land to implement changes. Other I allotments have ongoing intensive management planning efforts which are being cooperatively developed by all landowners in the allotment. (See RMP table 2-8 and appendix D for a summary and listing of allotment categorization.)	Spokane RMP ROD 1987	Yes. But need to review allotment categorization.
Livestock Grazing	Develop or revise 16 management plans (AMPS or CRMPs) on I category allotments and in cooperation with the grazing lessees and other interested parties. Each allotment's proposed range development program was subjected to a rangeland investment analysis. This analysis process was used to design and evaluate the economic efficiency of various combinations of range improvements and management actions. RMP table 2-9 displays proposed range projects for the I category allotments. See appendix C for a description of standard design features for range improvements.	Spokane RMP ROD 1987	No. Need to look at allotment categorization in light of acquisitions since RMP implementation. Rangeland investment analysis is no longer common practice.
Livestock Grazing	Livestock grazing administrative functions will continue. This includes the issuance of grazing leases, processing lease transfers, establishing and interpreting range monitoring studies, conducting field examinations, supervising allotments, processing trespass actions, making public contacts, and completing benefit/cost analysis studies for proposed range improvement projects. Available funding for range improvements and structures will generally be expended in the following priority based on allotment categorization: (1)	Spokane RMP ROD 1987	Partially. Benefit/cost analysis for range improvements is no longer BLM policy. Need to include rangeland health evaluation process to determine priorities.

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	Improvement allotments; (2) Maintain allotments; (3) Custodial allotments. Those allotments in the Improve category, where a need for adjustments in livestock grazing capacity is identified in this plan, will receive the highest priority for monitoring and generally the highest priority for ’—Allotment Management Plan” preparation (if applicable) and installation of range improvements. Note that re-categorization of allotments, particularly Custodial-l into Improve, is quite possible. Re-categorization, rangeland program progress, and other relevant information will be reported to the public through published periodic Rangeland Program Summary updates.		
Livestock Grazing	Implementing the livestock grazing portion of this plan will require several separate actions that overlap in time, some of which are underway. These actions include: allotment re-categorization; development of AMPs/CRMPs; monitoring of range conditions and trend; determination of stocking levels; forage use decisions; and monitoring to determine if selective management criteria are being fulfilled.	Spokane RMP ROD 1987	Partially. Implementing the livestock grazing portion of this plan will require several separate actions that overlap in time, some of which are underway. These actions include allotment re-categorization, rangeland health evaluations, development of AMPs/CRMPs, monitoring of range conditions and trend, determination of stocking levels, forage use decisions, and monitoring to determine if selective management criteria are being fulfilled.
Lands and Realty	Most of the public land within the ten management areas will remain in public ownership and continue to be administered by the BLM. Any transfer of public lands to other public land management agencies would be evaluated on an individual case basis.	Spokane RMP Amendment 1992	Partially. This decision seems to conflict somewhat with LR2.
Lands and Realty	BLM will acquire minimum access as needed to achieve management objectives. The preferred method will be through negotiated purchase of an easement or land exchange.	Spokane RMP ROD 1987	Yes.
Lands and Realty	Public land will only be sold when the following circumstances exist: (1) it is required by national policy; (2) it is required to achieve disposal objectives on a timely basis and where disposal through exchange would cause unacceptable delays; (3) it is determined	Spokane RMP ROD 1987	Yes.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
	that disposal through exchange is not feasible; or (4) it is required to facilitate title clearance.		
Lands and Realty	The preferred method of selling public land would be by competitive sealed bidding by qualifying purchasers. However, modified competitive bidding or direct sale procedures may be used when necessary to avoid jeopardizing an existing use on adjacent land or to avoid dislocation of existing public land users. No land will be sold for a monetary amount less than fair market value, as determined by appraisal.	Spokane RMP ROD 1987	Partially. The last sentence needs clarification. Some laws allow for land to be sold for other than fair market value.
Lands and Realty	Disposal of lands will be under the applicable authorities and in the following order of preference: I. State lieu and State grant selections. 2. State exchanges. 3. Private exchanges. 4. Recreation and Public Purpose patents. 5. BLM/USDA Forest Service jurisdiction transfers. 6. Withdrawals to other Federal agencies. 7. Public sales. 8. Indian allotments. 9. Desert land entries (subject to the Food Securities Act of 1985).	Spokane RMP ROD 1987	Partially. No. 1 and No. 9 are no longer applicable.
Lands and Realty	Simiikameen (Okanogan) Management Area: Acquire permanent access to Palmer Mountain, with rights for the public, to facilitate management. Conduct the adjustment of land pattern by exchange to reduce cost of property line determination and to enhance multiple use management. Acquire nonagricultural lands along the Similkameen River and lands adjacent to the Split Rock Recreation Site at Palmer Lake to improve fishing access.	Spokane RMP ROD 1987	Partially. (1) Access to Palmer Mountain was obtained through completion of the Palmer Mountain land exchange in the mid 1990s; additional exchanges could be completed to improve land pattern. (2) No lands have been acquired along the Similkameen; issue could still be applicable. (3) An attempt was made to acquire lands next to Split Rock; issue is still applicable.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Lands and Realty	*Conconully Management Area*: Conduct the adjustments of land pattern by exchange to reduce cost of property line determination. Obtain access for recreation activities through and exchanges or easement acquisition as opportunities arise. Acquire identified key parcels of deer winter range to facilitate management.	Spokane RMP ROD 1987	Partially. Some lands were acquired to meet this objective. However, future management direction for this area is to be determined through the planning process.
Lands and Realty	*Jameson Lake Management Area*: Acquire public access through easement purchase or land exchange to the Sulphur Canyon area to allow recreation use of the management unit. *Douglas Creek Management Area:* Acquire access (either by exchange or through easements) to the Rock Island Creek land parcels to enhance recreation. Consolidate ownership to enhance multiple use management. Acquire State grazing land in grazing allotments 0774, 0775, 0778, 0779, 0782, and 0785 to enhance management and certain private high potential grazing land where present ownership is inhibiting establishment of grazing systems that would increase forage production and enhance multiple use values.	Spokane RMP ROD 1987	Partially. A parcel owned by Washington Department of Transportation provides access to Sulphur Canyon. State and private grazing lands have been acquired in many of the allotments listed (0775, 0778, 0779). Douglas Creek Management Area has been incorporated into larger Moses Coulee Management Area. May want to consider further land acquisitions to meet goals and objectives for the Moses Coulee Management area in the Jameson Lake/Grimes Lake vicinity. Need to determine management direction for Jameson Lake and Douglas/Duffy Creeks areas. Consider further work with Douglas County and other partners to streamline management, protect habitat, improve access, accommodate current and future recreation use and enhance recreation facilities.
Lands and Realty	*Saddle Mountains Management Area:* Acquire 1,500 acres of State grazing land in grazing allotments 808 and 810 to enhance management and 13,000 acres of Burlington Northern land to enhance multiple use of the management area.	Spokane RMP ROD 1987	Partially. Some acquisitions were accomplished, but others were not.
Lands and Realty	*Rattlesnake Hills Management Area:* Acquire access by pursuing land exchanges to consolidate public land in order to facilitate recreation management objectives. Acquire access with rights to the public if land exchanges do not provide public access by 1990.	Spokane RMP ROD 1987	Yes. Access is still a problem in this area and management direction is needed.
Lands and Realty	*Rock Creek Management Area:* Conduct land exchange to acquire crucial habitat areas and to enhance recreational management opportunities. Acquire access for management and recreational purposes.	Spokane RMP ROD 1987	Yes. Have conducted two land exchanges but have obtained only limited access; issue is still applicable.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Lands and Realty	The highest land tenure adjustment priority would be placed on consolidation of public lands through land exchanges and purchases into, between, and within the ten management areas identified in this RMP Amendment. Most of the public land and reserve mineral estate within these ten management areas would remain in public ownership and continue to be administered by the BLM. Public lands designated as wilderness, wilderness study area, or areas of critical environmental concern would be retained.	Spokane RMP Amendment 1992	To be determined through identification of desired conditions in the new RMP.
Lands and Realty	*North Ferry Management Area:* Adjust land patterns by exchange to reduce cost of survey and property line determination and to enhance multiple use. Acquire permanent access to all public lands to enhance forest management and multiple use.	Spokane RMP ROD 1987	Partially. In light of the exchanges in the last 25 years we should reevaluate the need to acquire access to all forested public lands. Which parcels do we have access, where do we need access, and what type of access do we need. Prioritize.
Lands and Realty	*North Stevens (Northeast) Management Area:* Adjust land pattern by exchange to reduce cost of survey and property line determination. Acquire permanent access to all forested public lands to enhance multiple use management.	Spokane RMP ROD 1987	Partially. In light of the exchanges in the last 25 years we should reevaluate the need to acquire access to all forested public lands. Which parcels do we have access, where do we need access, and what type of access do we need. Prioritize.
Lands and Realty	*Huckleberry Mountains Management Area:* Adjust land pattern by exchange to reduce cost of survey and property line determination to consolidate landownership into more manageable blocks, to maintain or enhance crucial wildlife habitat areas or recreation opportunities.	Spokane RMP ROD 1987	Yes.
Lands and Realty	*Juniper Forest Management Area:* Acquire the private land within the Juniper Dunes Wilderness Area and the existing ACEC to provide protection for the natural values of the area. Acquire access with rights for the public to the management area. Acquire 5,120 acres of private land to enhance grazing management and other multiple use opportunities.	Spokane RMP ROD 1987	Partially. Some of these lands were acquired, but not all. New criteria will likely be developed for acquisition.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Lands and Realty	*Badger Slope Management Area:* Acquire privately owned grazing land in grazing allotments 0540 and 0544 where present ownership is inhibiting the establishment of grazing systems that would increase forage production. Acquire riparian areas for the purpose of improving waterfowl and upland game habitat.	Spokane RMP ROD 1987	No. Private lands within Badger Slope grazing allotments were acquired. Need to reassess benefits of acquiring additional riparian areas.
Lands and Realty	*Scattered Tracts Management Area:* Conserve the potential of rangeland, wildlife and fisheries habitats, woodlands, and recreation opportunities. Implement this management emphasis through land tenure adjustments such as exchanges, interagency agreements, special area designations, withdrawals, easements, and leases. Limit sales to adjust land tenure where no special resource values require protection to solve specific use problems. Enter into interagency agreements with the WSDG, WSDNR, or USFS to enhance management efficiency.	Spokane RMP ROD 1987	Partially. Need to reassess after development of new land tenure criteria.
Lands and Realty	High Priority. Land tenure adjustments to consolidate or otherwise promote the efficient management of the public land resources, protect and improve valuable wildlife habitat, enhance recreational opportunities, and provide access to public lands; issuance of rights-of-way, small tract leases, and/or other leases permits.	Spokane RMP ROD 1987	Yes.
Lands and Realty	Medium Priority. Land tenure adjustments through sales.	Spokane RMP ROD 1987	Yes.
Lands and Realty	Low Priority. Land tenure adjustments for desert land entries.	Spokane RMP ROD 1987	Yes.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Lands and Realty	The lands program will be monitored on a yearly basis to determine if the program objectives are being met. These objectives include, but are not limited to, monitoring progress in the following areas: land tenure adjustments in the management areas, cooperative management agreements district wide, access to public lands, trespass abatement, withdrawal revocations, issuance of rights-of-way, issuance of recreation and public purpose patents, land sales, and land exchange.	Spokane RMP ROD 1987	Partially. Applicability of withdrawal revocations and cooperative management agreements should be reconsidered.
Lands and Realty	Acquisition of lands, or interests in lands, will emphasize inholdings or lands adjacent to BLM lands with wilderness: threatened, endangered or sensitive species habitat; high scenic or other recreational values, designated ACECs; and other opportunities to consolidate BLM lands within the twelve management areas or improve BLM and public access to other public lands.	Spokane RMP ROD 1987	Yes.
Lands and Realty	All public land will be available and open for utility and transportation corridor development except the Hot Lakes RNA/ACEC, the Brewster Bald Eagle Roost and Juniper Forest ACECs, the Chopaka Mountain WSA, and the Juniper Dunes Wilderness Area as shown on map 31. Corridors have been identified and designated on BLM lands in Washington (see map 29). Corridor widths vary but are minimum of 200 feet. Additional corridors will be considered on a case-by-case basis. Applicants will be encouraged to locate new facilities within existing corridors to the extent possible.	Spokane RMP ROD 1987	Yes.
Lands and Realty	The remaining ACECs will be designated as avoidance areas. Rights-of-way in those ACECs will only be permitted after all other alternative routes have been analyzed or if the corridors development would not produce irreversible impacts to the resources being protected by the designations. All proposals identified by the Western Utility Group have been reviewed.	Spokane RMP ROD 1987	No. Avoidance areas, as defined by the land use planning guidelines, do not preclude the issuance of rights-of-way for wind energy site testing and monitoring activities or wind energy development or preclude the issuance of permits, leases, or easements under section 302 of FLPMA. These uses in avoidance areas may be available with special stipulations or mitigation

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
			measures. For such authorizations, the area's environmental sensitivity and other feasible alternatives will be strongly considered.
Lands and Realty	BLM policy is to minimize the acreage of public land withdrawn from mining and mineral leasing and to replace existing withdrawals with rights-of-way, leases, permits, or cooperative agreements, where applicable, over the next 6 years. Approximately 140,000 acres of land administered by other Federal agencies will be reviewed by BLM. This review of other agency withdrawals will be completed by 1991. If the withdrawal review process determines that a withdrawal is no longer needed, or should be modified, BLM will recommend that the withdrawal be revoked or modified in whole or in part. Upon revocation, part or all of the lands may revert to BLM management. Reverted lands will be managed in accordance with this RMP. No new BLM withdrawals are proposed. New withdrawal requests by other agencies will be evaluated on a case-by-case basis weighing the agencies' and public's needs with the RMP.	Spokane RMP ROD 1987	No. This withdrawal review was never completed. Recommendations for withdrawal will be considered in the new plan.
Lands and Realty	Unauthorized uses of public land will be resolved either through termination, authorization by lease or permit, or sale. Decisions will be based on (1) the type and significance of improvements involved; (2) conflicts with other existing or potential resource values and uses; and (3) unauthorized use being intentional or unintentional.	Spokane RMP ROD 1987	Yes.

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Lands and Realty	Unauthorized use will generally be terminated immediately. However, because of the various statutes of limitation which require that suit be brought within a certain period of time, it is necessary to process trespass cases by priorities. Criminal cases are to be processed ahead of civil cases, and cases of higher values ahead of ones of lower values. With this in mind, normal priorities are: A. Current ongoing trespasses. B. Cases less than 1-year old. C. Cases over 3-years old in which prospects for settlement are good. D. Cases between 1 and 3-years old. E. Continuing unauthorized use which has been occurring over long periods (occupancy).	Spokane RMP ROD 1987	Yes.
Lands and Realty	Temporary permits may be issued to provide short-term authorization, unless the situation warrants immediate abatement and restoration of the land. It is Bureau policy to collect trespass damages for the entire unauthorized use period.	Spokane RMP ROD 1987	Yes.
Lands and Realty	Generally, any lands acquired through exchange, purchase, or donation or lands which have been returned to BLM administration (from other Federal agency administration) through withdrawal review, would be placed under the guidance specified for the management area where it is located. For instance, land acquired in the Saddle Mountains Management Area would generally be managed for livestock grazing, recreation, and wildlife habitat. There may, however, be some exceptions where a parcel may be acquired for a specific purpose in which case its management would then be specified in the environmental assessment addressing the acquisition.	Spokane RMP Amendment 1992	Yes.
Lands and Realty	Additional criteria that would be used in categorizing public land for either retention or disposal, as well as identifying acquisition opportunities and priorities, are summarized below. While not all inclusive, this list	Spokane RMP Amendment 1992	Partially. Paleontological resources should be included with public resource values that would be considered. Consistency of the decision with cooperative agreements and plans or policies of Native American

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
	represents the major factors that would be evaluated: • Public resource values that would benefit and enhance range management, wildlife habitat, watershed, recreation, forestry, mineral, cultural resource, endangered, threatened, or sensitive plant and animal, and wilderness programs • Legal as well as physical accessibility of the land for public use • Amount of public monetary investments in facilities or improvements on the public land and the potential for recovering those investments • Difficulty or costs in time and money in the effective managerial administration of the lands • Suitability or desirability of the land for management by another governmental agency • Significance of any subsequent land use decisions in stabilizing, enhancing, or hindering existing or potential businesses, social and economic conditions, and/or life-styles • Need for future mineral or energy development; •Encumbrances to the land, including, but not limited to, Recreation and Public Purposes and small tract leases and/or other leases and permits, rights-of-way, and withdrawals • Consistency of the decision with cooperative agreements and plans or policies of other agencies • Suitability and need for change in land ownership or use for purposes including, but not limited to, community expansion or economic development, such as residential, commercial, industrial, or agricultural (other than grazing) development; and • State and local governmental requests and recommendations for retention or disposal of BLM administered public land.		tribal governments and their requests and recommendations for retention or disposal of BLM-administered public lands should be considered. Also, other values, such as visual resources, should be considered.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Lands and Realty	Exchanges would be accomplished to acquire specific tracts that: provide greater expanses of uninterrupted high value wildlife habitats, possess recreational values that can be better managed and/or developed in public ownership, provide legal access to other public lands, qualify as an ACEC, have high scenic values, enhance the value/manageability of other public land, or possess other resource values of public interest that would be devalued or lost if retained in private ownership.	Spokane RMP Amendment 1992	Yes.
Lands and Realty	Exchanges will be made only when the public interest will be well served, giving full consideration to better Federal land management and the needs of the State and local people, including needs for lands for the economy, community expansion, recreation areas, food, fiber, minerals, and fish and wildlife.	Spokane RMP ROD 1987	Partially. Criteria for determining public interests will be developed in the new plan.
Lands and Realty	Disposals of lands under the agricultural land laws or sale under section 203 of FLPMA will not be made until the following alternatives have been examined and found not feasible: (1) Exchanges which would benefit the Bureau's multiple use management mission; (2) Conveyances under the Recreation and Public Purposes Act to meet the needs of certain State and local governmental agencies and other qualified organizations; (3)Transfers to other Federal agencies by land withdrawals.	Spokane RMP Amendment 1992	Partially. Similar to LR13.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Lands and Realty	*Yakima River Canyon and Crab Creek Management Areas:* Land exchange and other acquisition opportunities for both the YRC and Upper Crab Creek MAs would be pursued that would emphasize consolidation of public land ownership, complement the recreation opportunities, and enhance threatened and endangered species habitat and/or important riparian values. Cooperative management agreements would be pursued with other agencies and private landowners with emphasis on coordinating recreation management. These agreements would also provide opportunities to enhance management of wildlife habitat, grazing lands, threatened and endangered species habitat, and cultural resources.	Spokane RMP Amendment 1992	Partially. Some lands were acquired to meet this objective. However, future management direction for this area is to be determined through the planning process.
Lands and Realty	The preferred locations for development of energy transport projects is the designated energy transport corridor depicted on figure A-10 of the Energy Corridors Record of Decision.	Energy Corridor ROD 2008	Partially. Need to consider other areas for energy corridors, especially considering recent acquisitions.
Lands and Realty	Acquisition of lands, or interests in lands, will emphasize inholdings or lands adjacent to BLM lands with wilderness, threatened, endangered or sensitive species habitat, high scenic or other recreational values, designated ACECs, and other opportunities to consolidate BLM lands within the 12 management areas or improve BLM and public access to other public lands.	Spokane RMP ROD 1987	Yes. However, future management direction for acquisitions will be determined through the planning process.
Lands and Realty	Exchanges of public land will continue under section 206 of FLPMA which requires: 1. A determination that the public interest will be well served by making an exchange: 2. Lands to be exchanged are located in the same state; and 3. Exchanges must be for equal value but differences can be equalized by payment of money by either party.	Spokane RMP Amendment 1992	Yes.

