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Jenny Creek Watershed Assessment & Analysis

JENNY CREEK WATERSHED ASSESSMENT AND ANALYSIS

USDI, Bureau of Land Management
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JENNY CREEK WATERSHED
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PREFACE

In April 1994, the Record of Decision (ROD) for the President's Forest Management Plan was released. This document includes Standards and Guidelines for the management of late-successional and old-growth forest related species within the range of the Northern Spotted Owl. Included in the Standards and Guidelines is a list of objectives known as the "Aquatic Conservation Strategy." This strategy provides direction for the restoration of riparian-wetland habitats, and has four primary components as follows:

1. It establishes Riparian Reserves on public lands along streams and on unstable and potentially unstable areas where special standards and guidelines direct land use.

2. It also establishes a system of Key Watersheds throughout the range of the northern spotted owl that are crucial to at-risk fish species and stocks and that provide high water quality.

3. It requires that Watershed Analysis be completed to provide the basis for monitoring and restoration programs and the foundation from which Riparian Reserves can be delineated.

4. A comprehensive, long-term program of Watershed Restoration to restore watershed health and aquatic ecosystems is the final component of the strategy.

This document, Jenny Creek Watershed Assessment and Analysis, has been prepared to meet requirements under the ROD and Aquatic Conservation Strategy.

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JENNY CREEK WATERSHED ASSESSMENT AND ANALYSIS

PART I ASSESSMENT

I. INTRODUCTION

The Jenny Creek Watershed is located in southeastern Jackson County and southwestern Klamath County in Oregon, and northern Siskiyou County in California. The Final Supplemental Environmental Impact Statement (SEIS), a coordinated ecosystem management direction for lands administered by the U. S. Forest Service and the Bureau of Land Management, has classified Jenny Creek as a Tier 1 Key Watershed because of its special aquatic resources. The SEIS was approved with the April 1994 signing of the "Record of Decision" (ROD) by the Secretaries for the U.S. Departments of Agriculture and Interior. The ROD requires the completion of a watershed analysis for Tier 1 Key Watersheds before management activities can be planned and carried out.

This document, "Jenny Creek Watershed Assessment and Analysis," has been prepared to meet the intent of the "Record of Decision," and follows the direction provided in the "Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl." The ROD defines Watershed Analysis as "a systematic procedure to characterize the aquatic, riparian, and terrestrial features within a watershed." It is an information gathering and analytical process, not a decision-making process. This information can be utilized during the National Environmental Policy Act (NEPA) process for any projects that may be planned for this watershed in the future. It provides the basis for project-specific proposals, and determines monitoring and restoration needs for the watershed.

This analysis is based on existing information, and where data is not available, that fact is made known. This document is the joint effort of the Medford District BLM and the Lakeview District BLM. About 24 percent of the Jenny Creek Watershed laps into Klamath County and into the Klamath Resource Area of the Lakeview District. The lower 3.25 miles of Jenny Creek are in the Redding Resource Area of the Ukiah District BLM. Only general information for this area is made available herein as the Medford District has no authority in this portion of the watershed. Refer to Map 1 to visualize the location of the Jenny Creek Watershed within the resource areas.

The Jenny Creek Watershed Assessment and Analysis includes a description of the watershed, its natural and cultural features, and the beneficial uses and values found there. It then incorporates this data into a discussion of environmental processes and their relative importance in achieving future desired conditions. This document represents an ongoing, iterative process. As new data becomes available, and as social and biological dictates become more clear, direction can be modified.

II. IDENTIFICATION OF KEY ISSUES AND CONCERNS

A. Public Participation

Public participation in resources management planning in the Jenny Creek Watershed has been fairly extensive especially in the last five years. Friends of the Greensprings (FOG), a community based interest group, has taken a lead role in this area, but the list also includes the Rogue Group of the Sierra Club, the Dead Indian Stockmen's Association, Hyatt Lake Homeowners Association, Soda Mountain Wilderness Council, Weyerhaeuser, Boise Cascade, and a variety of individuals who responded to specific project proposals.

Two specific projects that have involved a large segment of the communities in watershed issues have been the Box O exchange proposal and our ongoing Jenny Creek riparian projects. One result of both projects has been an ongoing dialogue about the problems and issues associated with Jenny Creek and the Jenny Creek Watershed. Prior to these projects, the majority of the dialogue had been associated with issues relating to timber harvesting in the area, and to a lesser degree, recreation planning and grazing.

Involvement with the public in the preparation of this analysis has been ongoing from the very beginning of this project. Initially we were looking at utilizing the Coordinated Resource Management Planning (CRMP) process to accomplish resource planning on the Keene Creek portion of the watershed. Discussions were started early with the Dead Indian Stockmen's Association in identifying the issues and process. This was quickly expanded to include a broader involvement of the residents and interested people in the area. The CRMP planning group was expanded to include Weyerhaeuser, Boise Cascade, local resort owners, residents, FOG, ranchers, and other State and Federal agencies. It was from this group that the recommendation came to expand the area of analysis to the entire watershed and to utilize the newly developed watershed analysis process from the President's Forest Plan.

Early in this process we held a public workshop at the Pinehurst School to provide a continued forum for discussion of the issues and problems facing all of us in the management of the watershed. The information gained from this workshop was combined with previous information and used to prepare the analysis of the Jenny Creek Watershed and help us address the resource management challenges of the future.

B. Public Issues and Concerns Summary

1. Rural Interface

Rural interface issues result from conflicts between rural residents and management practices on the adjoining public lands. Two principal issues arise: a.) urbanization (i.e., houses, noise, roads, fences, etc.) and b.) differences in people's aesthetic values. New rural residents usually place higher value on aesthetics, recreation, and wildlife than on commodity production (i.e., timber harvesting, grazing, etc.).

2. Grazing/Livestock

Commodity production in the form of livestock grazing is an authorized use of the public lands within the Jenny Creek Watershed. An issue identified by the public is inappropriate grazing or poor grazing management which prevents attainment of management objectives.

3. Aquatic Resources

The topic "Aquatic Resources" is listed as an issue in this document since the watershed includes two species of fish and several mollusks that are on the BLM's list of "Special Status Species." The Jenny Creek sucker and redband trout are sensitive indicators of the general health of the watershed. Watershed protection and restoration will continue to be a strong emphasis for the Ashland Resource Area in order to protect these species.

4. Wildlife Habitat

Wildlife habitat is an issue primarily because of the depletion of one component of overall wildlife habitat - the coniferous forest mature/old-growth stand condition. This habitat component is being depleted at a rate that is likely irreplaceable over time. As this habitat component is depleted those wildlife species that prefer or are dependent upon it concomitantly undergo population declines. Although the depletion of mature/old-growth habitat is the focal point of wildlife habitat issues, other habitats are also at risk due to various reasons, e.g. exclusion of fire.

5. Cumulative Effects of Management Practices

Cumulative effects measure past and current land use activity impacts through time on the watershed. There is a concern that human activities may be cumulatively degrading the quality of aquatic and riparian habitat and causing the decline of several Category 2 species that are totally or partially dependent on these habitats. Effects of future management actions can be predicted as well.

III. DESCRIPTION OF JENNY CREEK WATERSHED

The Jenny Creek Watershed drains approximately 210 square miles, or 134,300 acres (about 43% BLM) of multiple use resource land in southeastern Jackson County and southwestern Klamath County in Oregon, and northern Siskiyou County in California. The stream system includes Howard and Hyatt Prairies in the north and northwest, and Johnson Prairie in the northeast. Flowing south into California, it joins the Klamath River at Irongate Reservoir. The watershed is bounded on the west by the crest of the Cascade Mountains. Little Butte Creek Watershed lies to the north, and Fall Creek, another tributary to the Klamath River, borders the southeast side of the watershed. The Jenny Creek Watershed includes an estimated 1,250 acres of the Rogue River and Winema National Forests on its north and northeast perimeter.

The watershed contains approximately 765 miles of streams with an estimated 58 miles presently supporting native fish populations. The watershed is divided into six subwatersheds. The Hydrology and Climate section (IV.B.4.) discusses each subwatershed in more detail.

There are several distinguishing features in the Jenny Creek Watershed. The elevation varies from 6,565 feet at Surveyor Mountain down to approximately 2,375 feet at Irongate Reservoir. The 1,822 acre Howard Prairie Reservoir is one of the larger water bodies in southwestern Oregon. It, along with 755 acre Hyatt Reservoir, provide popular fishing opportunities to residents and nonresidents, and supply irrigation water to the Bear Creek Valley. Jenny Creek and its major tributaries are home to three animals that are on the Federal list of candidate species and the Oregon Sensitive Species list. They are the Jenny Creek sucker, the redband trout and the northwestern pond turtle. The Pacific Crest National Scenic Trail enters the watershed from the Rogue River National Forest on the north side, goes south through the watershed and exits near Soda Mountain on the southwest corner. Agate Flat, on the California border, is a critical deer winter range. A portion of the Soda Mountain Wilderness Study Area is also in the southern part of the watershed. The watershed includes all or portions of 13 grazing allotments.

The Jenny Creek Watershed has perhaps the greatest biodiversity of any area in the state of Oregon. It is at the apex of the Western Cascade and Klamath Mountains Physiographic Provinces, consequently, it brings together the complexities of each. It has dry-land plant species such as sage brush and juniper, temperate rain forest species such as big-leaf maple and peripheral plants such as Rocky Mountain maple. The variety of trees is impressive. There are a dozen or more native species of conifers and as many as 16 species of hardwood trees found in the watershed.

The fauna is also quite diverse. In addition to the unique fish in Jenny Creek, the stream and its tributaries are home to several unique mollusks, and the watershed hosts a wide variety of reptiles not common throughout the Cascade Mountains. Common and California mountain kingsnakes, the southern alligator lizard, the western rattlesnake, and scorpion sp. are found here. Several birds that are not widespread in western Oregon, such as the acorn woodpecker and plain titmouse, are well established here. The watershed also supports a large black-tailed deer herd and a growing elk herd. Maintaining this great biodiversity is one of the greatest challenges confronting the Bureau of Land Management in southwestern Oregon.

The Jenny Creek Watershed is strategically located for drawing a great deal of public attention. It is only twelve miles east of the city of Ashland, and twenty miles from Klamath Falls. The Dead Indian Memorial Highway skirts along the northwest corner of the watershed, and it is bisected by Highway 66. The watershed is located within the recreational hub of southwestern Oregon and northern California near the Interstate 5 corridor. The area is easily accessible within two hours for populations in excess of 300,000 residents.

The small settlements of Greensprings, Lincoln, Mountain View, and Pinehurst occur along Highway 66, which generally follows the route of the historic Applegate Trail and crosses the watershed in an east-west direction. Approximately 300 people reside along Highway 66 and at Hyatt Lake.

IV. NATURAL AND CULTURAL FEATURES AND ASSESSMENT

This chapter describes the natural and cultural features of the Jenny Creek Watershed including terrestrial wildlife, aquatic resources, vegetation, soils, hydrology, fire and cultural resources. A discussion on riparian habitat is included under the heading "Aquatic Resources" rather than in the chapter on vegetation, because of its close relationship to the health of aquatic ecosystems.

A. Soil and Geology

1. Geology-Geomorphology

The Jenny Creek Watershed consists of volcanic landforms comprised of two major topographic series, the Western Cascade and High Cascade (see Soil/Geo Map 2). The Western Cascade series consists of tertiary basaltic to dacitic flows, tuffs and breccias. The rocks are 8 to 20 million years old. This area is located generally on the west side of Jenny Creek. On the portion generally south of Highway 66, the surface landscape is complex with moderately steep uplands that are dissected and vertically convex and concave, due to natural

differential erosional processes and uplift. North of Highway 66 soils are developed from High Cascade material and overlay the West Cascade flow rock that leaves the surface landscape simple with gentle smooth slopes (Naslund, 1977).

The High Cascade series consists of pleistocene and pleistocene-pliocene andesitic flows and shield volcanoes. A shield volcano is broad with low relief, and caused by accumulations of slow, flow eruptions. The rocks are roughly seven hundred thousand to three million years old. This area is generally located on the east side of Jenny Creek. The surface landscape is simple with moderate to gentle smooth slopes. Shield volcanoes include Brush Mountain, Old Baldy, Kent Peak, Surveyor Mountain, Buck Mountain, Parker Mountain, Chinquapin, and Little Chinquapin Mountains (Naslund, 1977).

Features of special interest for management consideration include slide areas predominately on the Western Cascade series, and table land/small plateaus (Map 2; symbols Sl and tab respectively). Mapped slide areas are deposits from large, currently inactive, rotational block type slides. There is little evidence of recent movement of these slides. Movement of these slides may have occurred in the past when precipitation was greater than it is currently. Two mapped slides, Parsnips Lakes area and the east side of Rosebud Mountain, represent typical events of movement created by a heavy overburden over moist, low strength, clayey weathered tuffs or other soft Western Cascade material. Small active slumps may occur in and adjacent to these areas (Naslund, 1977). Parsnips Lakes are apparent sag ponds created by bulges blocking water flow. Springs at the base of the slide indicate an underlying relatively impervious contact. Management concerns for these areas include potential for activation of mass movement by road construction or other heavy disturbance.

Table land and/or small plateaus, as located on the Soil/Geo Map 2, include near level flats, mound-intermound surface, and clayey margins. Agate Flat and the Lincoln Airport flats are typical of this category. Mound-intermound microrelief consists of round raised structures roughly 50 feet or less in diameter surrounded by depressions that typically hold and accumulate temporary surface water that act as vernal pools for certain plants. One theory is that mound-intermounds may have formed as a periglacial feature created by freezing, thawing, and "ice wedging" (Naslund, 1977). Management concerns for this area include human disturbance of vernal pool plant habitat, and heavy human disturbance (ruts) in open, seasonally wet areas.

Stream/Alluvial geomorphology defines stream and land form processes. As indicated on the Soil/Geo Map 2, major stream segments in the Jenny Creek Watershed are generally controlled by low gradient/slight confinement (e.g. Johnson Creek) or deeply or moderate to steep gradient/deeply cut with canyon walls (e.g. Jenny Creek). Streams like Johnson Creek and associated wet meadows are indicated as "alluvial". These are geologically young stream deposits. Soils are generally poorly drained; indicative of wetlands. This condition also exists in various small stream margins and wet glades in the northwest portion of the watershed. The total amount of wetlands in the watershed is currently unknown.

Jenny Creek flows at the contact between the West Cascade and High Cascade series. Canyon walls are typically located on one side, typically the east High Cascade side, or on both sides of the stream. The canyon walls are typically over 200 feet high with slopes of over 65 percent. The walls are indicative of a downcutting phase of stream development where stream gradient, after the most recent High Cascade flow episode, would have to reach equilibrium. Within the canyon, various small segments exist where a later stage of deposition and narrow flood plains have developed. Beavers have been a factor in creating slow flow and therefore broadening the channel and increasing deposition [Map 2; symbol W(can)A]. Segments where canyon walls are nonexistent, and where only an "A" for "alluvial" shows, are flood plain areas and bench/foot margins. The lower stream canyon in Township 41 South has very little developed floodplain; there is no "A" shown. A field survey of stream morphology (Rosgen, 1994) would provide us with better stream descriptions.

2. Soils

The Soil/Geo Map 2, presents soils in the upper part of each symbol. The Soil Conservation Service (SCS) map units from soil survey maps are identified. The symbols are representative soils for the mapped area (USDA, Soil Conservation Service, 1993). Where more than one soil commonly occurs, a primary and secondary soil units are presented. Where different slope ranges and aspects for the same soil series are on the SCS soil map, only the most common unit is represented.

Soils vary in the watershed with landform and source material. Common soils in the upper east part of the watershed (High Cascade shield volcanoes and flows) are; Oatman (136E), Pokegama (147C) and Woodcock (205E). These are deep, low density, well drained soils with gravelly to very cobbly subsoils.

Soils on the northwest Hyatt Lake and Chinquapin areas (West Cascade flows and High Cascade shield volcanoes) are typically Farva (56C, 57E), Pinehurst (144E), and Rustler Peak (160E). These are moderately deep and deep, low to moderate density, well drained soils with few gravels to extremely cobbly subsoils. These are developed from High Cascade material.

Soils on wet alluvial margins and meadows are typically Klamath (99A) and Sibannic (167C). These are deep, moderately dense, poorly drained soils with silty clay loam to clay subsoils.

Soils on the south portion of the Western Cascade series are typically McMullin (113E), McNull (114E), Skookum (173F), and Tatouche (190E). These are well drained, moderately dense, moderately deep to deep soils with clayey subsoils (varying amounts of coarse fragments) except for McMullin which is a shallow loamy soil. Soil patterns and landscapes in this part of the area are very complex due to differing degrees of weathering of the mixed basalt/tuff/breccia of the Western Cascade material. Soils with clayey subsoil have low strength when wet, while sediment derived from these soils is fine and stays suspended for

extended periods of time, and is susceptible to cutbank failures and turbid runoff.

Other soils include Campfour-Paragon complex (24C), Randcore-Shoat complex (152B) located on table land and/or plateaus, and Carney clay (27B) on footslopes and fans.

The SCS Soil Interpretations records can be studied in the Soil Survey for Jackson and Klamath Counties (USDA, 1994). The SCS soil map is being added to GIS. It should be available early winter, 1995. The GIS soil map will be added to this document for more detailed information.

B. Hydrology and Climate

1. Introduction

The Jenny Creek watershed is a very complex hydrologic system. Hydrologic characterization is based on climatological, physical data such as soils, elevation, slope and aspect. Water resources concerns in Jenny Creek are primarily grounded in fisheries production. Refer to Map 3 which shows all streams and lakes within the watershed.

The watershed spans an area of 134,300 acres or 210 square miles. Elevation ranges from 2,375 feet at the mouth of the watershed to 6,565 feet on Surveyor Mountain. The watershed contains 6 distinct subwatersheds (Maps 4 and 4a): Upper Jenny Creek, Sheepy Creek, Johnson Creek, Middle Jenny Creek, Lower Jenny Creek and Keene Creek. These subwatersheds are at the level at which hydrologic assessment is best carried out.

2. Climate

USGS climate data from Howard Prairie Dam and the BLM Lower Crossing station at the mouth of Jenny Creek was utilized to describe the whole watershed. An isohyetal map completed by George Taylor, state climatologist at OSU, was used for figuring annual precipitation totals. The isohyetal map was overlaid onto the Jenny Creek quad and isohyetal boundaries were delineated (Map 4). Monthly precipitation at Howard Prairie was used as a model to distribute precipitation across the rest of the watershed. Based on subwatershed areas and areas within isohyetal boundaries, each subwatershed receives different amounts of precipitation. It is assumed though, due to a lack of data, that each subwatershed is affected by like weather patterns as Howard Prairie Dam. The precipitation distribution (Appendix 1) indicates precipitation falls mainly between November and March.

There is some question as to the accuracy of the isohyetal map used. The isohyetal map is based on data from 1961-1990. Of those years, seven represented 75% or less of average at the Howard Prairie Dam. Four of those occurred in the 1980's. Then drought has continued into the 1990's as two out of the first four years have also been 75% or less of average precipitation. Hydrologic modelling of Jenny Creek at the Northwest River Forecast Center in Portland, Oregon yielded results inconsistent with observed values of water volume on

Jenny Creek. Results of discharge determination using the model suggested there was less precipitation actually falling than the isohyetal map suggests. **Data gap: improved precipitation information is needed.**

Air temperature distribution provides insight into potential evapotranspiration rates and the form in which precipitation falls. Monthly average temperatures can also help us predict snowpack and snowmelt rates. An isothermal map distributing temperature on Jenny Creek was done by comparing data at the Lower Crossing station to that at Howard Prairie Dam. The distribution was estimated by breaking air temperatures down by elevational zones between the two stations. It was determined that there is a one degree Fahrenheit difference every 400 feet based on this elevational model between the Lower Crossing station and Howard Prairie Dam. Refer to Appendix 2 for the monthly, average maximum and minimum temperatures at Howard Prairie Dam.

It is assumed that precipitation falls as snow during months when the average temperature is 32 degrees Fahrenheit or less. During these months it is also assumed that precipitation is stored as snowpack. The temperature difference by elevation and months of snow accumulation are illustrated in Table 1.

Table 1. Elevational temperature distribution & snow pack months based on normal temperatures (1961-1990) at Howard Prairie Dam.

Elevation (Ft.)	Degree Difference from Howard Prairie	Months of Snow Pack Accumulation
2965	+4	Jan
<3365	+3	Dec, Jan
<3765	+2	Dec, Jan
<4165	+1	Dec, Jan
<4565	0	Dec, Jan, Feb
<4965	-1	Dec, Jan, Feb
<5365	-2	Dec, Jan, Feb
<5765	-3	Nov, Dec, Jan, Feb, Mar
<6165	-4	Nov, Dec, Jan, Feb, Mar
<6565	-5	Nov, Dec, Jan, Feb, Mar

By examining Table 1 it can be seen that snow falls over the entire watershed at one point or another during normal years. It may even be stored in snowpack during the month of January as low as 2,965 feet. in elevation. It is possible to follow a transient snow zone by month and elevation where snowpack will be affected by rain on snow events causing

snowpack depletion and high runoff events. The above data indicates that the transient snow zone for the Jenny Creek Watershed is located in the 3000 to 4200 feet elevation ban. Melt or rain will occur whenever temperature is greater than freezing, however a monthly index remains pretty accurate. For example, it is possible that snowpack may still be in place through mid-April at an elevation of 6,500 feet or there may be complete melt at 4,600 feet in February following 3 days of warm temperatures and rain. Table 1 provides an index to predict when and where snow would be present during years of normal precipitation. It is also useful to plan work in the woods to minimize impacts.