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Lands and Realty	Prior to the exchange of any public land, on-the-ground inventories are conducted to determine if there are any important resource values present and an environmental assessment is prepared with opportunity for public review and comment. If any significant resources (such as threatened or endangered species, unique habitats, or important cultural resources) are found as a result of these inventories and environmental analysis, and their retention determined to be in the public's interest, then areas supporting such resources would be excluded from the exchange and managed accordingly.	Spokane RMP Amendment 1992	Partially. Need to include consideration of Native American treaty rights, interests, and consultation.
Lands and Realty	There are approximately 40,680 acres identified for acquisition through land exchanges with the State of Washington and private parties. These areas are listed in RMP table 2-2. This is not an all-inclusive list but is representative of the type of high priority exchanges that will be pursued in the initial RMP implementation.	Spokane RMP ROD 1987	No longer current. The exchanges mentioned in RMP table 2-2 have been completed.
Lands and Realty	Any land to be acquired within the Scattered Tracts Management Area, will be that which is needed to enhance or protect unique or important public land values such as threatened, endangered or sensitive species habitat, riparian habitat, or other recreation values.	Spokane RMP ROD 1987	Yes. However, management direction for land acquisitions will be determined through the planning process.
Management Areas	*Okanogan MA:* Emphasize recreation, wildlife habitat, grazing management and forest management.	Spokane RMP Amendment 1992	Partially. Emphasizing these resource uses in this MA is responsive to current issues. The emphasis within forest management has changed from intensive timber production to an emphasis on forest health, fuels treatments, and management of other resource values. Management direction and subunits of the planning area will be determined through the planning process.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Management Areas	Divide the Planning Area into nine management areas: (1) Okanogan, (2) Moses Coulee, (3) Saddle Mountain, (4) Rock Creek, (5) Northeast, (6) Juniper Forest, (7) Yakima River Canyon, (8) Upper Crab Creek, and (9) Scattered Tracts. Each management area has a specific set of management prescriptions and programs of emphasis.	Spokane RMP Amendment 1992	No. Appropriate subdivisions of the planning area will be determined through the planning process.
Management Areas	*Moses Coulee:* Emphasize wildlife habitat, recreation, soil and water management, and grazing management	Spokane RMP Amendment 1992	Partially. Need to address new information. Tribal interests and cultural and paleontological resources values should be included as emphasis resources in this management area. Appropriate subunits of the planning area will be determined through the planning process.
Management Areas	**Saddle Mountain:** Emphasize grazing management, recreation, minerals, wildlife habitat, and soil and water management.	Spokane RMP Amendment 1992	Partially. Need to address new information. Tribal interests and cultural and paleontological resources values should be included as emphasis resources in this management area. Appropriate subunits of the planning area will be determined through the planning process.
Management Areas	*Rock Creek:* Emphasize recreation, wildlife habitat, and forest management.	Spokane RMP Amendment 1992	Partially. Need to address new information. Tribal interests and cultural and paleontological resources values should be included as emphasis resources in this management area. Appropriate subunits of the planning area will be determined through the planning process.
Management Areas	*Northeast:* Emphasize forest management, wildlife habitat, recreation, and grazing management.	Spokane RMP Amendment 1992	Partially. See comments on MA1.
Management Areas	*Juniper Forest:* Emphasize grazing management and recreation.	Spokane RMP Amendment 1992	Partially. Need to address new information, including wilderness character, natural resource protection or wildlife habitat, to emphasize the importance of management objectives for the ACEC and wilderness. Appropriate subunits of the planning area will be determined through the planning process.
Management Areas	*Upper Crab Creek:* Emphasize wildlife habitat, grazing management, and recreation.	Spokane RMP Amendment 1992	Partially. Need to address new information. Tribal interests and cultural and paleontological resources

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			values should be included as emphasis resources in this management area. Appropriate subunits of the planning area will be determined through the planning process.
Management Areas	Scattered Tracts: Emphasize lands and realty, grazing management, recreation, and forest management.	Spokane RMP Amendment 1992	Partially. Need to address new information. Tribal interests and cultural and paleontological resources values should be included as emphasis resources in this management area. Appropriate subunits of the planning area will be determined through the planning process.
Minerals	The BLM exclusively manages 307,523 acres and mineral estate, and 706,285 acres (all) of reserved Federal mineral estate in Washington. The BLM also has responsibilities on approximately 2.3 million acres of Indian lands in eastern Washington, and approximately 11 million acres of other Federal lands such as those lands managed by the Bureau of Reclamation, Department of Defense, Atomic Energy Commission, and USFS.	Spokane RMP ROD 1987	No. Need to update acreage figures (both surface/mineral & split estate) for minerals. Also need to update other Federal land acreage as needed since the 1987 RMP.
Minerals	All public lands are available for recreational mineral collection unless specific minerals are subject to prior rights, such as mining claims. No areas are withdrawn from the mining laws as recreational mineral collecting sites.	Spokane RMP ROD 1987	No. Some BLM managed lands may be closed to recreational mineral collection due to resource concerns such as archaeological and paleontological resources and federally listed plant/animal species.
Minerals	Oil and gas resources would be leased with standard terms and conditions as well as additional leasing stipulations to protect other resources and values (see RMP appendix D and table 2-6).	Spokane RMP Amendment 1992	No. Additional stipulations listed in appendix D are no longer adequate to address current resource issues.
Minerals	Some Federal lands within the Hanford Reservation and the Yakima Firing Center are closed to leasing, while other lands within these two areas are technically open to leasing. However, the surface managing agencies in these specific areas generally prohibit leasing and exploration, or may invoke highly restrictive limitations on such activities.	Spokane RMP Amendment 1992	No. Some lands previously in Hanford Reservation are now managed by USDI FWS. Need to coordinate with U.S. Department of Energy, and the U.S. Army Yakima Firing Center regarding special leasing stipulations.

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Minerals	Lands administered by the USDI FWS are closed to leasing, exploration and development, unless oil and gas resources on their lands are being extracted by development of adjacent lands. BLM designated wilderness areas and wilderness study areas are also closed to leasing. Corps of Engineers and Bureau of Reclamation withdrawals for dam sites typically include restrictions on operations conducted in the vicinity of dams and reservoirs.	Spokane RMP Amendment 1992	No. USBR and USCOE dam sites and vicinity (reservoirs) are typically covered by no surface occupancy (NSO) stipulations.
Minerals	Oil and gas exploration and development activities would only be permitted in an ACEC to the extent that they do not significantly affect the resource values the ACEC is designed to protect.	Spokane RMP Amendment 1992	No. Spokane District Special Stipulations (appendix D, 1992 RMP Amendment) ACEC stipulations will need to be reviewed to see if they still adequately cover all ACECs, the resources they protect, and whether stipulations need to be updated. The standard design features and operations procedures related to ACECs do not incorporate more updated BMPs. Also updated information from Onshore Oil and Gas Leasing Reform as outlined in BLM's WO-IM 2010-117 (5-17-2010) needs to be incorporated.
Minerals	Other Federal agencies administer the surface resources on the remaining lands. Withdrawals or restrictions on mineral development of these lands depend on legislation, the mission of the agency, and each agency's recommendations to the Bureau. The Bureau periodically reviews withdrawals and participates in development of other agency land management plans (e.g., USFS) and, where appropriate, seeks to ensure that the public lands remain open and available for mineral exploration and development. Acquired lands are technically available for leasing, but the Bureau can only lease these lands if the surface management agency consents.	Spokane RMP ROD 1987	Yes.

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Minerals	BLM's responsibilities vary considerably when other agencies are involved, depending mainly on whether or not the lands are open to mineral entry and the type of minerals involved. For example, if the lands are open to leasing, the BLM is responsible for inspection and enforcement activities on oil and gas drilling operations. BLM also works with the surface agency prior to issuing permits for such operations. If the lands are closed to mineral entry (e.g., National Park Service), the only operations allowed may be those which predated the withdrawal. BLM's role on these lands is limited to record keeping, adjudication of new applications, and some involvement on the few older operations which exist.	Spokane RMP ROD 1987	No. Need to incorporate BLM's latest oil & gas leasing reforms outlined in BLM policy (WO-IM-2010-117).
Minerals	Leasable minerals will continue to be made available on most of the land where the BLM manages the surface and mineral estate. No changes will be made in existing leases, although impacts on other resources will be considered in operating plans. New restrictions or changes in lease stipulations will apply prior to reissuing leases and to areas not presently leased.	Spokane RMP ROD 1987	No. Need to incorporate BLM's latest oil & gas leasing reforms outlined in BLM policy (WO-IM-2010-117). New stipulations may be identified through the planning process.
Minerals	Areas closed to mineral leasing after expiration of existing leases include the 7,140-acre Juniper Dunes Wilderness Area and the 80 acres of public lands within the Hot Lakes Research Natural Area ACEC.	Spokane RMP ROD 1987	No. During the planning process, additional parcels may be considered for closed to leasing.
Minerals	About 287,225 acres of public land will be open to exploration, subject to standard lease requirements and stipulations. Note the standard operating procedures in appendix C.	Spokane RMP ROD 1987	No. Through the planning process the BLM will review lands open to exploration and develop new leasing stipulations based upon updated resource data. The updated RMP will have alternatives outlining public lands subject to standard lease requirements and stipulations.

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Minerals	A restrictive no surface occupancy (NSO) stipulation for fluid minerals exploration and development will be maintained on 13,158 acres of public lands in the planning area. These lands include the Chopaka Mountain Wilderness Study Area, the Yakima and Columbia River Islands ACEC, and Webber Canyon ACEC (see RMP table 2-10). Exceptions to the NSO may be allowed. When leases are issued with the NSO, the following criteria for exception will be included in the stipulation: (1) Evidence of exploration or development activities would be substantially unnoticeable after reclamation has been completed. (2) All activities involving exploration would use existing roads to the fullest extent possible. (3) Any proposed exploratory drilling pad or road construction for access to a drilling site would be located to avoid canyon slopes and areas of high visibility. In these areas, roads and drilling sites would be fully rehabilitated and restored as nearly as possible to original contours.	Spokane RMP ROD 1987	No. New resource concerns may warrant additional NSO stipulations.
Minerals	Areas not specifically withdrawn from mineral entry will continue to be open under the mining laws to help meet the demand for minerals. Mineral exploration and development on public land will be regulated under 43 CFR 3809 to prevent unnecessary and undue land degradation. Note the standard operating procedures in appendix C. No new mineral withdrawals are proposed in this plan. The Bureau will recommend that the existing protective withdrawals on the Hot Lakes RNA and the Juniper Dunes Wilderness Area be retained.	Spokane RMP ROD 1987	No. There are other withdrawals which may warrant retention. Also, during the planning process, the BLM may consider recommending withdrawals to protect important resources.

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Minerals	Salable minerals, including common varieties of sand, gravel, and stone, will continue to be made available for local governments, state and Federal agencies, and the general public. The salable mineral program involves numerous pits and quarries where State and County road departments obtain rock for road surfacing material. Over the previous 10 years approximately 1.9 million cubic yards of material have been removed from 21 sites in eastern Washington for these purposes. New material sites may be developed as needed if they are consistent with the protection of other resource values.	Spokane RMP ROD 1987	No. Need to update acreage figures.
Recreation	Recreational activities and visual resources will be evaluated as part of the specific activity plans and will be evaluated to determine their appropriateness in relation to the land use allocations made in the RMP. BLM management of cultural and historic resources emphasize protection and preservation. See the standard operating procedures in appendix C.	Spokane RMP	Partially. Wilderness character will also be evaluated. The current management decision does not explicitly identify Native American consultation and consideration of tribal interests in the decision process. The standard operating procedures as written need revision to address typos and missing content.
Recreation	*Juniper Forest Management Area:* Manage the existing 14,480 acre ACEC to facilitate protection of the existing natural, scientific, and cultural values. Fence the Juniper Dunes Wilderness boundary and monitor recreational use of the adjacent public lands to determine if additional restrictions are necessary to protect the wilderness values. Continue the study of OHV activities and raptor use of the area and develop a recreation plan by the end of FY 88 that provides for the long-term OHV management in the area and ensures protection of the wilderness and ACEC objectives.	Spokane RMP ROD 1987	Partially. Current data lists OHV "Limited" area (i.e., ACEC) as 16,950 acres. Acreage has increased since last RMP due to acquisitions. The boundary and values of the ACEC, and appropriate protection measures, will be reconsidered during the planning process. Also, the wilderness has already been fenced, so the need is to monitor and maintain the fence, along with monitoring recreational use on adjacent public lands. "ORV" has been replaced by "OHV". Developing a recreation plan by FY 88 is outdated, and it is probably better to state to establish management policies within the RMP revision to manage increasing motorized recreational use while ensuring protection of wilderness and ACEC values.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Recreation	High Priority. Develop recreation management plans identified for the Similkameen, Douglas Creek, Rattlesnake Hills, and the Juniper Forest Management areas. Develop ACEC management plans for all designated ACECs within 2 years of the ROD approval. Identify the OHV restrictions within the management areas through the use of signs.	Spokane RMP ROD 1987	Partially. Additional recreation management plans may be needed, depending on management direction. "ORV" is now "OHV".
Recreation	Medium Priority. Develop new recreation facilities identified through the recreation management plans.	Spokane RMP ROD 1987	Partially. Should identify need for developing facilities based in part on increased use and public input, which should be stated in addition to "through the recreation management plans". Should also consider Improving access, accommodating current and future recreation use and enhancing recreation facilities.
Recreation	Recreational and visual resources will be monitored to determine trends or changes in land use. The monitoring tools will include the use of registration boxes and visitor use surveys to determine visitor use levels. Monitoring tools to determine surface disturbance attributed to recreation will include aerial photographs, and periodic soil and vegetation condition inventories. All of these tools will be used to establish base line data which will be used to determine the limits of acceptable change or to identify the need to improve recreational facilities. The target areas for this monitoring effort will be developed recreation sites, roads, parking areas, trail heads, trails, and potential picnic areas and campsites.	Spokane RMP ROD 1987	Partially. Recreation site and area visitation should also be monitored. Monitoring tools also include traffic counters and trail counters (which should be listed first since they are the primary means). Target areas should include "fishing/waterway access points".
Recreation	*Similkameen Management Area:* Develop a recreation management plan for the Chopaka Lake camping area to improve facilities benefiting hunting and fishing activities.	Spokane RMP ROD 1987	Partially. Facilities at Chopaka Lake have been improved. Consider continuing to emphasize maintenance and improvements of recreation facilities.
Recreation	*Douglas Creek Management Area:* Prepare a recreation management plan for Douglas Creek with an emphasis on protecting the existing values rather than development; and manage visual resources to maintain	Spokane RMP ROD 1987	No. Consider continuing current work with Douglas County and other partners to streamline management, protect habitat, improve access, accommodate current and future recreation use, and enhance recreation facilities. Determine management direction for this area

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	existing visual quality standards.		(includes Duffy Creek, Moses Coulee).
Recreation	*Saddle Mountains Management Area:* Permit a maximum of three races per calendar year. Acquire access through easement acquisition or land exchange to key parcels for recreational rock hounding on Saddle Mountains and in the Johnson Creek area.	Spokane RMP ROD 1987	No. BLM did acquire additional parcels that are key areas for recreation rock collection. But the real issue in this area is clarification of ownership of petrified wood, which remains unresolved. Three races per year may no longer be appropriate. Need to reconsider motorized travel designations.
Recreation	*Rattlesnake Hills Management Area:* Develop an activity plan to manage rock collecting OHV use and hunting.	Spokane RMP ROD 1987	No. Some BLM-managed lands may be closed to recreational mineral collection due to resource concerns.
Recreation	*Rock Creek Management Area:* Emphasize enhancement of the hunting and rock collection opportunities for the general public through the development of a recreation management plan.	Spokane RMP ROD 1987	No. Some BLM-managed lands may be closed to recreational mineral collection due to resource concerns. Camping is another important opportunity in this area.
Recreation	*North Ferry Management Area:* Emphasize maintenance of recreation opportunities in key areas as identified through public input and/or issues analyses. This may include land exchanges and development of recreation management plans for identified areas.	Spokane RMP ROD 1987	Partially. Subunits of the planning area and management direction will be determined through the planning process.
Recreation	*North Stevens Management Area:* Emphasize maintenance of recreation opportunities in key areas as identified through public input and/or issues analysis. This may include land exchange and development of recreation management plans for identified areas.	Spokane RMP ROD 1987	Partially. Subunits of the planning area and management direction will be determined through the planning process.
Recreation	*Huckleberry Mountains Management Area:* Emphasize maintenance or improvement of recreation opportunities in key areas identified through previous planning, public input, and/or issues analyses. This may include land exchanges and development of recreation management plans for identified areas.	Spokane RMP ROD 1987	Partially. Subunits of the planning area and management direction will be determined through the planning process.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Renewable Energy	251,096 (check acres in planning area) acres of public lands administered by BLM are designated as open to geothermal leasing subject to existing laws, regulations, formal orders, stipulations attached to the lease form, and the terms and conditions of the standard lease form. While these lands are allocated as open, compliance with laws and regulations or the exercise of BLM discretion in response to site-specific considerations could nevertheless prevent some lands from being leased.	Geothermal ROD 2008	No. Acreage is not accurate. Most Federal lands with moderate to high geothermal potential are located on national forests. The USFS has not yet done site specific NEPA or resource review, thus additional more restrictive stipulations or BMPs may be required.
Renewable Energy	14,415 acres of public lands administered by BLM are designated as closed to geothermal leasing.	Geothermal ROD 2008	No. Acreage not accurate. Need to reconsider rationale for closing areas.
Renewable Energy	The authorized officer would apply stipulations listed in chapter 2 of the Geothermal Leasing ROD and/or BMPs listed in appendix B of that ROD, as appropriate to any new geothermal lease.	Geothermal ROD 2008	Partially. Most Federal lands with moderate to high geothermal potential are located on national forests. The USFS has not yet done site specific NEPA or resource review, thus additional more restrictive stipulations or BMPs may be required.
Renewable Energy	BMPs and automatic avoidance/exclusion zones [see Wind Energy Policies and BMPs] included in the Wind Energy Development Program are adopted.	Wind Energy ROD 2005	Partially. IM 2009-043 modified the policy of avoidance areas and wind energy: "The Wind Energy Programmatic EIS established the previous policy that all ACECs were to be excluded from wind development. This IM changes this policy to ensure consideration of the purpose and specific environmental sensitivities for which the area was designated. All new, revised, or amended land use planning efforts will address and analyze ACEC land use restrictions individually, including restrictions to wind energy development. For future land use planning efforts, ACECs will not universally be excluded from wind energy site testing and monitoring or wind energy development but will be managed consistent with the management prescriptions for the individual ACEC."

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Special Designations	The 12 currently designated ACECs (Hot Lakes, Brewster Roost, Colockum Creek, Rock Island Canyon, Yakima River Cliffs and Umtanum Ridge, McCoy Canyon, Earthquake Point, Sentinel Slope, Yakima and Columbia River Islands, Juniper Forest) would continue to be managed to preclude land uses that could potentially damage special resource values. RMP table 2-4 provides a summary of the existing ACECs and their special resource values.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process.
Special Designations	Designate Yakima River Islands ACECs and manage to maintain or enhance crucial nesting habitat for water fowl.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process.
Special Designations	Designate Columbia River Island ACEC and manage to maintain or enhance crucial nesting habitat for water fowl and a candidate for Federal threatened or endangered listing species (*Rorippa columbiae*).		Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. Need to reconsider boundaries due to acquisitions in this area. *R. columbiae* is no longer a candidate, but is a species of concern and Bureau sensitive, State endangered, imperiled in the State and rare globally.
Special Designations	Designate Juniper Forest ACEC and manage to maintain or enhance nesting habitat for ferruginous and Swainson's hawks.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. Need to reconsider boundaries.
Special Designations	Designate Coal Creek ACEC and manage to maintain or enhance a species of concern (*Polemonium pectinatum*), important riparian habitat, and cultural values. This management could include such activities as construction of fences to exclude livestock from sensitive areas and stream bank stabilization projects to enhance riparian areas and fish habitat.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. Need to reconsider boundaries due to acquisitions in this area.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Special Designations	Designate Cowiche Canyon ACEC and manage to maintain or enhance a species of concern (*Tauschia hooveri*) and recreational values (to include hiking, horseback riding. OHV riding, and bird watching). The primary management objective for ACEC designation of Cowiche Canyon is to ensure the continued existence of *Tauschia hooveri* without precluding other compatible uses. Initially, OHVs would be limited to designated roads and trails, and *Tauschia hooveri* populations would be monitored to determine the condition or status of the habitat. Existing recreation activities would be permitted to continue. If monitoring indicates that livestock grazing is directly contributing to the decline of the species, livestock use adjustments would be made.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process, to include motorized travel designation and livestock grazing. *T. hooveri* is no longer a candidate, but is a species of concern and Bureau sensitive, State threatened, State and globally imperiled. Need to reconsider boundaries due to acquisitions in this area. Also, consider continuing work with local partners such as Cowiche Canyon Conservancy to enhance recreation opportunities, coordinate management, improve trail network, acquire land to consolidate public land ownership, complement recreation opportunities and enhance habitat.
Special Designations	Designate Little Vulcan Mountain ACEC and manage to maintain or enhance habitat for a candidate for Federal threatened or endangered listing species (bighorn sheep) and important wildlife habitat. Livestock grazing would be permitted to continue. No range improvement projects would be permitted except for enhancement of sheep habitat, such as the construction of fences to control livestock use.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. Need to reconsider boundaries.
Special Designations	Designate Yakima River Canyon ACEC and manage to maintain or enhance three species *(Tauschia hooveri, Oryzopsis hendersonii, and Lomatium tuberosum)* that are species of concern, and one species *(Erigeron basalticus)* that is a candidate for Federal threatened or endangered listing, important habitat for wildlife (including raptors and 120 other avian species, big horn sheep, mule deer, and occasional elk or bear), recreational values, and cultural values. The primary management objectives are to manage the increasing recreational uses that are occurring in the canyon and at the same time maintain or improve sensitive habitat. Initial management actions would include limiting OHVs to designated roads and trails.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. These values may include paleontological resources. Need to reconsider boundaries due to acquisitions in this area. Also consider working with partners to enhance effectiveness of management.