3. Hydrology

Precipitation is an input to the system in Jenny Creek. Discharge through the stream channel, evaporation, transpiration from vegetation and subsurface inter-basin transfers are all outputs. Inputs and outputs of water follow the equation of a water balance thusly:

Precipitation = Interception + Evaporation + Transpiration + change in Soil moisture storage + Groundwater storage + Discharge

Interception of precipitation by the vegetative canopy can be as great as 50 percent according to many studies throughout the U.S. as well as the rest of the world. The Jenny Creek Watershed has a predominant coniferous canopy cover capable of intercepting 22 to 28 percent of incoming precipitation on the average (Dunne & Leopold, 1978). Precipitation intercepted by vegetation is considered a loss to the system, unavailable for use. Interception is particularly effective when there is a drizzle or a low intensity storm event where there is a lack of "through fall" or "stem flow" which allows precipitation to enter the soil. Interception losses are difficult to measure and are controversial as to their use in creating a water budget. It is possible to account for this interception loss through performing energy budget analysis and determining evaporative losses. Essentially this precipitation is lost to evaporation anyway and can be accounted for in that manner. It is important to recognize though, that this coniferous cover lends itself to a great deal of evaporation, particularly in high density timber stands.

Evaporation and transpiration are often lumped together as a unit when performing a water budget. Evaporation can occur during a summer storm when the heat is high before the precipitation even hits the ground. It can happen off a snowpack in a process called sublimation where snow never reaches a liquid state rather moves directly to a gaseous state. Such losses of snowpack have been as high as 80 percent where solar radiation and wind speeds are high. Transpiration is the amount of available precipitation used by vegetation and expired through stomata in the leaves. It is calculated by many complex formulas that indicate potential evapotranspiration (ET) and determine actual evapotranspiration from that water available for use. The highest values of transpiration will occur when a great deal of water is available and air temperature is high. Highest ET rates will occur in the spring when soil moisture is available from snowmelt and temperatures climb. As the season progresses ET will decline due to a lack of soil moisture availability but not due to a lack of

need. The water balance for the Buncom Creek watershed is a good reference for this as it is under many of the same conditions as Jenny Creek (Appendix 3).

Water is available for transpiration when held as storage in the soil matrix, however soil does not act as a sponge with which storage is possible until drawn on only by the roots of plants. Water in this state is referred to as soil moisture storage. Soil has an available water holding capacity (AWC) which is the volume of water it can store for use by plants or when it is saturated and additional input becomes runoff. Soil moisture storage is affected by drainage and some water content will be held in tension under drought conditions making it scarcely available to plants. AWC is determined by the pore space of a cube of soil down to an effective rooting depth, usually through the B horizon of the soil profile. Available water capacities of soil on Jenny Creek range between .11 and .16 and average around .15 inches/inch (inches of water/inches of soil depth).

Water drained from the first three to four feet of the soil profile becomes available for groundwater recharge or runoff. It is fairly easy to measure the water detained for runoff but somewhat difficult to determine the amount that goes directly to groundwater storage in aquifers. Discharge records in the Jenny Creek Watershed are spotty at best but do provide the opportunity to create "synthetic" data as a reference index of daily flows. Discharge on Jenny Creek has been recorded through use of staff gages placed at many of the tributaries to the main stem of Jenny Creek.

Synthetically created data was made for the Lower Crossing station at the bottom of the watershed by performing regression analysis on like dates of discharge at record station USGS 14328000, Rogue River above Prospect, OR. This station had an R squared value higher than other stations and was chosen to be representative of Jenny Creek's flow. Daily flow from this station was plugged into the regression equation to provide daily values of discharge. Spot checking observed values of discharge versus calculated values reveal a reasonable estimate of flow. Table 2 contains estimated peak and lowest daily flows at the Lower Crossing station. This information is useful for engineering purposes as well as an indicator for fisheries production based on volumes of water.

There is an interesting contrast between discharge values in 1992 and an above average water year in 1993. It would indicate that low flows in a "normal" year would be in the range of 20 to 40 cubic feet per second. Peak discharges range in the high 100's. However, based on the limited amount of data available at the moment, it is possible to over assess these values until more years of data are available.

It is necessary for future management plans to continue to acquire discharge data particularly on the lower end. Actual daily values are far more useful than synthetically created data. This is especially the case in Jenny Creek due to the fact that it is a south facing watershed at the culmination of three distinct eco-regions. There are no unregulated watersheds like Jenny Creek that act as it does, therefore using other watersheds to model Jenny Creek is difficult and inconclusive.

Table 2. Calculated water discharges: peaks and low flows for '91 - April '94.

Discharges in Cubic Feet per Second at Lower-Crossing

	1991		1992		1993		1994	
	Peak	Low	Peak	Low	Peak	Low	Peak	Low
Jan.	175	14	38	21	64	18	49	25
Feb.	76	27	86	24	45	23	65	23
Mar.	161	39	45	21	312	23	72	35
April	71	48	97	21	187	80	70	44
May	80	53	36	17	149	95	--	--
June	54	30	19	15	144	43	--	--
July	28	18	19	12	46	31	--	--
Aug.	17	14	12	10	31	25	--	--
Sept.	14	11	13	10	25	22	--	--
Oct.	29	12	26	8	31	21	--	--
Nov.	84	14	89	14	26	17	--	--
Dec.	136	25	61	18	47	20	--	--

4. Jenny Creek Subwatershed Descriptions

Within any one watershed there are many subwatersheds that may vary in size from one acre to many square miles. A subwatershed is an area of defined drainage that flows into a larger network. Subwatersheds on Jenny Creek are on a good "working" order, small enough to analyze well, yet large enough to make work efficient. Subwatershed delineations can be seen on Maps 4 and 4A.

Vegetation zones are based on those in Franklin and Dyrness, 1973. The percentage of openings within each subwatershed was obtained from 1985 aerial photos. The figures will be updated as time permits. Slope range is the degree of slope calculated along a 1 mile interval. Information pertaining to the hydroclass of the soils within a subwatershed is based upon an ocular estimate of the dominant soils. This information can be found in the following descriptions of the subwatersheds.

a. Upper Jenny Creek Subwatershed

Upper Jenny Creek has an area of 27,611 acres or 43.1 square miles and is located at the top of the watershed. Elevations range between 3,600 feet to 6,165 feet. Eighty-nine percent of the area rests at an elevation above 4,000 ft., and 79 percent of the area is between 4,165 and 5,365 feet. Snowpack is likely from December through February on most of the area and through March on areas above 5,365 feet. Average annual precipitation is 40 inches across the entire area with 42.5 inches falling above 5,165 feet.

The dominant vegetation in Upper Jenny Creek subwatershed is white fir. There is an approximate 15 percent canopy opening in this white fir association. Because of the density of white fir needles at least 28 percent of all precipitation (rain and snow) is estimated to be intercepted.

The three soil associations most prevalent are Farva, Pinehurst and Oatman with a corresponding distribution of 65, 25 and 10 percent respectively. Rooting depth ranges from 0.9 to 2.0 meters and averages 1.3 meters. The average weighted available water holding capacity of the soil is 0.15 inches/inch. The hydrologic class of the soils is primarily B with portions of D along lower Willow and Soda creeks. See Table 3 for a description of hydrologic soil classes.

Slopes range from 2 percent at Moon Prairie to 15 percent at Brush Mountain. Average stream gradients for named streams in Upper Jenny Creek are as follows:

Hoxie Creek	2.2%
Jenny Creek	3.8%
Soda Creek	4.5%
Willow Creek	3.2%

Dominant land uses in the area include forestry, grazing, irrigation supply for Talent Irrigation District (TID) and recreation. Howard Prairie Dam is located on the upper Jenny Creek subwatershed and intercepts all incoming flow above the dam. Inflow records from TID on both Howard Prairie Dam and Hyatt Lake can be seen in Appendix 4. There is no discharge out of Howard Prairie Dam back into the Jenny Creek Watershed except under emergency conditions. This tends to be a rare event.

Table 3. Classification of soils by their hydrologic properties (from U.S. Soil Conservation Service 1972).

Classification		Type of Soil
A.	(low runoff potential)	Soils with high infiltration capacities, even when thoroughly wetted. Chiefly sands and gravels, deep and well drained.
B.		Soils with moderate infiltration rates when thoroughly wetted. Moderately deep to deep, moderately well to well drained, with moderately fine to moderately coarse texture.
C.		Soils with slow infiltration rates when thoroughly wetted. Usually have a layer that impedes vertical drainage, or have moderately fine to fine texture.
D.	(high runoff potential)	Soils with very slow infiltration rates when thoroughly wetted. Chiefly clays with a high swelling potential; soils with a high permanent water table; soils with a layer at or near impervious materials.

b. Johnson Creek Subwatershed

Johnson Creek subwatershed has an area of 25,066 acres or 39.2 square miles and is located east of Upper Jenny Creek. Elevations range between 3,600 feet to 6,500 feet. Thirty-six percent of the area rests between 3,600 and 4,165 feet, 41 percent between 4,165 and 5,365 feet and 23 percent of the area is between 5,365 and 6,500 feet. Snowpack is likely from December through February on most of the area and through March on areas above 5,365 feet. Snowpack below 4,165 feet will remain most likely from December to January. Average annual precipitation is 37.8 inches across the entire area with 36 inches falling above 4,165 feet.

Vegetation on Johnson Creek is characterized by mixed conifers, Shasta red fir and white fir. There is an approximate 30 percent canopy opening in this vegetative association. Because of the density of conifer needles, over 20 percent of all precipitation is estimated to be intercepted.

The three soil associations most prevalent are Woodcock, Pokegama and Oatman with a corresponding distribution of 50, 30 and 20 percent respectively. Rooting depth ranges from 1.3 to 2.0 meters and averages 1.8 meters. The average weighted available water holding capacity of the soil is 0.15 inches/inch. The hydrologic class of the soils is primarily B with portions of D in Johnson Prairie.

Slopes range from less than 5 percent at Johnson Prairie to 18 percent at Surveyor Mountain. Average stream gradients for named streams on the subwatershed are as follows:

Upper Johnson	6.3%
Lower Johnson	4.2%

Dominant land uses in the area include forestry, grazing and wildlife management.

c. Sheepy Creek Subwatershed

Sheepy Creek subwatershed has an area of 13,297 acres or 20.8 square miles and is located just below Johnson Creek. Elevations range between 3,800 feet to 6,500 feet at Surveyor Mountain. Forty percent of the area rests between 3,800 and 4,165 feet, 39 percent between 4,165 and 5,365 feet and 21 percent of the area is between 5,365 and 6,500 feet. Snowpack is likely from December through February on 79 percent of the area and through March on areas above 5,365 feet. Snowpack below 4,165 feet will remain most likely from December to January. Average annual precipitation is 36.5 inches across the entire area.

Vegetation in Sheepy Creek subwatershed is characterized by mixed conifers, Shasta red fir and white fir. There is an approximate 20 percent canopy opening in this vegetative association. Because of the density of conifer needles over 20 percent of all precipitation is estimated to be intercepted.

The three soil associations most prevalent are Pokegama-Woodcock, Woodcock-Pokegama and Oatman-Otwin with a corresponding distribution of 50, 30 and 20 percent respectively. Rooting depth ranges from 1.3 to 2.0 meters and averages 1.7 meters. The average weighted available water holding capacity of the soil is 0.15 inches/inch. The hydrologic class of the soils is primarily B with portions of D in Johnson Prairie and Puckett Glade.

Slopes range from less than 5 percent at Johnson Prairie to 18 percent at Buck Mountain. Average stream gradients for Sheepy Creek are as follows:

Upper Sheepy	9.5%
Lower Sheepy	1.5%

Dominant land uses in the area include forestry, grazing, and wildlife management.

d. Middle Jenny Creek Subwatershed

Middle Jenny Creek subwatershed has an area of 22,538 acres or 35.2 square miles and is located in the middle of the watershed. Elevations range between 3,200 feet to 6,105 feet at Chinquapin Mountain. Four percent of the area rests below 4,165 feet, 58 percent between 4,165 and 5,365 feet and 38 percent of the area is above 5,365 feet. Snowpack is likely from December through February on most of the area and through March on areas above 5,365 feet. Snowpack below 4,165 feet will remain most likely from December to January. Average annual precipitation is 30.1 inches across the entire area.

Vegetation on Middle Jenny Creek is characterized by mixed conifers and white fir. There is an approximate 13 percent canopy opening in this vegetative association. Because of the density of conifer needles, over 20 percent of all precipitation is estimated to be intercepted.

The five soil associations most prevalent are Farva, Pinehurst, Pokegama-Woodcock, Rustlerpeak and McMullin-Skookum with a corresponding distribution of 40, 25, 25, 5 and 5 percent respectively. Rooting depth ranges from 0.4 to 2.0 meters and averages 1.2 meters. The average weighted available water holding capacity of the soil is 0.16 inches/inch. The hydrologic class of the soils is primarily B and C with portions of D along Lower Corral Creek and Beaver Creek.

Slopes range from 5 percent at Round Prairie to 25 percent at Little Chinquapin Mountain. Average stream gradients for named streams on the subwatershed are as follows:

Beaver Creek	6.2%
Corral Creek	7.6%
Jenny Creek	1.2%

Dominant land uses in the area include forestry, grazing, rural residential and irrigation supply.

e. Keene Creek Subwatershed

Keene Creek subwatershed has an area of 26,482 acres or 41.4 square miles and is located west of Middle Jenny Creek. Elevations range between 3,200 feet to 6,105 feet at Chinquapin Mountain. 51 percent of the area rests between 3,200 feet and 4,165 feet, 47 percent between 4,165 and 5,365 feet and 2 percent of the area is above 5,365 feet. Snowpack is likely from December to January on the lower portion of the area, and through February on the remainder of the area. Average annual precipitation is 33.7 inches across the entire area.

Vegetation on Keene Creek is characterized by mixed conifers and white fir. There is an approximate 7 percent canopy opening in this vegetative association. Because of the density of conifer needles, over 22 percent of all precipitation is estimated to be intercepted.

The three soil associations most prevalent are Farva, Rustlerpeak and Tatouche/Bybee/McNull with a corresponding distribution of 60, 20 and 20 percent respectively. Rooting depth ranges from 0.6 to 1.7 meters and averages 1.0 meters. The average weighted available water holding capacity of the soil is 0.11 inches/inch. The hydrologic class of the soils is primarily B and C with portions of D around Buck Prairie and Cottonwood Glades.

Slopes range from 4 percent at Buck Prairie to 24 percent at Soda Mountain. Average stream gradients for named streams on the subwatershed are as follow:

Keene Creek	3%
Lincoln Creek	10%
Mill Creek	9%

Dominant land uses in the area include forestry, grazing, recreation and irrigation supply.

f. Lower Jenny Creek Subwatershed

Lower Jenny Creek subwatershed has an area of 19,306 acres or 30.2 square miles and is located at the bottom of the watershed. Elevations range between 2,375 feet to 5,563 feet on Keene Creek Ridge. Over 90 percent of the area lies 2,375 feet and 4,165 feet in elevation. Snowpack is likely only from December to January throughout the area. Average annual precipitation is 22.6 inches across the entire area.

Vegetation on Lower Jenny Creek is characterized by mixed conifers and interior valley plant communities. There is an approximate 9 percent canopy opening in this vegetative association. Approximately 18 to 22 percent of all precipitation is estimated to be intercepted.

Soil associations most prevalent are Skookum, McNull, Pinehurst, Pokegama, McMullin, Carney, Randcore-Shoat, Farva and Campfour with a corresponding distribution of 25, 20, 15, 10, 10, 5, 5, 5 and 5 percent respectively. Rooting depth ranges from 0.3 to 2.0 meters and averages .9 meters. The average weighted available water holding capacity of the soil is 0.11 inches/inch. The hydrologic class of the soils is primarily D and B.

Slopes range from less than 1 percent at Agate Flat to 24 percent at Keene Creek Ridge. Average stream gradients for named streams on the subwatershed are as follows:

Jenny Creek	<1.0%
Oregon Creek	7.2%
Skookum Creek	5.6%

Dominant land uses in the area include, grazing, hunting, rock hounding, and wildlife management.

C. Vegetation

The Jenny Creek Watershed is located at the junction of the Klamath Mountain and Western Slope Oregon Cascades Physiographic Provinces. According to Marshall (1986) "Botanists consider the Klamath Mountains Physiographic Province the most interesting of the state's nine provinces." Perhaps the best reference we have on the vegetation in the watershed, and for southwestern Oregon, is Natural Vegetation of Oregon and Washington, by Jerry Franklin and C.T. Dyrness, (1973). Franklin and Dyrness begin their discussion of our area by agreeing with Marshall with the statement "Southwestern Oregon is an extremely interesting and complex region environmentally, floristically, and synecologically." They follow this statement saying that a large number of plant species are indigenous only to the Klamath Mountains (Siskiyous). The plant diversity found in this region becomes even more complex when you add in the element of fire. Fire, according to Franklin and Dyrness plays an important role in producing an extremely varied array of plant communities. Also important in shaping plant communities are elevation, moisture, temperature, aspect, soil and depth of soil, and overstory or shade.

About 60% of the Jenny Creek Watershed is located on the Dead Indian Plateau, which is unique in regard to reforestation efforts. The plateau is approximately 100,000 acres resembling an elevated saucer lying southwest of Mount McLoughlin. The plateau is characterized by cold, snowy winters that alternate with hot, dry summers. Freezing night temperatures in combination with the gentle, concave topography produce extreme frost damage problems for tree seedlings. Temperatures at Howard Prairie range from -20 degrees to 95 degrees Fahrenheit. Pocket gophers in combination with the frost problem create extreme reforestation problems. Minore (1978) found that average seedling survival under a tree canopy was 88.8 percent versus 36.4 percent in clearcut areas.

1. Vegetation Zones

Franklin and Dyrness, obviously challenged by the complexity of the flora in the southwest region, attempted to describe it by dividing the landscape into vegetation zones which are primarily established along lines dictated by elevation and temperature. The six zones are described as follows:

a. Interior Valley Zone
b. Mixed Conifer Zone
c. White Fir Zone
d. Shasta Red Fir Zone
e. Mountain Hemlock Zone, and
f. Alpine Zone

Even though the elevation in the Jenny Creek Watershed reaches in excess of 6,000 feet, the flora is limited to the first four zones. We include the Interior Valley Zone because it is well represented in the lower reaches of the system, especially south of Keene Ridge where it is interspersed with the Mixed Conifer Zone. The Mixed Conifer Zone is the largest one that we will discuss.

a. Interior Valley Zone

The Interior Valley Zone, as it relates to the Jenny Creek Watershed, is best described as oak woodland. This zone is found within the Lower Jenny subwatershed. The landscape pattern of this zone is coarse grained. Fire is the most frequent coarse influence, but the soils are also a factor. This zone is a mosaic of brush fields, scattered trees, grasslands and pockets of timber.

The trees are predominantly Oregon white oak with a smaller component of California black oak intermingled with Pacific madrone. The brush component in the understory is a mixture of deerbrush, poison oak, Oregon grape, white-leaved manzanita, and some bitterbrush. Ground cover consists of an assortment of forbs and grasses including low dogbane, California honeysuckle, Puget balsamroot, California fescue, white-leaved lupine and several varieties of paintbrush. Exotics, including yellow star thistle and Medusahead wildrye are well established.

Oak woodlands vary from very open savannas with grass understories to forest stands with Douglas-fir and ponderosa pine intermingled. At higher elevations the zone fades in a transition with the mixed conifer zone. There may, or may not be, a definite demarcation. More Douglas-fir and ponderosa pine may be evident, but there will also be a greater mixture of golden chinquapin, Oregon grape, baldhip rose and more ceanothus species.

Oak woodlands are occasionally interspersed with brush fields which have helped this zone gain the name "Southern Oregon Chaparral". Patches of wedgeleaf ceanothus and greenleaf manzanita are common. As the elevation increases the brush fields are dominated by deerbrush, mountain whitethorn ceanothus, poison oak, skunkbrush sumac and brown dogwood. Also found are hoary manzanita, birchleaf mountain mahogany, pale serviceberry and whitestem gray rabbitbrush.

b. Mixed Conifer Zone

The Mixed Conifer Zone lies between 2,250 and 4,200 feet in elevation. It is a northern extension of the Sierran montane vegetative zone. An examination of the perimeter of this zone shows there is not always a noticeable demarcation between it and the Interior Valley Zone. Mostly there is a gradual increase in coniferous species. Also, there is no clear transition into the White Fir Zone at the high side of the zone. This zone is found within the Sheepy Creek, Johnson, Middle Jenny, Keene creeks, and the Lower Jenny subwatersheds. The landscape pattern of this zone can also be described as coarse grained because of interspersion of shrublands, meadows, large clearcuts and forest lands.

The Mixed Conifer Zone supports a variety of coniferous species including Douglas-fir, white fir, ponderosa pine, sugar pine, incense-cedar, Pacific yew and western juniper. Douglas-fir is the most common conifer, but sugar pine and incense cedar characterize the overstory of the mature stands. White fir and Douglas-fir dominate the understory reproduction in the mature stands which gives strong indication that they are the climax species. Fire history throughout the zone has prevented many stands from reaching the climax stage, consequently, most of them are in some seral stage short of climax. Timber harvest has caused a significant change in the natural succession. Severe frost conditions, invading brush species and gophers have made efforts at reforestation difficult. Consequently, large cut-over areas have been replanted with ponderosa and lodgepole pine.

A large hardwood component is found intermingled in the conifers, but often appears in groves on south aspects or other dry sites. The list of hardwoods includes Oregon white oak, California black oak, and Pacific madrone as the most common species, but also included are Oregon ash, black cottonwood, quaking aspen, bigleaf maple, Rocky Mountain maple, chokecherry, golden chinquapin, Pacific dogwood, black hawthorn, red alder and at least three species of willow. Moisture and depth of soil appear to be major natural selectors of species distribution and abundance. Some species, such as red alder, black cottonwood and quaking aspen are seldom found outside riparian or wet meadow areas.

Understory vegetation is quite varied due to the variation in the overstory, soil, availability of moisture, elevation and aspect. The BLM's Micro*Storms System lists 37 common shrub species. Most of the ceanothus species are present including deerbrush, snowbrush, redstem and mountain whitethorn ceanothus, squaw carpet, narrow-leaved buck-brush, and blue blossom. Burned or logged stands often regenerate with these species where they slow the rate of succession to conifer stands. Other common shrubs are golden chinquapin, hoary

manzanita, blue elderberry, Oregon grape, gooseberry, baldhip rose and Saskatoon serviceberry. Some shrub species are more shade tolerant. Included in this group are California hazel, creambush oceanspray, creeping snowberry, western mock orange, and huckleberry. The more xeric (dry) sites and south exposures are characterized by mountain whitethorn ceanothus, big sagebrush, pine-mat manzanita, mountain mahogany and whitestem gray rabbitbrush. These shrubs are often associated with white oak and western juniper. North and east facing slopes contain red current, baldhip rose, western mock orange, wedgeleaf ceanothus, and deerbrush. Other shrubs are confined to riparian areas or mesic (wet) sites. This group includes river willow, sandbar willow, red osier dogwood, huckleberry, elderberry, thimbleberry and spirea. Poison oak, which is so prevalent in the Interior Valley Zone, extends little, if any, into the Mixed Conifer Zone.

There are perhaps hundreds of species of forbs in the Mixed Conifer Zone. Like the shrubs, their distribution and abundance is dictated by elevation, moisture, aspect, soil and overstory. Nine of the forbs are on the BLM's special status list.

One group of forbs is strictly aquatic. Included in this group are elodea, hardstem bullrush, cattail, Potomogeton and Myriophyllum. These aquatics are most apparent in Jenny Creek, Hyatt Lake, Howard Prairie Reservoir, Parsnip Lakes and an assortment of beaver ponds.

Numerous forbs are found in the understory. Included are trailing blackberry, trail plant, white hawkweed, and sword fern. But there is also a major group of species that are characteristic of non-forested communities. Some are on dry, shallow soil sites. Sierra snakeroot, bare stem lomatium, mountain false caraway and arrowleaf balsamroot are examples. Soils that are disturbed by logging and road construction often become host to common mullein, common teasel and Canada thistle.

The Mixed Conifer Zone also hosts a wide assortment of grasses. Some are in the forested areas, but most are in the non-forested areas in association with both dry slopes and wet meadows. Bluebunch wheatgrass, western needlegrass, and California fescue are on dryer sites. Reed canarygrass and California oatgrass are examples of species found on moist sites.

c. White Fir Zone

Franklin and Dryness describe the White Fir Zone as a narrow belt located at the upper margin of the mixed conifer zone. In southwestern Oregon this zone is not as clearly separated from adjacent vegetative zones as it is in other regions in the state. In the Jenny Creek Watershed there is a gradual transition from the Mixed Conifer Zone to the White Fir Zone beginning at 4,200 foot elevation. The White Fir Zone becomes clearly recognizable above 5,000 feet around Hyatt Lake, and on Table and Chinquapin mountains. It occupies most of the higher elevation, but gives way to the Shasta red fir zone in the northeast corner of the watershed in the Griffin Pass/Old Baldy and Surveyor Peak/Buck Mountain areas. The White Fir Zone differs from the Mixed Conifer Zone by having significant winter snow

accumulations, consequently, vegetation suffers less stress from lack of moisture. This zone is found within the Upper Jenny Creek, Sheepy Creek, Johnson, Middle Jenny and Keene Creek subwatersheds. The landscape pattern of this zone is more fine grained than the previous vegetation zones, but numerous clearcuts and meadows do tend to fragment the landscape.

The White Fir Zone is characterized by extensive stands of coniferous forest interspersed with wet meadows. White fir is the major tree species, and may occur as pure or nearly pure stands. In areas where there is a mixture with other conifers, Douglas-fir is the most common associate. Sugar pine, ponderosa pine and incense-cedar may also be present. Ponderosa pine and lodgepole pine have been used extensively in plantations as they are more tolerant of the severe frost conditions than some other species such as Douglas-fir. Lodgepole pine is also found as a pioneer species occurring naturally.

Undisturbed white fir stands have a rich understory of low shrubs and herbs. Some of the more common shrubs are Pacific yew, creambush oceanspray, baldhip rose, Oregon grape, California hazel, Rocky Mountain maple, trailing blackberry, snow dewberry, Saskatoon serviceberry and golden chinquapin. Some of the more common herbs are twinflower, deerfoot vanillaleaf and western prince's pine.

Occasional brush fields are interspersed among the coniferous stands, and are of similar composition to those found in the Mixed Conifer Zone. Snowbrush, greenleaf manzanita and curlleaf mountain mahogany are well represented.

Wet meadows occupy most of the nonforested areas in the White Fir Zone. Many of the meadows are privately owned, and are used as seasonal pastures for livestock. A rich variety of herbs and grasses cover these meadows shortly after the spring snow melt. A list of the more common species includes California false hellebore, nettle-leaved giant hyssop, parsleyleaf licoriceroot, lupines, Indian paintbrush, mountain owlclover, alpine timothy, Columbia brome and showy oniongrass.

d. Shasta Red Fir Zone

The Shasta Red Fir Zone is confined to the northeast corner of the watershed and mostly at elevations over 5,500 feet. This plant community is represented by pockets of timber in the Griffin Pass/Old Baldy area, and along the ridge from Surveyor Peak southeast to Buck Mountain (Sheepy Creek and Johnson Creek subwatersheds). These areas are at the southern end of the Shasta red fir zone in the Cascade Mountains. The landscape pattern tends to be fine grained because of the lack of disturbance.

The most common overstory associates in the Shasta Red Fir Zone are white fir, western white pine, and lodgepole pine. The more common understory species are ovalleaf

huckleberry, western prince's pine, starry solomonplume, trailing blackberry, mountain sweetroot, pyrola, and Columbia brome.

2. Special Status Plants

The Jenny Creek drainage is one of the most botanically diverse areas in the state. The unique geologic and climatic history at the apex of the Klamath and Cascade mountains in southwestern Oregon provide habitats for a large number of endemic plants. Nine of these species have been classified as special status plants by the Bureau of Land Management (BLM).

Plant species that are limited in abundance and distribution, and which have identified threats to their existence are considered to be special status species. They include listed threatened, endangered, candidate, Bureau sensitive and assessment species. They now also include listed nonvascular plants, such as lichens and fungi. There are three lists that the BLM recognizes for defining special status species. They include: 1.) Federal Threatened, Endangered, and Candidate species lists designated by the U.S. Fish and Wildlife Service; 2.) The State Threatened, Endangered, and Candidate species lists designated by the State of Oregon; and 3.) Bureau Sensitive and Assessment species lists designated by the BLM. The Bureau sensitive list is a national BLM list and the assessment species list is a BLM Oregon state list.

The BLM conducts inventories for special status plants in conjunction with timber sales, other surface disturbing activities, and land exchanges. Specific inventories determine the distribution, trend, and ecologic requirements for Federal candidate species. It is BLM policy to protect these plants as if they were Federally listed, and to preclude impacts that might result in their being Federally listed.

There are no Federal listed or proposed plant species in the planning area. The nine special status plants that are known or suspected to occur in the Jenny Creek drainage are either Federal candidates, BLM sensitive, or BLM assessment species. Their names, habitat requirements, status, genus species code, and known threats are listed in Appendix 5. The condition and trend of these species is unknown, since no accurate studies or monitoring efforts have been funded.

3. Special Emphasis Species

Special emphasis species include any plant species that needs special recognition or is a management issue or concern for whatever reason but does not meet the special status species manual definition. Examples would include species of concern, species at risk, noxious weeds, Pacific yew, etc. This list will be variable and species will move off and on the list as issues change. For example, two years ago Pacific yew was an issue, but the sensitivity

of the issue has declined significantly since then. It may be in the future that Pacific yew would not need to be listed as a special emphasis species. Pacific yew is distributed throughout the forested areas of the watershed.

4. Introduced Plants

Man's activities over the years in the Jenny Creek Watershed include livestock grazing, timber harvest, road and utility line construction, water developments, and building rural homes. All have altered the native plant communities, and, in many instances, have lead to their replacement with introduced species.

Introduced plants are well established throughout the watershed. Some species were intentionally introduced while others have simply spread into the area as a result of unfortunate introductions made elsewhere.

Intentional introductions were made as early as 1948. Extensive logging on private and federal lands in the 1940's opened considerable acreage to grazing, however, forage was rated as only fair. Grass seeding with non-native species was initiated on logged over federal land in 1948, and was later done on private lands. The Keene Creek Grazing Association did extensive grass seeding in meadows and forest openings. Since then, non-native grasses and forbs have been used to stabilize soil on road cut and fill slopes, Pacific Power's 500 KV powerline right-of-way, around private dwellings, and most recently on the slide area that resulted from the 1982 failure of the Talent Irrigation District canal near Fredenburg Springs.

Reforestation efforts have used native species for the most part, but large areas that were at one time stands of mixed conifers or white fir, then logged, have been replaced with an even-aged mixture of ponderosa pine, lodgepole pine, Douglas-fir, or combinations of these species. Some of these trees are the products of careful genetic selection. The Bureau of Land Management has also replaced native stands in some areas with trees that are native to Oregon, but not native to the Howard Prairie/Hyatt Plateau. The most used non-native species is Jeffrey pine which appears to be more resistant to gopher damage than ponderosa pine.

The history of unintentional plant introductions is unclear, but occurrences presumably date back to the early 1900's. Extensive grazing by cattle, sheep and horses on the Howard/Hyatt Plateau, dating back to the 1860's, decimated native perennial grasses over much of the area. Non-native annual grasses and forbs effectively replaced them over time. Medusahead wildrye and cheatgrass are two of the many species of annual grasses that have become established. Yellow star thistle, an exotic from eastern Europe, was introduced into California by bee keepers, and became established in southwestern Oregon. These three species are found primarily south of Highway 66, but they may continue their ranges further into the area unless checked.

Appendix 6 is a list of introduced species including annuals, perennials, forbs, and trees. No introduced shrub species are known to exist in the watershed. Garden and ornamental species found around rural homes are not included.

5. Noxious Weeds

These plants are superior competitors designated by the Oregon Department of Agriculture's Noxious Weed Control Program. The Bureau is concerned that even under the guidance of best management practices, populations of these weeds may continue to expand.

a. Yellow Star thistle (*Centaurea solstitialis*)
See also poisonous plants (Section V.C.6.).

This is an annual that will germinate in fall, winter, or spring. The flowerhead, is .50 to .75 inches. It blooms from July through September. This species is aggressive and spreads rapidly. Feeding on the plant can cause a nervous disorder in horses known as "chewing disease," which can be fatal. Control of Yellow Star thistle is limited to biological or management efforts rather than chemical efforts on BLM land. The seed fly (*Urophora sirunaseva*) was released in Jackson county in 1985. The seed-head weevil (*Bangasternus orientalis*) was released in Jackson County in 1987.

b. Canada Thistle (*Cirsium arvense*)

The Canada thistle is a creeping perennial which is difficult to control because of its aggressive nature and a root system that may extend as deep as 2.5 feet. The root system branches extensively, making an auxiliary reproductive system of the roots. The flowers are either white or light purple, .5 to .75 inches in diameter, borne at the tips of the branches, often in clusters, from early July to late August. Canada thistle stems are smooth instead of spiny and "winged" as are the stems of bull thistle. The plant is from one to four feet tall, erect and ridged with stiff yellow spines.

c. Klamath Weed (*Hypericum perforatum*)
See poisonous plants.

d. Dodder (*Cuscuta* sp.)

Dodder is a parasitic plant that is troublesome over much of the United States. The small root system disappears once the plant becomes established on a host plant. Seeds are long lived and infestations may occur in areas where host plants have not grown for several years. (Dodder has been identified using *Ceanothus cuneatus* as a host plant.)

e. Dyers Woad (*Isatis tinctoria*)

Dyers woad is a biennial or perennial that is invading grazing lands. It thrives in sandy and gravelly soils forming dense stands.

f. Medusahead Rye (*Taeniatherum caput-medusea*)

Medusahead or foxtail is an annual grass that is potentially hazardous to livestock. It produces long harsh awns that are unpalatable and often cause injury.

6. Old-Growth Forest Ecosystems

One of the most complex questions facing natural resource managers today is the definition of old-growth forest. This basic question becomes even more difficult because old-growth forests differ by geographic area. Old-growth forest is a biological or ecological concept that presumes that ecosystems change over periods of time. Perhaps one must understand what an ecosystem is before an old-growth forest can be defined. An ecosystem is a forest community and its habitat together in which the constituent organisms and their environments interact in a vast and complex energy cycle (Spurr, 1964). Spurr points out that the forest ecosystem is the least comprehensible definition of the forest community.

Consequently, for practical reasons definitions of old-growth have been developed which emphasize structure and composition. Old-growth forests are later stages in forest development that are often compositionally and always structurally distinct from earlier successional stages (Franklin and Spies, 1991). Structurally, old-growth stands have a much larger range of tree sizes and spacing, and the age at which forests become old-growth varies widely with forest type, site conditions and stand history. Multiple canopy layers are generally present and total organic matter accumulations are high. Functionally, old-growth forests have dominant trees that grow slowly and stable biomass accumulations that are constant over long periods of time. Old-growth Douglas-fir forests are from about 200 to over 1,000 years old depending upon the criteria described above.

The Old-Growth Definition Task Group developed the following criteria for Douglas-fir on mixed conifer sites in 1986 (Marcot et. al., 1991):

a. Two or more species with a wide age range and a full range of tree sizes.

b. Douglas-fir, ponderosa pine, or sugar pine greater than or equal to 8 to 9 trees per acre, 30 inches diameter or greater than 200 years old.

c. Intermediate and small size-classes are typically white fir, Douglas-fir, and incense-cedar, singly or in mixture.

d. Multilayered canopy.

e. Conifer snags greater than or equal to 1.5 per acre that are greater than 20 inches diameter and greater than 15 feet tall.

f. Downed logs greater than or equal to 24.25 tons per acre including 5 pieces per acre greater than or equal to 24 inches and greater than 49 feet long.

Within the Jenny Creek watershed on public lands, there are 153 forest stands totaling 7,181 acres that may meet this old-growth definition (see Map 5). These stands were identified in the BLM's GIS information (September 1992 data) as having a birthdate previous to or on 1800, and as being well stocked (70 percent or greater of normal basal area per acre). Younger stands with the compositional and structural requirements of old-growth forests probably exist within the watershed.

Old-growth forests are important because of their functional and compositional uniqueness. The following is a list of major ecological features of old-growth forests (Franklin et. al., 1981):

a. Several vertebrate species (red tree vole, northern spotted owl, and northern flying squirrel), saprophytic plants and epiphytic, nitrogen fixing lichens find optimum habitat in old-growth forests. There are substantial differences in composition and relative abundance of species between young and old-growth forests.

b. Old-growth forests are highly retentive of nutrients. Losses of limiting nutrients such as nitrogen are low. Bacterial nitrogen fixation appears to be common in large woody debris.

c. Large snags are valuable as habitat for a variety of vertebrates and as a future source of logs.

d. Logs on the forest floor are important habitats for small mammals, including species that disperse spores of mycorrhiza-forming fungi.

e. Logs are critical to maintenance of physical and biological stability in headwater streams. Debris dams create stepped stream profiles that dissipate energy otherwise used for sediment transport and lateral cutting and downcutting of stream channels. The debris dams and their associated plunge pools and beds of trapped gravels and fine sediments, provide a range of habitats needed to maintain a full array of stream and stream-margin organisms. Small to medium sized streams in old-growth forests depend mainly on forest litter for an energy base. The bulk of the nitrogen supply of streams comes from woody debris.

7. Abiotic and Biotic Influences on the Landscape Pattern

The combination of abiotic and biotic influences on the landscape pattern seem to work together in a delicate balance to maintain the uneven-aged structure and somewhat coarse grained landscape pattern of the forests of the watershed. These influences in combination with climatic extremes allow for reforestation of the forests on the Dead Indian Plateau in a slow, steady manner rather than one that favors fast growing even-aged stands of timber.

a. Fire

Forest fires have played a minor role in creating the present day landscape pattern of the Jenny Creek Watershed because of the lengthy natural fire rotation between stand replacement fires. Although some even-aged forest stands have been created by fire, the effects of most fires on the landscape are probably more masked because of their small size and low to moderate severity. In most cases, only the understory burns and perhaps an occasional dominant tree is killed.

The History of the Rogue River National Forest by Carroll E. Brown (1960) summarizes the 1916 forest history of the Dead Indian District of the Crater National Forest as follows:

> "The plateau bears heavy stands of Douglas and white fir. The species of mixture is yellow and sugar pine in the foothill slopes and white pine and Shasta fir in the higher altitudes. The timber is of inferior quality, and the white fir particularly is susceptible to defect. Fire in previous years has burned over 75% of the area, which has left the forest in a more or less dangerous condition. Because of the generally level conditions, the prevailing winds do not get the same sweep in this District as in other regions, and fire, consequently, is much easier to control. Fire may burn briskly during the heat of the day, but is comparatively easy to control in the evening."
>
> "One of the greatest causes of fires in this District, as in others, is lightning, which started 36% of all fires. Campers started an equal number. The largest fires occurred in 1910. The Short Creek Fire and Deadwood Fire (Moon Prairie area) burned over 2,400 acres and 2,330 acres respectively. Since then no large fires have occurred."

For the years 1924 through 1929 records were kept on acres burned and the number of fires by elevation bands on the Crater National Forest. A total of 483 fires burned 13,361 acres. Ninety percent of the acres burned were below 5,000 feet, 10 percent between 5,000 and 6,000 feet and less than 1 percent above 6,000 feet in elevation. Seventy-one percent of the fire starts occurred below 5,000 feet, 24 percent between 5,000 and 6,000 feet and 5 percent above 6,000 feet in elevation (Brown 1960).

Forest fires in the Cascade Range have been documented since about 1850. Morrison and Swanson (1990) found the natural fire rotation between 1500 and 1910 ranged from 95 to 149 years near the H.J. Andrews Experimental Forest. On lower elevation sites (1,719 to 4,248 feet elevation) where the topography was steeper and more dissected, fires were more frequent (95 years) but low to moderate in severity. On another site (2,998 to 5,354 feet elevation) where the topography was more gentle with broad valleys and ridge tops, the natural fire rotation was less frequent (149 years) but the fires were stand-replacement in severity. Weatherspoon and Skinner (1989) summarized variables significantly relating to fire damage for timber stands as follows: fuels, past logging history status, tree species, slope class, crown diameter size, elevation and aspect.

As a consequence of variable fire regimes, forest areas at both the stand and landscape level have sustained old-growth characteristics in regard to structure through numerous fires. Patches originating from fires from 1800 to 1900 are approximately 25 acres in size, although single fire episodes could have been more widespread (Morrison and Swanson, 1990).

b. Tree Diseases

Forest pathogens probably contribute more to diversity in forest structure and the landscape pattern of the watershed than fire. The most significant pathogen is *Phellinus weirii* (laminated root rot). It causes growth loss, wood decay, windthrow and tree mortality. Susceptible tree species in the watershed include Douglas-fir, white fir, grand fir, Shasta red fir and subalpine fir. Infected trees begin to show yellow foliage in the crowns and may produce a distress crop of cones. Windthrown trees exhibit a root ball where roots have rotted off below the root crown. The decayed wood characteristically separates by the growth rings in layers, hence its name laminated root rot.

In the forest, infected areas appear to be a circular area of infected trees. Generally, infection centers are less than 1 acre in size, but larger areas do exist. Tolerant and resistant tree species may be growing within the infected area. Seedlings, saplings and pole timber of the susceptible species may be present . Thus, infected areas often have variable forest canopy structure. The fungus can survive for decades in stumps and roots and new trees are infected when their roots contact old infected material. Bark beetles may attack the already weakened trees. The Ashland Resource Area has location maps of known disease centers.

The most practical approach to reforest infected areas may be to plant resistant native species. Resistant tree species include ponderosa pine and incense-cedar. Sugar, white and lodgepole pines ares considered to be tolerant of the disease.

Other root rots of less impact within the watershed include *Armillaria mellea* (Shoestring root rot), *Fomes annosus* (Annosus root rot) and *Phaelous schweinitzii* (Brown cubical butt rot).

Armillaria disease centers are characterized by dying trees and snags. Early decay appears as watersoaked areas with tiny pockets. Under the bark of the lower bole and roots, white mycelial sheets develop. In the fall, golden yellow mushrooms with a ring on the stem grow from infected material. This fungus spreads by rhizomorphs and root contacts. Virtually all trees are susceptible (USDA).

Fomes annosus causes growth loss, root and butt rot, windthrow and tree mortality. Pines show decreased terminal leader growth, needle yellowing, pitch soaking of root wood, decline and death. Other conifers exhibit stain or white stringy rot in roots and butts and perhaps are windthrown. The rot often has small black specks. Conks are perennial, brown to tan with a lighter colored sterile margin and white pore surface. The conks vary in shape from being flat, button-like or bracket-shaped and are leathery in texture. Conks appear in hollows, crotches or on root collars of dead trees or stumps, often below the duff layer. The disease is spread by windborn spores which germinate on freshly cut stump surfaces or other wound surfaces. Live trees become infected when their roots come into contact with infected material. Tree to tree spread continues across root grafts. Secondary attack by bark beetles is common.