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Special Designations	Designate Keystone Point ACEC and manage to maintain or enhance a species of concern (*Trifolium thompsonii*). Management actions will include construction of enclosure fence and the limiting of surface disturbing activities or other incompatible uses as determined by site monitoring.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. *T. thompsonii* is no longer a candidate, but is a species of concern and Bureau sensitive, State threatened, State and globally imperiled.
Special Designations	Designate Iceberg Point and Point Colville ACECs to preserve the natural values in these areas. •Prohibit all fires, trail construction, overnight camping, fuel wood cutting, commercial timber sales, mineral material sales, and grazing of livestock. •Prohibit mineral material sales, and rights-of-way for additional roads, powerlines, pipelines or communication facilities. •Allow motorized vehicular travel to continue on the road crossing Point Colville. •Prohibit all other motorized vehicular travel, except for emergency vehicles, authorized vehicles, including the U. S. Coast Guard vehicles used for maintenance of the navigational facility on Iceberg Point, and motorized wheelchairs required by the handicapped. •Require permits for any vegetation collection. Survey and clearly mark the boundaries of both parcels. •Acquire public access to both sites. •Incorporate any additional land adjacent to or in the vicinity of Iceberg Point or Point Colville coming under BLM administration in the future into the ACEC designation. •Design management activities to protect federally or State-listed threatened, endangered and/or sensitive species. •Opportunities for visitor use would be provided to the extent they are compatible with the preservation of natural values. If a choice must be made between preservation of the natural values and allowing visitor	ACEC DR 1990	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
	use, preservation of the natural values will be the primary consideration. Specific actions include: (1) Place signs to control visitor use as necessary. (2) Require special permits for groups containing ten or more individuals. (3) Enter into a Law Enforcement Agreement with the County Sheriff. (4) Establish regular patrols by BLM law enforcement officers and/or personnel during high use periods. •Enter into a Memorandum of Understanding with adjacent land owners, interested parties and special interest groups to implement the plan. •Establish a monitoring program independent of the above, focusing on preserving natural qualities of the areas. This program would first require defining the desired natural conditions and to undertake actions when necessary to maintain or achieve these conditions. •Close the areas to any use or combination of uses that tend to degrade the natural values of the sites.		
Special Designations	Establish a monitoring program for Iceberg Point and Point Colville ACEC, focusing on preserving natural qualities of the areas. This program would first require defining the desired natural conditions. and to undertake actions when necessary to maintain or achieve these conditions	ACEC DR 1990	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process.
Special Designations	Designate Hot Lakes ACEC and manage to maintain or enhance the values of the merimictic lake.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process.
Special Designations	Designate Brewster Roost ACEC and manage to maintain or enhance the bald eagle winter roost	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. Bald eagles are no longer a federally listed species.
Special Designations	Designate Colockum Creek ACEC and manage to maintain or enhance a species of concern (*Astragalus sinuatus*).	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. Need to reconsider boundaries. A. sinuatus is no longer a candidate, but is a species of

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
			concern and Bureau sensitive, State endangered, State and globally critically imperiled.
Special Designations	Designate Rock Island Canyon ACEC and manage to maintain or enhance five species (including *Astragalus misellus* var. *pauper* and *Phacelia lenta*), a bureau sensitive species and a species of concern, respectively.	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. Need to reconsider boundaries. *A. misellus* var. *pauper* is no longer a candidate, but is Bureau sensitive and State sensitive. *P. lenta* is no longer a candidate, but is a species of concern and Bureau sensitive, State threatened, State and globally imperiled.
Special Designations	Designate Yakima River Cliffs and Umtanum Ridge ACECs and manage to maintain or enhance a species (*Erigeron basalticus)* that is a candidate for Federal threatened or endangered listing, and a species of concern (*Lomatium tuberosum).*	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. These two species are no longer candidates, but are species of concern and Bureau sensitive. *E. basalticus* is State threatened, State and globally imperiled. *L. tuberosum* is State sensitive, rare/uncommon to imperiled on State and global levels.
Special Designations	Designate McCoy Canyon ACEC and manage to maintain or enhance two species of concern (*Astragalus columbianus* and *Lomatium tuberosum*).	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. These two species are no longer candidates, but are species of concern and Bureau sensitive. *A. columbianus* is State sensitive, State and globally rare/uncommon. *L. tuberosum* is State sensitive, rare to imperiled on State and global levels.
Special Designations	Designate Earthquake Point ACEC and manage to maintain or enhance a species of concern (*Petrophytum cinerascens*).	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. *P. cinerascens* is no longer a candidate, but is a species of concern and Bureau sensitive, State endangered, and critically imperiled in the State and globally.
Special Designations	Designate Sentinel Slope ACEC and manage to maintain or enhance a species of concern (*Lomatium tuberosum*).	Spokane RMP Amendment 1992	Partially. Values for the ACEC designation and related management direction will be reconsidered through the planning process. *L. tuberosum* is no longer a candidate, but is a species of concern and Bureau sensitive, State sensitive, and rare to imperiled in the

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
			State and globally.
Special Status Species	Prior to any vegetation or ground disturbing manipulation projects, the BLM requires a survey of the project site for plants and animals listed or proposed for listing as threatened or endangered, or their critical habitats.	Spokane RMP ROD 1987	Partially. May not be appropriate guidance in an RMP. Follow current BLM special status species guidance.
Special Status Species	For sensitive, proposed, or candidate T/E species, it is Bureau policy to ensure that the crucial/essential habitats be considered (managed and/or conserved) in all management decisions to minimize the need for future listing by either Federal or State governments. Sensitive species will be accorded special management consideration as if they were officially listed pursuant to the Endangered Species Act of1973. It may be determined by the District Manager, on a case-by-case basis, that verified data concerning a species is adequate to allow the planned action. If not, approval by the State Director is required before an action can proceed.	Spokane RMP ROD 1987	Partially. Needs to be revised to be more consistent with current BLM policy.
Special Status Species	Activities will not be permitted or implemented in habitat important for listed threatened or endangered species, or for proposed, candidate, or State-listed sensitive species, if such activities are likely to jeopardize the existence of the species in the area in question.	Spokane RMP ROD 1987	Yes. Bureau policy still applies.
Special Status Species	An effort will be made to modify proposed actions that —may affect" habitat or species in order to achieve a —no affect" biological opinion from USDI FWS. If the action cannot be adequately modified, it may be abandoned or relocated.	Spokane RMP ROD 1987	Partially. Direction is somewhat vague. Need to revisit and clarify.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Special Status Species	Whenever possible, management activities in habitat for endangered, threatened, or sensitive species would be designed specifically to benefit those species through habitat improvement or protection.	Spokane RMP ROD 1987	Yes.
Special Status Species	The Washington State Department of Game (WSDG)and Department of Natural Resources/Washington Natural Heritage Program (WSDNPJWNHP) may be consulted along with the USDI FWS prior to implementing projects that may affect habitat for State-listed endangered, threatened, or sensitive species.	Spokane RMP ROD 1987	Partially. Need to revise to be consistent with current BLM policy.
Special Status Species	In the event if BLM proposed or authorized actions could have potential adverse effects on federally listed species, the BLM will not take any action that would contribute to the need to list any species as threatened or endangered. This policy requires the conservation of special status species, including federally listed and proposed, Federal candidate, Bureau sensitive, assessment species, and State-listed species of plants or animals and their habitats. Should any of these species or their habitats (critical, proposed, essential or other habitat) be encountered prior to project initiation, BLM will seek technical assistance from the USDI FWS and the project will be altered or mitigated. If such species are encountered during project construction, all ground and tree disturbing work will be suspended, and mitigation applied as needed to protect and conserve the species and their habitats.	Spokane RMP Amendment 1992	Yes.
Visual Resources	The evaluation of visual resources will consider the significance of proposed projects and the visual/scenic sensitivity of the affected area. Stipulations will be attached as appropriate to assure compatibility of projects with management objectives for visual resources. Note the definitions and management guidelines for the five visual resource management classes in appendix C.	Spokane RMP ROD 1987	No. BLM policy (Land Use Planning Handbook) requires that offices designate visual resource management classifications during the RMP process.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Visual Resources	The Badger Slope is designated as a class II [Visual] management area because of its high sensitivity and scenic quality.	MFP Southeast Planning Area 1981	Partially. Need to revisit after completion of ongoing visual resources inventory.
Vegetation – Noxious Weeds	Infestations of noxious weeds are known to occur on some of the BLM lands. The most common noxious weeds are diffuse knapweed, spotted knapweed, Russian knapweed, and yellow starthistle. Methods of controlling would be proposed and subjected to site-specific environmental analyses. Control methods would not be considered unless the weeds are confined to the BLM lands or efforts are coordinated with adjoining infested, non-BLM lands. Proper grazing management will be emphasized after control to minimize possible reinfestation of weeds from neighboring lands.	Spokane RMP ROD 1987	No. Noxious weeds are a major problem in the planning area and new direction is required to address them.
Fish and Wildlife	Fish and wildlife habitat management objectives will continue to be evaluated on a case-by-case basis as a part of project level planning (for example: timber sale plans, grazing management plans, recreation management plans, rights-of-way applications, and so forth). Note the standard design features and operation procedures in appendix C. Evaluations will consider the significance of the proposed projects and the sensitivity of fish and wildlife habitats in the affected areas. Stipulations will be attached as appropriate to assure compatibility of projects with management objectives for fish and wildlife habitat. Protective fences will be constructed in riparian areas, and other habitat improvement projects will be implemented where necessary to stabilize and/or improve unsatisfactory or declining wildlife habitat condition. Such projects will be identified through habitat management plans or coordinated resource management activity plans.	Spokane RMP ROD 1987	No. Need to be more specific and address anadromous fisheries habitat, listed fish, and native fish habitat. Also, should reference PACFISH riparian habitat conservation areas and riparian management objectives.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Fish and Wildlife	*Similkameen Management Area:* Develop a CRMP on Palmer Mountain to improve or maintain crucial mule deer winter range. Protect 6.5 stream miles with high value riparian habitats on Palmer Mountain, Little Chopaka Mountain, Ellemeham Mountain, American Butte, Kruger Mountain, and the shorelines of Chopaka Lake and the Similkameen River.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Subdivisions of the planning area and management directions will be determined through the planning process.
Fish and Wildlife	*Conconully Management Area:* Identify and protect high value riparian habitats along 2.25 miles of Salmon Creek and 1 mile in Dry Coulee.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Through the work of the Colville Confederated Tribes in Salmon Creek, there are now steelhead in this stream. Subdivisions of the planning area and management directions will be determined through the planning process.
Fish and Wildlife	*Jameson Lake Management Area:* Develop an HMP and acquire approximately 1,200 acres of nonagricultural lands for the purpose of maintaining or improving upland game nesting and wintering habitat. Protect riparian habitat in Sulphur Canyon.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Subdivisions of the planning area and management directions will be determined through the planning process.
Fish and Wildlife	*Douglas Creek Management Area:* Expand existing HMP to cover the entire Douglas Creek Management Area. Improve wildlife habitat in the Douglas Creek riparian area by management of the plant cover through the existing habitat management plan which includes planting of shrubs and grasses, control of noxious weeds, and exclusion of cattle grazing from specific areas. Protect and improve the condition of high value riparian habitat along Rock Island Creek (1.5 miles), Sutherland Canyon (3 miles), Skookumchuck Creek (1 mile), and Rattlesnake Creek (0.5 mile).	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	*Saddle Mountains Management Area:* Protect and improve high value riparian habitat along Johnson Creek (1 mile) and 6 miles of its tributaries.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	*Rattlesnake Hills Management Area:* Develop an HMP to maintain or improve key species concentration areas. Identify and protect high value riparian habitat in	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
	Washout Canyon (1 mile).		
Fish and Wildlife	*Rock Creek Management Area:* Develop an HMP to emphasize enhancement of game species habitat. Protect and improve riparian habitat along Squaw Creek (1.5 miles), Rock Creek (5 miles), and riparian areas acquired through land exchanges.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made, land base has changed. Need to develop management direction through the planning process to address new information, like non-listed wild steelhead population in Rock Creek.
Fish and Wildlife	*North Ferry Management Area:* Emphasize maintenance or improvement of key species habitat areas identified through previous planning, public input, and/or issues analyses. This may include land exchanges to facilitate protection of these areas and development of HMPs. Protect and improve riparian habitat on BLM administered land along 7 miles of perennial streams and the Kettle River.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	*North Stevens Management Area:* Protect and improve 4.5 miles of riparian habitat along perennial streams and the Columbia and Kettle rivers.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	*Huckleberry Mountains Management Area:* Emphasize maintenance or improvement of key wildlife habitat areas, such as critical deer winter range, identified through previous planning, public input, and/or issues analyses. This may include land exchanges to facilitate protection of these areas and development of HMPS. Protect and improve the 2.5 miles of riparian habitat along perennial streams that cross public land.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	Management actions within riparian habitat areas, wetlands, and flood plains will include measures to preserve, protect, and restore natural functions, as defined by Executive Orders 11988 and 11990. Management techniques will be used to minimize the degradation of streambanks and the loss of riparian vegetation. Bridges and culverts will be designed and installed to maintain adequate fish passage. Roads and other facilities will be designed to avoid riparian areas to the extent that it is practicable. Riparian habitat needs	Spokane RMP ROD 1987	No. Need to revise and incorporate appropriate standards and guidelines from PACFISH.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
	will be taken into consideration when developing livestock grazing systems and pasture designs.		
Fish and Wildlife	*Juniper Forest Management Area:* Implement the HMP to emphasize maintenance or improvement of raptor and upland game habitat. Allocate forage to livestock to minimize conflict with wildlife habitat management objectives.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	*Badger Slope Management Area:* Develop a CRMP for this area with provisions to improve and protect raptor and upland game habitat. Develop an HMP on 1,000 acres of the area for the purpose of improving upland game habitat. Protect riparian habitat in Webber Canyon (2.5 miles) and protect and improve riparian habitat in Sec. 30, T9N., R26E.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	*Scattered Tracts Management Area:* Identify and protect valuable wildlife habitat through management of livestock, OHVs, and other resource uses. Protect and improve high potential riparian habitats. Inventory small acreages for high value riparian habitats. Develop and implement HMP for riparian habitat protection or enhancement.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	High Priority. Actions taken through an HMP that affect riparian areas or threatened or endangered species habitat. Monitoring existing HMPs. Assessment of actions affecting wildlife habitat. Protection of unique or sensitive species habitat.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Fish and Wildlife	Medium Priority. Complete statewide cooperative Sikes Act HMP. Monitor important habitat of other species such as mule deer, elk, pheasant and other game and nongame species.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	Low Priority. Manage non-critical habitats with significant values.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	Habitat management plans will be prepared prior to implementation of specific activities for habitat improvement. HMPs will contain sections on monitoring techniques for various activities. These will evaluate habitat condition and trend against resource objectives.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop management direction through the planning process.
Fish and Wildlife	Wildlife habitat monitoring will consist largely of recording repeated observations of the physical and biological habitat components being manipulated by an action. This may be as simple as using photo stations or as complicated as a complete ecological study. Each action will be monitored to assess degree of success or failure measured against management objectives.	Spokane RMP ROD 1987	Yes.
Fish and Wildlife	Monitoring priorities will follow general management priorities discussed previously. Each HMP will discuss and rank by priority monitoring efforts as part of the management scenario for a particular geographic area.	Spokane RMP ROD 1987	No. Need to develop new priorities through the planning process.
Fish and Wildlife	Support and cooperation from the WSDG, private sportsmen's groups, and others will be an integral part of the habit management program. Extensive coordination with other Federal, State, private agencies, and groups will be carried out as needed during day-to-day program operation.	Spokane RMP ROD 1987	Yes.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Fish and Wildlife	A supplemental inventory evaluation of riparian habitat will be conducted on public lands within 3 years from the time the RMP is adopted. Habitat vegetation potential and current condition will be assessed for all areas, and management guidelines and objectives will be developed. All high value and high potential habitats in less than good condition will be managed through implementation of activity plans and projects (such as construction of protective fencing) to allow restoration of native vegetation, increase of plant vigor, and general habitat condition improvement.	Spokane RMP ROD 1987	No. Inventories completed. Need to develop management direction for riparian habitat through the planning process.
Fish and Wildlife	Seasonal restrictions will be applied to mitigate the impacts of human activities on important seasonal wildlife habitat. Some of the major types of important seasonal wildlife habitat are crucial deer winter range, bighorn sheep winter range and lambing grounds, mountain goat winter range and kidding grounds, sage and sharptail grouse leks, and raptor nesting habitat.	Spokane RMP ROD 1987	Yes.
Fish and Wildlife	Sufficient forage and cover will be provided for wildlife on seasonal habitat to maintain existing population levels or target population levels as established by the WSDG. Forage and cover requirements will be incorporated into allotment management plans and will be specific to areas of primary wildlife use.	Spokane RMP ROD 1987	Yes.
Fish and Wildlife	Sufficient forage and cover will be provided for wildlife on seasonal habitat to maintain existing population levels or target population levels as established by the WSDG. Forage and cover requirements will be incorporated into allotment management plans and will be specific to areas of primary wildlife use.	Spokane RMP ROD 1987	Yes. Rangeland Health Standards and Guidelines direct that habitat will be provided for wildlife.

Resource Program	Current Management Decision	Source Document	Is Decision Responsive or Relevant to Current Issues, Laws, Regulations, and Policies?
Fish and Wildlife	Range improvements generally will be designed to achieve both wildlife and range objectives. Existing fences may be modified, and new fences will be built to allow wildlife passage. Water developments generally would not be established for livestock where significant conflicts over vegetation would result. Water will be provided when possible in allotments during seasonal periods of need for wildlife.	Spokane RMP ROD 1987	Yes. But consider revision to incorporate Standards for Rangeland Health for Oregon and Washington.
Fish and Wildlife	Vegetation manipulation projects will be designed to minimize impact on wildlife habitat and to improve it whenever possible. The WSDG would have the opportunity to review all proposed actions involving vegetation manipulation projects.	Spokane RMP ROD 1987	Yes.
Fish and Wildlife	Wildlife reintroductions and fish stocking proposals would be evaluated, and recommendations would be made to the WSDG.	Spokane RMP ROD 1987	Partially. Need to consider current and future agreements with WDFW.
Fish and Wildlife	The management area prescription summary will be used as a basis to implement the Wildlife and Fish Habitat Management Program.	Spokane RMP ROD 1987	No. Various plans and range improvements have been made and land base has changed. Need to develop new management direction through the planning process.
Water Resources	Water sources necessary to meet BLM program objectives will be developed and filed on according to applicable State and Federal laws and regulations.	Spokane RMP ROD 1987	Yes.

Chapter 4 Management Opportunities

4.1 Opportunities Based on Analysis of Current Management Direction

Chapter 3 describes the potential for application of current management to resolve the planning issues (see chapter 7). As a result of this analysis, the BLM identified a number of needs and opportunities for the new management direction. The following is not an all-inclusive list of these opportunities, but it highlights the most significant findings.

4.1.1 *Resources*

4.1.1.1 Soil Resources

- Collect and compile soil resource condition information. Collect soil information during rangeland health evaluation, inventory, and monitoring activities.
- Identify areas with highly erodible soils, and unique soil resources including inland sand dunes, lithosols, and biological soil crusts.
- Continue to protect soil resources with BMPs for management activities and fire rehabilitation and emergency stabilization.
- Protect soil resources through motorized vehicle area designations.

4.1.1.2 Vegetative Communities

- Manage for forest health, restoration, and fuels reduction, including riparian areas, to manage vegetation and ecological function. Conduct hazard tree management for public and structure/facility safety. Use stewardship contracting to achieve some land management goals. There would be salvage of merchantable material resulting from wildfire, insect and disease outbreaks, drought, and other events.
- While the BLM continues to manage forests on public lands under the principles of multiple use and sustained yield as required by FLPMA, these principles have taken on a different interpretation from when the current RMP was released. The ―Forest Management" section of the Spokane RMP (USDI BLM 1985) and the Spokane ROD (USDI BLM 1987) focuses on the sustained-yield component, which was the emphasis at that time. While the concept of sustained yield is still an important component of Spokane District Office's forestry program (as well as a basic tenet of forestry), there is more emphasis placed on managing forest health and fuels reduction for the benefit of all resources. This type of management results in restoring forests to some form of desired future condition with a future range of variability, with timber production being a by-product. As a result, this current planning effort needs to include decisions that address this new emphasis in forest and woodland management.
- There are no current management decisions that consider the conservation of aspen and Oregon oak woodlands and other hardwoods. These areas need management to restore, maintain, or enhance plant communities to a future range of variability, including riparian areas. Management prescriptions should be designed to reduce or remove vegetation from sites where it has encroached and to expand aspen stands in all locations where it is found. Options for use of woodland products and biomass industries should be explored.

- Lack of a management plan for the San Juan portion of the planning area currently precludes the ability to respond to poor forest health conditions that may threaten the continued existence of the forest structure that makes the area special. Current activities have been limited to hazard tree management for public and structure safety.

4.1.1.3 Noxious Weeds and Invasive Plants

- Develop an integrated weed management strategy for the district using the goals outlined in the ―Partners Against Weeds" (1996) and incorporate the practices and mitigation measures identified in the ―Vegetation Treatments on BLM Lands in 17 Western States PEIS, PER, and ROD" (2007).
- Consider preventing the introduction and spread of invasive plants through activities such as using ―weed-free" hay, straw, mulch, and seed for restoration activities; all baled feed, pelletized feed and grain transported into weed-free zones and used to feed livestock should also be certified as free of weed seed.
- Conduct inventories for noxious weed infestations on BLM lands to develop a baseline of weed geographic distribution and abundance. Priority areas can be determined in conjunction with the weed control strategy for the district. Determine areas within the planning area where noxious weed infestations are not present and identify as ―weed-free".
- Consider requirements to reduce the spread of noxious weeds, such as, all contractors and land-use operators moving surface-disturbing equipment in or out of weed-infested areas should clean their equipment before and after use on public land.
- Consider timing limitations of livestock grazing in weed-infested areas and the use of prescribed grazing for targeted weed control.
- Encourage the cleaning of all vehicles and equipment, including off-road and all-terrain vehicles, when travelling through weed-infested areas before and after use on public land.
- Establish and maintain partnerships with Federal, State, and local agencies and private groups to coordinate the prevention and control of noxious weeds.

4.1.1.4 Special Status Plants

- BLM should take an active role in carrying out actions proposed in the recovery plan for Spalding's catchfly, because a substantial proportion of Spalding's catchfly occurrences in eastern Washington are on lands owned by the Spokane District. Of the seven potential key conservation areas identified within the Channeled Scablands by the recovery plan, six are on BLM lands (Fishtrap, Coal Creek, Crab Creek, Rocky Ford, Twin Lakes and Telford). BLM should develop habitat management plans that specifically address Spalding's catchfly at each of these potential key conservation areas, including considerations of grazing management, control of invasive species, and fire management. Develop a program for demographic monitoring of this plant, if possible in partnership with a university or conservation organization. Update information for areas initially surveyed by conducting new surveys, and survey new acquisitions within the appropriate geographic area for this plant.

4.1.1.5 Fisheries Resources

- Continue or update standards and guidelines in PACFISH Interim Strategy for the Management of Anadromous Fish Bearing Watersheds. PACFISH was a 1994 agreement

between the USFS, BLM, and NOAA-National Marine Fisheries Service to set standards and guides for riparian habitat conservation areas (RHCAs).

4.1.1.6 Wildlife

- Consider excluding priority sage grouse habitat from energy development and transmission projects as per BLM policy (IM-2010-071).
- Adopt protective management actions for sage grouse from the WDFW recovery plan (Stinson 2004), Connelly et al. (2000) habitat guidelines, and BLM management considerations for energy development per BLM policy (IM-2010-73). Identify where certain actions will take place according to priority tiers developed under this policy.
- Adopt protective management actions for Canada lynx from the Lynx Conservation and Assessment Strategy and WDFW recovery plan.
- Adopt protective management actions, as appropriate, from WDFW recovery plans for other State-listed species including: sharp-tailed grouse, ferruginous hawk, western gray squirrel, sandhill crane, and American white pelican.

4.1.1.7 Wildland Fire Ecology and Management

- The general desired wildland fire condition is to have ecosystems that are at low risk of losing ecosystem components following wildfire and that function within their historical range of ecological variability. In terms of Fire Regime Condition Classification (FRCC), the desired wildland fire condition is to trend to a lower FRCC using the least intrusive method possible. In other words, the desired condition is to move lands in FRCC 3 to FRCC 2 and lands in FRCC 2 to FRCC 1 through fire and non-fire treatments. Inside some fire management units (e.g., those with wildland-urban interface areas), the general desired condition is to have limited potential for values to be threatened by wildland fire; this condition will be achieved through some modification of fuels.
- In all fire management decisions, strategies, and actions, firefighter and public safety are the first and highest priority. The full range of management strategies and actions will be used to protect firefighter and public safety. This priority overrides all other strategies and actions. Further, the full range of fire management actions, consistent and integrated with other resource considerations and planning decisions, will be used to help achieve ecosystem sustainability, including its interrelated ecological, economic, and social components.
- The following should also be considered in the DRMP/DEIS when addressing wildland fire ecology and management:
    - Develop goals and objectives that address fire management.
    - Include management actions that continue incorporation of standards for rangeland health.
    - Develop management direction for fuel treatment priorities and fuel treatment methods.
    - Develop desired future conditions for each vegetation type and high wildfire hazard risk situation.
    - Determine fuels management opportunities.
    - Address use of wildfire as a vegetation and fuels management tool.
    - Address smoke management issues.

- Continue to develop new management actions to restore sagebrush and native plant communities to compete with annual invasive plant species. This will be in association with wildlife and vegetation management strategies included in tiered direction from the Greater Sage-grouse Species National Policy and Guidance (USDI BLM 2000).
- The Spokane District fire program should continue to develop future planning for community risk and assistance with community wildfire protection plans.
- Identification of areas where wildfire management is desired to meet specific resource objectives.
- Update RMP with new science and policy: The current Spokane District RMP (USDI BLM 1985) does not address changes in agency and departmental direction and policy concerns related to wildland fire ecology and management.
  - Federal Wildland Fire Management Policy and Program Review (1995).
  - Report to the President: Managing the Impacts of Wildfires on Communities and the Environment (2000).
  - Development of the National Fire Plan and the setting of priorities for fuels treatment (communities at risk), protection, and suppression activities.
  - Review and Update of the 1995 Federal Wildland Fire Management Policy (2001).
  - Direction and guidance from the President's Forest Health Initiative (2002).
  - A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy and Implementation Plan (2006).
  - Revised Guidance for Implementing Fire Policy (2009).
  - Flame Act (2009).

4.1.1.8 Cultural Resources

- Consider conducting proactive cultural landscape inventories.
- Consider inventory and evaluation of cultural resources particularly on acquired lands.
- Develop plans for treatment and management of NRHP properties.
- Consider proactive protection and management of cultural resources.
- Build partnerships for protecting, interpreting and maintaining historic properties.

4.1.1.9 Paleontology

- Implement new BLM regulations, when promulgated, in response to the recently enacted Paleontological Resources Preservation Act (PRPA).
- Consider proactive paleontological resource inventories.

4.1.1.10 Visual Resources

- Determine appropriate visual resource inventory classes and establish appropriate visual resource management classes for all Spokane District BLM lands. This information has not been updated since the Spokane District's 1980–1982 Management Framework Plan (MFP), and a significant portion of the records providing that information in the MFP

has been lost. Also incorporate other significant VRI data into EWSJ RMP as deemed necessary. This complies with the Recreation appendix C guidance to identify pertinent recreation management, operational, information and monitoring activities or direction.

4.1.1.11 Wilderness Characteristics

- Consider management for wilderness characteristics at some sites, following completion of ongoing wilderness characteristics inventories of large, contiguous tracts of public land, lands acquired since the original inventories of 1979−80, and any roadless islands.

4.1.1.12 Cave and Karst Resources

- Develop management objectives for future significant cave or karst resources that are discovered on BLM-managed lands.

4.1.2 *Resource Uses*

4.1.2.1 Livestock Grazing

- Review grazing allotment categorization. Allotment categorization needs to be revisited to address the allotments where public lands were acquired since implementation of Spokane District RMP, listed and special status species and other new resource priorities.
- Designate any lands that would be unavailable for livestock grazing. Determine if lands within the San Juan Archipelago would be available for livestock grazing addressing potential to use livestock grazing for vegetation control.
- Establish criteria for leasing of small unfenced unleased tracts for grazing. Criteria would include suitability of base property, slope, topography, availability of livestock water and impacts on surrounding property owners.
- Determine areas where grazing by sheep and goats would not be authorized due to potential health impacts on big horn sheep.
- Address renewal of grazing leases on small and scattered tract C and M allotments in RMP revision to allow for tiering of NEPA documents to the RMP.
- Address authorizing grazing on small scattered public land tracts that are surrounded by lands not administered by BLM to allow for tiering of NEPA documents to the RMP.
- Address the need for flexibility in season of use on small scattered tract allotments to allow for changes in timing of grazing occurring on surrounding lands not administered by BLM.
- Address grazing lease terms and conditions from the Okanogan Livestock Grazing Biological Assessment to be incorporated in affected grazing leases.
- Consider keeping currently unleased larger allotments available for grazing as needed when livestock operations are displaced from other public land allotments for reasons such as fire or restoration activities.
- Update Spokane District Resource Monitoring Plan to incorporate rangeland health standards and integrate resource inventory and monitoring efforts to improve staff efficiency.

4.1.2.2 Minerals

All Minerals

- Recognize that public lands managed by BLM can contribute to the Nation's need for domestic sources of mineral and energy resources.
- Encourage development of a stable domestic minerals and energy industry and orderly economic development of domestic mineral and energy resources on public lands.
- Allow for and recognize that energy and mineral development can occur concurrently or sequentially with other resource uses, providing that appropriate stipulations or conditions of approval are incorporated into authorizations to prevent unnecessary or undue degradation and reduce environmental impacts.
- Within the planning area determine where mineral development is appropriate.
- Conditions of approval (COA) and best management practices (BMPs) need to be identified that will protect other resources should exploration and development proposals be received.

Leasable Minerals

- Identify areas closed or restricted to leasable mineral activity.
- Make low, moderate, and high potential areas available for oil and gas leasing, exploration, and development.
- Fluid mineral stipulations need to be identified for the protection of resources/resource uses on public lands that are available for leasing, exploration, and development.

Locatable Minerals

- Identify areas open and closed to locatable mineral development and areas where restrictions may apply.
- Develop standard stipulations that would protect other resources during locatable mineral development.

Saleable Minerals

- Identify areas closed or restricted to saleable mineral development.
- Identify areas where mineral material sources should be established where there is a demand by local, county, state, or Federal entities.
- Lands adjacent to county, state, and Federal roads should be made available to maintain those roads.
- Community pits and common use areas should be established where there is a demand for mineral materials and re-evaluated for closure and final reclamation where there is not future anticipated demand.

4.1.2.3 Recreation

Manage recreation to comply with LUP Handbook appendix C guidance required since the last RMP: (1) By creating recreation management areas (RMAs) in areas where recreation is emphasized, which consist of extensive recreation management areas (ERMAs) and/or special recreation management areas (SRMAs), for the first time in the Spokane District; and establish objectives, and identify management action and allowable use decisions as appropriate for them, according to the criteria found in appendix C. It is not mandatory to create RMAs for areas

where recreation is not emphasized, but where recreation activities may occur. Management actions and allowable use decisions may still be necessary for these areas. Also, provide supporting information, including a description of the rationale used for creating any SRMA. (2) By potentially creating recreational implementation decisions that would allow site-specific actions to achieve land use plan decisions. Implementation decisions fall under the categories of management, administration, information and education, and monitoring. (3) By defining recreation setting characteristics for RMAs, including physical, social, and operational criteria, and create outcome-based objectives to manage and protect those settings, including by identifying terms, conditions, or special considerations for other programs necessary to maintain particular recreation setting characteristics to ensure that a variety of outdoor recreational opportunities continue to be available. This will include creating GIS map(s) to identify RMAs and setting characteristics within the entire district. Outcomes-focused management will tier from consideration of three components: managerial/administrative/monitoring, settings, and benefits/experiences. (4) Create an interim travel management plan (ITMP) for use until such time as a final TMP is created, i.e., within 5 years of completing the EWSJ RMP.

4.1.2.4 Renewable Energy

- Potential development areas for renewable energy should be identified.

4.1.2.5 Transportation and Access

- Identify and prioritize access needs.

4.1.2.6 Utility Corridors, Land Use Authorizations, and Communication Sites

- **Utility Corridors:** Evaluate designated corridors and carry forward, modify, or identify new energy corridors where necessary ensuring conformance with the PEIS for the Designation of Energy Corridors on Federal Land in 11 Western States.
- **Land Use Authorizations:** Right-of-way avoidance and exclusion areas will be designated following identification of important or sensitive resource values. Right-of-way grants within avoidance areas may be subject to restrictive stipulations.

4.1.2.7 Land Tenure

- Consider excluding desert land entries from the list of appropriate authorities for conveying land.
- Current (RMP-Appendix B; BLM 1987) land tenure adjustment criteria used for acquisition of land or disposal of public lands will be reviewed and adjusted if necessary during the development of the amended RMP. Each parcel listed in the 1987 RMP should be reviewed and re-evaluated using the new disposal criteria to determine if the parcel should still be considered for disposal. The revised RMP could list lands or interests in lands that are determined suitable for disposal by either identifying parcels by legal description or through a zoning concept.

4.1.2.8 Withdrawals

- There is no accurate inventory of the various types of withdrawals in Washington State. A township-by-township inventory of withdrawals along with research to determine BLM's jurisdiction responsibilities is needed for a proper withdrawal review.

4.1.3 *Special Designations*

4.1.3.1 Areas of Critical Environmental Concern

- Reconsider boundaries of the Juniper Dunes ACEC to increase effectiveness of ACEC management and enforcement. Current boundaries do not relate to any physical marker on the ground and thus are impossible to communicate to the public and enforce. New boundaries should correspond to existing or proposed fence lines that can then be signed, maintained, and enforced. Some areas of ACEC may not support ACEC values or are unmanageable as an ACEC and may be considered for removal of this designation.
- Reconsider ACEC designation for all areas deferred from consideration in the 1992 RMP amendment. These include: Aeneas Mountain, Boylston Mountain, Whiskey Dick Mountain, Sentinel Slope, McCoy Canyon Additions, Keystone Point, Buck and Doe Lakes, Wilson Creek, Mount Hull, Stoddard Mountain, Rattlesnake Ridge, Rock Creek. Consider designation for two areas that were more recently reviewed for ACEC suitability: Horse Heaven Hills and Sentinel Butte Dunes.
- Evaluate acquired lands to determine if new ACEC designations are warranted. Consider all lands within the San Juan Archipelago for potential ACEC designation.
- Develop special stipulations and use restrictions for ACECs (some may apply to all, others may be area specific).
- Review ACEC designations to consider and incorporate new information since designations were made.
- Review ACEC boundaries and consider adjustments for acquired lands located adjacent to the designated ACECs.

4.1.3.2 Wild and Scenic Rivers

- Identify all perennial, free-flowing stretches of rivers and streams meeting the requirements as eligible and/or suitable for wild and scenic river designation(s). Explore the potential for recommending designation of Yakima River Canyon as suitable for wild and scenic river, recreational river area designation. Because it has previously been identified as meeting eligibility criteria 3, it should be closely studied.

4.1.4 *Social and Economics*

4.1.4.1 Tribal Interests

- Identify and manage traditional use locations of importance to tribes.
- Identify and protect habitats for plants, fish, and wildlife of traditional value and importance to tribes.
- Ensure resource health and access for exercise of treaty rights and tribal interests.

4.1.5 *Other*

4.1.5.1 General Management

- Incorporate the San Juan Archipelago as an identified management area. Botany, wildlife, visual resource management, forestry, fuels, recreation and visitor services, archeology, and realty comply with LUP Handbook appendix C guidance.

4.2 Areas of Relative Ecological Importance

Areas of relative ecological importance (AREI) are identified in order to understand tradeoffs when establishing land use allocations and analyzing alternatives. This information should feed into alternative development to identify opportunities for restoration and maintenance of habitats. The land use planning handbook instructs BLM to focus on dominant patterns across the ecoregion, habitat extent, condition and connectivity, and overall species diversity. Features used to identify AREIs will vary by planning area, but the planning handbook suggests considering large and unfragmented areas, important soil and watershed/wetland values, habitat for special status species, and any other important ecological features as determined by the planning team.

For the Eastern Washington and San Juan Islands RMP the following criteria will be used to identify AREIs:

- Sage grouse Tier 1 Priority Habitat.
- Sharp-tailed grouse Habitat Concentration Areas[6] (HCA).
- Areas where HCAs for multiple connectivity focal species overlap.
- Existing ACECs.
- Existing wilderness and wilderness study areas.
- Old growth stands.
- Interior sand dune systems.
- White oak woodlands.
- Conservation area for *Silene spaldingii*.
- All BLM lands in the San Juan Islands Archipelago.

Map 36, appendix A, displays the areas of relative ecological importance within the planning area, based on these criteria.

[6] HCAs were developed by the Washington Connectivity Working Group to represent areas where focal connectivity species and their habitat are especially concentrated.

Chapter 5 Consistency/Coordination with Other Plans

As required by FLPMA, during the development of the EWSJ RMP, the BLM will coordinate with Indian tribes, state agencies, counties, and municipalities to ensure consistency between the RMP and their resource and land use plans. The plans include the following:

1) Comprehensive plans for the 23 counties within the planning area.

2) City comprehensive plans for municipalities within which there are BLM lands within or adjacent to the corporation limits.

3) Community wildfire protection plans for communities within the planning area.

4) Wildlife area management plans and comprehensive wildlife conservation strategies prepared by Washington Department of Fish and Wildlife.

5) Integrated resource management plans for the Colville Indian Reservation, the Spokane Indian Reservation, the Yakama Indian Reservation, and the Kalispel Indian Reservation.

Chapter 6 Specific Mandates and Authorities

6.1 Federal, State, and Local Laws, Regulations, and Policies That Apply to All Resources and Resource Uses

- The Federal Land Policy and Management Act (FLPMA) of 1976, as amended, 43 U.S.C. 1701 et seq., provides the authority for BLM land use planning.
- The National Environmental Policy Act (NEPA), as amended, 42 U.S.C. 4321 et seq., requires the consideration and public availability of information regarding the environmental impacts of major Federal actions significantly affecting the quality of the human environment. This includes the consideration of alternatives and mitigation of impacts.

6.2 Federal, State, and Local Laws, Regulations, and Policies That Apply to Specific Resources and Resource Uses

6.2.1 *Resources*

6.2.1.1 Air Quality

Federal Laws, Regulations, Statutes, and Orders

- The Clean Air Act, as amended (1990), 42 U.S.C. 7418, requires Federal agencies to comply with all Federal, state, and local requirements regarding the control and abatement of air pollution. This includes abiding by the requirements of state implementation plans. The following sections of the act apply to this planning process:
  - Applicable National Ambient Air Quality Standards (Section 109)
  - State Implementation Plans (Section 110)
  - Control of Pollution from Federal Facilities (Section 118)
  - Prevention of Significant Deterioration, including visibility impacts to mandatory Federal Class I Areas (Section 160 et seq.)
  - Conformity Analyses and Determinations (Section 176(c))
- Secretarial Order 3289: Addressing the Impacts to Climate Change on America's Land, Water, and Other Natural and Cultural Resources (OR/WA IM 2010-012)

Policies

- United States Department of Interior (DOI) Manual (910 DM 1.3)
- 1995 Federal Wildland Fire Management Policy and 2008 update
- 2001 Updated Federal Wildland Fire Management Policy (1995 Federal Wildland Fire Management Policy update)
- 1998 Departmental Manual 620 Chapter 1, Wildland Fire Management General Policy and Procedures
- CFR Title 43 (1610) (BLM's planning guidance and regulations)/BLM Manual 1601

- Interagency Standards for Fire and Fire Aviation Operations: As amended annually, describes policy and operations for all fire-related activities in the DOI and US Department of Agriculture (USDA).
- BLM Manual Section 9214, Prescribed Fire Management (1988), and BLM Handbook 9214 (2000): Describes the authority and policy for prescribed fire use on public lands administered by the BLM.

Other

- Spokane District Fire Management Plan

6.2.1.2 Water Resources

- The Clean Water Act, as amended, 33 U.S.C. 1251, establishes objectives to restore and maintain the chemical, physical, and biological integrity of the Nation's water.
- The Federal Water Pollution Control Act, 33 U.S.C. 1323, requires the Federal land manager to comply with all Federal, state, and local requirements regarding the control and abatement of water pollution in the same manner and to the same extent as any nongovernmental entity.
- The Safe Drinking Water Act, 42 U.S.C. 201, is designed to make the Nation's waters —drinkable" as well as —swimmable." Amendments establish a direct connection between safe drinking water, watershed protection, and management.

6.2.1.3 Vegetative Communities

<u>Forestry and Woodland Products</u>

- The Healthy Forests Initiative
- The Healthy Forests Restoration Act
- FLPMA
- BLM Manual

<u>Sagebrush Plant Communities</u>

- BLM's National Sage Grouse Habitat Conservation Strategy (November 2004) contains guidance for the management of sagebrush plant communities for sage grouse conservation.

6.2.1.4 Noxious Weeds

- Executive Order 13112 (Invasive Species) provides that no Federal agency shall authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions.
- The Carlson-Foley Act (Public Law 90-583 codified in 43 U.S. Code [USC] 1241) establishes legal guidance and responsibility for the management of weeds on Federal lands. This law authorizes Federal agencies to allow states to take weed control measures on Federal lands.

6.2.1.5 Fish and Wildlife and Special Status Species

- The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), as amended, directs BLM to (1) conserve threatened and endangered species and the ecosystems upon which they depend, and (2) not contribute to the need to list a species.
- The 1995 Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (USDA-FS and USDI-BLM 1995), commonly referred to as PACFISH, provides guidance for managing and monitoring grazing lands adjacent to streams where anadromous fish are present or potentially present.

Federal Laws and Statutes

- Endangered Species Act of 1973 (16USC 1531 et seq.), as amended: Provisions of the ESA, as amended, apply to plants and animals that have been listed as endangered or threatened, those proposed for being listed, and designated and proposed critical habitat.
- Sikes Act of 1974, Title II (16 USC 670g et seq.), as amended: This act directs the Secretaries of Interior and Agriculture to, in cooperation with the state agencies, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game species. Such conservation and rehabilitation programs shall include, but are not limited to, specific habitat improvement projects and related activities and adequate protection for species considered threatened or endangered.
- The Migratory Bird Act of 1929, as amended: This act establishes Federal responsibility to protect international migratory birds and authorizes the Secretary of the Interior, through the USDI FWS, to regulate hunting of migratory birds. The North American Waterfowl Management Plan signed in 1986 between Canada and USA further sets population goals and how to achieve them.
- The Bald and Golden Eagle Protection Act of 1940, as amended: This act prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."
- Magnuson-Stevens Fishery Management and Conservation Act (MSA) as amended in 1996: This act requires Federal agencies to consult with National Marine Fisheries Service on activities that may adversely affect Essential Fish Habitat (EFH) of federally managed commercial fishery species. The BLM is required to consult on effects to chinook salmon, coho salmon, and Puget Sound pink salmon. The definition of EFH is —..those waters and substrate necessary to fish for spawning, breeding, or growth to maturity.”

Policies

- BLM Special Status Species Policy: It is the BLM’s policy to comply with the following stipulations:
  1. Conserve federally listed and proposed threatened or endangered species and the habitats on which they depend.
  2. Ensure that actions requiring authorization or approval by the BLM are consistent with the conservation needs of special status species and do not contribute to the

need to list any special status species, either under provisions of the ESA or other provisions of this policy.

- BLM Manual 6840.06 - BLM Sensitive Species Policy: It is the BLM's policy is to provide sensitive species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C; that is, to "ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed." The sensitive species designation is normally used for species that occur on Bureau-administered lands for which BLM has the capability to significantly affect the conservation status of the species through management.
- BLM Manual 6840 Special Status Species Management, Sage-grouse: Policy guidance for sage grouse habitat conservation is summarized in this manual. It provides national-level policy direction, consistent with appropriate laws, for the conservation of special status species of animals and plants and the ecosystems on which they depend. Conservation in this strategy, and consistent with 6840 policy, means the use of all methods and procedures necessary to improve the condition of special status species.
- BLM National Sage Grouse Habitat Conservation Strategy (June 2004): The objective of this strategy is to manage public land in a manner that will maintain, enhance, and restore sage grouse habitats while providing for multiple uses public land. The following five goals will guide BLM's implementation of the national strategy:
  1. Develop a consistent and effective management framework for addressing conservation needs of sage grouse on public lands.
  2. Increase our understanding of resource conditions and priorities for maintaining and restoring habitat.
  3. Expand available research and information that supports effective management of sage grouse habitat.
  4. Develop partnerships to enhance effective management of sage grouse habitats.
  5. Ensure leadership and resources are adequate to implement national and state-level sage grouse habitat conservation strategies.
- USFS Management Plan, Unity Reservoir Bald Eagle Management Plan (1985): This plan was adopted into our current RMP as specific guidelines that BLM follows to avoid the bald eagle being listed on the ESA. Since then, the bald eagle has been delisted and is protected under two ESA policies. Since the bald eagle is considered a Bureau sensitive species this management plan will still be followed until further directed.
- Wind Energy Development Programmatic Environmental Impact Statement (PEIS) (2006): This PEIS evaluates the potential impacts associated with the proposed action to develop a wind energy development program, including the adoption of policies and best management practices (BMPs) and the amendment of 52 BLM land use plans to address wind energy development.
- GOA Wind Power Impacts on Wildlife and Government Responsibilities for Regulating Development and Protecting Wildlife (2005): GAO assessed (1) what available studies and experts have reported about the impacts of wind power facilities on wildlife in the U.S. and what can be done to mitigate or prevent such impacts, (2) the roles and responsibilities of government agencies in regulating wind power facilities, and (3) the

roles and responsibilities of government agencies in protecting wildlife. GAO reviewed a sample of six states with wind power development for this report.

- USFS Management Recommendations for Northern Goshawk in Southwestern United States Tech Manual RM-217 (1991): This manual provides technical guidelines on how we should manage habitat that could support goshawks. Furthermore, this manual has various management suggestions such as snags/acre, times to avoid logging, and habitat densities.

6.2.1.6 Wildland Fire Ecology and Management

Federal Laws and Statutes

- Protection Act of September 20, 1922 (42 Stat. 857; USC 594)
- Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66; 42 USC 1856, 1856a)
- Economy Act of June 30, 1932 (47 Stat. 417; 31 USC 686)
- Disaster Relief Act, Section 417 (Public Law 93-288)
- Annual Appropriations Acts for the DOI
- The Multiple-Use Sustained-Yield Act of June 12, 1960
- The Forest and Rangeland Renewable Resources Planning Act of August 17, 1974
- Healthy Forest Restoration Act, December 2003 (Public Law 108-148)
- The FLAME Act, 2009 (Public Law 111-88)

Policies

- United States DOI Manual (910 DM 1.3)
- 1995 Federal Wildland Fire Management Policy
- 2001 Updated Federal Wildland Fire Management Policy (1995 Federal Wildland Fire Management Policy update)
- 1998 Departmental Manual 620 Chapter 1, Wildland Fire Management General Policy and Procedures
- CFR Title 43 (1610) (BLM's planning guidance and regulations), BLM Manual 1601

BLM National Fire Policy

- 43 CFR 9212.0-6 Policy: It is the policy of the BLM to take all necessary actions to protect human life, the public lands, and the resources and improvements thereon through the prevention of wildfires.
- BLM Manual Section 9212, Fire Prevention (1992): Consistent with Departmental policy (910 DM 1.4), it is the BLM's policy that:
    1. Prevention of catastrophic wildfires is a high priority. Commitment to an effective wildfire prevention program is expected at all levels within the Bureau.
    2. The wildfire prevention program shall be designed to minimize losses from fire consistent with resource objectives identified in the RMPs.
    3. Wildfire prevention shall stress the analysis of risks, hazards, and values and the development of specific educational, engineering, enforcement, and administrative prevention actions.