Brown cubical butt rot often called velvet-top fungus or cow-pie fungus causes severe butt rot and root rot in younger trees. Large, flat reddish-brown mushrooms may be present at the base of infected trees or on the tree bole rarely above 10 feet in height. This fungus may kill large diameter trees with wide crowns thus opening holes in the forest canopy and eventually providing for variable tree size classes. This fungus spreads into the wounds of trees by way of windborn spores.

Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*) and fir dwarf mistletoe (*Arceuthobium abietinum* Engelm. ex Munz) are common but probably cause less mortality than root and butt rots. Mistletoe is recognized by the swelling of branches and stems of the host trees. Witches'-brooms may develop on old infection sites. The brooms are caused by fungi, especially *Cytospora abietis* (Filip and Schmitt, 1990). The brooms provide habitat for numerous wildlife species. Mistletoe spreads by seed in the fall. Most seeds travel less than 10 feet but maximum horizontal spread may be as great as 50 feet. The reproduction cycle takes approximately six years. Disease spread is most rapid in multistoried stands.

When the host tree dies, the mistletoe dies also. When large diameter trees with wide crowns die, the opening is usually sufficient for natural seedling reproduction to become established.

Echinodontium tinctorium (Indian paint fungus) is another common and important fungus in the true firs. The upper surface of the conks appear dull black in color. The fungus spreads by windborn spores and commonly enters trees through dead branch stubs. The fungus remains dormant until the trees become stressed. Once activated, it rapidly decays the wood.

Other diseases of less significance found in the watershed include *Phellinus chrysoloma*, *Pholiota adiposa* and *Hericium abietis* (Minore, 1978).

The presence of these pathogens in forest stands not only results in tree mortality and canopy diversity over time, but also provides woody debris. The woody debris is critical for natural seedling regeneration to become established. The debris creates favorable microenvironments for the seeds to germinate and for the seedlings to become established and grow. The woody debris also provides habitat for birds, mammals and invertebrates.

c. Animal Influences

Animals have a seemingly minor role in changing the landscape pattern and structural diversity of the forest. The wildlife species present and their respective populations are probably more dependent upon the diversity of habitat that is available. However, certain species may tend to slow down plant succession and favor early seral stages (porcupine, pocket gophers, beaver, deer and elk). Wildlife species do contribute to creating small forest openings and even the thinning of dense patches of vegetation or trees.

Pocket gophers (*Thomomys* sp.) have been a major problem economically in respect to reforestation efforts. In forested areas that have been clearcut or where the basal area per acre has been reduced below 100 ft^2/acre and openings in the forest canopy layer exist, pocket gophers probably help maintain early seral stages of vegetation by feeding on a wide variety of vegetation including tree seedlings. Gophers prefer fleshy or succulent roots and stems of herbaceous plants, and injure tree seedlings by root pruning, stem girdling and stem clipping. Population densities vary widely and are influenced by weather, altitude, soil characteristics and food quality and quantity. In preferred forest habitat, gopher populations can be as high as 15 to 25 gophers per acre (Marsh and Steele, 1992).

Beaver (*Castor canadensis*) can also push plant communities to early successional seral stages along riparian areas when they cut patches of trees. Beaver also flood areas and create new ponds. New riparian areas may become established as a result.

Porcupines (*Erethizon dorsatum*) can alter small areas of the landscape by girdling patches of trees. This will have the effect of creating diversity of tree crown classes and the forest canopy layers. This occurs most often in even-aged plantations of ponderosa pine. Western silver gray squirrels (*Sciurus griseus*) may also cause similar damage in the tree tops. Porcupines may also girdle seedlings and slow down plant succession by maintaining pioneer species on a site.

Deer (*Odocoileus hemionus columbianus*) and elk (*Cervus elaphus nelsoni*) browse seedlings and saplings and can slow down tree establishment. This would also favor early seral stage vegetation. Damage usually tends to be in small pockets and is dependent upon other available browse and the nutrient (nitrogen) content of the foliage. Deer and elk can also

thin dense patches of saplings by barking. Polishing their antlers on saplings and pole timber sometimes kills the trees.

Black bears (*Ursus Americanus*) sometimes kill small patches of pole or small sawtimber by stripping the bark and eating the cambium layer. They usually favor brush species growing in the area, thus creating diversity in the forest canopy layer.

Rabbit and squirrel species are common to the watershed but probably do a minor amount of damage.

Livestock grazing certainly affects plant succession (Gibson and Brown, 1992). Grazing could stop succession, reverse succession to an earlier seral stage, or push succession along a completely distinct sere but eventually to the same end-point. The variables that determine successional pathways are the existing successional stage itself, the species of grazing animal, intensity to grazing, local variations between sites and times (seasonal) of initiation. In practice, grazing might be expected to cause succession to proceed on a course between the two extremes (Gibson and Brown, 1992).

d. Insects

Bark beetles have probably influenced the landscape pattern and forest canopy structure more than any other type of insect. On the Dead Indian Plateau, bark beetles typically kill small patches of dense timber that are under moisture stress. Overstocked pole stands are attractive to the mountain pine beetle (*Dendroctonus ponderosae*). Large diameter ponderosa pine trees may also be targeted by the western pine beetle (*Dendroctonus brevicomis*). Flatheaded fir borers (*Melanophila drummondi*) are a secondary insect that prefer standing distressed trees. Pine engravers (*Ips pini*) can be common where there is abundant slash on the ground.

In 1986 a species of bark beetle that attacks true firs was found in Township 38 South, Range 4 East, Section 7. Approximately 40 acres of a dense, small sawtimber Douglas-fir and white fir stand was infested. Small openings created in the stand will allow conifer seedlings to become established and diversify the structure of the forest canopy layer.

Bark beetle research began east of the Dead Indian Plateau as early as 1912 by the U.S.D.A. Bureau of Entomology (Minore, 1978). Between 1917 and 1926, F.P. Keen correlated the radial growth of ponderosa pine and the numbers of beetle attacks in the Jenny Creek area (Miller and Keen, 1960). In 1920 another researcher developed a method for attracting beetles with solar heat. The method was attributed with a 27 percent reduction in lost timber. Major beetle infestations were recorded in 1925, 1926, 1931 and 1934 for the Dead Indian Plateau area.

e. Timber Harvesting

Logging has been a major impact to the landscape pattern of the Jenny Creek Watershed. Approximately 40 to 50 percent of the Jenny Creek Watershed has been clearcut since World War II. Selection logging probably started on the Dead Indian Plateau early in the century. The biggest old-growth pine and Douglas-fir were cut first. Virgin old-growth stands contained 40,000 to 125,000 board feet per acre, International 1/4-inch scale (Minore, 1978).

Large-scale logging started at the beginning of World War II. Again, the timber was harvested selectively. Douglas-fir trees 24 inches DBH and larger were cut as well as white fir 18 inches DBH and larger. General Land Office (BLM) sales started in 1923 and Forest Service sales in 1943.

In the 1950's timber harvesting became more intense and harvested areas looked more like clearcuts. Only pole timber was left standing. Clearcutting started on the plateau by 1958. By 1963, it was evident that clearcutting caused reforestation difficulties and this practice was gradually replaced with the three stage shelterwood system.

On private lands entire sections have been clearcut and converted to ponderosa and lodgepole pines. This has created an open, fragmented (coarse grained) landscape pattern.

8. Assessment of Current Forest Health

A healthy forest ecosystem is able to maintain its productivity and resiliency over time when exposed to drought, wildfire, insect attack or human-induced changes. A healthy forest ecosystem has the physical environment, biotic resources, and trophic networks to sustain processes and viable populations of indigenous species. It is resistant to catastrophic change and has the ability to recover from disturbances, and it needs to be described in variables that are measurable. Some ecological processes used to quantify forest health are tree mortality, changes in tree growth and vigor and changes in species composition.

Population growth can have a major impact on the health of the forest ecosystem. As people move into an area, wildlife habitat usually dwindles and new residents who are not familiar with their ecosystem may inadvertently impact it negatively. The following is a list of ecosystem questions arising in rural communities today:

a. What are "balanced" forestry practices?

b. Will there be enough water for population growth?

c. What are the fire risks?

d. What are the effects on wildlife (loss of habitat, poaching, etc.)? The most obvious forest health problem is occurring in the white fir zone. In some areas where *Phellinus weirii* is present, large sawtimber size white fir trees continue to die. This problem seems to be exacerbated where timber has been harvested in the past. As a result, large openings in the forest canopy layer have been created. Small sawtimber trees on the site may continue to die because of the pathogen, and the natural regeneration becomes infected if not of a resistent species. Pocket gophers invade the forest openings and reforestation problems may occur. All these factors in combination with the current drought can create an aesthetically displeasing forest landscape.

The forest health of some lower elevation mixed conifer forest stands may also be declining. There are some overstocked stands of pole to small sawtimber sized ponderosa pine and Douglas-fir that are thinning naturally. Also, individual old-growth ponderosa pine or Douglas-fir trees may succumb if dense pockets of natural seedlings or pole timber become established beneath them. With the present drought conditions the old-growth trees cannot obtain enough water to support their large biomass.

D. Aquatic Resources

Aquatic resources, for the sake of this discussion, include fish, lake and stream fisheries, aquatic macroinvertebrates, and riparian/wetland habitat. Fifteen species of fish are found in the lakes and streams in the Jenny Creek Watershed. Only six are native to the system. Two of the fish, the Jenny Creek sucker and the redband trout are endemic to the basin, and are on the BLM's special status species list. The speckled dace, the only other native fish that is widely distributed in the watershed, is also found in other parts of Klamath River Basin. The three remaining natives, the marbled sculpin, Pacific lamprey and flathead minnow, are also widely distributed in the Klamath Basin, but are confined to the lower two miles of Jenny Creek below the waterfalls. The other nine fish species are introduced species. They include the rainbow trout, several species of warm-water fish and the golden shiner. This group of fish will be discussed under the heading "Lake Fisheries." All of the fish are listed in Appendix 7.

Information on macroinvertebrates in the Jenny Creek system is limited. Some sampling has been conducted for aquatic insects, and some investigation of endemic mollusks has been performed.

Data on lake and stream fisheries has been obtained from the Oregon Department of Fish and Wildlife. Only the most recent information is included in this section.

The discussion on riparian/wetland habitat is also included in this section because of its close relationship with other aquatic resources. Riparian and wetland habitats are tied together when determining "Functioning Condition" of stream corridors or lake shores.

1. Fish

a. Special Status Species

The two endemic fish in the Jenny Creek Watershed, the Jenny Creek sucker and the redband trout, are on the BLM's list of special status species, and are "Category 2 Species" on the U.S. Fish and Wildlife Service's "Notice of Review" or candidate species list (Appendix 8). Category 2 species are those whose listing as threatened or endangered may be warranted, but for which data to substantiate such action is lacking. Both fish are isolated above two impassable waterfalls located about one mile south of the Oregon/California border. The falls are estimated to be roughly five million years old (Hohler, 1981), however the fish are presumed to date back only to the end of the ice age when extensive flooding may have allowed native populations in some headwater streams to transfer to others. This "headwater capturing" may be responsible for the presence of Klamath small-scaled suckers, *Catostomus rimiculus*, in Jenny Creek and the Rogue River. The redband trout, *Onchorhynchus mykiss* sp., may also have originated from another Klamath Basin headwater stream through the same process.

The Jenny Creek sucker is a dwarf form of the Klamath small-scaled sucker. It matures at age two at around 130 mm (five inches) and seldom exceeds 210 mm (8.5 inches). It is the only dwarf sucker found in the northwest (Hohler 1981). Its distribution in Jenny Creek extends from the falls at river mile (R.M.) 2 to R.M. 28, and it occurs in four of the major tributaries. The upstream limit for the fish on Jenny Creek is in Township 39 South, Range 4 East, Section 10, approximately 0.3 mile below the confluence of Jenny and Grizzly Creeks. Approximately 28 percent (8 miles) of the species habitat passes through lands administered by the Medford District (Bessey 1988). David Hohler, OSU, studied the distribution and size at maturity of this fish in 1988. Then in 1993, Phil Harris, OSU, conducted an electrophoretic study of the taxa with samples coming from Jenny Creek, the Klamath River and the Rogue River.

Harris concluded that there is a genetic difference between Rogue River stock and samples from the other two streams, but that there is little genetic difference between suckers in Jenny Creek and those in the lower Klamath River. Harris did note, however, "we believe that Jenny Creek suckers meet the criteria for consideration as an evolutionarily significant unit within *C. rimiculus* because: 1.) there are no opportunities for gene flow into this population; and 2.) they are currently the only identified population of dwarfed fish within this species, thus representing an important evolutionary legacy for *C. rimiculus*."

The Jenny Creek redband trout is more widely distributed in the Jenny Creek Watershed than is the sucker, and inhabits upper Beaver, Soda and Grizzly Creeks as well as the other perennial streams in the basin. Unlike the sucker, the redband commonly reaches a length in excess of ten inches, consequently it is popular among stream anglers.

This trout caused some confusion as to its genetic make-up for a number of years, then in 1990 Kenneth Currens, a Graduate Research Assistant with the Oregon Cooperative Wildlife Research Unit at Oregon State University undertook an electrophoretic study. Currens' analysis found that the Jenny Creek trout showed no identity to cutthroat or to coastal rainbow stocks, but has some similarities to other headwater rainbow stocks found elsewhere in the Klamath Basin. These fish need further taxonomic investigation, but until that happens the fish has been lumped into a broad group of unique rainbow called "redband."

b. Limiting Factors

The Jenny Creek sucker and redband trout are sensitive indicators of the general health of the watershed. There are a number of events and circumstances that occurred in the system over the years that presumably had a deleterious affect on these fish. Some of them continue to present problems today. Bob Bessey, 1988, summarized the situation when he wrote, "It is highly probable that significantly depleted stream flow, periodic addition of large quantities of sediment and elevated water temperatures are contributing to subtle declines of trout and sucker populations in Jenny Creek and several of its tributaries."

Bessey's contentions are largely based on evidence from other watersheds under similar circumstances because quantified, long-term baseline fisheries data for Jenny Creek is unavailable. But it is very probable that the transfer of a large portion of the stream flow outside the watershed has created substantial changes in the quality of habitat over the past 60 plus years. Water diversions from Hyatt and Howard Prairie Reservoirs, and from Soda and Beaver Creeks by Talent Irrigation District (TID) and from Shoat Springs Creek by Pacific Power and Light (PP&L) export approximately 30,000 acre feet of water annually from the Jenny Creek Watershed (Bessey 1988). This quantity represents 28 percent of the estimated total runoff that would otherwise be available to support the watershed's fish populations. One effect of reduced stream flow is the streams lessened ability to transport accumulated sediments out of the system. Reduced flows also cause reduced space for rearing and food production. Fish are concentrated in less space where they compete for a reduced food supply and hiding cover. They are much more vulnerable to bird and mammal predators. Effects of the lower peak flows are probably most severe in Keene Creek and in Jenny Creek upstream of its confluence with Johnson Creek. The TID and PP&L diversions have altered habitat conditions in 24 miles of Jenny, Soda, Keene, Beaver and Shoat Springs Creeks, representing 84 percent of the habitat currently used by the Jenny Creek sucker. Water diversions for agricultural purposes along Jenny, Keene, Beaver and Corral Creeks have also cumulatively reduced stream flows from natural, undisturbed levels (Bessey, 1988).

The effects of the man-caused reduction in stream flows have been further aggravated by the ten plus years of drought that has been experienced in the Pacific Northwest. The drought has been especially pronounced in 1994, and several streams became dry by July including Johnson, Corral, Mill and Lincoln Creeks. Other streams were reduced to a mere trickle. The stream flow at the north end of the Box O Ranch (R.M. 9.5) on August 24 was 2.8 cubic feet per second (cfs) while on August 10, 1993 (a more average water year) the flow at

that location was 8.8 cfs. Fortunately, Shoat Springs Creek adds flow and cooler temperatures downstream of this location.

High summer water temperature is another factor affecting sensitive fish species in Jenny Creek. The reduced volume of water in the stream results in reduced insulation against the sun's rays. This coupled with the removal of stream-side shade trees during accelerated logging in the 1960's and 1970's have caused water temperatures in excess of 80 degrees Fahrenheit in July and August in lower reaches of the watershed. Ideal summer water temperatures for trout are in the 55 to 62 degree range, and once they exceed 70 degrees the fish begin to experience stress and increased metabolism which leads to increased competition for food. Higher temperatures also incubate diseases which readily attack the already stressed fish. There is at least some indication that redband trout are more temperature tolerant than other trout species.

The accumulation of sediment is a major problem confronting fish in the Jenny Creek system. It accumulates in pool and riffle habitats that are important for rearing, food production and spawning. Interspaces in the substrate become clogged with this material and are no longer available for cover and food production, and eggs deposited there are subject to suffocation. Rocks become covered with sediment and are not available as areas for insects and other food organisms to reproduce. Much of this sediment resulted from intensive logging that began in the 1950's. Some of it is still being washed off the myriad of un-surfaced roads throughout the watershed. Livestock grazing, dating back to 1880 in the watershed, damaged stream banks and associated vegetation and continues to do so on some stream reaches. Another major source of sediment in Jenny Creek is the TID delivery canal which has caused two major slides in Township 39 South, Range 4 East, Sections 21 and 22. One slide, in 1982, delivered several hundred tons of rock, soil and debris directly into the stream. The hazard of future canal failures is a reality.

Another limiting factor that is not as obvious is the lack of large woody debris in Jenny Creek and its tributaries. Woody debris is important for nutrient recycling, hiding cover, and as substrate for fish food production.

2. Macroinvertebrates

a. Special Status Species (Mollusks)

Jenny Creek and its tributaries are host to eight species of freshwater snails that are on the Bureau's Special Status Species list (Holthausen et al, 1992). Seven of them are in the family *Hydrobiidae* and genus *Fluminicola*. The eighth of these is a Calibasis snail named *Juga acutifilosa*, or scalloped juga. Table 4 lists the snails and their primary habitats. Most of these snails are associated with large, cold springs. Shoat Springs and Spring Creek are particularly important habitats. The exact locations of most of these animals in the watershed has not been provided to the resource area by the chief investigator, Dr. Terrence Frest, at this writing. The group of Fluminicolas, according to Frest, are endemics that have

speciated in Jenny Creek, with some located in very exacting habitats within the watershed. The seven snails in this group have not been taxonomically described, and more investigation should be done, Frest says. The species of Juga are known from only one location in Oregon, that being Shoat Springs. It has also been located in seven other locations in northern California, but at least two of those habitats no longer exist. Frest recommends that all of these snails be considered for listing under the federal Endangered Species Act.

Table 4 . Jenny Creek mollusks.

SCIENTIFIC NAME	SUGGESTED COMMON NAME	LOCATION
Fluminicola n. sp. 4	Nerite Pebblesnail	several Jenny Cr. tribs.
Fluminicola n. sp. 5	Toothed Pebblesnail	three tribs. to Jenny Cr.
Fluminicola n. sp. 6	Diminutive Pebblesnail	three tribs. to Jenny Cr.
Fluminicola n. sp. 7	Topaz Pebblesnail	Shoat Springs
Fluminicola n. sp. 8	Fall Creek Pebblesnail	Shoat Springs/Fall Creek
Fluminicola n. sp. 9	Lunate Pebblesnail	Jenny Creek
Fluminicola n. sp. 10	Keene Creek Pebblesnail	Keene Creek
Fluminicola n. sp. 11	Fredenburg Pebblesnail	Fredenburg Springs
Juga acutifilosa	Scalloped Juga	Shoat Springs

b. Other Macroinvertebrates

A freshwater mussel, *Margaritifera falcata*, appears to be fairly common in the middle and lower portions of Jenny Creek. This animal is found from southern Alaska to central California and east to the Rocky Mountains. It is a common mollusk in the Klamath and Rogue River systems. There is some indication that the Jenny Creek population is a dwarf version. Maximum shell length of this animal is between 2.5 and 2.7 inches. This animal needs to be studied.

Benthic macroinvertebrate sampling has been done annually since 1991 at three locations in the Jenny Creek Watershed. The sites are Jenny Springs, Keene Creek and Jenny Creek at Lower Crossing (Wisseman, 1991). Thirty-six taxa were included in sampling done in 1991. Members of the order Tricoptera comprised 53 percent of the organisms collected.

Plecoptera, on the other hand, contributed only five percent to the samples. Several insect species, including those in the order Plecoptera, serve as good indicators of stream health and decline in numbers as pollution and sedimentation increase . Present plans call for this monitoring to continue periodically as a part of other monitoring efforts in the watershed.

c. Limiting Factors

All of the limiting factors discussed under the heading "Fish - Special Status Species" pertain to macroinvertebrates as well. Low flows, warm water temperatures and sedimentation presumably limit these resources somewhere below their potential for Jenny Creek. Frest (1992) was particularly concerned about impacts from grazing on streams that host endemic snails.

3. Lake Fisheries

a. Species and Population Levels

Howard Prairie Reservoir and Hyatt Lake were constructed by the Bureau of Reclamation and are operated by the Talent Irrigation District for irrigation supply and power generation. The two reservoirs have had a history of providing outstanding rainbow trout fisheries. Howard Prairie has been a good trout producer over the years, but Hyatt Lake has had a series of set backs from over populations of bullhead catfish. The lake was last chemically treated to remove bullheads in the fall of 1989, and by 1993 the trout were growing at an exceptional rate. The Oregon Department of Fish and Wildlife stocks up to 350,000 rainbow fingerlings annually in Howard Prairie Reservoir and between 150,000 and 250,000 in Hyatt Lake.