4. Wildfire prevention activities shall be coordinated with all Federal, state, county, and municipal agencies.

5. Each state and district office shall provide coordination, guidance, and assistance to achieve an aggressive wildfire prevention program and shall maintain and update as required a wildfire prevention plan integrated with the fire management planning process.

6. Wildfire Prevention Program funding shall be consistent with the identified needs as determined through a prevention analysis that is approved as an operational plan of the fire management plan (BLM 9212-1).

7. The BLM shall emphasize the use of hazardous fuels reduction techniques as part of the wildfire prevention program.

- BLM Manual Section 1742, Emergency Fire Rehabilitation and BLM Handbook 1742 provides for guidance for emergency fire rehabilitation including measures to prevent accelerated soil erosion, establishment of noxious and/or invasive plant species, and post-fire management of restoration areas. Fire line rehabilitation would include restoration of surface contours and closure to vehicles.
- BLM Manual Section 9214, Prescribed Fire Management (1988), and BLM Handbook 9214 (2000) describes the authority and policy for prescribed fire use on public lands administered by the BLM. It is BLM policy that:

1. The role of fire and its potential use will be considered in establishing the management strategy for all ecosystems.

2. Prescribed fires may be initiated by planned or unplanned (unscheduled) ignition. See definitions under BLM Manual Section 9210.

3. All prescribed fires (including hazard reduction) projects will support one or more approved land management objective(s) derived from the Bureau's land and management planning process.

4. The planning and execution of the prescribed fire will be funded by the benefiting program(s).

5. Each prescribed fire project will have an approved prescribed fire plan completed before ignition and well be reported upon completion. Other agency projects supported by the Bureau will have approved participation.

6. Each prescribed fire will be managed and executed in conformance with the approved plan by qualified personnel. The term qualified will include experience, training, and physical fitness for key positions.

7. Prescribed fire projects will comply with Federal, state, and local regulations and standards, including air quality and smoke management programs.

8. Pre-burn, burn, and post-burn fuel and weather measurement(s) will be taken on all prescribed fire projects for planning purposes, prescription compliance, and project evaluation. It may not be necessary to take post-burn weather measurements on fuel reduction projects.

9. Pre-burn and post-burn monitoring will be conducted to determine whether resource and fire objectives are achieved, unless where previous documented experience is adequate to predict post-burn results.

- Interagency Standards for Fire and Fire Aviation Operations, as amended annually, describes policy and operations for all fire-related activities in DOI and USDA.
- BLM Manual 1740 and BLM Manual Handbook H-1740-1 provide guidance and procedures for management and treatment of renewable resources, including utilization of management-prescribed fire and emergency fire rehabilitation.
- The 2001 Review and Update of the 1995 Federal Wildland Fire Management Policy states:

1. Safety: Firefighter and public safety is the first priority. All fire management plans and activities must reflect this commitment.

2. Fire Management and Ecosystem Sustainability: The full range of fire management activities will be used to help achieve ecosystem sustainability, including its interrelated ecological and social components.

3. Response to Wildland Fire: Fire, as a critical natural process, will be integrated into land use plans and RMPs and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of the fire. The circumstances under which a fire occurs, and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected, dictate the appropriate management response to the fire.

4. Use of Wildland Fire: Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. Use of fire will be based on approved fire management plans and will follow specific prescriptions contained in operational plans.

5. Rehabilitation and Restoration: Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health, and safety, and to help communities protect infrastructure.

6. Protection Priorities: The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be based on the values to be protected, human health and safety, and the costs of the protection. Once people have been committed to an incident, these human resources become the highest value to be protected.

7. Wildland Urban Interface: The operational roles of Federal agencies as partners in the wildland urban interface are wildland firefighting, hazardous fuels reductions, cooperative prevention and education, and technical assistance. Structural fire suppression is the responsibility of tribal, State, or local governments. Federal agencies may assist with exterior structural protection activities under formal fire protection agreements that specify mutual responsibilities of the partners, including funding. (Some Federal agencies have full structural protection authority for their

facilities on lands they administer, and may also enter into formal agreements to assist state and local governments with full structural protection.)

8. Planning: Every area with burnable vegetation must have an approved fire management plan. Fire management plans are strategic plans that define a program to manage wildland and prescribed fires based on the area's approved land management plan. Fire management plans must provide for firefighter and public safety; include fire management strategies, tactics, and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations.

9. Science: Fire management plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociologic factors. Information needed to support fire management will be developed through an integrated interagency fire science program. Scientific results must be made available to managers in a timely manner and must be used in the development of land management plans, fire management plans, and implementation plans.

10. Preparedness: Agencies will ensure their capabilities to provide safe, cost-effective fire management programs in support of land and RMPs through appropriate planning, staffing, training, equipment, and management oversight.

11. Suppression: Fires are suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.

12. Prevention: Agencies will work together and with their partners and other affected groups and individuals to prevent unauthorized ignition of wildland fires.

13. Standardization: Agencies will use compatible planning processes, funding mechanisms, training and qualification requirements, operational procedures, values to be protected methodologies, and public education programs for all fire management activities.

14. Interagency Cooperation and Coordination: Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners.

15. Communication and Education: Agencies will enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education programs. These programs will be continuously improved through the timely and effective exchange of information among all affected agencies and organizations.

16. Agency Administrator and Employee Roles: Agency administrators will ensure that their employees are trained, certified, and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands. Employees with operational, administrative, or other skills will support the wildland

fire program as necessary. Agency administrators are responsible and will be held accountable for making employees available.

17. Evaluation: Agencies will adopt and implement a systematic method of evaluation to determine effectiveness of projects through implementation of the 2001 Federal Fire Policy. The evaluation will assure accountability, facilitate resolution of conflicts, and identify resource shortages and agency priorities.

- A Report to the President in Response to the Wildfires of 2000 (September 2000), "Managing the Impacts of Wildfires on Communities and the Environment" contains the following key points and recommendations:
  1. Continue to Make All Necessary Firefighting Resources Available: As a first priority, DOI will continue to provide all necessary resources to ensure that fire suppression efforts are at a maximum efficiency in order to protect life and property.
  2. Restore Damaged Landscapes and Rebuild Communities: After ensuring that suppression resources are sufficient, invest in the restoration of communities and landscapes impacted by the year 2000 fires.
  3. Investment in Projects to Reduce Fire Risk: The fires of 2000 have underscored the importance of pursuing an aggressive program to address the fuels problem with the help of local communities, particularly those in the wildland-urban interface areas, where threats to lives and property are greater and the complexity and cost of treatments higher.
  4. Work Directly With Local Communities: Working with local communities is a critical element in restoring damaged landscapes and reducing fire hazards proximate to homes and communities.
  5. Be Accountable: A Cabinet-level management structure should be established to ensure that the actions recommended by the departments receive the highest priority.
- Restoring Fire Adapted Ecosystems on Federal Lands: A Cohesive Strategy for Protecting People and sustaining Natural Resources, February 2002: The primary goal is to coordinate an aggressive, collaborative approach to reduce the threat of wildland fire to communities and to restore and maintain land health.
- Healthy Forests: An Initiative for Wildfire Prevention and Stronger Communities, August 2002: The Healthy Forest Initiative will implement core components of the National Fire Plan's 10-Year Comprehensive Strategy and Implementation Plan. This historic plan which was adopted by Federal agencies and western governors, in collaboration with county commissioners, state foresters, and tribal officials, calls for protecting communities and the environment through local collaboration on thinning, planned burns and forest restoration projects. The initiative will complement the National Fire Plan by reducing unnecessary regulatory obstacles and allowing more effective and timely actions. *Note:* not all aspects of the Healthy Forests Initiative are still valid, such as the categorical exclusions.
- Healthy Forest Restoration Act, December 2003: Purposes of the Act include the following:

1. To reduce wildfire risk to communities, municipal water supplies, and other at-risk Federal land through a collaborative process of planning, prioritizing, and implementing hazardous fuel reduction projects;

2. To authorize grant programs to improve the commercial value of forest biomass (that otherwise contributes to the risk of catastrophic fire or insect or disease infestation) for producing electric energy, useful heat, transportation fuel, and petroleum-based product substitutes, and for commercial purposes;

3. To enhance efforts to protect watersheds and address threats to forest and rangeland health, including catastrophic wildfire, across the landscape;

4. To promote systematic gathering of information to address the impacts of insect and disease infestations and other damaging agents on forest and rangeland health;

5. To improve the capacity to detect insect and disease infestations at an early stage, particularly with respect to hard-wood forests; and

    a. To promote the recovery of threatened and endangered species;

    b. To improve biological diversity; and

    c. To enhance productivity and carbon sequestration.

- A Collaborative Approach for Reducing Wildland Fire Risk to Communities and the Environment: 10 Year Comprehensive Strategy (December 2006): This document provides a foundation for wildland agencies to work closely with all levels of governments, tribes, conservation and commodity groups, and community-based restoration groups to reduce wildland fire risk to communities and the environment. It also provides a suite of core principles and four goals. The core principles include the concepts of collaboration, priority setting, and accountability. The four goals are:
    1. Improve Prevention and Suppression

    2. Reduce Hazardous Fuels

    3. Restore Fire Adapted Ecosystems

    4. Promote Community Assistance

- Revised Guidance for Implementing Fire Policy (2009). This document, Guidance for Implementation of Federal Wildland Fire Management Policy (February 2009), replaces the Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy (June 20, 2003). This updated guidance consolidates and clarifies changes that have occurred since the 2003 strategy document was issued, and provides revised direction for consistent implementation of the Review and Update of the 1995 Federal Wildland Fire Management Policy (January 2001)
    - One such policy area is the wildland urban interface (WUI). WUI is more complex and extensive than previously considered in the 1995 and 2001 Federal Fire Policy reviews. Fire management activities affecting WUI areas require closer coordination and more engagement between Federal, state, local, and tribal land and fire managers to ensure firefighter and public safety and mitigate property loss from wildland fire.

- A key finding of the 2001 review of the 1995 policy was that "multiple terms for various management options to respond to wildland fire have confused agency managers and employees, operators, partners, and the public, and have perpetuated multiple fire management program elements". This important communications issue will be resolved only through Federal, state, local and tribal engagement in building a foundation for common terms (see appendix A) with understanding and support by all.
- The current policy clearly states that wildland fire analysis will carefully consider the long-term benefits in relation to risks both in the short and long term: "Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of fire. The circumstances under which a fire occurs, and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected dictate the appropriate management response to fire."
- *1995/2001 Federal Wildland Fire Management Policy.* The intent of this framework is to solidify that the full range of strategic and tactical options are available and considered in the response to every wildland fire. These options are to be used to achieve objectives as described in land and resource management plans and/or fire management plans, subject to clear processes defined to manage fire that crosses jurisdictional boundaries. Mutually developed objectives with adjoining jurisdictions for managing fires that cross jurisdictional boundaries will also be recognized. This guidance also calls for increased dialogue and collaboration between Federal agencies and tribal, local, and state agencies as plans are updated and implemented to manage wildfires in order to accomplish resource and protection objectives.

- Federal Land Assistance, Management and Enhancement Act (FLAME) (2009). To authorize a supplemental funding source for catastrophic emergency wildland fire suppression activities on Department of the Interior and National Forest System lands, to require the Secretary of the Interior and the Secretary of Agriculture to develop a cohesive wildland fire management strategy, and for other purposes.
  - Establishes in the Treasury the Federal Land Assistance, Management, and Enhancement Fund (Flame Fund). Requires amounts in the Flame Fund to be made available to the Secretaries of the Interior and of Agriculture (the Secretaries) to pay the costs of catastrophic emergency wildland fire suppression activities that are separate from amounts annually appropriated for the predicted annual workload for such activities.
  - Requires the Secretaries to submit a report to Congress that contains a cohesive wildland fire management strategy, consistent with the recommendations of recent Comptroller General reports. Sets forth the elements of the strategy. Includes: (1) a system for ensuring that the highest priority fuels reduction projects are being funded first; (2) a system to assess the impacts of climate change on the frequency and severity of wildland fire; (3) a system to study the effects of invasive species on wildland fire risk; and (4) a plan, developed in coordination with the National Guard Bureau, to maximize the use of National Guard resources to fight wildfires. Directs the Secretaries to submit to Congress, at least once during every 5-year period initially beginning on the date of submission of the strategy, a revised strategy taking into consideration changes affecting the elements of the strategy, in particular changes respecting landscape, vegetation, climate, and weather. Ensures that owners

of adjacent private land are notified before any prescribed fire is used on National Forest System land.

- Directs the Secretaries to conduct a review, using independent panels, of each wild fire incident for which expenses exceeding $10 million were incurred and to submit a report containing the results of each review conducted. Requires the review of an incident to include separate assessments of: (1) what actions, if any, could have been taken in advance of the fire that may have prevented it or at least reduced its severity; and (2) the quantity of greenhouse gases produced as a result of the fire.
- Directs the Secretaries to develop regional maps of communities most at risk of wildfire and in need of hazardous fuel treatment and maintenance. Requires such maps to identify priority areas for hazardous fuels reduction projects, including: (1) at-risk communities in fire-prone areas of the wildland-urban interface; (2) watersheds and municipal drinking water sources; (3) emergency evacuation corridors; (4) electricity transmission corridors; and (5) low-capacity or low-income communities. Authorizes the Secretaries to provide cost-share grants to fire-ready communities which may be used for: (1) education programs to raise awareness of homeowners and citizens about wildland fire protection practices, including FireWise or other similar programs; (2) training programs for local firefighters on wildland firefighting techniques and approaches; (3) equipment acquisition to facilitate wildland fire preparedness; (4) implementation of a community wildfire protection plan; and (5) implementation of fire-safety programs focused on the eradication or control of invasive species. Instructs the Secretaries, in developing any wildland fire cost-share agreement with a state forester or equivalent official, to encourage the state and local communities involved to become fire-ready communities. Authorizes appropriations to carry out this section.

6.2.1.7 Cultural Resources

- The Antiquities Act of 1906, 16 U.S.C. 431-433, provides guidance for protecting cultural resources on Federal lands and authorizes the President to designate national monuments on Federal lands.
- The Historic Sites Act of 1935 established a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the U.S..
- The National Historic Preservation Act (NHPA) of 1966, as amended, 16 U.S.C. 470, directs agencies to consider the effects of proposed actions on properties eligible for or included on the National Register of Historic Places. A ―Historic property" is any district, building, structure, site, or object that is eligible for listing in the National Register of Historic Places because the property is significant at the national, state, or local level in American history, architecture, archaeology, engineering, or culture. In some cases, such properties may be eligible because of historical importance to Native Americans, including traditional religious and cultural importance. Section 110 of the NHPA requires each Federal agency to establish an affirmative program to identify, evaluate, protect, and preserve historic properties in consultation with others.
- The American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996, establishes a national policy to protect and preserve the right of American Indians to exercise traditional Indian religious beliefs or practices including but not limited to access to religious sites. Agencies are to avoid unnecessary interference with traditional tribal

spiritual practices. In addition, compliance requires consultation with tribes when land uses might conflict with Indian religious beliefs or practices.

- The Archaeological Resources Protection Act of 1979 (ARPA) 16 USC 470, as amended, defines and provides for the protection of archaeological resources on Federal lands, irrespective of eligibility for the National Register of Historic Places, establishes a permit system for resources over 100 years old, and requires agencies to provide for public education and continuing inventory of Federal lands.
- Native American Graves Protection and Repatriation Act of 1990, 25 U.S.C. 3001, establishes rights to Indian tribes and Native Hawaiians to claim ownership for the repatriation of human remains, and also funerary, sacred, and other objects, controlled by Federal agencies and museums. Agency discoveries of such human remains and associated cultural items during land use activities require consultation with appropriate tribes to determine ownership and disposition.
- National Trails System Act of 1968 (P.L. 90-543; 16 U.S.C. 1241 et seq. as amended through P.L. 107-325, December 4, 2002) established a National Trails system to promote preservation of, public access to, travel within, and enjoyment of the open-air, outdoor areas, and historic resources of the nation. The act designated initial trail system components and established methods and standards for adding additional components.
- Executive Order 11593 of 1971, directs Federal agencies to inventory public lands and to nominate eligible properties to the National Register of Historic Places.
- Executive Order 13007 of 1996 (Indian Sacred Sites), (61FR104), explicitly does not create any new right for Indian tribes, but does require Federal agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions to:

  a. Accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners;

  b. Avoid adversely affecting the physical integrity of such sacred sites; and

  c. Maintain the confidentiality of sacred sites.

- Executive Order 13175 of 2000 (Consultation and Coordination with Indian Tribal Governments) provides, in part, that each Federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on Federal matters that significantly or uniquely affect their communities.
- Executive Order 13287 of 2003 (Preserve America), directs Federal agencies to provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of historic properties managed by the Federal government, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties, and establishing agency accountability for inventory and stewardship.
- 36 CFR 60 and 63 discuss the National Register of Historic Places and eligibility criteria for listing properties.
- 36 CFR 68 describes the Secretary of the Interior's Standards for the treatment of historic properties.
- 36 CFR 800 outlines the NHPA Section 106 process for protecting historic properties.

- 43 CFR 3 and 7 discuss the preservation of American antiquities and archaeological sites.
- 43 CFR 10 discuss requirements for implementing the Native American Graves Protection and Repatriation Act.

BLM Regional Policy, Direction, and Guidance

- BLM Manuals: 8100 Series: Cultural Resources Management: The manual is a reference source that provides basic information and general summary guidance for BLM's cultural resource management program. The series includes 8110: Identifying Cultural Resources; 8120: Tribal Consultation under Cultural Resource Authorities; 8130: Planning for Uses of Cultural Resources; 8140: Protecting Cultural Resources; H-8120-1: Guidelines for Conducting Tribal Consultation.

6.2.1.8 Paleontology

BLM manages paleontological resources principally under the following authorities:

- Paleontological Resources Preservation Act of 2009 (PRPA) (P.L. 111-011) requires that paleontological resources are managed and protected on Federal land using "scientific principles and expertise." The act also affirms existing policies for the management of paleontological resources including ". . . permits for collecting paleontological resources, curation of paleontological resources, and confidentiality of locality data". The statute establishes new criminal and civil penalties for fossil theft and vandalism on Federal lands.
- FLPMA of 1976 (P.L. 94-579) requires that the public lands be managed in a manner that protects the ". . . quality of scientific . . ." and other values. The act also requires the public lands to be inventoried and provides that permits may be required for the use, occupancy, and development of the public lands.
- National Environmental Policy Act of 1969 (P.L. 91-190) requires that ". . . important historic, cultural and natural aspects of our national heritage . . ." be protected, and that ". . . a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences ... in planning and decision making ..." be followed.
- Title 43 CFR, Subpart 8365 addresses the collection of invertebrate fossils and, by administrative extension, fossil plants.
- Title 43 CFR, Subpart 3622 addresses the free use collection of petrified wood as a mineral material for non-commercial purposes.
- Title 43 CFR Subpart 3621 addresses collection of petrified wood for specimens exceeding 250 pounds in weight.
- Title 43 CFR, Subpart 3610 addresses the sale of petrified wood as a mineral material for commercial purposes.
- Title 43 CFR, Subparts 3802 and 3809 address protection of paleontological resources from operations authorized under the mining laws.
- Title 43 CFR, Subpart 8200 addresses procedures and practices for the management of lands that have outstanding natural history values, such as fossils, which are of scientific interest.
- Title 43 CFR, Subpart 1610.7-2 addresses the establishment of ACECs for the management and protection of significant natural resources, such as paleontological localities.

- Title 43 CFR Subpart 8364 addresses the use of closure or restriction of public lands to protect resources. Such closures or restrictions may be used to protect important fossil localities.
- Title 43 CFR Subpart 8365.1-5 addresses the willful disturbance, removal and destruction of scientific resources or natural objects and 8360.0-7 identifies the penalties for such violations.
- Title 36 CFR, Subpart 62 addresses procedures to identify, designate, and recognize national natural landmarks, which include fossil areas.
- 18 USC Section 641 addresses the unauthorized collection of fossils as a type of government property.
- Secretarial Order 3104 grants to BLM the authority to issue paleontological resource use permits for lands under its jurisdiction.
- Onshore Oil and Gas Order No. 1 and 43 CFR Title 3162 provide for the protection of natural resources and other environmental concerns, used to protect paleontological resources where appropriate.
- Federal Cave Resources Protection Act of 1988 (P.L. 100-691) and Title 43 CFR Subpart 37 address protection of significant caves and cave resources, including paleontological resources.
- Washington Office Instruction Memorandum (IM) 2009-011: Assessment and Mitigation of Potential Impacts to Paleontological Resources provides guidelines for assessing potential impacts to paleontological resources in order to determine mitigation steps for Federal actions on public lands.

BLM Regional Policy, Direction, and Guidance

- BLM Manual 8270: Paleontological Resource Management Program and Handbook 8270-1 provides uniform policy and direction for the BLM Paleontological Resource Management Program. The objective of the program is to provide a consistent and comprehensive approach in all aspects relating to the management of paleontological resources, including identification, evaluation, protection, and use.

6.2.1.9 Cave and Karst Resources

- The Federal Cave Resources Protection Act of 1988, 16 USC 4301, requires Federal agencies to identify, protect, and maintain significant caves. The locations of such caves may be kept confidential. Protection is afforded to not only the geologic structure, but also the associated decorations, inhabitants, artifacts, and water resources.
- 43 CFR, Subpart 37 address protection of significant caves and cave resources, including paleontological resources.
- MS-8380 Cave and Karst Resources Management.

6.2.2 *Resource Uses*

6.2.2.1 Livestock Grazing

43 CFR 4140.1 mandates that grazing management follow state livestock laws or regulations relating to the branding of livestock; breed, grade, and number of bulls; health and sanitation requirements; and laws regarding the stray of livestock from permitted public land grazing onto areas that have been formally closed to open range grazing.