Other fish species in Howard Prairie include largemouth bass, pumpkinseed sunfish, brown bullhead catfish and golden shiners. In addition to the rainbow trout in Hyatt Lake there are largemouth bass, bluegill and black crappie. Brown bullhead catfish were not evident in the lake since the chemical treatment project in 1989, however, one was collected during electrofisher sampling in the spring of 1994.

Two additional lakes, Little Hyatt Lake and Keene Creek Reservoir, are located on Keene Creek below Hyatt Lake. Little Hyatt Dam is an abandoned diversion structure which was obtained by the BLM through a quick claim deed in 1993. Over the years this lake has been a popular rainbow trout fishery. In addition to rainbow trout, it contains green sunfish and brown bullhead catfish. Keene Creek Reservoir is a regulating reservoir for the Greensprings power generating plant. It contains a few stunted warm water fish, but is not managed for a fishery due to its fluctuating nature and potential risks to the public.

Other standing water bodies include the quarry pond off Keno Access Road, Parsnip Lakes on the north side of Keene Ridge and the old log pond at Lincoln. The log pond is entirely on private land, and fish populations are unknown. Warmwater fish inhabit the quarry pond,

and the Oregon Department of Fish and Wildlife has released trout in the past. Several of the Parsnip Lakes dry periodically, and it is doubtful that the remaining ones support fish populations. Several pump chances in the watershed have had trout that were trapped in canals or streams during drought transplanted into them. Status of these populations is unknown.

The Oregon Department of Fish and Wildlife conducts gillnet sampling at major lakes and reservoirs each fall. The 1993 sample from Howard Prairie Reservoir indicates that the fish population is 61.8 percent rainbow, 23.0 percent brown bullhead, 12.4 percent golden shiner, and 2.8 percent other species. No largemouth bass were included in the 1993 sample. One brook trout was captured. Its origin is unknown as none of this species has been released into Howard Prairie Reservoir by ODFW, but they do occur in Beaver Dam Creek (Little Butte Creek system) from which TID draws water.

The sample taken at Hyatt Lake in 1993 showed that the population was 100 percent rainbow trout. Largemouth bass, black crappie and bluegill, while present in the lake, were not taken in the sample. One immature brown bullhead catfish was collected using an electrofisher in the spring of 1994. This was the first indication of the fish in the lake since the chemical treatment in 1989.

b. Angler Success

The Oregon Department of Fish and Wildlife collects angler catch information at Howard Prairie and Hyatt Lakes each year. Most of this data is gathered on opening weekend of the trout fishing season which falls near the end of April, and does not reflect improvements or declines in success throughout the remainder of the season. Table 5 provides some creel census information for the two lakes for 1992 and 1993.

Table 5. Angler catch success for 1992 and 1993.

Howard Prairie Reservoir

Year	Anglers Interviewed	Hours Fished	Fish Caught	Fish Caught per Angler	Fish Caught per Hour
1992	625	1912	3252	5.2	1.10
1993	321	1291	979	3.05	0.76

Hyatt Lake Reservoir

Year	Anglers Interviewed	Hours Fished	Fish Caught	Fish Caught per Angler	Fish Caught per Hour
1992	291	523	403	1.4	0.77
1993	65	198	6	0.09	0.03

The angler success rate at Howard Prairie Reservoir in 1992 was considered good with a catch rate of 5.2 fish per angler and 1.1 fish per hour. Success for Hyatt Lake for that year was not nearly as good with a rate of 1.4 fish per angler and 0.77 fish per hour. The opening weekend of trout season in 1993 at Hyatt Lake was pretty dismal with a very low success rate of 0.09 fish per angler.

c. Limiting Factors

Howard Prairie Reservoir continues to provide an exceptional trout fishery, but several factors distract from it having an even better fishery as follows:

(1) The trout must compete with several species of game and nongame fish which were introduced unlawfully.

(2) The annual draw-down for irrigation supply reduces the lake's fish producing potential by causing the fish to compete more for available space and food. Predation by large fish on smaller ones becomes more acute.

(3) Cormorants, osprey, bald eagles and other fish eating birds devour enough trout of various age groups to necessitate stocking of additional fingerlings to maintain quality trout angling.

(4) Tons of biomass have been removed from Howard Prairie Reservoir in the form of fish flesh. No plan has been pursued to augment the nutrient cycle.

Hyatt Lake has a history of producing excellent angling for rainbow and brook trout. With the introduction of brown bullhead catfish, the lake declined in trout production and required chemical rehabilitation in 1960, 1967, 1977 and again in 1989. Net sampling in 1993 showed a good population of trout with exceptional growth. The presence of nesting bald eagles and a desire to manage the lake for trout and largemouth bass may preclude treatment projects, as we have known them, in the future. Most of the limiting factors for Howard Prairie Reservoir (listed above) pertain to Hyatt Lake, with the exception that golden shiners have not been introduced into this reservoir. Bullheads are present in Howard Prairie Reservoir, but conditions in that lake have not permitted them to over-populate as they tend to do in Hyatt.

4. Stream Fisheries

a. Species and Population Levels

Jenny Creek provides a trout fishery of exceptional quality. Anglers fish for redband trout on public and timber company lands in the main stem and in the larger tributaries including Keene, Grizzly and Soda Creeks. No estimate of angler numbers or numbers of fish taken in

past years is available.

The redband trout is a Category 2 species on the U. S. Fish and Wildlife Service Notice of Review, and as such has been receiving increased attention by ODFW and BLM. Since 1988, the BLM has sponsored volunteer work projects to stabilize sources of erosion and to plant stream-side vegetation. Additional riparian restoration is planned for the future.

b. Limiting Factors

Past logging and grazing practices and water withdrawal have had severe impacts on Jenny Creek and many of its tributaries. Erosion in the watershed has caused sedimentation of spawning beds in the streams. Overgrazing due to poor livestock distribution in riparian habitat has left portions of streams with a lack of cover and exposed to the warming effects of the sun. The Talent Irrigation District removes roughly 28 percent of Jenny Creek's annual runoff. This and other water appropriations have reduced the potential for trout production and angler catch success. Some of the impacts on redband trout are reduced rearing space, reduced food production, increased disease potential and stress, and increased predation. Spawning gravel of suitable size for trout is lacking in some sections of stream. Keene Creek from Hyatt Dam to Keene Creek Reservoir is dewatered seasonally as Hyatt Lake is being filled. This situation makes it nearly impossible to produce trout in this nearly four mile stretch of stream except for in Little Hyatt Lake.

5. Riparian/Wetland Habitat

a. Description

Riparian/wetland habitats comprise a small percentage of the total land base, but they are the most productive in terms of wildlife and vegetation diversity. Wetlands, according to BLM Manual 1737-9, 1993, "Riparian Area Management" includes marshes, shallow swamps, lakeshores, bogs, muskegs, wet meadows, estuaries and riparian areas as wetlands. The manual defines wetlands as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and which, under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Riparian, on the other hand, is defined as a form of wetland transition between permanently saturated wetlands, and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence.

The manual divides riparian/wetland habitats into two major categories: 1.) lentic, which is standing water habitat such as lakes, ponds, seeps, bogs and meadows, and 2.) lotic, which is running water habitat such as rivers, streams, and springs.

Lotic habitats along Jenny Creek and its tributaries vary considerably in vegetative cover and width. Some reaches are characterized by having a good overstory of mixed conifers and

hardwoods and a dense understory component. In other sections of stream, the channel is incised with little or no overstory, and with sparse or absent ground cover except for grasses and forbs. Riparian/wetland condition is usually a direct result of past and/or present land uses including logging, grazing, roading, agriculture and urban development.

Lentic habitat is found primarily on the shoreline of Howard Prairie and Hyatt Reservoirs where it is undergoing constant change as these lakes are filled and evacuated for irrigation purposes. The lentic zones around Little Hyatt Lake and some of the Parsnip Lakes, on the other hand, are more stable year around. Known wetlands are listed in Appendix App 3-Veg-1 of the 1992 Draft Medford District RMP. Sixteen of those covering 195 acres are within the Jenny Creek Watershed.

The species composition of riparian vegetation is fairly consistent throughout the watershed although some species, such as quaking aspen are more common at higher elevations. Appendix 9 lists the more common riparian shrub and tree species found in the watershed.

The benefits of good riparian/wetland habitats are extraordinary. They have the ability to shade streams, cool the water, and reduce evaporation. Banks are stabilized by their roots, and flood waters are dispersed and slowed by their density which causes deposition of silt and debris. In addition, the riparian area around lakes and along streams is the most important habitat for many of Oregon's terrestrial wildlife. Overstory and understory vegetation provide food, shelter (both hiding and thermal cover), and an area for reproducing, and building material for some animals like beavers.

Aquatic vegetation is well established in lakes, ponds and slower moving stream reaches throughout the watershed. Included in this group are elodea, hardstem bullrush, various other rushes and sedges, cattail, and various species of *Potomogeton* and *Myriophyllum*. This group of plants provides valuable habitat for aquatic insects and snails which in turn are food for fish and some birds. These plants also provide cover for fish, and the emergent forms, such as bullrush and cattails, provide cover and nesting structure for some birds, and food for muskrats. Refer to Map 6 for the location of the riparian reserves in GFMA lands.

b. Functioning Riparian Condition

The BLM adopted the "Riparian-Wetland Initiative for the 1990's" which provides a "blueprint for management and restoration of riparian/wetland habitats." Among the goals is a requirement to "restore and maintain riparian-wetland areas so that 75 percent or more are in proper functioning condition by 1997." In order to meet this goal it was necessary to define "proper functioning condition," and develop criteria for determining what it is. The following terms and definitions have been developed:

(1) Proper Functioning Condition: Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion

and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water and vegetation.

(2) Functional-At Risk: Describes riparian-wetland areas that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

(3) Nonfunctional: Riparian-wetland areas are nonfunctional when they are clearly not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, etc., as listed above. The absence of certain physical attributes such as a floodplain where one should be are indicators of non-functioning condition.

(4) Unknown: This category describes riparian-wetland areas that BLM lacks sufficient information on to make any form of determination.

The BLM has not done a detailed survey of proper functioning condition on Jenny Creek or its tributaries, but has physical stream survey data that indicates the conditions. Map 7 is a preliminary watershed map that shows degrees of riparian/wetland habitat condition for Jenny Creek and its tributaries. Perennial streams and springs, totaling 76.5 miles, are classified as to condition on the map. The only stream given a proper functioning condition is the upper one mile of Shoat Springs Creek above the diversions for the Taylor Ranch and Pacific Power. All of stream reaches downstream of Hyatt and Howard Prairie Reservoirs are classified as functioning at risk or nonfunctioning. A combination of conditions, including diversions by the Talent Irrigation District, past logging and grazing, are responsible for this rating. Much of the watershed will never reach proper functioning condition because of the large diversions made by TID.

The 76.5 miles of streams that have been classified fall into the three conditions as follows: Proper Functioning Condition = 0.5 mile, or 0.7 percent; Functioning at Risk = 52.5 miles, or 68.5 percent (streams in this condition class include 9 miles, or 11.7 percent that have suitable riparian habitat); and Nonfunctioning Condition = 23.5 miles, or 30.9 percent.

E. Terrestrial Wildlife

Approximately 255 terrestrial wildlife species are known or suspected to occur in the Jenny Creek Watershed (Appendix 10). This species richness reflects the diversity of habitats found in the watershed. Twenty-eight of these species are considered "special status species"

and will be discussed further.

1. Special Status Species

Special Status Species (SSS) include those species that are listed as threatened or endangered, are proposed for listing as threatened or endangered, or are a candidate for listing as threatened or endangered by the U.S. Fish and Wildlife Service, under the auspices of the Endangered Species Act (ESA) of 1973, as amended. Also included are those species listed by the BLM as sensitive and assessment species. For this watershed analysis those species identified in the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (SEIS) Record of Decision (ROD) for protection by Protection Buffers will also be addressed as SSS. By definition all of the aforementioned species are in a categories that are "red flags". Inventory and monitoring are critical for better assessment of habitat and population status for many of these species; particularly those that are not presently listed under the auspices of the ESA. (This discussion does not include those species listed only as Oregon Sensitive unless listed in the ROD.)

Unless otherwise noted in the discussion of individual species, the primary reason for a species inclusion as a SSS is due to loss or degradation of primary habitat as a result of commercial timber harvest.

a. Birds

(1) Northern Spotted Owl (*Strix occidentalis caurina*)

The northern spotted owl is listed as a threatened species under the auspices of the ESA. Northern spotted owls are generally associated with late-successional coniferous forests which are characterized by large trees, multilayered canopies, and a high degree of canopy closure. There are 20,600 acres of habitat suitable for nesting, roosting or foraging by northern spotted owls on BLM managed lands within the watershed. Refer to Map 8 which shows suitable spotted owl habitat within the watershed.

There are 17 known northern spotted owl sites within the Jenny Creek Watershed. These sites vary considerably in the amount of suitable habitat within the median provincial home range radius (1.2 miles) for spotted owls in the Oregon Cascade Province. Table 6 shows the acreage of suitable habitat within the median provincial home range for each site within the watershed. As a rather gross estimate of the adequacy of suitable habitat in these sites, the values can be compared to 1,182 acres, the threshold for incidental take established by the U.S. Fish and Wildlife Service (FWS).

There are approximately 35,700 acres of designated critical habitat in the watershed. The critical habitat was designated to provide essential nesting, roosting, foraging or dispersal habitat for linkage between the western Cascades and Klamath provinces through the I-5

Area of Concern. Approximately 10,200 acres of this area is considered to be suitable for nesting, roosting or foraging. An additional 6,400 acres provide only dispersal habitat.

Table 6. Suitable habitat within the provincial home range radius for northern spotted owl sites within the Jenny Creek Watershed.

Site Identification Number	Suitable Habitat (Acres)
2285	124
0092	110
2020	500
0977	176
3272	204
3274	398
1305	1020
2078	462
2270	412
3278	540
0061	693
0062	820
2268	511
2261	662
0040	1062
0978	426
0927	943

(2) Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle is listed as a threatened species under the auspices of the ESA. Habitat loss is presently the most significant long-term threat to bald eagle populations in the Pacific northwest (Recovery Plan for the Pacific Bald Eagle, 1986). Bald eagle nest sites are usually in late-successional conifer stands that are near water bodies that support adequate food supplies (Recovery Plan for the Pacific Bald Eagle, 1986). There are three active and one historic bald eagle nest sites in the Jenny Creek Watershed. The active bald eagle nest sites are proximate to Howard Prairie Reservoir and Hyatt Lake. The historic site is along the

rim of lower Jenny Creek canyon, and assumed to have been associated with Irongate Reservoir, the nearest large body of water.

The Pacific Bald Eagle Recovery Plan (1986) identifies shooting, logging, pesticides, land development, human disturbance, disturbance on foraging areas, changes in agricultural practices, fire, power lines and lead poisoning as the main threats to the species in the management zone that includes the Jenny Creek Watershed.

The recovery plan identifies the following tasks as the most urgent for this recovery zone:

- Prohibit logging of known nest trees, perch trees and winter roost trees.
- Preserve snags in eagle use areas.
- Reduce bald eagle mortality associated with shooting and trapping.
- Restrict use of poisons detrimental to eagles in predator and rodent control programs within important bald eagle nesting and wintering habitat.

The Medford District Proposed Resource Management Plan (PRMP) specifies that a block of suitable habitat at least 80 acres in size be managed for future population expansion near the shoreline of both Hyatt and Howard Prairie Reservoirs.

(3) Peregrine Falcon (*Falco peregrinus*)

The peregrine falcon is listed as an endangered species under the auspices of the ESA. This listing is due to the drastic decline in populations following the widespread us of chlorinated hydrocarbon pesticides following World War II. There are no known peregrine falcon nest sites in the Jenny Creek Watershed. However, there have been reported sightings of peregrine falcons in Jenny Creek canyon, and the cliffs along the rim of lower Jenny Creek canyon provide potential nesting habitat.

Lower Jenny Creek canyon was inventoried for peregrine falcons in 1992 and 1994. No peregrines were observed. Prairie falcons were observed each year.

(4) Northern Goshawk (*Accipiter gentilis*)

The northern goshawk is a candidate (Category 2) for listing as threatened or endangered under the auspices of the ESA. Preferred habitat for northern goshawks is mature/late seral conifer forest in the Mixed Conifer, White Fir, and Shasta Red Fir Vegetative Zones. There are three known nest sites within the Jenny Creek Watershed. There has not been any systematic inventory for goshawks within the watershed.

(5) Lewis' Woodpecker (*Asyndesmus lewis*)

Lewis' woodpecker is a Bureau assessment species. Within the watershed this species is found most commonly in the Interior Valley Zone. The population of Lewis' woodpeckers

in the watershed is believed to be almost exclusively a wintering population. There may be some nesting, but there is little data on non-winter observations.

(6) Great Gray Owl (*Strix nebulosa*)

The great gray owl is a Bureau sensitive species. It is also to receive protection buffers under the SEIS ROD. Great gray owls nest in mature/late seral conifer forests of the Mixed Conifer, White Fir and Shasta Red Fir Zones, and forage primarily in meadows/grasslands or early seral stand conditions of conifer forests. There are 3 known great gray owl nest sites in the watershed. Since 1992 there has been some opportunistic inventories for great gray owls, but no widespread systematic inventory. Population trend in the watershed is unknown, but based on the number of reported sightings the population appears to be at least stable.

The SEIS ROD requires the following measures as mitigation/protection buffers on matrix land for great gray owls: a .25 mile protection zone around nest sites, and a 300 foot buffer around meadows and natural openings.

(7) White-headed Woodpecker (*Dendrocopos albolarvatus*)

The white-headed woodpecker is a Bureau assessment species. Also, the SEIS ROD directs that this species be given extra protection where it occurs on matrix land by retaining more snags. Primary habitat is found in the White Fir Zone where pines are a component of the conifer stands. Little is known about this species within the watershed. However, based on field observations the population is probably quite small. There are only occasional reported sightings of white-headed woodpeckers in the watershed.

(8) Black-backed Woodpecker (*Picoides arcticus*)

The black-backed woodpecker is a Bureau assessment species. It is also a species that is to receive extra protection under the SEIS ROD by retention of additional snags on matrix land. Primary habitat is found in the White Fir Zone where abundant insect infested trees are present (Jones and Stokes Inc., 1980). Little is known about this species in the watershed.

(9) Northern Three-toed Woodpecker (*Picoides tridactylus*)

The northern three-toed woodpecker is a Bureau assessment species. Primary habitat is found in the White Fir and Shasta Red Fir Zones where an abundant supply of insect infested trees are present (Jones and Stokes Inc., 1980). Little is known about this species in the watershed.

(10) Pileated Woodpecker (*Dryocopus pileatus*)

The pileated woodpecker is a Bureau assessment species that is found throughout the watershed. Primary habitat is mature/old-growth coniferous forest in the Mixed Conifer,

White Fir and Shasta Red Fir Zones. It is also found in the Interior Valley Zone, but in lesser numbers than in the other zones. Little is known about actual population trend in the watershed.

(11) Flammulated Owl (*Otus flammeolus*)

The flammulated owl is a Bureau assessment species that is found throughout the watershed. This species is designated by the SEIS ROD to receive extra protection by retention of extra snags on matrix lands. Primary habitat is conifer forest intermixed with oak-woodland and grassland in the Mixed Conifer Zone. Cavities in ponderosa pine are preferred nest sites, while shrubland and grassland are primary foraging areas. Population trend in the watershed is unknown. Most detections of this species have been made during inventories for spotted owls.

(12) Greater Sandhill Crane (*Grus canadensis*)

The greater sandhill crane is a Bureau assessment species. It is given this status due to low population numbers, sensitivity to human disturbance and land use practices (Marshall, 1992). Primary habitat for both nesting and foraging is wet meadows. There have been a number of sightings of this species in the meadows and grasslands near Hyatt and Howard Prairie Reservoirs, but there has not been confirmed nesting within the watershed. There has not been any systematic inventory for greater sandhill cranes.

(13) Northern Saw-whet Owl (*Aegolius acadicus*)

The northern saw-whet owl is a Bureau assessment species. Primary habitat is dense conifer forest intermixed with meadows in the Mixed Conifer and White Fir Zones. Little is known about this owl in the watershed. Some have been aurally and visually detected coincidentally with inventories for northern spotted owls.

(14) Western Meadowlark (*Stunella neglecta*)

The western meadowlark is a Bureau assessment species found throughout the watershed. Populations are believed to be declining due to habitat loss from human encroachment. Primary habitat is meadows and grasslands. Little is known about population trend in the watershed.

(15) Western Bluebird (*Sialia mexicana*)

The western bluebird is a Bureau assessment species found throughout the watershed. It is given this status due to a decline in numbers possibly attributable to competition with starlings for nest sites, and lack of nest sites due to timber harvest and urbanization (Marshall, 1992). Primary habitat is naturally occurring open areas or early seral conifer forest where snags for nesting are plentiful. Little is known about populations within the

watershed. A number of nest boxes have been erected in the watershed to encourage nesting by western bluebirds.

(16) Mountain Quail (*Oreortyx pictus*)

The mountain quail is a candidate (Category 2) for listing as threatened or endangered under the auspices of the ESA. The species is a candidate for federal listing primarily because of population declines in the Willamette Valley. Populations west of the Cascades appear to be stable. Primary habitat is dense brushland in the Interior Valley/Oak-Woodland and Mixed Conifer Zones.

(17) American White Pelican (*Pelicanus erythrorhynchos*)

The white pelican is a Bureau assessment species. It is listed as an assessment species due to population and nesting habitat decline. The white pelicans observed in the watershed are not are not a nesting population. Various sized groups have been observed on both Hyatt and Howard Prairie Reservoirs for approximately the past six summers. Little is known about this summer population. It is assumed they come from the Klamath Basin. The pelicans remain for a relatively short time - several weeks to a couple months.

(18) Pygmy Nuthatch (*Sitta pymaea*)

The pygmy nuthatch was identified in the SEIS ROD as a species to receive protection buffers where nest/roost sites are found on matrix lands. Primary habitat is mature/old-growth conifer forest with a component of pine in the Mixed Conifer and White Fir Zones. An open canopy is preferred. Roost sites, which may shelter over 100 individuals, are very important for winter survival. Little is known about this species in the watershed.

b. Reptiles and Amphibians

(1) Northwestern Pond Turtle (*Clemmys marmorata*)

The northwestern pond turtle is a candidate (Category 2) for listing as threatened or endangered under the auspices of the ESA due to declining numbers and lack of recruitment to the population. Possible reasons for this include habitat alteration and predation on juveniles by bullfrogs and bass. Preferred habitat is ponds or streams with abundant aquatic vegetation, basking structure (rocks and/or logs), and adjacent terrestrial habitat suitable for nesting and overwintering (Holland personal communication 1993). They are generally found below 3,600 feet in elevation. There are several known populations within the watershed.

Preferred nesting habitat is dry compacted clay soil on a southern aspect. Northwestern pond turtles generally overwinter under the duff layer of a tree or shrub. A monitoring program for two populations in Jenny Creek was initiated in 1994.

(2) Cascade Frog (*Rana cascadae*)

The Cascade frog is a Bureau assessment species. It is afforded this status due to decline in population for unknown reasons. Preferred habitat is mountain meadows characterized by the presence of marsh marigold and small ponds or potholes with little aquatic vegetation. One record (Nussbaum et al. 1983) indicates this species is probably present in the watershed.

(3) Tailed Frog (*Ascaphus truei*)

The tailed frog is a Bureau assessment species. Preferred habitat is fast-flowing perennial streams in forested areas of the Mixed Conifer, White Fir and Shasta Red Fir Zones. Known locales illustrated in Nussbaum et al (1983) indicate the species is present in the watershed, however, there have not been any recent surveys to verify this.

(4) California Mountain Kingsnake (*Lampropeltis zonata*)

The California mountain kingsnake is a Bureau assessment species due to its general rarity and lack of information. This species is known to occur in the drainage, but nothing is known about populations. Preferred habitat is oak-woodland and mountain chaparral plant communities in the Interior Valley and Mixed Conifer Zones.

(5) Common Kingsnake (*Lampropeltis getulus*)

Like the California mountain kingsnake the common kingsnake is a Bureau assessment species due to its general rarity and lack of information. There are no records of this species in the watershed, but it is likely present. Preferred habitat is riparian vegetation along streams in the Interior Valley Zone.

c. Mammals

(1) Pacific Fisher (*Martes pennanti*)

The Pacific fisher is a federal candidate (Category 2) for listing as threatened or endangered under the auspices of the ESA. It is a listed species due to low population numbers and lack of information. Preferred habitat is dense conifer forests in the Mixed Conifer, White Fir and Shasta Red Fir Zones. There are no recent records of fisher in the watershed. Minore (1978) suggests that populations were quite high in the upper portions of the watershed at the turn of the century, but intensive trapping caused a decline in the population. There is no explanation why fisher have not recovered with the decrease in trapping pressure, but it is speculated that habitat loss due to intensive timber harvest has kept the population depressed (Marshall, 1992).

Track counts were conducted in portions of the watershed in the winters of 1992-93 and 1993-94, no fisher tracks were encountered.

(2) American Marten (*Martes americana*)

The marten is a Bureau assessment species. Preferred habitat is mature/old-growth conifer forests that have an abundance of large down woody material and standing snags in the Mixed Conifer, White Fir and Shasta Red Fir Zones. Tracks of marten have been found in the watershed in the Howard Prairie and Johnson Creek areas. Very little is known about the present distribution and abundance of this species in the watershed. Historically the population is believed to have been quite high, but intense trapping caused a decline. As with the fisher, it is speculated that habitat loss due to intensive timber harvest has kept populations depressed.

(3) Townsend's Big-eared Bat (*Plecotus townsendii*)

The Townsend's big-eared bat is a federal candidate (Category 2) for listing as threatened or endangered under the auspices of the ESA. This listing is due to population declines that might be attributable to human disturbance at nursery sites and hibernacula (Marshall, 1992). Preferred habitat is caves and abandoned mines. There are no known records of this species being present in the watershed, but the rimrock/cliffs of the lower canyon likely provide suitable habitat (caves). Townsend's big-eared bats have been found in the Klamath Canyon which is nearby.

(4) Pacific Pallid Bat (*Antrozous pallidus*)

The Pacific pallid bat is a Bureau assessment species due to small populations and its susceptibility to disturbance at nursery sites and hibernacula. Preferred habitat is canyons and other rocky areas near water sources in arid areas. There are records of this species in the watershed, however, little is known of its distribution and abundance.

(5) Fringed Myotis (*Myotis thysanodes*)

The fringed myotis is a Bureau assessment species due to its rarity and susceptibility to disturbance at nursery sites and hibernacula. It appears to be a habitat generalist since it is found in both forested and non-forested habitats. Caves, abandoned buildings or other similar structures are required for nursery colonies. There are records of this species occurring in the watershed, but little is known of its distribution and abundance.

2. Special Emphasis Species

The special emphasis species identified for this watershed analysis are black-tailed/mule deer and Roosevelt elk. They have been given this designation because of their recreational value

for both hunting and viewing. Elk are also included because of the potential conflict of an increasing elk herd on deer winter range.

a. Black-tailed Deer (*Odocoileus hemionus columbianus*)

Black-tailed deer are quite numerous throughout the drainage. Trend counts conducted by Oregon Department of Fish and Wildlife (ODFW) indicate a relatively stable population. There have been some decreases in the population due to die-offs during extreme winter weather, but the population has recovered from these decreases.

The deer in the watershed are essentially migratory. Generally, they winter in the Interior Valley Zone and summer in the Mixed Conifer, White Fir and Shasta Red Fir Zones.

Habitat condition on both the winter and summer range is judged to be only fair. Winter range condition has deteriorated due to lack of fire and encroachment of exotic vegetation, e.g., yellow star thistle and medusahead rye. The exclusion of fire has allowed browse species favored by deer to become decadent and of little forage value.

On summer range, forage condition appears to be adequate, but their is a concern by ODFW about the adequacy of summer thermal cover due to intensive timber harvest in the watershed.

b. Roosevelt Elk (*Cervus elaphus*)

Roosevelt elk are present throughout the watershed in varying numbers. There is a substantial herd in the Chinquapin Mountain area. In the rest of the watershed they tend to be present in scattered smaller herds. ODFW trend counts for the Rogue Big Game Management Unit indicate an increasing population of elk. The counts are not specific to the Jenny Creek Watershed, but this area should not differ from the management unit as a whole. Habitat condition for elk is judged to be good, and this is reflected in increasing populations. Due to an increasing population on deer winter range there is concern about potential competition for available forage.

A study to discern seasonal use areas, habitat affinity, migration routes and mortality rates was initiated in 1991 by ODFW, BLM and USFS. Some of the data being collected for this study are from the Jenny Creek Watershed.

3. Other Species

There are many other wildlife species known or suspected to be present in the watershed (reference Appendix 10). A basic assumption is that the viability of these species will be ensured if the fundamental goals of ecosystem management are met.

4. Special/Unique Habitats

A number of special or unique habitats occur in the Jenny Creek Watershed. They include cliffs, seeps and springs, and meadows. The importance of cliffs and meadows to several species have been described previously in the discussion of special status species.

Meadows occur throughout the watershed and vary greatly in size and vegetative characteristics. Vegetative characteristics are generally a function of the amount moisture present, i.e., wet meadows versus dry grasslands, and the degree they have been altered by grazing, recreational activities or management actions. Under the PRMP (page 2-33 and Table 2-17), all meadows are to have protection buffers as necessary to protect special habitat values.

Cliffs are concentrated in lower Jenny Creek canyon. Some smaller rimrock areas also occur in other parts of the drainage. The cliffs present in the watershed have not been altered to any extent by past management actions.

Springs and seeps are present throughout the watershed. There has not been any intensive inventory of these habitat types. Many springs and seeps have been degraded by grazing, recreational activity, and various management activities. Under the Aquatic Management Strategy these habitats will receive protection buffers of approximately 100 feet.

F. Cultural Overview

1. Prehistory

For at least 10,000 years people have come from the east, west, and south to the upland meadows and glades within the headwaters of the watershed, inhabiting small settlements and profiting from the abundance of plant and animal foods which the area provided. One of the earliest types of artifacts found in southwest Oregon, a Clovis point, is reported from Keene Creek, near Little Hyatt Reservoir, attesting to the use of this area by Paleo-Indian hunters at the end of the last Ice Age. A rich archaeological record for this region documents continuous use of this area since this early period. There are numerous recorded prehistoric (i.e., Indian) sites within the watershed spanning at least the last 6,000 years. Studies at archaeological sites document human occupation of this area since the first Paleo-Indian inhabitants.

These people came from the surrounding lands; artifacts characteristically used by inhabitants from the Klamath Basin to the east, the Rogue Basin to the west, and the Klamath River to the south occur at sites on the plateau. The high elevation and comparatively harsh winters probably precluded winter use for much of this period. Warmer climates between about 9,000 and 4,000 years ago, however, may have made upland use possible for longer periods of the year. People came to this upland plateau attracted by the rich resources of the meadows and marshes, which provided forage for game animals and an abundance of root

and other vegetable foods during the warmer months of the year. These forest openings may well have been enhanced and maintained by these Native Americans through regular burning, a practice common throughout the area.

The lands in the watershed brought people to the area for other purposes. Its location between the Rogue Valley, Shasta Valley, and Klamath Basin, made this a place for trade among various groups, and travel routes crossed the Cascades throughout the region. At the time of contact with Euro-American settlers, several groups claimed territory in this region. The Jenny Creek Watershed itself lies at the intersection of lands claimed by the Takelma of the Rogue Valley, the Shasta of the Klamath River area, and the Klamath Indians of the Klamath Basin.

2. Sensitive Areas

The Jenny Creek Watershed is an unusually rich area for archaeological resources with high concentrations of sites in and around prairies, springs, creeks, the Applegate Trail, and the lower Jenny Creek/Agate Flat area. Because of the cultural richness and sensitivity of this watershed, longer timeframes for cultural clearances and planning can be expected. All planning actions should keep this in mind.

3. Euro-American Settlement

a. Grazing

The first Euro-Americans came through this area seeking a southern route to the prime farmlands of the Willamette Valley. Jesse Applegate opened the Applegate Trail in 1846, and travelers through the area used this route during the following years. Cattle ranchers found lush grasses "higher than a man's head" in the prairie lands of the Rogue Valley, but by the 1860's were seeking summer pastures in the uplands. The lands on the Dead Indian Plateau were still unsettled at this time, providing refuge for cattle rustlers. Corral Creek, in the southern part of the watershed, received its name from a cattle rustler's corral located along it. In 1866 these rustlers were hanged from a tree just south of the present town of Lincoln.

With the exception of timber production, livestock grazing practices have been the major contributing factor to the present vegetation within the Jenny Creek Watershed. Prior to the Forest Reserve Act of 1893 and the Taylor Grazing Act of 1934, there was no control over uses of Federal lands.

Stock raising became an important part of the Rogue River Valley economy in the early 1850's. Increasing populations as a result of the discovery of gold in 1851 created a high demand for meat (BLM, 1978). With increased demand the ranchers began to utilize the excellent ranges in Klamath County. Thousands of cattle were driven over the Cascades in the 1860's and 1870's to the developing cattle empires in Eastern Oregon.

The later decades of the nineteenth century witnessed uncontrolled expansion of sheep and cattle grazing, provoking continual "bickerings and wranglings" among rival grazers for the best range. Creation of the Forest Reserves in 1893, and later the Forest Service in 1907, brought some order to the range. The lands within the watershed were part of the Cascade Range Forest Reserve in the early decades of the twentieth century, and as such were part of a vast grazing and hunting preserve used mainly by local settlers.

In addition to cattle, many sheep grazed these upland meadows. Fortunately, the competition between cattle and sheep ranchers was never as violent as in the eastern part of the state. Sheep did well, and woolen mills in Ashland prospered until the 1930's, when they succumbed to the sharp drop in wool prices which accompanied the Depression.

Sheep pastured with cattle in the high mountain meadows of the Cascades and the Dead Indian Plateau from 1890 until 1940. Historical records from the Rogue River forest indicate that several thousand head of sheep and cattle ran on the Keene Creek range. The Barron Brothers ran large sheep camps from about 1900 to 1917. Major camp locations included the head of Burnt Creek, Cottonwood Glades, Wildcat Glades, Little Rock Springs, and Crane Prairie (USFS, 1953). Woolen mills established in Ashland were successful until the Depression era and the drop in wool prices during the 1930's. The cattle industry suffered through the Depression as well.

Hyatt Reservoir was constructed in 1923 in order to provide irrigation water to the Bear Creek Valley. The resulting Hyatt Lake inundated marsh and meadowlands that had been previously grazed.

Cattle numbers increased after 1940 as sheep were phased out. In addition to sheep and cattle, hundreds of horses historically ran out year around. Severe overgrazing was reported in the upper Rogue Valley. In 1913 the Dead Indian Plateau was reported to be the most extensively grazed district on the Crater National Forest, and by 1917 the Cottonwood Glades area was reported to be overgrazed (Minore, 1978).

After World War II opening of the land through logging, along with grass-seeding programs, improved the range, but changed the character of the native vegetation. An active range program was instituted by the BLM, which had become the primary government manager of the grazing lands.

Local cattlemen formed associations to coordinate use of the rangelands among both the livestock operators and the agencies. The Keene Creek Cattle and Horse Association was formed in 1917 and included 30 permittees on Forest Service lands. A range management plan was produced by the Forest Service in 1927. Then in 1934, the Pilot Rock Grazing District was organized by resident stockmen from Southern Oregon and Northern California. Conflict between members resulted in the formation of the Greensprings Cattlemen's Association (Oregon) and the Camp Creek Cattlemen's Association (California) in 1952.

Hamilton Fox refused to join the associations and was issued a separate lease on what is now the Jenny Creek allotment.

In 1957 the BLM and Forest Service exchanged several thousand acres on the Dead Indian Plateau to realign administrative boundaries. Extensive bits of the history related to area livestock operations are contained in the files of both the BLM and Forest Service.

b. Logging

The end of the nineteenth century saw the beginning of other uses of the area, in addition to grazing. Logging of the region's timber began before the turn of the century, with small sawmills cutting logs for local use. One such mill, built by George W. Bailey, was located near the confluence of Jenny Creek and Beaver Creek at Round Prairie. Mr. Bailey established the second post office on the Greensprings in 1886 and named it "Shake" after his shake mill. The name was changed in 1911 to Pinehurst and in 1934 the Pinehurst Post Office closed, with mail delivered out of Ashland.

The advent of the railroad in the late 1880's opened the area to major timber exploitation. Soon after the turn of the century, major lumber companies such as Weyerhaeuser made their appearance in the area; in 1905 Weyerhaeuser bought a large tract of land along Jenny Creek. Homestead laws brought settlers to the uplands; many came as ranchers, but others were hired by large and small lumber companies, to acquire sections of land which later were turned over to the companies. A number of homestead claims were established in the watershed; some of these were patented, though others were never approved.

By the 1920's more intensive use of the area accompanied more aggressive management policies. In 1917 the Keene Creek Cattle and Horse Association was formed. In 1927 the Forest Service produced a Range Management Plan. Hyatt Reservoir was constructed in 1923, forming Hyatt Lake and inundating marsh and meadow lands, in order to provide water to people in the Rogue Valley below. Grazing regulations by the government as well as fire suppression policies helped control overgrazing and wildfire, thus contributing to vegetation changes in the following decades. The 1920's witnessed the growth of local communities; the town of Lincoln was founded around a mill established in 1929 by John H. Henry.

The Depression era hit loggers hard. Sharp drops in the prices of commodities made timber unprofitable. The mill at Lincoln stopped running for several years, and sheep disappeared from the Dead Indian Plateau. As the Depression wore on, however, New Deal policies brought changes to the Forests, as Civilian Conservation Corps workers opened up areas by building roads, and worked on conservation projects.

World War II brought a renewed demand for timber, and with it a renewal of the logging industry in the region. The mill at Lincoln was busy again, as were others in the area. Ranching continued to be a major use.

c. Changes in the Landscape

We know from numerous archaeological projects that Native Americans used the meadows of the Dead Indian Plateau for plant gathering. It is also known that Native Americans utilized fire to burn meadows to renew grasses and forbs and to keep the meadows open. Although we have no direct evidence of this use of fire in the Jenny Creek Watershed, we hypothesize that this was the case before contact with Euro-Americans.

Like the Indians before them, local settlers often set fire to large areas to promote the growth of berries, browse for game, and forage for their stock. Sometimes these fires swept through large areas of heavy timber. Records of the Cascade Range Forest Reserve from 1900 note conditions in the allotment area by township; each township had sustained recent, heavy burns, though the cause of the burns are not noted. In Township 38 South, Range 3 East, for example, the report states that:

> "Fires have ravaged much of the timbered sections, destroying 25 percent of the timber. The burned tracts do not reforest readily, but instead become covered with dense brush growths. Here, as everywhere else in the region lying on the western plateau of the Cascades, cattle range through the forest. Every glade or grass patch is badly overgrazed, and the trampling by stock when the ground is wet in spring or autumn prevents the small glades from becoming forested, as they would otherwise do, in most cases."

In the 1850's through the 1890's, the General Land Office (GLO) mapped the plateau indicating the size of meadows. In 1900, rangers from the Cascade Range Forest Reserve, noted the recent burns and overgrazing in the area, both of which kept meadows open.

As grazing was regulated and fires excluded or suppressed rapidly, the trend has been for meadows to decrease in size as the forest encroaches into them. This trend can be noted when comparing the 1850 GLO maps with the 1954 series topographic maps. The same meadow from the 1850 map covers less area in 1954 and even less today.

d. Rural Interface

Initial settlement and development of the Jenny Creek Watershed in the 1850's was linked to the Applegate Trail traffic between the Rogue Valley and Linkville, now known as Klamath Falls. The first significant settlement in the area occurred after reconstruction of the trail to the Southern Oregon Wagon Trail in 1872. The first post office opened in 1878, near what is now the Box R Ranch, to provide service to several ranches in the area and to some early homesteaders who did some ranching and provided various services to travelers along the wagon trail. Settlement in the majority of the watershed remained limited until the construction of the Greensprings Highway in the early 1920's. With improved access, the advent of the automobile, and improved logging mechanization, development in the Jenny Creek Watershed began in earnest. Several small mills began operating along the highway.

One small mill, owned by the Henry's, was interested in making the normal "rough and tumble" mill towns more liveable for mill administrators and their families. Thus the town of Lincoln came into existence in 1929.

Recreational use, by people from the valleys escaping the summer's heat, began as early as the 1870's. A dude ranch was opened at Fredenburg Springs in 1900 but closed shortly thereafter.

From these early starts, development continued to be focused near Lincoln and Highway 66 with dispersed homesteads occurring throughout the area. The depression of the 1930's saw a sag in development until it was resuscitated by World War II. Growth from the 1940's through the 1960's continued to be linked to the growth of the lumber industry. Ranching remained stable throughout this period.

The 1970's saw a change where the lumber industry became dominated by larger companies who trucked trees to larger mills outside the area, and the small mills closed one-by-one. As property came on the market the new purchasers came more and more from cities outside the area wanting an escape from that lifestyle. In many ways the attitudes of these emigrants still reflected these urban values with less emphasis given to commodity production and more value placed on the environmental setting.

The major uses established early in the history of this watershed continued to be important throughout the latter half of this century. Hunting, fishing, and pleasant summer weather have drawn people to this area for thousands of years, and continue to do so today, though winter sports have added a new dimension to the recreational use of this area. Ranching and logging were the first historic occupations and still constitute major economic uses of the watershed lands. Whether these remain substantial uses under new directions remains to be seen.

G. Transportation System

Roads in the Jenny Creek Watershed were built beginning in the mid 1800's with wagon roads to provide transportation routes for early settlers. Somewhat later roads were constructed for sheep and cattle ranchers. Still later a road system was developed for various recreational activities, homesteads, logging, fire access, and other land uses. Today roads are owned or managed by the BLM, various companies, the State of Oregon, Jackson County, and numerous private landowners. Road conditions in the watershed vary from primitive 4- wheel drive roads to paved major state highways such as Highway 66. Many of the roads in the watershed have reciprocal road use agreements between the BLM, various companies, and many private land owners. In some cases BLM grants rights-of-way for others to use BLM roads for their specific needs. The BLM also obtains easements for roads that cross private properties. BLM charges fees for commercial use of BLM controlled roads. Revenues from these fees are used to maintain BLM roads.

The BLM Geographical Information System (GIS) and Transportation Inventory Management System (TIMS) identify a total of 793 miles of road of which 259 miles are controlled by the Medford District BLM (Maps 9 and 9A). The State of Oregon controls 15 miles and Jackson County controls 22 miles of road. BLM's inventory contains very little information about non-BLM controlled roads. Medford BLM controls 101 miles of natural surface roads, 141 miles of rocked roads, and 17 miles of bituminous surfaced roads. All BLM controlled roads have a maintenance level assigned to them which is monitored and changed when needs and conditions change. Maintenance levels range from level 1 to level 5 with level 1 consisting of very minimum maintenance requirements up to level 5 with a high degree of maintenance requirements. BLM roads are classified as arterial, collector, and local based on the standard for which the road is used. In general, arterial roads serve large land areas and are primary travel routes, collector roads serve smaller land areas with standards determined by multi-resource service needs as well as travel efficiency, local roads are usually short dead end roads that serve a specific facility. BLM roads are generally open for use by the public unless blocked by gates or other methods. Medford BLM road inventory indicates approximately 36 miles of BLM controlled roads are located behind road blocks to protect resources or prevent resource damage. Specific road information for Medford District roads appears in Appendix 11.