The laws, mandates, policies, and regulations that guide the BLM's authority for grazing by domestic livestock include:

- Taylor Grazing Act of June 28, 1934, as amended (42 USC 315, 315a through 315r), provides direction to protect rangelands by preventing overgrazing and soil deterioration while providing for managed use and improvement, and to stabilize the livestock industry dependent upon public lands.
- FLPMA of 1976 (43 USC 1701 et seq.) recognizes livestock grazing as one of the "principal or major uses" of the public lands. It directs that the public lands be managed on the basis of multiple use and sustained yield in a manner that will provide food and habitat for fish and wildlife and domestic animals while protecting the quality of other values (i.e., scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource and archeological).
- Public Rangelands Improvement Act of 1978 (43 USC 1901 et seq.) provides policy to manage, maintain, and improve the condition of public rangelands to increase productivity in accordance with management objectives and the land use planning process.
- 43 CFR 4100 Grazing Administration, exclusive of Alaska, provides uniform guidance for administration of grazing on the public lands.
- Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration (43 CFR 4180 et seq.) defines the minimum resource conditions that must be achieved and maintained and the acceptable management practices to be applied to achieve those conditions.

6.2.2.2 Minerals

Federal Laws and Statutes

- The Onshore Oil and Gas Leasing Reform Act, 30 U.S.C. 181 et seq., provides that:
  - Potential oil and gas resources be adequately addressed in planning documents;
  - The social, economic, and environmental consequences of exploration and development of oil and gas resources be determined; and
  - Any stipulations to be applied to oil and gas leases be clearly identified.
- The General Mining Law, as amended, 30 U.S.C. 21 et seq., allows the location, use, and patenting of mining claims on sites on public domain lands of the U.S. Amendments established a policy of fostering development of economically stable mining and minerals industries, their orderly and economic development, and studying methods for disposal of waste and reclamation.
- Stock Raising Homestead Act (43 USC 291; 1916).
- Mineral Leasing Act of 1920, as amended (30 USC 18; 1920), authorizes the development and conservation of coal, phosphate, oil, oil shale, gas, sodium, and potassium on Federal lands.
- Amendment to the Mineral Leasing Act of 1920 (30 USC 201), promotes coal development.
- Common Varieties or Mineral Materials Act (30 USC 601; 1947).
- Multiple Mineral Development Act (30 USC 521; 1954).

- Mining and Mineral Policy Act of 1970 (USC 21a), establishes a policy of fostering development of economically stable mining and minerals industries and their orderly and economic development, and studying methods for disposing of waste and reclamation.
- Geothermal Steam Act (30 USC 1001; 1970) authorized the Secretary of Interior to issue leases for the development and utilization of geothermal steam and associated geothermal resources.
- Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701; 1976).
- Surface Mining Control Act.
- Federal Onshore Oil and Gas Leasing Reform Act.

Regulations

- 43 CFR 3100 – Oil and Gas Leasing.
- 43 CFR 3200 – Geothermal Resource Leasing.
- 43 CFR 3400 – Coal Management.
- 43 CFR 3500 – Leasing of Solid Leasables other that Coal and Oil Shale.
- 43 CFR 3600 – Mineral Material Disposal.
- 43 CFR 3600 – Mineral Material Disposal.
- 43 CFR, Subpart 3622, addresses the free use and collection of petrified wood as a mineral material for noncommercial purposes.
- 43 CFR 3715 – Use and Occupancy under the Mining Laws.
- 43 CFR 3809 – Surface Management; mining claims.
- 43 CFR 3814 – Disposal of Reserved Minerals under the Stock Raising Homestead Act.
- 43 CFR 8200 – Address procedures and practices for management lands that have outstanding natural history values, such as fossils, which are of scientific interest.
- 43 CFR, Subpart 8365.1-5, addresses the willful disturbance, removal, and disturbance of scientific resources of natural objects; and Subpart 8360.0-7 identifies the penalties for such violations.

Policies (BLM Handbooks and Manuals)

- H-1610-1 Land Use Planning Handbook.
- H-3042-1 Solid Minerals Reclamation Handbook.
- H-3150-1 Onshore Oil and Gas Geophysical Exploration Surface Management Requirements.
- H-3160-6 National Certification Handbook for Oil and Gas Inspection and Enforcement.
- H-3600-1 Mineral Material Disposal Handbook.
- H-3720-1 AML Program Policy Handbook.
- H-9335-1 Mineral Material Trespass Prevention and Abatement.
- MS-3150 Onshore Oil and Gas Geophysical Exploration Surface Management Requirements.
- MS-3600 Mineral Material Disposal.
- MS-3720 Abandoned Mine Land Program Policy.
- MS-3890 Mineral Investigations.

6.2.2.3 Recreation

- The Recreation and Public Purposes Act, as amended, 43 U.S.C. 869 et seq., authorizes the Secretary of the Interior to lease or convey BLM managed lands for recreational and public purposes under specified conditions.
- Executive Order 11644 (37 FR 2877), on February 8, 1972, provided that off-highway vehicle (OHV) use will be controlled and managed to protect resource values, promote public safety and minimize conflicts with uses of public lands. This Executive order directed Federal agencies to designate specific areas and trails on public lands where OHV use may be permitted and areas where OHV use may not be permitted.
- On May 24, 1977, President Carter amended this order with Executive Order 11989. This executive order further defined OHV, administrative use exemptions, and directed agencies to immediately close areas and trails whenever the agency determines that the use of OHV will cause or is causing considerable adverse effects on the soil, wildlife, and wildlife habitat, cultural or historic resources (42 USC 4321).
- The BLM's National Management Strategy for Motorized OHV Use on Public Lands (2001) provides agency guidance and offers recommendations for future actions to improve motorized vehicle management.

6.2.2.4 Renewable Energy

- Executive Order 13212 states that ―i[]t is the policy of this Administration that executive departments and agencies (agencies) shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy.”

6.2.2.5 Lands and Realty

Federal Laws and Statutes

- FLPMA of 1976
- Recreation and Public Purposes Act of 1926, as amended (43 USC 869 et seq.)
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1971
- Land and Water Conservation Fund Act of 1965, as amended
- Federal Land Transaction Facilitation Act of 2000
- The Federal Power Act of 1920, as amended
- 43 CFR 2100 (Acquisitions)
- 43 CFR 2200 (Exchanges)
- 43 CFR 2300 (Withdrawals)
- 43 CFR 2400 (Land Classification)
- 43 CFR 2500 (Disposition: Occupancy and Use)
- 43 CFR 2600 (Disposition: Grants)
- 43 CFR 2700 (Disposition: Sales)
- 43 CFR 2800 (Use: Rights-of-Way)
- 43 CFR 2900 (Uses: Leases and Permits)
- 43 CFR 9230 (Trespass)
- IM 2009-043 (BLM’s Wind Energy Development Policy)

- IM 2011-003 (Solar Energy Development Policy)
- BLM-H-2200-1 (Land Exchange Handbook)
- BLM-H-1790-1 (NEPA Handbook)
- BLM-H-2100-1 (Acquisition Handbook)
- BLM-H-2740-1 (Recreation and Public Purposes)
- BLM-MS-2200 (Land Exchange Handbook)
- BLM-MS-2880 (Oil & Natural Gas Pipeline Handbook)
- Wind Energy Development PEIS and Associated Land Use Plan Amendments, BLM 2005
- PEIS, Designation of Energy Corridors on Federal Land In the 11 Western States (DOE/EIS-0386) (Draft October 2007)

6.2.3 *Special Designations*

6.2.3.1 Areas of Critical Environmental Concern

Federal Laws, Regulations, Statutes, and Orders

- FLPMA and BLM policy (Manual 1613 [BLM 1988a]) require the BLM to give priority to the designation and protection of ACECs during the land use planning process
- This analysis and the resultant findings for ACEC relevance and importance criteria has been performed pursuant to FLPMA Section 202 (43 USC 1712[c][3]), 43 CFR 1610.7-2 and BLM Manual 1613 (USDI BLM 1988a)

6.2.3.2 Wild and Scenic Rivers

The Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271 et seq., requires Federal land management agencies identify river systems and then study them for potential designation as wild, scenic, or recreational rivers.

6.2.3.3 Wilderness Areas

The Wilderness Act, as amended, 16 U.S.C. 1131 et seq., established the National Wilderness Preservation System and provided the criteria for select agencies to use to evaluate new lands for possible inclusion by Congress.

6.2.3.4 Wilderness Study Areas

The Federal Land Policy and Management Act of 1976, as amended, 43 U.S.C. 1701 et seq., extended wilderness inventory, study and management authority to the BLM. Section 1782 required the Secretary of Interior to review ―roadless areas of five thousand acres or more and roadless islands of the public lands, identified … as having wilderness characteristics described in the Wilderness Act" and to ―report to the President his recommendation as to the suitability or nonsuitability of each such area or island for preservation as wilderness." Until Congress determines otherwise, all ―wilderness study areas" are to be managed in a manner so as not to impair their suitability for preservation as wilderness.

6.2.4 *Social and Economic Conditions*

6.2.4.1 Tribal Interests

Treaties constitute negotiated settlements between sovereign parties, and as such hold a unique status in defining Federal obligations toward Indian tribes. Rights reserved to Indian tribes vary from treaty to treaty. Hunting, fishing, and gathering rights and certain other land uses are common rights reserved through treaty. Although numerous treaties were negotiated with Indian Nations in the late 19th century, many were not ratified or honored. Some Indian tribes were recognized and reservations established through Executive order.

Treaties and Executive Orders

- Port Madison Indian Reservation: The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S. The reservation boundaries were expanded by Executive order in October 1864.
- Lummi Reservation: The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.
- Tulalip Indian Reservation: The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.
- Swinomish Indian Reservation: The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.. The Samish Indian Nation lost Federal recognition due to administrative error in 1969 and was re-recognized on April 26, 1996.
- Skokomish Indian Reservation: The Point-No-Point Treaty with the S'Klallam, Chimakum and Twana later known as the Skokomish Tribe was signed January 26, 1855, and ratified on April 20, 1859. The Skokomish Reservation was subsequently enlarged by Executive order on February 25, 1874. The Treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.
- Lower Elwha Klallam Tribe: The Point-No-Point Treaty (12 STAT. 933) with the S'Klallam, Chimakum and Skokomish Tribe was signed January 26, 1855, and ratified on April 20, 1859. The Lower Elwha Reservation was created on January 19, 1968. The

treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.

- Jamestown S'Klallam Tribe: The Point-No-Point Treaty (12 STAT. 933) with the S'Klallam, Chimakum and Skokomish Tribe was signed January 26, 1855, and ratified on April 20, 1859. The Jamestown S'Klallam Reservation was created in 1980. The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.
- Port Gamble S'Klallam Tribe: The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S. The Port Gamble Reservation was established in 1936.
- Nooksack Indian Tribe: The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S. The Nooksack gained Federal recognition in 1973.
- Confederated Tribes and Bands of the Yakama Reservation: The treaty with the tribes and bands of the Yakama Nation, was signed June 9, 1855, and ratified March 8, 1859 (12 STAT. 945). The Yakima Treaty reserved rights for the Confederated Tribes and Bands of the Yakama Indian Reservation to fish off-reservation at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, gather resources, and pasture horses and cattle on public lands in common with other citizens of the U.S.
- Confederated Tribes of the Colville Reservation: Executive Order (July 2, 1872) established the present location of the Colville Reservation in Washington. Subsequent orders led to the progressive diminishment of the reservation, and it was not until 1956 that a significant portion of withdrawn lands was restored to tribal ownership. Many descendants of the Joseph Band of the Nez Perce are members of the Confederated Tribes of the Colville Reservation. Traditional homelands of the Joseph Band of the Nez Perce are located in northeast Oregon and southeast Washington. Hunting rights on the former North Half of the Colville Reservation were upheld by the Supreme Court's decision in Antoine v. Washington in 1975.
- Kalispel Reservation: Executive Order (1914) created the Kalispel Reservation. Treaty negotiations were conducted in 1872, but the Kalispel Tribe refused to sign the treaty. The Lower Kalispel resisted efforts to relocate the tribes to the Flathead Reservation with the Upper Kalispel and Flathead tribes. Additional trust lands were established in 1995 and 1996.
- Spokane Indian Reservation: Executive order established the Spokane Indian Reservation in 1881. Membership includes Upper Spokane, Middle Spokane, Lower Spokane, and Chewelah peoples.
- Coeur d'Alene Reservation: Executive order established the Coeur d'Alene Reservation in 1873. The northern border of the reservation was altered in 1894 to exclude the

community of Harrison, Idaho, from the reservation. Membership includes Coeur d'Alene, Spokane, San Joe (St. Joseph) River, Kalispel, and Pend Oreille peoples.

- Confederated Tribes of the Umatilla Indian Reservation: The Treaty with the Walla Walla, Cayuse, and Umatilla, signed June 9, 1855, ratified March 8, 1859 (12 STAT. 945), reserved rights for the Confederated Tribes of the Umatilla Indian Reservation to fish off-reservation at usual and accustomed stations, and to hunt, gather resources, and pasture animals on public lands in common with other citizens of the U.S.
- Nez Perce Reservation: The Treaty with the Nez Perce, signed June 11, 1855, ratified March 8, 1859, reserved rights for the Nez Perce Indians to fish off-reservation, at usual and accustomed stations and to hunt, gather resources, and pasture horses and cattle on public lands in common with other citizens of the U.S.
- Confederated Tribes of the Warm Springs Reservation: The Treaty with the Tribes of Middle Oregon, signed June 25, 1855, ratified March 8, 1859 (14 STAT. 751), reserved rights for the Confederated Tribes of Warm Springs to fish off-reservation at usual and accustomed stations, and to hunt, gather resources, and pasture animals on public lands in common with other citizens of the U.S. Members include descendants of Northern Paiute bands who were removed to the reservation in the 1880s.
- Kootenai Indian Reservation: Lands of the Kootenai Tribe of Idaho, once part of a larger Kootenai Tribe, were ceded to the Federal government in the Treaty of Hellgate in Montana on July 16, 1855. The treaty was ratified on March 8, 1859. Although a number of members received allotments, a reservation was not established until October 18, 1974. The treaty reserved rights to fish off-reservation, at usual and accustomed places, erect temporary structures for curing, and to hunt, gather resources, and pasture horses and cattle on public lands in common with other citizens of the U.S.

Additional Authorities

- National Environmental Policy Act of 1969 establishes national policy for protection and enhancement of the human environment. Part of the function of the Federal government, as stated in the act, is to "preserve important . . . cultural . . . aspects of our national heritage and maintain whenever possible an environment which supports diversity and variety of individual choice."
- FLPMA of 1976 requires coordination with Indian tribes, as well as with other Federal agencies and state and local governments, in the preparation and maintenance of an inventory of the public lands and their various resource and other values, in the development and maintenance of long- range plans providing for the use management of the public lands.
- American Indian Religious Freedom Act of 1978 resolves that it shall be the policy of the U.S. to protect and preserve for the American Indian, Eskimo, Aleut, and Native Hawaiian the inherent right of freedom to believe, express, and exercise their traditional religions, including but not limited to access to religious sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites. Federal agencies are directed to evaluate their policies and procedures to determine if changes are needed to ensure that such rights and freedoms are not disrupted by agency practices. The act, a specific expression of First Amendment guarantees of religious freedom, is not implemented by regulations.
- National Historic Preservation Act of 1966, as amended, addresses preservation of historic properties, including historical, archaeological, and architectural districts, sites, buildings, structures, and objects that are eligible for the National Register of Historic

Places. In some cases, such properties may be eligible because of historical importance to Native Americans, including traditional religious and cultural importance. Federal agencies must take into account effects of their undertakings on eligible properties.

- Archaeological Resources Protection Act of 1979 provides for the protection and management of archaeological resources, and specifically requires notification of the affected Indian tribe if archaeological investigations proposed in a permit application would result in harm to or destruction of any location considered by the tribe to have religious or cultural importance.
- Native American Graves Protection and Repatriation Act of 1990, 25 U.S.C. 3001, establishes rights to Indian tribes and Native Hawaiians to claim ownership and repatriate human remains, and also funerary, sacred, and other objects, controlled by Federal agencies and museums. Agency discoveries of human remains and associated cultural items during land use activities require consultation with appropriate tribes to determine ownership and disposition.
- Executive Order 13007 of 1996 (Indian Sacred Sites), (61FR104), explicitly does not create any new right for Indian tribes, but does requires Federal agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions to:
    a. Accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners;
    b. Avoid adversely affecting the physical integrity of such sacred sites; and
    c. Maintain the confidentiality of sacred sites.
- Executive Order 13175 of 2000 (Consultation and Coordination with Indian Tribal Governments) provides, in part, that each Federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on Federal matters that significantly or uniquely affect their communities.
- Secretarial Order 3206 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act) requires DOI agencies to consult with Indian tribes when agency actions to protect a listed species, as a result of compliance with ESA, affect or may affect Indian lands, tribal trust resources, or the exercise of American Indian tribal rights.
- Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) (49 FR 7629) requires that each Federal agency consider the impacts of its programs on minority populations and low-income populations.
- Tribal Forest Protection Act of 2004 (currently listed in the Federal Register for re-authorization) provides a tool for tribes to propose work and enter into contracts and agreement with the USFS or BLM to reduce threats from catastrophic events that originate on Federal lands adjacent to Indian trust land and Indian communities.

6.2.4.2 Public Safety

- Resource Conservation and Recovery Act (RCRA, Pub. L. 94-580), as amended: In 1976, RCRA established a system for managing non-hazardous and hazardous solid wastes in an environmentally sound manner. Specifically, it provides for the

management of hazardous wastes from the point of origin to the point of final disposal (i.e., ―cradle to grave”). RCRA also promotes resource recovery and waste minimization.

6.2.4.3 Social and Economic Conditions

- BLM planning regulations (43 CFR 1610.4-3 and 1610.4-6) require that RMPs consider social, economic, and institutional information.

6.2.4.4 Environmental Justice

- Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) (49 FR 7629) requires that each Federal agency consider the impacts of its programs on minority populations and low-income populations.

Chapter 7 Planning Issues and Criteria

7.1 Planning Issues

The BLM identified the following planning issues through analysis of the comments received during the public scoping period (April 30–July 12, 2010). The scoping report, which was published as a separate document, contains detailed information about this analysis and the scoping process.

1) Shrub-steppe Habitat: ***How will shrub-steppe, and its associated riparian and wetland habitats be managed to maintain, improve, or restore healthy plant and wildlife communities?*** The natural communities that make up the shrub-steppe and associated riparian, wetland, and aquatic habitats support unique assemblages of native plants, fish, and wildlife, many of which are declining, causing its designation as a ―priority habitat" for the State of Washington (WDFW 2008) and triggering national initiatives to conserve and maintain shrub-steppe communities. The shrub-steppe ecosystems support the livelihood of the ranching-related communities and provide important hunting and other outdoor recreation for the public. One-half of the area historically occupied by shrub-steppe in Washington has been converted to agriculture (Jacobson and Snyder 2000) with much of what remains being fragmented and/or degraded. Removal of sagebrush, introduction of non-native grasses, and historic overgrazing has resulted in altered fire regimes and proliferation of invasive weeds that threaten ecological processes and the societal values this ecosystem provides. These ecosystems may also be further affected and altered by climate change in the future.

2) Mixed Landownership Pattern: ***Given the mixed ownership pattern in the planning area, how should the BLM manage public lands, while considering uses on adjacent lands?*** Given the current and likely future ownership pattern with many areas of interspersed ownerships, and limited resources, how will the BLM resolve the most pressing adjoining land use conflicts? BLM lands in the planning area consist of scattered tracts and isolated blocks, varying in size from a few acres to over 19,000 contiguous acres. These tracts and blocks are adjacent to, and intermixed with private lands, other State and Federal public lands, and tribal lands. Uses or activities on BLM or adjacent lands can affect or conflict with uses and activities on the other. It is usually not possible to accomplish landscape-level management objectives without complementary management across ownerships. To be affective BLM must reach across those ownership boundaries and develop working partnerships with a broad array of State and local government agencies, Native American tribes, other interest groups and organizations, communities, and individual landowners. Related concerns include:

- **Fuels Management** – Accomplishing fire management and property protection goals must cross ownerships to be effective.
- **Fish, Wildlife, and Special Status Spec**ies – Single ownership does not generally contain enough area to provide habitats for wildlife requiring larger ranges.
- **Livestock Grazing** – When BLM parcels are intermixed with private lands, grazing on one parcel, especially in unfenced situations, often impacts use of adjacent lands. BLM must, therefore, consider impacts to adjacent properties when managing grazing use on BLM lands. Prohibiting grazing may prove impractical in some such situations.
- **Public Access and Trespass** – Some BLM parcels are surrounded by private lands and lack public access. This may result in unauthorized use of public lands, trespass on private land, and interference with authorized uses of public lands.

- **Noxious Weeds and Invasive Species** – Management of noxious weeds and invasive species must occur across all ownerships to be effective. Ineffective management by one landowner can quickly lead to spread of noxious weeds and invasive species to adjacent lands.
- **Urban Growth** – Development from a number of communities in the planning area has greatly expanded and continues to do so, moving communities closer to, or even engulfing BLM lands. Proximity to urban areas means BLM lands sometimes become the only open space lands available in some communities. Retaining open space may conflict with other authorized uses of public lands.
- **Special Management Areas** – Resource values, which may warrant protection by designation of special management areas, often extend beyond the boundaries of the BLM.
- **Visual Resource Management** – Management of the visual landscape by the BLM is often ineffective without coordination with adjacent landowners.
- **Greenhouse Gas Emissions** – Changes in greenhouse gas levels may affect global and regional climate. Many of the authorized activities and allocations on BLM lands (such as livestock grazing, carbon sequestration activities, prescribed burning, and timber harvest), as well as activities on adjacent lands, may affect carbon storage and greenhouse gas levels.

3) Limited Multiple-Use Public Lands Available: ***How should the BLM manage uses on public lands and protect sensitive resources given the limited amount of public lands in the planning area?*** As described under the previous issue, BLM lands in the planning area consist of scattered tracts and isolated blocks, varying in size from a few acres to over 19,000 contiguous acres. In many areas, BLM lands are the only public lands available; and thus, there is a high demand for multiple and sometimes conflicting uses within the limited area. Also, to protect sensitive resources, BLM must often apply restrictions and constraints which eliminate or reduce opportunities for other uses.

4) Changes Since the Previous RMP: ***How should the BLM manage multiple uses and resources that have changed, or that occur on lands that were either not administered by the BLM or were not within the planning area when the current RMP was developed?*** The BLM has acquired more than 130,000 acres of land in the planning area since 1987. Additionally, there is no RMP for public lands administered by the BLM in the San Juan Archipelago. Therefore, authorized uses sometimes conflict or result in unintended impacts to other resources (such as wildlife habitat and cultural resources). Furthermore, over the past 20 years the number of federally listed threatened and endangered species with habitat in the planning area has increased from 3 to 16, with 7 candidate species. This is compounded by the increase in the number of other BLM and State special status species of concern. With the tremendous amount of urban growth in the planning area during the same 20-year period, and the increased interest in motorized recreation, demands for recreational opportunities on BLM lands often exceed the capacity of these lands and resources.

5) Energy Development: ***How should the BLM facilitate energy development while still allowing for multiple uses and appropriate protection of public lands and resources?*** As the BLM provides opportunities for energy (renewable and non-renewable) development, to include associated transmission lines and pipelines, it must also provide protection for other resources, such as visual, cultural, and habitat values. For example, a number of wind energy projects have been developed in eastern Washington in recent years. Development of renewable energy is also

a DOI priority. However, the current RMP did not consider or identify areas open or closed to wind energy development, and did not identify constraints to protect other resources. Also, interest in development of natural gas in eastern Washington has greatly increased recently and the existing RMP and amendment do not afford appropriate protection of resources and uses such as wildlife habitat (including special status species and shrub-steppe communities) cultural resources, and recreation. In addition, the most current reasonable foreseeable development scenario, which the BLM prepared for a 1992 RMP amendment, did not account for changes in oil and gas development technology that have occurred over the past 10 to 15 years. Furthermore, energy development on BLM lands may result in conflicts with uses such as residential areas or open space for recreation and tourism on adjacent lands.

7.2 Planning Criteria Identified Through Scoping

Through scoping, the BLM also identified the following planning criteria:

1) The BLM will protect resources in accordance with FLPMA, as amended, and other applicable laws and regulations.

2) The BLM will strive to make land use plan decisions compatible with existing plans and policies of adjacent local, State, Federal, and tribal agencies, and consistent with other applicable laws and regulations governing the administration of public land.

3) The plan will recognize valid existing rights within the planning area.

4) Land use plan decisions will apply to BLM lands and split-estate minerals administered by the BLM.

5) The BLM will use a collaborative and multi-jurisdictional approach, when practical, to jointly determine the desired future conditions of public lands.

6) The plan will recognize the State's authority to manage wildlife.

7) The plan will incorporate the BLM Oregon and Washington Rangeland Health Standards and Guidelines.

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Chapter 9 Glossary

Acquired lands ~ Acquired lands, as distinguished from public lands, are those lands in Federal ownership that have been obtained by the government by purchase, condemnation; or gift, or by exchange for such purchased, condemned, or donated lands, or for timber on such lands.

Actual use ~ The amount of grazing AUMs, based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by the BLM.

Alfisols ~ Moderately leached soils with subsurface zone of clay accumulation, often formed under forest or savanna vegetation in dry climates.

Allotment ~ An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other Federal managed, state owned, and private lands. An allotment may include one or more separate pastures.

Allotment management plan (AMP) ~ An intensive livestock grazing management plan dealing with a specific unit of rangeland, based on multiple use resource management objectives. The AMP considers livestock grazing in relation to the renewable resources such as watershed, vegetation, and wildlife. An AMP establishes the season of use, the number of livestock to be permitted on the range, and the range improvements needed

Alluvium ~ Clay, silt, sand, gravel or other rock materials transported by moving water. Deposited in comparatively recent geologic time as sorted or semi-sorted sediment in rivers, floodplains, lakes, and shores, and in fans at the base of mountain slopes.

All-terrain vehicle ~ A wheeled (three or more wheels) or tracked vehicle, other than a snowmobile or work vehicle, designed primarily for recreational use or the transportation of property or equipment exclusively on undeveloped road rights-of-way, marshland, open country, or other unprepared surfaces.

Andisols ~ Soils formed in volcanic ash.

Animal unit month (AUM) ~ The amount of forage consumed by one mature cow and calf under 6 months, for 1 month. The amount of forage consumed by one horse, or five sheep, or five deer, or six bighorn for 1 month is considered equal to one cow AUM; also a unit of measurement of grazing privilege that represents the privilege of grazing one animal for one month.

Appropriate management response ~ (Obsolete 2001 policy definition) The response to a wildland fire is based on an evaluation of risks to firefighter and public safety, the circumstances under which the fire occurs, including weather and fuel conditions, natural and cultural resource management objectives, protection priorities, and values to be protected. The evaluation must also include an analysis of the context of the specific fire within the overall local, geographic area, or national wildland fire situation. Removed as agency documents are updated.

Aridisols ~ Soils of arid environments with subsurface horizon development with low organic matter.

Climax plant community ~ The vegetative community that emerges after a series of successive vegetational stages and perpetuates itself indefinitely unless disturbed by outside forces.

Closed (OHV designation) ~ Designated areas and trails where the use of OHVs is permanently or temporarily prohibited to protect resources, promote visitor safety, or reduce use conflicts.

Commercial special recreation permit ~ Commercial use is defined as recreational use of public land and related waters for business or financial gain. When any person, group, or organization makes or attempts to make a profit, receive money, amortize equipment, or obtain goods or services, as compensation from participants in recreational activities occurring on public land, the use is considered commercial (e.g., outfitters and guides; National Outdoor Leadership School; Outward Bound) and requires a permit.

Competitive special recreation permit ~ Competitive use means any organized, sanctioned, or structured use, event, or activity on public land in which two or more contestants compete and either (1) participants register, enter, or complete an application for the event, or (2) a predetermined course or area is designated (e.g., raft, OHV or mountain bike races).

Community wildfire protection plan (CWPP) ~ A plan developed in the collaborative framework established by the Wildland Fire Leadership Council and agreed to by state, tribal, and local government, local fire department, other stakeholders and Federal land management agencies managing land in the vicinity of the planning area. A CWPP identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on Federal and non-Federal land that will protect one or more at-risk communities and essential infrastructure and recommends measures to reduce structrual ignitability throughout the at-risk community. A CWPP may address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection.

Cumulative impacts ~ The collective and aggregate impacts of all actions affecting a particular resource.

Designated route ~ Specific route (including roads and trails) identified by the BLM in limited areas where some type of motorized vehicle use is appropriate and allowed either seasonally or yearlong.

Eligible river segment ~ A section of a river that qualifies for inclusion into the NWSRS through determination that it is free-flowing and, with its adjacent land area, possessing at least one river-related value considered to be outstandingly remarkable.

Entisols ~ Soils with little or no morphological development.

Environmental impact statement (EIS) ~ A formal public document prepared to analyze the impacts on the environment of a proposed project or action and released for comment and review. An EIS must meet the requirements of NEPA, CEQ guidelines, and directives of the agency responsible for the proposed project or action.

Eolian deposit ~ Wind deposited materials.

Ephemeral stream ~ A stream or stretch of a stream that flows only in direct response to precipitation. It receives no water from springs and no long-continued supply from melting snow or other surface source. Its stream channel is at all times above the water table. These streams do not normally flow for at least 30 consecutive days.

Existing route ~ The roads, trails, or ways that are used by motorized vehicles (jeeps, all-terrain vehicles, motorized dirt bikes, etc.), mechanized means (mountain bikes, wheelbarrows, game

carts), pedestrians (hikers), and/or equestrians (horseback riders) and are, to the best of BLM's knowledge, in existence at the time of RMP/EIS publication.

Extensive recreation management area (ERMA) ~ Designated administrative unit where recreation is planned for, and actively managed on, an interdisciplinary-basis in concert with other resources/resource programs. ERMAs offer recreation opportunities that facilitate visitors' freedom to pursue a variety of outdoor recreation activities and attain a variety of outcomes. They include all lands not designated as an SRMA or closed to public use. See Recreation management areas.

Fire frequency ~ A general term referring to the recurrence of fire in a given area over time.

Fire interval ~ The number of years between two successive fire events for a given area; also referred to as fire-free interval or fire-return interval.

Fire management ~ All activities related to the management of wildland fires.

Fire management plan (FMP) ~ A plan which identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans. It defines a program to manage wildland fires (wildfire, prescribed fire, and the use of wildland fire). The plan is supplemented by operational plans, including but not limited to, preparedness plans, preplanned dispatch plans, and prevention plans. FMPs assure that wildland fire management goals and components are coordinated.

Fire management unit (FMU) ~ A land management area definable by objectives, management constraints, topographic features, access, values to be protected, political boundaries, fuel types, major fire regime groups, etc., that set it apart from the characteristics of an adjacent FMU. The FMU may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives.

Fire regime ~ Description of the patterns of fire occurrences, frequency, size, severity, and sometimes vegetation and fire effects as well, in a given area or ecosystem. A fire regime is a generalization based on fire histories at individual sites. Fire regimes can often be described as cycles because some parts of the histories usually get repeated, and the repetitions can be counted and measured, such as fire return interval.

Fluid energy minerals ~ Oil, natural gas, and geothermal energy.

Fuel loading ~ The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area. This may be available fuel (consumable fuel) or total fuel and is usually dry weight.

Fuel management ~ Act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire, in support of land management objectives.

Impact ~ The effect, influence, alteration, or imprint caused by an action.

I**nceptisols** ~ Soils with weakly developed subsurface horizons, usually moist.

Initial attack ~An aggressive action to put the fire out consistent with firefighter and public safety and values to be protected.

Intermittent stream ~ A stream or reach of stream that flows only at certain times of the year when it receives water from springs or from surface source (e.g., melting snow). Intermittent streams usually are divided with respect to the source of their water into spring-fed or surface-fed intermittent streams. These streams generally flow continuously during periods of at least 1 month, or more, during the year.

Lacustrine deposits ~ Materials deposited in lake water and later exposed by lowering of water level or elevation of land.

Leasable minerals ~ Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. They include coal, phosphate, asphalt, sulphur, potassium and sodium minerals, and oil and gas. Geothermal resources are also leasable under the Geothermal Steam Act of 1970.

Limited (OHV designation) ~ Designated areas and trails where the use of OHVs is subject to restrictions such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions), permitted or license use only, limiting use to existing roads and trails, or limiting use to designated roads and trails, or other limitations if restrictions are necessary to meet resource management objectives, including certain competitive or intensive use areas that have special limitations.

Locatable minerals ~ Mineral or materials subject to claim and development under the Mining Law of 1872, as amended. Generally includes metallic mineral, such as gold, silver, copper, lead, zinc, molybdenum, and other materials not subject to lease or sale (some bentonite, limestone, talc, some zeolites, etc.). Whether or not a particular miner deposit is locatable depends on such factors as quality, quantity, the ability to be mined, demand, and marketability.

Loess ~ Soils primarily composed of silt transported and deposited by wind.

Mineral materials ~ Common varieties of sand, building stone, gravel, clay, and rock obtainable under the Mineral Materials Act of 1947, as amended.

Mining Law of 1872 ~ Provides for staking of mining claims and gaining title to locatable minerals on public lands. Also referred to as the ―General Mining Laws" or ―Mining Laws".

Mollisols ~ Grassland soils with organic rich surface horizons.

Naturalness ~ Refers to an area that ―generally appears to have been affected primarily by the forces of nature, with, the imprint of man's work substantially unnoticeable" (section 2[c] of the Wilderness Act of 1964).

Off-highway vehicle (OHV) ~ Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies.

Off-highway vehicle (OHV) designation ~ Refers to the land use plan decisions that permit, establish conditions, or prohibit OHV activities on specific areas of public lands. All public lands are required to have OHV designations (43 CFR 8342.1). The CFR requires all BLM-managed

public lands to be designated as open, limited, or closed to off-road vehicles and provides guidelines for designation.

Open (off-highway vehicle designation) ~ Designated areas and trails where the use of off-highway vehicles is not restricted and where there are no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting cross-country travel.

Organized group activity and event use special recreation permit ~ A permit for noncommercial and noncompetitive group recreational activity and recreation event(s) (e.g., a large scout camp out, a fraternity activity, or a large family reunion).

Patent ~ A grant made to an individual or group conveying fee simple title to selected public lands.

Patented mining claim ~ A mining claim on which title has passed from the Federal government to the mining claimant under the Mining Law of 1872 (as amended).

Perennial stream ~ A stream or reach of a stream that flows continuously. They are generally fed in part by springs. Surface water elevations are commonly lower than water table elevations in adjacent soils.

Permitted use ~ Forage allocated for livestock grazing in an allotment and expressed in AUMs.

Planning area ~ The geographical area for which land use and resources management plans are developed and maintained (i.e., Eastern Washington and San Juan Island Planning Area).

Prescribed fire ~ Any fire intentionally ignited by management under an approved plan to meet specific objectives. *Synonym*: prescribed burn and controlled burn.

Primitive and unconfined recreation ~ Non-motorized and undeveloped types of outdoor recreation.

Public land ~ Any land and interest in land (outside Alaska) owned by the United States and administered by the Secretary of the Interior through the BLM.

Rangeland ~ Land on which the potential natural vegetation is predominantly grasses, grass like plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Rangeland health ~ The degree to which the integrity of the soil and the ecological processes of rangeland ecosystems are sustained.

Recreation management areas ~ Recreation management areas are units within a planning area guiding recreation management on public lands having similar recreation related issues and concerns. There are two types of recreation management areas, extensive and special.

> **Extensive recreation management areas (ERMA)** ~ Designated administrative units where recreation is planned for, and actively managed on, an interdisciplinary-basis in concert with other resources/resource programs. ERMAs offer recreation opportunities that facilitate visitors' freedom to pursue a variety of outdoor recreation activities and attain a variety of outcomes. They include all lands not designated as an SRMA or closed to public use.

Special recreation management areas (SRMA) ~ Designated administrative units where congressionally recognized recreation values exist or where a commitment has been made to emphasize recreation by managing for specific recreation opportunities and settings on a sustained or enhanced long-term basis.

Resource management plan (RMP) ~ A land use plan that establishes land use allocation, multiple-use guidelines, and management objectives for a given planning area (i.e., Eastern Washington and San Juan Island Planning Area).

Recreation use permit ~ Authorization for use of developed facilities that meets the fee criteria established by the Land and Water Conservation Fund Act of 1964, as amended, or subsequent authority (e.g., the pilot fee demonstration program). Recreation use permits are issued to ensure that U.S. residents receive a fair and equitable return for the use of those facilities to help recover the cost of construction, operation, maintenance, and management of the permits.

Recreation visit ~ The entry of a person onto lands or waters administered by the BLM for pursuit of recreation experiences.

Response to wildland fire ~ Decisions and actions implemented to manage a wildland fire based on ecological, social, and legal consequences; the circumstances under which a fire occurs; and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected.

Road ~ Vehicle route that has been improved and maintained by mechanical means to ensure relatively regular and continuous use. A way maintained strictly by the passage of vehicles does not constitute a road.

Roadless ~ Refers to the absence of roads that have been constructed and maintained by mechanical means to ensure regular and continuous use.

Route ~ A combination of roads, trails, or ways that are used by a motorized vehicle(s) (e.g., jeeps, all-terrain vehicles, motorized dirt bikes), mechanized uses (e.g., mountain bikes, wheelbarrows, game carts), pedestrians (hikers), and/or equestrians (horseback riders).

Saleable minerals ~ Those minerals or materials designated as saleable under the Materials Act of 1947, as amended. They include common varieties of sand, stone, gravel, pumice, cinder, clay, and petrified wood.

Sediment ~ Soil, rock particles, and organic or other debris carried from one place to another by wind, water or gravity.

Solitude ~ The state of being alone or remote from habitations; isolation. A lonely or secluded place. Factors contributing to opportunities for solitude may include size, natural screening, topographic relief, vistas, physiographic variety, and the ability of the user to find a secluded spot.

Special area ~ An area officially designated by statute or Secretarial order and may include components of the national trails system; the NWSRS; the national wilderness system; national conservation areas, national monuments, or national recreation areas.

Special area use special recreation permit ~ Permit that may be required for individual (private, noncommercial) recreation use in a special area (see also ―Special area”).

Special recreation management areas (SRMA) ~ Designated administrative units where congressionally recognized recreation values exist or where a commitment has been made to emphasize recreation by managing for specific recreation opportunities and settings on a sustained or enhanced long-term basis. See ―Recreation management areas."

Special recreation permit ~ An authorization that allows for recreational use of public lands and related waters. They are issued as a means to manage visitor use, protect natural and cultural resources, as a means to achieve the goals and objectives of the field office recreation program as outlined in a land use plan, and as a mechanism to authorize five types of recreational use (see also, ―Commercial special recreation permit," ―Competitive special recreation permit," ―Vending special recreation permit," ―Special area use special recreation permit," and ―Organized group activity and event special recreation permit").

Split estate ~ Split estate lands occur when the Federal government owns and manages the mineral estate and another party owns the surface lands.

Suitable river ~ A river segment found, through administrative study by an appropriate agency, to meet the criteria for designation as a component of the NWSRS, specified in section 4(a) of the Wild and Scenic Rivers Act.

Supplemental value ~ Resources, associated with wilderness, which contribute to the quality of wilderness areas.

Suppression ~ Management action to extinguish a fire or confining fire spread.

Use of wildland fire ~ Management of either wildfire or prescribed fire to meet resource objectives specified in land/resource management plans. *Synonym*: fire use.

Vending special recreation permit ~ A temporary, short-term, non-exclusive, revocable authorization to sell goods or provide services on public land in conjunction with a recreation activity (e.g., t-shirt sales in conjunction with a competition).

Visitor day ~ A visitor day represents one person using BLM-managed public lands for all or part of one day. For example, if one person spent one night camping on public lands, it is counted as two visitor days.

Visual resource management ~ The inventory and planning actions taken to identify visual resource values and to establish objectives for managing those values, and the management actions taken to achieve the visual resource management objectives.

Visual resource management (VRM) class ~ VRM class identifies the degree of acceptable visual change within a characteristic landscape. A classification is assigned to public lands based on the guidelines established for scenic quality, visual sensitivity, and visibility.

Visual resources ~ The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

Visual sensitivity ~ Visual sensitivity levels are a measure of public concern for scenic quality and existing or proposed visual change.

Wilderness ~ An area formally designated by Congress as a part of the National Wilderness Preservation System.

Wilderness characteristic ~ Identified by Congress in the Wilderness Act of 1964, namely, size, naturalness, outstanding opportunities for solitude or a primitive and unconfined type of recreation, and supplemental values such as geological, archaeological, historical, ecological, scenic, or other features.

Wilderness study area ~ A designation made through the land use planning process of a road-less area found to have wilderness characteristics, as described in section 2(c) of the Wilderness Act of 1964 (from H-6310-1, Wilderness Inventory and Study Procedures).

Wildfire ~ An unplanned ignition caused by lightning, volcanoes, unauthorized, and accidental human-caused actions and escaped prescribed fires.

Wildland fire ~ A general term describing any non-structure fire that occurs in the vegetation and/or natural fuels.

Wildland fire benefits ~ Fire effects with positive value or that contribute to the attainment of organizational goals. *Synonym*: resource benefits; also known as fire benefits.

Wildland fire use ~ (Obsolete term) The application of the appropriate management response to naturally-ignited wildland fires to accomplish specific resource management objectives in predefined, designated areas outlined in fire management plans. Operational management is described in an implementation plan. Found in existing planning documents, to be changed when plans are reviewed and updated. This was used as a category/type of fire that is now included in wildfire. It is important to acknowledge that many fires may have benefits even when the focus is primarily on protection objectives.

Wildland urban interface (WUI) ~ The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. *Synonym*: I-zone, wildland/urban interface)

Chapter 10 References

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Appendix A: Maps

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Map 31 - Lands with Special Management Designations
Map 32 - National Scenic Byways
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Map 34 - Abandoned Mine Lands
Map 35 - Seismic Activity in Washington
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Appendix B: Special Status Plant Species on the Spokane District

Table B-1. Special status plant species documented or suspected on the Spokane District[1]

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Bryoerythrophyllum columbianum (1)	Moss		R1	STR	D
Schistostega pennata	Moss		R1	STR	D
Scouleria marginata	Moss		ST	SEN	D
Umbilicaria phaea var. *Coccinea*	Lichen		R1	STR	(D in WNHP)
Pseudocyphellaria rainierensis	Lichen		R1	STR	(S in SFS)
Lecanora pringlei	Lichen		R1	STR	(S in SFS)
Texosporium sancti-jacobi	Lichen		ST	SEN	D
Usnea longissima	Lichen		R1	STR	D
Allium constrictum	Constricted douglas' onion		SS	SEN	D
Astragalus arthurii	Arthur's milk-vetch		SS	SEN	D
Astragalus columbianus	Columbia milk-vetch		SS	SEN	D
Astragalus geyeri	Geyer's milk-vetch		ST	SEN	D
Astragalus microcystis	Least bladdery milk-vetch		SS	SEN	D
Astragalus misellus var. *Pauper*	Pauper milk-vetch		SS	SEN	D
Astragalus riparius	Piper's milk-vetch		SE	SEN	D
Astragalus sinuatus	Whited's milk-vetch		SE	SEN	D
Botrychium ascendens	Upward-lobed moonwort		SS	SEN	D
Botrychium crenulatum	Crenulate moonwort		SS	SEN	D
Calochortus macrocarpus var. *Maculosus*	Green-band mariposa-lily		SE	SEN	D
Camissonia pygmaea	Dwarf evening-primrose		SS	SEN	D

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Camissonia scapoidea ssp. *Scapoidea*	Naked-stemmed evening-primrose		SS	SEN	D
Carex comosa	Bristly sedge		SS	SEN	D
Carex sychnocephala	Many-headed sedge		SS	SEN	D
Carex vallicola	Valley sedge		SS	SEN	D
Collomia macrocalyx	Bristle-flowered collomia		SS	SEN	D
Crataegus phippsii	Phipp's hawthorn		R1	STR	D
Cryptantha gracilis	Narrow-stem cryptantha		SS	SEN	D
Cryptantha leucophaea	Gray cryptantha		SS	SEN	D
Cryptantha rostellata	Beaked cryptantha		ST	SEN	D
Cryptantha scoparia	Miner's candle		SS	SEN	D
Cryptantha spiculifera	Snake river cryptantha		SS	SEN	D
Damasonium californicum	Fringed waterplantain		ST	SEN	D
Dryas drummondii var. *Drummondii*	Drummond's mountain-avens		SS	SEN	D
Erigeron basalticus	Basalt daisy		ST	SEN	D
Erigeron piperianus	Piper's daisy		SS	SEN	D
Eriophorum viridicarinatum	Green keeled cotton-grass		SS	SEN	D
Eryngium petiolatum	Oregon coyote-thistle		ST	SEN	D
Hackelia diffusa var. *Diffusa*	Diffuse stickseed		ST	SEN	D
Hackelia hispida var. *Disjuncta*	Sagebrush stickseed		SS	SEN	D
Howellia aquatilis	Water howellia	LT	ST	LT	D
Iliamna longisepala	Longsepal globemallow		SS	SEN	D
Isoetes nuttallii	Nuttall's quillwort		SS	SEN	D
Juncus tiehmii	Tiehm's rush		ST	SEN	D
Juncus uncialis	Twelfth rush		SS	SEN	D
Leptosiphon bolanderi	Baker's linanthus		SS	SEN	D
Lomatium laevigatum	Smooth desertparsley		ST	SEN	D
Lomatium rollinsii	Rollins' lomatium		ST	SEN	D
Lomatium serpentinum	Snake canyon desert parsley		SS	SEN	D
Lomatium suksdorfii	Suksdorf's desert parsley		SS	SEN	D
Lomatium tuberosum	Hoover's desert parsley		SS	SEN	D