H. Utility Corridors

There are numerous utility right-of-ways which cross public lands on the Medford District. These right-of-ways have been granted under various authorities over the years. Since 1976, all grants have been issued under either the Federal Land Policy Management Act (FLPMA) or the Mineral Leasing Act. In the case of the Jenny Creek Watershed area, there are five right-of-ways that have been granted to PP&L for specific utility lines. Portions of these lines pass through the watershed area. These existing lines are all long term grants which are subject to renewal as long as the terms and conditions of the original grant are satisfied.

Under FLPMA, right-of-ways are discretionary. However, in the case of a utility line which has been determined to serve the public interest, BLM is not free to deny a proposed line. We can have input into where a line should go and how to mitigate for it, but we cannot deny it outright. With this in mind, it is conceivable that more utility lines could be located within the watershed. However, if future watershed analysis indicates that additional right-of-ways would be detrimental to the area, then we would have grounds for recommending alternative routes which would be outside of the watershed boundaries or requiring the use of an existing corridor.

There are five existing utility corridors of varying lengths within the Jenny Creek Watershed (See Map 7). All of the corridors are leased and managed by Pacific Power & Light through 30 year renewable authorizations. Relevant information for each is as follows:

AUTHORIZATION #	VOLTAGE	R/W WIDTH	TOTAL R/W WIDTH IN WATERSHED
ORE 03490	12.0 KV	50 feet	2.53 miles
OR 13745	500.0 KV	175 feet	15.60 miles
OR 17317	12.5 KV	20 feet	1.48 miles
OR 20544	115.0 KV	100 feet	7.86 miles
OR 24416	230.0 KV	100 feet	17.73 miles

In each of these cases the operator has the right to enter upon and do maintenance on the right-of-way. This can include any and all maintenance on the line and supports and maintenance in the form of cutting brush and trees sufficient for access purposes and protection of the line.

In the summer of 1993 Pacific Gas Transmission Company (PGT) initiated the process of applying for a right-of-way for the Medford Extension gas pipeline. Resource specialists from the Ashland Resource Area submitted information that affected the routing of the pipeline. The proposed route (see Map 7) has been adjusted according to the input as well as other factors. The right-of-way application is being processed as a Mineral Leasing Act Right-of-Way by Tom Cottingham, BLM, Klamath Falls Resource Area. Initial construction and installation of the pipeline will require a 65-foot cleared strip. Of that strip 35 feet will be permanent right-of-way, and within the permanent right-of-way, 15 feet of width over the buried pipe will be permanently cleared of trees. Trees will be planted beyond the permanent right-of-way and other mitigation measures will be implemented throughout the impact area on a site specific basis.

V. USES AND VALUES

A. Recreation Assessment

The Jenny Creek Watershed is one of the most recreationally diverse areas in the entire Medford District. Within this watershed are the Hyatt-Howard Special Recreation Management Area (SRMA), the Pacific Crest National Scenic Trail (PCNST), the Applegate National Historic Trail, a small portion of the Soda Mountain Wilderness Study Area (WSA), a larger portion of the proposed Oregon High Desert Protection Act (OHDPA) Soda

Mountain Wilderness, the proposed Hyatt-Howard Back Country Byway, and Jenny Creek itself, which was found eligible for Wild and Scenic River status, but was not found suitable for inclusion in the National Wild and Scenic Rivers system.

The Hyatt-Howard SRMA includes approximately 42,000 acres around Hyatt Lake and Howard Prairie Reservoir (see Map 10). Recreational activities within the SRMA include fishing, swimming, boating, hunting, camping, hiking, equestrian activities, mountain biking, off-road vehicle activities, sightseeing/driving for pleasure, wildlife viewing, mushroom and berry gathering, cross-country skiing, snowmobiling, ice-skating, and sledding/tubing.

Facilities within the SRMA include private resorts, resorts operated by concessionaires, highly developed campgrounds, an equestrian campground, organizational campgrounds, semi-primitive campgrounds, a winter play area, and a BLM watchable wildlife site. Facilities around Howard Prairie Reservoir are managed by Jackson County Parks Department and facilities around Hyatt Lake are privately managed or managed by BLM.

Landscape features contributing to the recreational potential of the SRMA include the lakes, the elevation, and the location along the Cascade crest: the lakes for the obvious attraction of water, the elevation for relief from Rogue Valley summer temperatures and winter fog, and the location along the Cascade crest because of winter snows and the PCNST.

Important issues within the SRMA include visual resource management, inappropriate or competing recreational demands for the resource, grazing, winter access, and management along the PCNST. Existing and potential conflicts include timber management, inappropriate or competing recreational uses, and grazing.

Timber management activities have the potential to create unacceptable visual impacts, but visual resource management guidelines are established to help ensure acceptable impacts. New restrictions placed on timber management activities by the RMP should also reduce potential timber management conflicts.

Inappropriate or competing recreational demands have been the most significant conflict within the SRMA. Motorized versus non-motorized uses, off-road vehicle (ORV) damage, illegal camping, and winter access are examples.

Conflicts with grazing occur when cattle get into campgrounds, or gather on the lake shores for extended periods. This has not been a major problem and fencing and moving cattle have alleviated the problem.

Approximately 26 miles of the PCNST traverses the watershed from Soda Mountain to Old Baldy, of which 16 miles are also within the Hyatt-Howard SRMA (See Map 10). Under the RMP, the lands for 1/4 mile on each side of the trail will be managed as Visual Resource Management (VRM) Class II. The PCNST is open to hiking and pack animals but is closed to motorized vehicles and mechanized vehicles which include mountain bikes. Camping

facilities are available at the Hyatt Lake Campground for PCNST users, and water sources are available near Greensprings Mountain and at Griffin Pass. Landscape features contributing to the recreational potential of the PCNST is the Cascade crest itself. The trail is located on or near the crest to provide the best views of the landscape.

Important issues within the PCNST corridor include timber management, mountain bike use, and private lands. Existing and potential conflicts are the result of the issues. Timber management activities have caused much protest from groups who feel a national scenic trail should be left pristine with a "no-cut" buffer. Mountain bike use, although illegal, does occur. It frightens livestock and hikers so the original "motorized vehicle" closure was changed to "mechanized vehicles" to specifically add mountain bikes to the prohibited list. Gates, signs, and trail user's behavior are all potential conflict sources where the trail crosses private land.

The Applegate Trail, a portion of the California National Historic Trail designated in 1992, traverses the watershed from Greensprings summit to Grouse Butte following much of what is now Highway 66 (See Map 10).

Interpretive markers erected along the trail route by the Southern Oregon Historical Society provide brief messages about the area. The Jenny Creek wagon slide, a steep crossing point on the Trail, is a landscape feature that has interpretive potential. This crossing point is on private land in Section 34 of Township 39 South, Range 4 East.

Important issues associated with the Applegate Trail include its preservation and interpretation. Existing and potential conflicts include surface disturbing activities which might disturb archaeological sites associated with the trail.

The Soda Mountain WSA is a 5,867 acre roadless area on the south side of Soda Mountain. Approximately 800 acres of the WSA is within the Jenny Creek Watershed (See Map 10). Recreational activities within the WSA include hiking, horseback riding, and hunting. There are no facilities provided within the WSA, however, vehicles are allowed to cross the WSA on an existing way and this way crosses the portion of the WSA within this watershed. The landscape feature which contributed to the WSA being recommended for wilderness designation is the ecological variety and the lack of roads.

Important issues associated with the WSA include the boundary, fire management, ORV incursions, and non-native species. Existing and potential conflicts include the OHDPA proposal for a 32,000 acre wilderness, vehicle restrictions proposed for the WSA and surrounding lands, and grazing. The OHDPA proposal includes additional lands inside and outside the Jenny Creek Watershed. Approximately 6,300 acres of the OHDPA proposal are within the watershed, including numerous private parcels. Seasonal vehicle restrictions are proposed for the Agate Flat, Keene Ridge area, including approximately 13 square miles of land within the Jenny Creek Watershed. These restrictions are proposed to prevent damage to the area when the roads are wet. Attempts at gating an access road near Pilot Rock in

1993 failed, and the long history of vehicular access to the area will make enforcement of the closure difficult. Grazing is a potential conflict within the WSA when cattle gather at water sources for long periods. These problem areas do exist within the WSA but not within the Jenny Creek Watershed portion of the WSA. A range fence also exists within the WSA and it runs along the ridge which defines the watershed boundary. Some people find range improvements of any kind in conflict with their wilderness values. Still others consider grazing inappropriate in wilderness, however grazing use within the WSA is a grand-fathered use. Both grazing animals and vehicles have been accused of spreading yellow star thistle across the WSA.

The proposed Hyatt-Howard Back Country Byway would designate the roads around Howard Prairie Reservoir and Hyatt Lake as a Back Country Byway. This Byway System is within the SRMA so facilities, issues, and conflicts associated with the SRMA also apply to the byway.

During the RMP process, Jenny Creek, from its confluence with Grizzly Creek down-stream to Irongate Reservoir, was found eligible for Wild and Scenic River status based on fish and historic values. When the stream was evaluated for suitability, it was determined that Wild and Scenic designation would not be recommended. As such, Jenny Creek will not receive protection under the Wild and Scenic River Act.

Outside of the recreation areas listed above, occurs dispersed recreation activities of all varieties. The major activities include hunting, fishing, camping, ORV use, sightseeing, and horseback riding. Habitat for fish and game and climate and topography are the factors important to dispersed recreation opportunities within the watershed.

Issues involving dispersed recreation include length of stay limits, fire closures, and fish and game issues. Existing and potential conflicts occur when people stay longer than allowed or leave trash in the woods. Conflicts also occur when Oregon Department of Forestry closes the public lands to all users and hunters refuse to obey the closure. Any fish and game activity that appears to adversely affect some segment of the fishing or hunting public causes conflict.

B. Rural Interface

The majority of developed areas along Highway 66, now referred to as a rural interface area, is located near the town of Lincoln and in a strip 1/4 mile either side of the highway. Two additional areas of increased residential development are occurring near Hyatt and Howard Prairie Lakes. BLM administers 17 lease sites on the eastside of Hyatt Lake. Hyatt Pines, on the westside of Hyatt is also in the process of developing several additional homesites to add to the already existing residences. Several homes are being developed on scattered private parcels along the west shore of Howard Prairie. Refer to Map 11 which shows the land ownership pattern of the watershed.

Despite strict adherence to the Land Conservation and Development Act by the State of Oregon, and strict enforcement of county zoning ordinances, existing rural interface areas will continue to grow as more of the larger private parcels are subdivided. This growth will continue to focus along Highway 66 and Hyatt and Howard Prairie Lake areas. An additional area on the south end of Copco Road will see increased development as already subdivided parcels are developed. Minor dispersed development will occur throughout the watershed as already partitioned land is built on or further subdivided and developed.

C. Rangeland/Livestock

Livestock grazing was one of the first uses of the Jenny Creek Watershed by settlers after they began occupying southwestern Oregon in the 1850's, and has been one of the greatest influences in the BLM's management of its lands in the basin. A historical account of early grazing activities is provided in "Cultural Overview." This chapter discusses the grazing program as it exists today.

1. Grazing/Rural Interface Area

Rural Interface areas are areas where BLM administered lands are adjacent or intermingled with privately owned lands. Within the analysis area the majority of homesites occur on the Dead Indian Plateau. The scoping process for the Medford District Resource Management Plan identified management opportunities related to livestock grazing. Chief among these opportunities for livestock grazing are: a.) riparian management sites, and b.) working with adjacent land owners to resolve conflicts.

Approximately 90 acres of land within the Jenny Creek Watershed are designated as within a Livestock Free Herd District. This Herd District was formed in 1974. Lands in section 32, roughly west of Keene Creek reservoir, do not allow livestock to roam at large. Other conflicts between homeowners and livestock occur around Howard Prairie Reservoir, Hyatt Lake, Surveyor Mountain campground and at Lily Glen. In the past some complaints were received along the Greensprings area. The majority of Greensprings conflicts were resolved when the local livestock based operation was sold and moved to another location. Some local complaints still occur in this area, primarily during drought years when cattle are seeking green forage.

2. Riparian Areas

Riparian areas are unique and among the most productive and important ecosystems. Healthy riparian systems display a great diversity of plant and wildlife species, purify water and dissipate stream energy. Riparian areas are also focal points for recreation and livestock.

Livestock tend to stay in riparian areas in hot weather, seeking water, shade, and green forage. This tendency to concentrate in riparian areas in conjunction with the protein content

of browse species may result in riparian vegetation removed along streams and around wetlands. This vegetation removal in conjunction with streambank trampling can cause increased temperatures and sedimentation to occur.

3. Current Allotment Situation

The following discussion is a summary of the current allotment situation within the Jenny Creek Watershed (JCW). See Map 12a which depicts the areas within the grazing allotments described below. Some terms used in this discussion which should be defined are:

a. Animal Unit Month (AUM): The amount of forage required for 1 cow or equivalent during a 1 month period.

b. Exchange of Use (EOU): A non-preference type of grazing authorization issued to applicants owning or controlling unfenced and intermingled land within an allotment boundary.

c. Grazing Preference: Amount of AUM's of livestock grazing on public lands which are attached to base property owned or controlled by a permittee.

d. Licensed Use: Current authorized amount of livestock use for which payment has been received.

The Medford District completed a Grazing Environmental Impact Statement and Rangeland Program Summary (RPS) in 1984. These documents continue to provide guidance for the rangeland program. Key components of the rangeland program are the categorization of allotments, monitoring and evaluations, implementation of management plans and construction of necessary rangeland improvements.

Categorization or selective management concentrates funding and personnel where management is most needed. The categories are Maintain (M), Improve (I), and Custodial (C). Maintain means that current management will be sufficient to maintain conditions that are satisfactory. Improve means that the allotment will be managed intensively for improvement. Custodial means that a minimum amount of manpower will be expended to maintain existing resources, often due to a large percentage of private lands.

Actual use forms reveal a steadily decreasing trend in livestock use upon these allotments during the past 10 years. A recent development, which may accelerate this downward trend, was the cancellation of all privileges on Weyerhaeuser Company lands. This decision was made due to public perceptions related to grazing and lack of control of livestock within riparian zones. This action could have a significant impact on many livestock operators within the Jenny Creek Watershed.

Information pertaining to allotments within the Klamath Falls Resource Area was obtained from Bill Lindsey, Range Conservationist, Klamath Falls Resource Area, Lakeview District.

4. Current Allotment Allocations

AGATE ALLOTMENT #20106
Allotment Category - C

	ownership
BLM/O&C	97
Private	160
TOTAL	257

Operator: Vacant
Normal Operation
2 Cattle

Preference 9
Season Of Use
5/1 - 9/15 BLM 9 AUMs

This allotment is 100 percent within the Jenny Creek Watershed. Winifred Miller began utilizing this allotment in 1973, acquiring 6 AUMs from 10/1 to 11/15. In 1980 she applied and received the current season and AUMs. The base property was sold in 1990 and the allotment has remained vacant.

Because this allotment is in the custodial category an evaluation was not completed under the Medford Grazing Management Program EIS.

BOX R ALLOTMENT #10137
Allotment Category - C

	ownership
BLM/O&C	80
Private	680
TOTAL	760

Operator: Don Rowlett
Normal Operation
1 Cow

Preference 5
Season of Use
6/16 - 11/15 BLM 5 AUMs

This allotment is 100 percent within the Jenny Creek Watershed. Because this allotment is in the custodial category, an evaluation was not completed.

BUCK LAKE ALLOTMENT #00104
Allotment Category - C
KLAMATH FALLS R.A.

	ownership
BLM/O&C	11,971
Private	4,380
TOTAL	16,351

Operator: Scott and Lori Johnston	Preference 105			
Normal Operation	Season of Use			
30 Cattle	7/1 - 10/15	BLM	106 AUMs	
11 Cattle	7/1 - 10/15	EOU	39 AUMs	

Approximately 45 percent of this allotment is within the Jenny Creek Watershed. Although the allotment has 2 permittees, only the Johnston permitted area is within the Jenny Creek watershed. Actual use is not required because it is within the custodial category. However, observations made by Klamath Falls employees have determined that actual use is very similar to licensed use. Therefore, normal operation is based on grazing lease information.

Over utilization problems, particularly in the riparian areas are a concern within this allotment. Cattle within Surveyor mountain campground has also been an issue.

BUCK MOUNTAIN ALLOTMENT #00103
Allotment Category - C
KLAMATH FALLS R.A.

	ownership
BLM/O&C	8,464
Private	41,720
TOTAL	50,184

Operator: Larzabal Ranch	Preference 204			
Normal Operation	Season of Use			
44 Cattle	5/15 - 10/1	BLM	203 AUMs	
210 Cattle	5/15 - 10/1	EOU	948 AUMs	

Approximately 75 percent of this allotment is within the Jenny Creek Watershed. The allotment and exchange-of-use land are currently in nonuse by mutual agreement due to disputes over range improvements and maintenance. This allotment is in the custodial category. Licensed use information was used to represent the normal operation.

The primary issue concerning livestock grazing in this allotment is whether or not Weyerhaeuser Company will renew its exchange-of-use lease agreements. Riparian areas are also a concern.

DEADWOOD ALLOTMENT #20106
Allotment Category - I

	ownership
BLM/O&C	7,928
Private	3,860
TOTAL	11,788

Operator #1: Merton Bradshaw Co.	*Preference 382 cattle		
Normal Operation	Season of Use		
283 Cattle	8/16 - 10/15	BLM	566 AUMs
99 Cattle	8/16 - 10/15	EOU	198 AUMs

Operator #2: Donald Johnstòn	*Preference 150 Cattle		
Normal Operation	Season of Use		
110 Cattle	8/16 - 10/15	BLM	220 AUMs
40 Cattle	8/16 - 10/15	EOU	80 AUMs

Approximately 95 percent of this allotment is within the Jenny Creek Watershed. The Deadwood allotment is managed in conjunction with the Deadwood USFS allotment (#12214) under a Coordinated Resource Management Plan (CRMP) which was developed in 1972. The two month season for this allotment rotates yearly with the USFS, turn out in even years is 8/16, odd years 6/16. Livestock numbers are static in this allotment. Utilization studies show distribution problems occurring on the west half of the allotment from Hoxie Creek north while limited use occurs in the east. Ranchers are cooperating to resolve the distribution problem through salting, riding, transporting water and water developments. Riparian utilization is a also a concern late in the season. Riparian exclosures have been completed to help resolve the situation.

DEADWOOD ALLOTMENT USFS #12214
Allotment Category - Unknown

	ownership
Forest Service	15,241
Private	5,825
TOTAL	21,066

Operator #1: Merton Bradshaw Co.	Preference 656		
Normal Operation	Season of Use		
328 Cattle	6/16 - 8/15	BLM	656 AUMs
54 Cattle	6/16 - 8/15	EOU	108 AUMs

Operator #2: Donald Johnston	Preference 258		
Normal Operation	Season of Use		
129 Cattle	6/16 - 8/15	BLM	258 AUMs
21 Cattle	6/16 - 8/15	EOU	42 AUMs

Approximately 10 percent of this allotment is within the Jenny Creek Watershed. This allotment is managed in conjunction with the Deadwood allotment (#20106). Because this allotment is not under the jurisdiction of BLM an allotment category or evaluation are not available.

DIXIE ALLOTMENT #00107
Allotment Category - I
KLAMATH FALLS R.A.

	ownership
BLM/O&C	5,547
Private	22,260
TOTAL	27,807

Operator: Jerry Barry	Preference 415		
Normal Operation	Season of Use		
75 Cattle	5/1 - 10/15	BLM	324 AUMs
125 Cattle	5/1 - 10/15	EOU	680 AUMs

Approximately 40 percent of this allotment is within the Jenny Creek Watershed. A primary concern in this allotment was the cancellation of Weyerhaeuser Company exchange-of-use lease agreements. Cattle drift onto the Weyerhaeuser lands is a problem. This allotment also includes the Pokegama Wild Horse Management Area.

EDGE CREEK ALLOTMENT #0102
Allotment Category - I
KLAMATH FALLS R.A.

	ownership
BLM/O&C	8,860
Private	29,400
TOTAL	38,260

Operator: Joe Laubacher	Preference 208		
Normal Operations	Season of Use		
83 Cattle	5/1 - 7/15	BLM	208 AUMs

Less than one percent of this allotment is within the Jenny Creek Watershed. A primary concern in this allotment was the cancellation of Weyerhaeuser Company exchange-of-use lease agreements. This allotment is also within the Pokegama Wild Horse Management Area. Conflicts concerning unauthorized use are reported to have resulted in cancellation of the Pacific Power and Light base property lease to Mr. Laubacher.

HOWARD PRAIRIE ALLOTMENT #10116
Allotment Category - M

	ownership
BLM/O&C	20
*Bureau of Reclamation	300
TOTAL	320

Operator: Merton Bradshaw Co.	Preference 60		
Normal Operation	Season of Use		
60 Cattle	10/16 - 11/15	BLM	61 AUMs
15 Cattle	10/16 - 11/15	EOU	15 AUMs

* This property is managed by the BLM through a memorandum of understanding (MOU) with the Bureau of Reclamation.