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Meconella oregana	White fairypoppy		ST	SEN	D
Mimulus suksdorfii	Suksdorf's monkey-flower		SS	SEN	D
Minuartia nuttallii ssp. *Fragilis*	Nuttall's sandwort		ST	SEN	D
Monolepis pusilla	Red poverty weed		ST	SEN	D
Myosurus clavicaulis	Mousetail		SS	SEN	D
Nicotiana attenuata	Coyote tobacco		SS	SEN	D
Oenothera caespitosa ssp. *caespitosa*	Tufted evening primrose		SS	SEN	D
Ophioglossum pusillum	Adder's-tongue		ST	SEN	D
Oxytropis campestris var. *Columbiana*	Columbia crazyweed		SE	SEN	D
Oxytropis campestris var. *Gracilis*	Slender crazyweed		SS	SEN	D
Oxytropis campestris var. *Wanapum*	Wanapum crazyweed		SE	SEN	D
Pediocactus nigrispinus	Snowball cactus		R1	STR	D
Penstemon barrettiae	Barrett's penstemon		ST	SEN	D
Penstemon eriantherus var. *Whitedii*	Whited's penstemon		SS	SEN	D
Petrophytum cinerascens	Chelan rockmat		SE	SEN	D
Phacelia lenta	Sticky phacelia		ST	SEN	D
Phacelia tetramera	Dwarf phacelia		SS	SEN	D
Pilularia americana	American pillwort		ST	SEN	D
Poa unilateralis ssp. *Pachypholis*	Ocean bluff bluegrass		ST	SEN	D
Polemonium pectinatum	Washington polemonium		ST	SEN	D
Polyctenium fremontii var. *Fremontii*	Fremont's combleaf		ST	SEN	D
Ranunculus californicus	California buttercup		ST	SEN	D
Ribes cereum var. *Colubrinum*	Wax currant		SE	SEN	D
Ribes oxyacanthoides ssp. *Irriguum*	Idaho gooseberry		ST	SEN	D
Rorippa columbiae	Columbia cress		SE	SEN	D
Rubus nigerrimus	Northwest raspberry		SE	SEN	D

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Sanicula marilandica	Black snake-root		SS	SEN	D
Schizachyrium scoparium var. *Scoparium*	Little bluestem		ST	SEN	D
Scutellaria angustifolia ssp. *Micrantha*	Narrowleaf skullcap		R1	STR	D
Silene spaldingii	Spalding's catchfly	LT	ST	LT	D
Sisyrinchium montanum	Strict blue eyed-grass		ST	SEN	D
Spiranthes diluvialis	Ute ladies'-tresses	LT	SE	LT	D
Tauschia hooveri	Hoover's tauschia		ST	SEN	D
Trifolium thompsonii	Thompson's clover		ST	SEN	D
Abronia umbellata ssp. *Breviflora (1)*	Pink sand-verbena		SE	STR	S
Agrostis mertensii	Northern bentgrass		ST	SEN	S
Aliciella leptomeria (1)	Great basin gilia		ST	STR	S
Allium bisceptrum	Twincrest onion		R1	STR	S
Allium campanulatum	Sierra onion		ST	SEN	S
Ammannia robusta	Ammannia		ST	SEN	S
Antennaria corymbosa	Meadow pussy-toes		ST	SEN	S
Antennaria parvifolia	Nuttall's pussy-toes		SS	SEN	S
Arabis crucisetosa	Cross-haired rockcress		ST	SEN	S
Arenaria paludicola	Marsh sandwort	LE	SX	LE	S
Artemisia campestris ssp. *Borealis var. Wormskioldii*	Northern wormwood	FC	SE	SEN	S
Asclepias cryptoceras ssp. *Davisii (1)*	Davis's milkweed		ST	STR	S
Astragalus arrectus	Palouse milk-vetch		ST	SEN	S
Astragalus australis var. *Olympicus*	Cotton's milk-vetch		ST	SEN	S
Astragalus cusickii var. *Cusickii*	Cusick's milk-vetch		SS	SEN	S
Astragalus pulsiferae var. *Suksdorfii (1)*	Ames' milk-vetch		SE	STR	S
Astragalus tenellus (1)	Loose-flowered vetch		ST	STR	S
Baccharis pilularis (1)	Coyotebush		ST	STR	S

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Balsamorhiza deltoidea	Puget balsamroot		R2	STR	S
Bolandra oregana	Oregon bolandra		SS	SEN	S
Botrychium hesperium	Western moonwort		ST	SEN	S
Botrychium lineare	Slender moonwort		ST	SEN	S
Botrychium paradoxum	Twin-spiked moonwart		ST	SEN	S
Botrychium pedunculosum	Stalked moonwort		SS	SEN	S
Calamagrostis canadensis var. *Imberbis*	Blue joint reedgrass		R2	STR	S
Calochortus longebarbatus var. *Longebarbatus*	Long-bearded mariposa-lily		SS	SEN	S
Calochortus nitidus	Broad-fruit mariposa-lily		SE	SEN	S
Camissonia minor (1)	Small-flower evening-primrose		SS	STR	S
Campanula lasiocarpa	Alaska harebell		SS	SEN	S
Carex anthoxanthea	Yellow-flowered sedge		SS	SEN	S
Carex atrosquama	Blackened sedge		R1	STR	S
Carex capillaris	Hairlike sedge		ST	SEN	S
Carex chordorrhiza	Cordroot sedge		SS	SEN	S
Carex circinata	Coiled sedge		SS	SEN	S
Carex densa	Dense sedge		ST	SEN	S
Carex gynocrates	Yellow bog sedge		SS	SEN	S
Carex macrochaeta	Large-awn sedge		ST	SEN	S
Carex media	Intermediate sedge		SS	SEN	S
Carex obtusata	Blunt sedge		SS	SEN	S
Carex pauciflora	Few-flowered sedge		SS	SEN	S
Carex pluriflora (1)	Many-flowered sedge		SS	SEN	S
Carex proposita	Smokey mtn. Sedge		ST	SEN	S
Carex rostrata	Beaked sedge		SS	SEN	S
Carex scirpoidea ssp. *Scirpoidea*	Canadian single-spike sedge		SS	SEN	S
Carex stylosa	Long-styled sedge		SS	SEN	S
Carex tenuiflora	Sparseflower sedge		ST	SEN	S

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Cassiope lycopodioides (1)	Clubmoss casssiope		ST	STR	S
Castilleja cryptantha	Obscure indian-paintbrush		SS	SEN	S
Castilleja levisecta	Golden paintbrush	LT	SE	LT	S
Castilleja victoriae (1)	Victoria's paintbrush		SE	STR	S
Centaurium muehlenbergii	Monterey centaury		R2	STR	S
Chaenactis thompsonii	Thompson's chaenactis		SS	SEN	S
Cheilanthes feei	Fee's lip-fern		ST	SEN	S
Chrysolepis chrysophylla var. *Chrysophylla*	Golden chinquapin		SS	SEN	S
Chrysosplenium tetrandrum	Northern golden-carpet		SS	SEN	S
Cicuta bulbifera	Bulb-bearing water-hemlock		SS	SEN	S
Cimicifuga elata var. *Elata*	Tall bugbane		SS	SEN	S
Cistanthe rosea (1)	Rosy pussypaws		ST	SEN	S
Cochlearia officinalis (1)	Spoonwort		SS	STR	S
Coeloglossum viride	Long-bract frog orchid		ST	SEN	S
Collinsia sparsiflora var. *Bruceae*	Few-flowered collinsia		SS	SEN	S
Coptis aspleniifolia	Spleenwort-leaved goldthread		SS	SEN	S
Coptis trifolia (1)	Three-leaf goldthread		ST	STR	S
Corydalis aquae-gelidae	Cold-water corydalis		SS	SEN	S
Crassula connata (1)	Erect pygmy-weed		ST	STR	S
Cryptogramma stelleri	Steller's rockbrake		SS	SEN	S
Cuscuta denticulata (1)	Desert dodder		ST	STR	S
Cusickiella douglasii	Douglas' draba		ST	SEN	S
Delphinium leucophaeum (1)	White rock larkspur		SE	STR	S
Delphinium viridescens	Wenatchee larkspur		ST	SEN	S
Dodecatheon austrofrigidum	Frigid shootingstar		SE	SEN	S
Draba aurea	Golden draba		SS	SEN	S
Draba cana	Lance-leaved draba		SS	SEN	S
Draba lonchocarpa var. *Vestita*	Lance-fruited draba		R1	STR	S

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Draba longipes	Long-stalked draba		ST	SEN	S
Dryopteris cristata	Crested shield-fern		SS	SEN	S
Eatonella nivea (1)	White eatonella		ST	STR	S
Eleocharis rostellata (1)	Beaked spikerush		SS	STR	S
Erigeron elatus (1)	Tall bitter fleabane		SE	STR	S
Erigeron engelmannii var. *Davisii*	Engelmann's daisy		R1	STR	S
Erigeron howellii	Howell's daisy		ST	SEN	S
Erigeron oreganus	Oregon daisy		ST	SEN	S
Erigeron peregrinus var. *Thompsonii*	Thompson's wandering daisy		SS	SEN	S
Erigeron salishii	Salish fleabane		SS	SEN	S
Eriogonum codium	Umtanum desert buckwheat	FC	SE	SEN	S
Eritrichium nanum var. *Elongatum*	Pale alpine forget-me-not		SS	SEN	S
Euonymus occidentalis var. *Occidentalis (1)*	Western wahoo		ST	STR	S
Filipendula occidentalis (1)	Queen-of-the-forest		ST	STR	S
Fritillaria camschatcensis	Black lily		SS	SEN	S
Gaultheria hispidula	Creeping snowberry		SS	SEN	S
Gentiana douglasiana	Swamp gentian		SS	SEN	S
Gentiana glauca	Glaucous gentian		SS	SEN	S
Gentianella tenella ssp. *Tenella*	Slender gentian		SS	SEN	S
Geum rivale	Water avens		SS	SEN	S
Hackelia cinerea (1)	Gray stickseed		SS	STR	S
Hackelia hispida var. *Hispida*	Rough stickseed		ST	SEN	S
Hackelia venusta	Showy stickseed	LE	SE	LE	S
Halimolobos perplexa var. *Perplexa (1)*	Puzzling rockcress		ST	STR	S
Heterotheca oregona var. *Oregona*	Oregon goldenaster		ST	SEN	S
Hypericum majus	Canadian st. John's-wort		SS	SEN	S
Isoetes minima	Midget quillwort		R1	STR	S

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Juncus hemiendytus var. *Hemiendytus (1)*	Dwarf rush		ST	STR	S
Juncus howellii	Howell's rush		ST	SEN	S
Juncus kelloggii	Kellogg's rush		SE	SEN	S
Lasthenia glaberrima	Smooth goldfields		SE	SEN	S
Lathyrus holochlorus (1)	Thin-leaved peavine		SE	STR	S
Lathyrus torreyi	Torrey's peavine		ST	SEN	S
Lathyrus vestitus ssp. *Bolanderi (1)*	Pacific pea		SE	STR	S
Lepidium oxycarpum (1)	Sharpfruited peppergrass		ST	STR	S
Liparis loeselii (1)	Twayblade		SE	STR	S
Lipocarpha aristulata	Aristulate lipocarpha		ST	SEN	S
Lobelia dortmanna	Water lobelia		ST	SEN	S
Lobelia kalmii (1)	Kalm's lobelia		SE	STR	S
Loeflingia squarrosa ssp. *Squarrosa (1)*	Spreading pygmyleaf		ST	STR	S
Loiseleuria procumbens	Alpine azalea		ST	SEN	S
Lupinus sabinianus	Sabin's lupine		SE	SEN	S
Lupinus sericeus var. *Asotinensis*	Asotin silky lupine		R1	STR	S
Lupinus sulphureus ssp. *Kincaidii*	Kincaid's lupine	LT	SE	LT	S
Lycopodiella inundata	Bog club-moss		SS	SEN	S
Lycopodium dendroideum	Treelike clubmoss		SS	SEN	S
Microseris borealis	Northern microseris		SS	SEN	S
Mimulus cusickii	Cusick monkeyflower		ST	SEN	S
Mimulus jungermannioides	Hepatic monkeyflower		SX	STR	S
Mimulus patulus	Stalked-leaved monkeyflower		ST	STR	S
Mimulus pulsiferae	Pulsifer's monkey-flower		SS	SEN	S
Montia diffusa	Branching montia		SS	SEN	S
Muhlenbergia glomerata	Marsh muhly		SS	SEN	S
Myriophyllum ussuriense	Russian water-milfoil		R1	STR	S
Navarretia tagetina	Marigold navarretia		ST	SEN	S

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Nuttallanthus texanus (1)	Texas toadflax		SS	STR	S
Oenothera caespitosa ssp. *Marginata*	Tufted evening primrose		ST	SEN	S
Orthocarpus bracteosus	Rosy owl-clover		SE	SEN	S
Oxalis suksdorfii (1)	Western yellow oxalis		ST	STR	S
Parnassia fimbriata var. *Hoodiana (1)*	Fringed grass-of-parnassus		ST	STR	S
Parnassia kotzebuei	Kotzebue's grass-of-parnassus		ST	SEN	S
Parnassia palustris var. *Neogaea*	Northern grass-of-parnassus		SS	SEN	S
Pedicularis rainierensis	Mt. Rainier lousewort		SS	SEN	S
Pellaea brachyptera	Sierra cliffbrake		SS	SEN	S
Penstemon deustus var. *Variabilis*	Variable hot-rock penstemon		ST	SEN	S
Penstemon wilcoxii	Wilcox's penstemon		SS	SEN	S
Phacelia minutissima	Dwarf phacelia		SE	SEN	S
Physaria didymocarpa var. *Didymocarpa*	Common twinpod		SS	SEN	S
Physaria tuplashensis	Whitebluffs bladderpod	FC	ST	SEN	S
Pityopus californica (1)	Pine-foot		ST	STR	S
Plantago macrocarpa (1)	North pacific plantain		SS	STR	S
Platanthera chorisiana	Choris' bog-orchid		ST	SEN	S
Platanthera obtusata	Small northern bog-orchid		SS	SEN	S
Platanthera sparsiflora	Canyon bog-orchid		ST	SEN	S
Poa laxiflora (1)	Loose-flowered bluegrass		SS	STR	S
Poa nervosa (1)	Wheeler's bluegrass		SS	STR	S
Polemonium carneum	Great polemonium		ST	SEN	S
Polemonium viscosum	Skunk polemonium		SS	SEN	S
Polygonum austiniae (1)	Austin's knotweed		ST	STR	S
Polygonum parryi (1)	Parry's knotweed		ST	STR	S
Polystichum californicum (1)	California sword-fern		ST	STR	S
Potamogeton obtusifolius (1)	Blunt-leaved pondweed		SS	STR	S
Potentilla diversifolia var. *Perdissecta*	Diverse-leaved cinquefoil		SS	SEN	S

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Potentilla drummondii ssp. *Breweri*	Brewer's cinquefoil		ST	SEN	S
Potentilla nivea	Snow cinquefoil		SS	SEN	S
Potentilla rubricaulis (1)	Five-leaved cinquefoil		ST	STR	S
Pulsatilla patens ssp. *Multifida*	Cutleaf anemone		ST	SEN	S
Pyrrocoma hirta var. *Sonchifolia*	Sticky goldenweed		SS	SEN	S
Pyrrocoma liatriformis	Palouse goldenweed		ST	SEN	S
Ranunculus cooleyae	Cooley's buttercup		SS	SEN	S
Ranunculus populago	Mountain buttercup		SS	SEN	S
Ranunculus triternatus	Dalles mt. Buttercup		SE	SEN	S
Rotala ramosior	Lowland toothcup		ST	SEN	S
Rubus arcticus ssp. *Acaulis*	Nagoonberry		ST	SEN	S
Salix candida	Hoary willow		ST	SEN	S
Salix glauca	Glaucus willow		SS	SEN	S
Salix maccalliana	Maccall's willow		SS	SEN	S
Salix sessilifolia	Soft-leafed willow		SS	SEN	S
Salix vestita var. *Erecta*	Rock willow		SX	STR	S
Samolus parviflorus (1)	Water-pimpernel		SS	STR	S
Sanguisorba menziesii (1)	Menzies burnet		ST	STR	S
Sanicula arctopoides (1)	Bear's-foot sanicle		SE	STR	S
Saxifraga cernua	Nodding saxifrage		SS	SEN	S
Saxifragopsis fragarioides	Joint-leaved saxifrage		ST	SEN	S
Schoenoplectus saximontanus (1)	Rocky mountain bulrush		ST	STR	S
Sclerolinon digynum (1)	Northwestern yellowflax		ST	STR	S
Scribneria bolanderi	Scribner's grass		SS	SEN	S
Sericocarpus oregonensis var. *Oregonensis*	Oregon white-top aster		ST	SEN	S
Sericocarpus rigidus	White-topped aster		SS	SEN	S
Sidalcea hirtipes	Bristly-stemmed sidalcea		SE	SEN	S
Sidalcea malviflora ssp. *Virgata (1)*	Rose checker-mallow		SE	STR	S

Scientific Name	Common Name	Federal Status	WNHP State Status	WA BLM Status	Spokane District Status
Sidalcea nelsoniana	Nelson's checkermallow	LT	SE	LT	S
Sidalcea oregana var. *Calva*	Wenatchee mountains checker-mallow	LE	SE	LE	S
Silene seelyi	Seely's silene		SS	SEN	S
Sisyrinchium sarmentosum	Pale blue-eyed grass		ST	SEN	S
Spartina pectinata	Prairie cordgrass		SS	SEN	S
Spiranthes porrifolia	Western ladies-tresses		SS	SEN	S
Stuckenia filiformis ssp. *Occidentalis*	Western fineleaf pondweed		R1	STR	S
Sullivantia oregana	Oregon sullivantia		SE	SEN	S
Swertia perennis	Swertia		R1	STR	S
Symphyotrichum boreale (1)	Rush aster		ST	STR	S
Symphyotrichum hallii (1)	Hall's aster		ST	STR	S
Symphyotrichum jessicae (1)	Jessica's aster		SE	STR	S
Synthyris pinnatifida var. *Lanuginosa*	Featherleaf kittenstails		ST	SEN	S
Thelypodium howellii ssp. *Howellii (1)*	Howell's thelypody		R1	STR	S
Trifolium douglasii	Douglas' clover		SE	SEN	S
Trifolium plumosum ssp. *Plumosum*	Plumed clover		ST	SEN	S
Trillium parviflorum	Small-flowered trillium		SS	SEN	S
Utricularia intermedia	Flat-leaved bladderwort		SS	SEN	S
Utricularia minor	Lesser bladderwort		R1	STR	S
Vaccinium myrtilloides	Velvet-leaf blueberry		SS	SEN	S
Veratrum insolitum (1)	Siskiyou false-hellebore		ST	STR	S
Viola renifolia	Kidney-leaved violet		SS	SEN	S
Woodwardia fimbriata (1)	Chain-fern		SS	STR	S

Abbreviations:

For Federal status: LE = listed endangered; LT = listed threatened; FC = Federal candidate.

For WNHP State status: SE = State endangered; ST = State threatened; SS = State sensitive; SX = possibly extirpated from WA; R1 = review list, needs more field work to assign rank.

For WA BLM status: STR = strategic; SEN = sensitive; FE (change to LE) = listed endangered; LT = listed threatened.

For Spokane District status: D= documented, S = suspected.

Appendix C: Social and Economic Data

Table C-1. Degree of employment specialization amongst counties in the planning area

	Agriculture	Mining	Utilities	Construction	Manufacturing	Wholesale Trade	Transportation & Warehousing	Retail Trade	Information	Finance & Insurance	Real Estate & Rental & Leasing	Professional, Scientific, & Technical Services	Management of Companies and Enterprises	Admin, Waste Mgt & Rem. Serv.	Educational Services	Health Care & Social Assistance	Arts, Entertainment, and Recreation	Accommodation & Food Services	Other Services	Government
Adams	6.3	-	-	-	1.7	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	1.2
Asotin	-	-	-	-	-	-	-	1.2	-	-	-	-	-	-	-	1.2	-	1.2	3.4	-
Benton	2.1	-	-	-	-	-	-	-	-	-	-	1.8	-	2.1	-	-	-	-	-	-
Chelan	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	-	-	-	-
Columbia	4.8	-	-	-	1.4	-	-	-	-	-	-	-	-	-	-	-	2.1	-	1.7	1.3
Douglas	8.2	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	1.6	-	-	1.1
Ferry	2.5	9.1	-	-	-	-	-	-	-	-	-	-	2.2	-	-	-	-	-	1.4	3.0
Franklin	6.1	-	-	-	1.2	1.5	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-
Garfield	5.5	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7
Grant	7.4	-	-	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
Kittitas	2.1	-	-	-	-	-	-	1.2	-	-	-	-	-	-	-	-	-	1.8	-	1.5
Klickitat	5.8	-	-	-	-	-	-	-	-	-	-	-	-	1.7	-	-	-	-	1.3	1.4
Lincoln	5.5	-	-	-	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1
Okanogan	8.5	-	-	-	-	-	-	1.3	-	-	-	-	-	-	-	-	-	-	-	1.5
Pend Oreille	1.3	13.9	-	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3	2.6
San Juan	-	-	-	2.2	-	-	-	1.1	-	-	1.5	-	-	-	-	-	2.5	2.3	1.2	-
Spokane	-	-	-	-	-	-	-	1.2	-	-	-	-	-	-	-	1.5	-	-	-	-
Stevens	2.3	-	-	-	1.5	-	-	1.1	-	-	-	-	-	-	-	1.3	-	-	1.3	1.4
Walla Walla	4.2	-	-	-	1.5	-	-	-	-	-	-	-	-	-	2.6	1.3	-	-	-	-
Whitman	1.9	-	-	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6
Yakima	6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	-	-