This allotment is 100 percent within the Jenny Creek Watershed. Livestock allocation is well within annual production, and utilization has not been a problem. Deferred grazing until mid-October has resulted in good plant vigor and has reduced conflicts with recreationists at the Lily Glen site. Late season grazing also protects the waterfowl nesting sites while removal of decadent growth late in the year promotes new growth for waterfowl in the spring. Unauthorized use occurs in this allotment from gates being left open by recreationists. The result is cattle drift prior to the grazing season. Forage use has been minor in the last three years.

HOPKINS ALLOTMENT #10153
Allotment Category - C
KLAMATH FALLS R. A.

	ownership
BLM/O&C	356
Private	???
Total	

Operator: Jerry Barry	Preference 47		
Normal Operations	Season of Use		
16 cattle	3/1 - 5/30	BLM	47 AUMs

Approximately 75 percent of this allotment is within the Jenny Creek Watershed. Information is limited concerning this allotment. Observations by Haight and Arnold (BLM) during raptor surveys conducted in 1993 and 1994 report native plant communities in good condition with limited access. This allotment falls within the Redding Resource Area in California, but is administered by the Klamath Falls Resource Area.

JENNY CREEK ALLOTMENT #10108
Allotment Category - I

	ownership
BLM/O&C	1,303
Private	80
Other	320
TOTAL	1,703

Operator: Cecilia Taylor
Normal Operation
30 Cattle

Preference 120
Season of Use
6/1 - 9/30 BLM 120 AUMs

This allotment is 100 percent within the Jenny Creek Watershed. Prior to the Jenny Creek Riparian Projects, utilization problems within the riparian areas of this allotment were a major concern. Riparian fencing has created an opportunity for controlled and limited third and fourth pasture rotation. Utilization in the south pasture is a concern. There is a history of unauthorized use. Winter access to the allotment is a problem. Noxious weeds (e.g. yellow star thistle) are becoming well established.

JOHNSON PRAIRIE ALLOTMENT #00115
Allotment Category - C
KLAMATH FALLS R.A.

	ownership
BLM/O&C	120
Private	400
TOTAL	520

Operator: Richard Hart and Marco Mendez
Normal Operation
2 Cattle

Preference 12
Season of Use
5/1 - 10/31 BLM 12 AUMs

This allotment is 100 percent within the Jenny Creek Watershed. Due to this allotments small size, management information is limited and concerns unidentified.

KEENE CREEK ALLOTMENT #10115
Allotment Category - I

	ownership
BLM/O&C	22,863
Private	23,540
TOTAL	46,403

Operator #1: Joe Dauenhauer	Preference 1,400
Normal Operation	Season of Use
350 Cattle	6/16 - 10/15 BLM 1,404 AUMs

Operator #2: James C. Miller	Preference 207
Normal Operation	Season of Use
59 Cattle	6/16 - 9/30 BLM 207 AUMs

Approximately 99 percent of this allotment is within the Jenny Creek Watershed. Utilization studies within the allotment show that distribution of livestock is a major concern. Much of the allotment is not used or under utilized while other areas may be heavily used. Cattle tend to stay around Hyatt Lake, in Wildcat Glades and Crane Prairie, and below Little Hyatt. Intensive livestock management is required to resolve distribution and accompanying forage utilization patterns natural to this area. These include placement of salt, riding and fence maintenance.

Residential development and recreational use is on the increase. Mr. Dauenhauer recognized the social and biological conflicts within the allotment and subsequently voluntarily relinquished some AUMs in 1994, which resulted in his current preference of 1,400 AUMs.

A riparian demonstration area has been established on Dead Indian Creek (outside of the Jenny Creek Watershed) to provide information on recovery and potential for riparian areas on the Dead Indian Plateau.

SODA MOUNTAIN ALLOTMENT #10110
Allotment Category - I

	ownership
BLM/O&C	35,471
Private	13,866
TOTAL	49,337

Operator #1: Suzy Courtney	Preference 1,500
Normal Operation	Season of Use
273 Cattle	5/1 - 10/15 BLM 1,500 AUMs
Operator #2: Robert R. Miller	Preference 470
Normal Operation	Season of Use
104 Cattle	6/1 - 10/15 BLM 470 AUMs
Operator #3: Walt Ranch	Preference 324
Normal Operation	Season of Use
81 Cattle	6/16 - 10/15 BLM 324 AUMs

Approximately 50 percent of this allotment is within the Jenny Creek Watershed. Grazing preference within the allotment was reduced to 2,694 AUMs from the historic preference of 4,029 AUMs in 1986. Another 400 AUMs of preference were eliminated in 1994 in the Pilot Rock area (not in watershed) due to failure to make proper application. Two herd districts exist adjacent to the allotment. The Green Springs Herd District was formed in 1974 and the Siskiyou Summit Herd District in 1983.

Intensive livestock management is required to resolve distribution and accompanying forage utilization patterns natural to this area. Grazing rotates within the seven pastures. Closing gates and fence maintenance are extremely important. Utilization along Keene Creek ridge is an area of concern. Unauthorized use, during the off season is a concern on Jenny Creek. Riparian areas of Keene Creek, Parsnip Lakes, and Mayfield garden are showing improvement with intensive cattle management. Yellow star thistle is encroaching at an alarming rate, especially on south slopes near the California border. Introduction of biological controls, should give positive results soon.

5. Range Improvements

The Jenny Creek Watershed has all or part of 13 grazing allotments within its boundaries. Six of these allotments are managed from the Klamath Falls office. Several rangeland improvements have been developed within these allotments. The responsibility of maintenance is assigned to the benefitting activity. Many of our rangeland improvements are maintained by the allotment permittees.

Rangeland improvements include water developments, fencing, seeding and projects for erosion control. Although many of these improvements are related to livestock management, funding is also available for wildlife enhancement and riparian habitat improvement. See Appendix 12 for a listing of rangeland improvements.

6. Poisonous Plants

Poisonous plants have the potential to inflict serious economic consequences on many livestock operations. They should be considered in any range management plan. There are several species present in the Jenny Creek Watershed which deserve special attention.

The most toxic plant present in the watershed is poison hemlock (*Conium maculatum*). Even in small quantities this plant can cause respiratory paralysis in sheep or cattle within two to three hours. However, control is possible, and animals seldom consume it when other forage is available.

A congenital deformity in lambs known as "monkey face" is a side effect of western false-hellebore (*Veratrum californicum*). Toxic reactions occur within two to three hours of consumption. Spontaneous abortions in ewes can also result. Because this plant occurs in moist sites, it is often times very accessible to livestock, which makes it a management concern.

Saint-Johns-wort (*Hypericum perforatum*), often referred to as Klamath weed, causes photosensitization in light colored animals, with young being particularly susceptible. Although it is seldom fatal, economic losses can easily occur. Cattle and sheep normally will not consume this plant when mature, but young shoots in the spring may be eaten. Biological control agents have been very successful for this plant.

Low (*Delphinium barbeyi*) and tall (*Delphinium occidentale*) larkspur can result in severe livestock losses because animals will feed on it even when other forage is available. There is no known treatment for the toxin, but losses are rare in sheep and horses. Cattle should be restricted from infested ranges until after the plants have flowered.

Yellow star thistle (*Centaurea solstitialis*), which is also a noxious weed, commonly spread by sheep or in hay, is a serious concern primarily due to its ability to aggressively invade and take over large expanses of rangeland. However, it is also poisonous to horses during certain stages of growth. The symptoms are similar to lock jaw, and the toxin is almost always fatal.

These are not the only plants present within the Jenny Creek Watershed, which pose health risks to livestock. Oak brush (*Quercus* sp.) for example, if eaten in large quantities when toxins are high after frost, can be fatal to cattle. However, this section includes species which pose the greatest potential to inflict harm.

7. Wild Horses

Jenny Creek is the western boundary of the 80,900 acre Pokegama Wild Horse Management Area (WHMA). The WHMA is bounded on the north by Highway 66. Copco Lake and the upper Klamath River form the south and east boundaries. BLM controls 20 percent of this area with management responsibilities for the herd assigned to the Klamath Falls Resource Area, Lakeview District. The primary area of horse activity within the Jenny Creek Watershed occurs in the Dixie Creek allotment. See Map 12b which shows the boundary of the Wild Horse Management Area.

The herd is believed to have been established by a rancher who free ranged a buckskin quarter horse and approximately seven mares in the area around the turn of the century. Off-spring from these animals were gathered only when needed, which allowed for expansion to occur.

Herd surveys conducted since 1972 reveal a gradually increasing trend in herd size. Although the herd has attained the upper herd number objective of 50 animals, low recruitment is a concern. This problem may be due to unauthorized cropping of the foals, predation, or genetic problems related to inbreeding. Horse herd trend counts are provided in Table 7.

The Jenny Creek Watershed contains critical deer winter range, while at the same time has economic importance through livestock grazing and timber harvesting. Therefore, the wild horse herd can potentially impact several interests. Fecal analysis conducted from 1979 to 1981 found direct competition between horses and cattle for grasses. The study also found that horses do not compete with deer for browse during the winter, but some competition may occur during green up periods when deer feed heavily on forbs and grasses. The Weyerhaeuser Company, which owns 61 percent of the land within the WHMA, has complained of horses trampling and eating seedlings.

In an attempt to alleviate some of these problems, the Medford District allocated 250 AUM's to the Pokegama herd in 1983. Because the horses seem to congregate in wetter sites, fencing and spring developments could control some of the potential impacts.

Present management strategies include maintaining the wild horse herd between 25 and 50 animals. However, an Environmental Assessment (EA) is currently in progress which includes reducing the herd to 30 animals possibly over a 5 year period. Implementation of this plan should begin within three years. At this time, only nuisance animals are being relocated. If the free roaming nature of the herd is to continue, cooperative agreements with Weyerhaeuser Company and other private land owners is essential.

Table 7. Results of the wild horse surveys conducted in the Pokegama Wild Horse Management Area.

YEAR	# ADULTS	# FOALS	TOTAL
1972	-	-	25
1973	-	-	25
1977	-	-	30
1978	31	4	35
1985	36	5	41
1992	52	3	55
1993	47	3	50
1994	43	2	45

8. Range Condition

The Soil Vegetation Inventory Method (SVIM) survey conducted on the Medford District between 1979 and 1983 evaluated most of the BLM land within the Jenny Creek Watershed for range condition. Range condition tells us the state of the vegetation on each range site and where it stands relative to potential natural community status. A "range site" is the basic unit of rangeland classification which is defined and described with soil, species composition, and production emphasis. The term "potential natural community" (PNC) is used to describe the basic community of plant species that would become established if all successional sequences were completed without interference by man under the present environmental conditions. PNC is generally synonymous with the "climax community." Range condition is a part of Ecological Site Inventory data, and was classified as excellent, good, fair, poor in the Rangeland Program Summary, but is now rated on ecological status (PNC, late, mid, or early seral stage). These ratings compare as shown below:

CLASSICAL RATING	SIMILARITY TO PNC	ECOLOGICAL STATUS
EXCELLENT	76 - 100 %	PNC
GOOD	51 - 75	LATE SERAL
FAIR	26 - 50	MID SERAL
POOR	0 - 25	EARLY SERAL

The SVIM data and the site write up areas mapped off the GIS computer give us an extensive set of production data from clipped plots and a detailed baseline for condition on which to plot trend by periodic vegetation sampling at the transect sites.

Rating forests on a range ecological basis and adding forest acre numbers to rangeland data skews the picture of range condition classification. If just rangeland had been rated for range site condition and potential, the status of the range in the Jenny Creek Watershed would rank much higher ecologically than the SVIM results indicated. It is probably not a valuable use of time or manpower to rate forested acreage for range condition. However, while the Jenny Creek Watershed, through the SVIM survey, is categorized as forest or non-forest lands all site write up areas (SWA's) were identified with a range site type and rated as rangeland. The SVIM team surveyed 69,234 acres for range condition, with nearly 96 percent of this land rated as early seral condition. Eighty-seven percent (60,553) of these acres surveyed were ranked against a forest PNC, not for classic rangeland potential natural communities. Ninety-eight percent (59,128) of the forested acres rated at early seral stage with only a minor amount (1,425 acres) at mid seral (Refer to Table 8).

Only 4,952 surveyed acres fell into the classic rangeland groups of grassland or oak/grass woodlands. Oak woodlands make up seven percent of the total acreage surveyed, and grasslands, about six percent. Of this acreage, about 30 percent was in mid or late seral status. Some of the early seral rating on the non-forested lands reflects historical poor management practices. However, there is a concern that even given best management practices the possible introduction or spread of noxious weeds and nonnative plants will displace the native perennial grasses, thus decreasing the ecological rating.

Table 8. SVIM range condition survey of BLM acres within the Jenny Creek Watershed counted a total of 69,234 acres.

	FORESTED ACRES	OAK WOODLAND ACRES	GRASSLAND ACRES
PERCENT OF TOTAL ACRES SURVEYED	87%	7%	6%
TOTAL SURVEYED	60,553	4,816	4,136
TOTAL EARLY SERAL	59,123	4,434	3,136
TOTAL MID SERAL	1,425	382	899
TOTAL LATE SERAL	0	0	101

9. Potential Natural Vegetation

The Soil Vegetation Inventory Method (SVIM) survey conducted on the Medford District between 1979 and 1983 evaluated all BLM lands for Potential Natural Community (PNC) or as it was called then, Potential Native Vegetation. Knowing potential natural vegetation for areas allows Range Managers to determine the suitability of sites for grazing, types of management needed on those sites, and other possible uses of the areas assessed.

"Potential vegetation" is synonymous with "climax vegetation." As with climax, natural potential is predictable, being based on climate and soils. Climate and soil types are determined in part by elevation, latitude, longitude (sometimes), slope, and aspect. The relationships between the potential species composition of stands and site variables which characterize the temperature and moisture environments within which plants grow in southwestern Oregon was published by Waring, Reed, and Emmingham (1972). They emphasized that soil variables, particularly soil moisture holding capacity also strongly influence the potential natural community. Since these variables cannot be changed other than temporarily by management, they pose relatively unalterable limits on stand species composition (Lewis, 1993). Because of these limits, potential vegetation can be based upon reference sites of 100 to 300 years old, which are considered by ecologists to be stable enough to reveal their potential species composition, structure, and give some information on biomass production (Atzet, 1990).

The combinations of factors influencing Potential Natural Communities are complex in southern Oregon. Within the Franklin and Dyrness' publication, zones are multiple inclusions of varied potential natural vegetation communities. These communities are divided into specified range sites described by the Soil Conservation Service or forest associations described by the U.S. Forest Service. Data from the SVIM study, a soil inventory in 1989, and a complete soil survey for 1993 were used to build a Potential Vegetation Map for the public and private lands of the Jenny Creek Watershed (see Map 13).

The potential vegetation designated on the Jenny Creek Watershed is made up of nine Series of Vegetation Types. Each series represents a group of SCS designated range sites (Appendix 13 has brief Range Site Descriptions). These series fit loosely within the Vegetative Zones described earlier.

PART II ANALYSIS

The preceding sections of this Watershed Analysis have presented assessment information on resources in the Jenny Creek Watershed. Also included are a number of issues concerning their management that have been raised by the public and BLM. This portion of the document discusses "Land Use Designations" and "Standards and Guidelines." Land Use Designations or Allocations are referenced in two planning documents, "Medford District Proposed Resource Management Plan and Environmental Impact Statement" and the "Record of Decision and Standards and Guidelines for Management of Late Successional and Old-Growth Forest Related Species." They provide definitions and descriptions for these areas. "Standards and Guidelines" were developed to assist land managers in managing resources and attaining "future desired conditions" for those land use designations.

Also in this chapter, resource assessment data has been compared with desired future conditions for the various land use allocations. Where current conditions fall short of the desired future condition, recommendations for improvement will be identified.

VI. CUMULATIVE EFFECTS AND HYDROLOGIC ANALYSIS

A. Background for Cumulative Effects

The following are common methods of measuring cumulative effects of timber harvest, road construction, and other extensive ground disturbing activities: early seral area, compacted area, created openings in the transient snow zone (TSZ), and road density.

Early seral area refers to the percent of a watershed that has been brought to an early seral stage through logging, fire, road building, and other clearing practices. It assumes a recovery period in which the vegetation returns to a hydrologic condition that would match its natural hydrologic condition. This is approximately 35 years in this watershed due to cold alpine conditions in the upper part and low precipitation in the lower part. In forested areas the canopy intercepts precipitation and the trees take up ground water in the process of evapotranspiration. Logging removes trees, thus more water may reach the stream system increasing stream yield and sediment load (Harr, 1989).

Compacted area refers to the percent of a watershed that has been subject to tractor logging and road building. This causes increased densities and reduced permeability of the soil. Compaction may increase surface water runoff and decrease forest productivity. If tractor logging without designated skid roads can compact as much as 40 percent of a logged area, the recovery period for compacted soils may be as much as 70 years (Froelich, 1979 and 1983).

Created openings in the TSZ refers to that portion of the drainage area that has been artificially opened through logging and road building. The TSZ is an area, usually defined by elevations (in this case 3,500 to 4,500 feet), where the snow level fluctuates throughout

the winter in response to alternating warm and cold fronts. Snow accumulates the most in open areas. Rapid melting occurs as a consequence of rain on snow events. This results in higher peak flows. Time of recovery is approximately 40 years (Harr, 1981 and 1989). (Note: climatic information in section IV.B.2 indicates that the TSZ lies from 3000 to 4200 feet, however, for all of Ashland Resource Area, TSZ was assumed to be 3500 to 4500 feet.)

Road density refers to length of road for a measured area. Common units are miles per square mile. Roads can act to redirect surface runoff to the natural drainage system. Roads also can intercept shallow groundwater and convert it to surface runoff that is routed to the natural drainage system. Roads, therefore, can act as artificial drains that deliver water to the natural drainage system that otherwise would be detained or infiltrated by the soil. This phenomena creates higher peak flows. Runoff from roads is generally concentrated and is more erosive than most natural runoff. Concentrated runoff from roads is more likely to carry a higher proportion of sediment than a like area of natural surface. Road density is an index of existing effects on the watershed.

In assessing cumulative effects the above factors must be considered in relation to a given watershed's resiliency or, conversely, its fragility. Measurements of resiliency/fragility include portions of fragile soils and stream condition/stability.

In order to perform a detailed cumulative effects analysis an analytical watershed should be subdivided into subwatersheds and each subwatershed should be further subdivided into drainage areas. Each drainage area (1,000 to 7,000 acres) would then be analyzed. For the purposes of this document, the best available data for each subwatershed will be used.

B. Subwatershed Cumulative Effects:

The following data is presented for each subwatershed within the Jenny Creek Watershed. The headings include Drainage Area, Year (for which the analysis was performed), % of Subwatershed, % Early Seral (Portion of the drainage area with early seral vegetation, % Compaction (portion of the drainage area that is compacted), percent transient snow zone (portion of the drainage area within the transient snow zone and the portion in the transient snow zone that is in nonrecovered openings), and Road Density (in miles per square mile):

1. Upper Jenny Creek

This subwatershed has four of five drainage areas analyzed as follows:

Drainage Area	Base Year	% of Sub*	% Early Seral	% Compacted	% TSZ (Open)**	Road Density*
East Howard Prairie	1991	37.5	7	7	0	2.9
West Howard Prairie	1990	28.6	18	12	0	3.2

Drainage Area	Base Year	% of Sub*	% Early Seral	% Compacted	% TSZ (Open)**	Road Density*
Jenny Creek Springs	1991	18.6	4	7	45(20)	4.6
Grizzly Creek	1994	4.9	NA	NA	NA	6.6
Soda Creek	1991	10.4	6	15	16 (est)	5.4

*Data generated from GIS.
**Percent of subwatershed that is in transient snow zone (percent of TSZ artificially opened)

The streams are generally in good condition except Hoxie (East Howard Prairie) and Willow (West Howard Prairie) Creeks which are in fair hydrologic condition. Farva, Pinehurst, and Oatman soils on gentle to moderate slopes are generally stable. Overall road density is 3.8 miles per square mile. The following concerns are based on the above data:

a. High portions of early seral vegetation and/or compacted area are in the West Howard and Soda Creek drainage areas.

b. High amounts of TSZ with 45 percent artificial openings are in the Jenny Creek Springs drainage area.

c. High road density in Jenny Creek Springs, Grizzly Creek and Soda Creek drainage areas.

Note that the two Howard Prairie drainage areas feed Howard Prairie Reservoir and have no direct effect on the Jenny Creek stream system.

2. Johnson and Sheepy Creek Subwatersheds

There is very little information available about these subwatersheds. Weyerhaeuser Company owns the majority of land within these two subwatersheds. Drainage areas have not been delineated for these subwatersheds. However, experience in the area and quick aerial photo review indicates that there is a high percentage of early seral vegetation. Some degree of hydrologic recovery has occurred because most of the logging was done roughly 15 years ago. Compacted area is also most likely high as tractor logging was the predominate form of yarding. Roughly 65 percent of both these drainage areas are within the TSZ. Road density is 4.0 for Johnson Creek and 4.3 miles per square mile for Sheepy Creek. The lands in these two subwatershed are predominantly privately owned and managed.

Pinehurst, Woodcock, and Oatman soils are generally stable. A relatively large area of poorly drained Klamath soil occurs here. Sketchy information indicates the following concerns:

a. There is a large portion of early seral vegetation, of special concern that part within the transient snow zone.

b. There is a large amount of compacted area.

c. There are high road densities over much of the area.

3. Middle Jenny Creek Subwatershed

This subwatershed has two of five drainage areas analyzed for cumulative effects as follows:

Drainage Area	Base Year	% of Sub*	% Early Seral	% Compacted	% TSZ (Open)**	Road Density*
Beaver Creek	1992	40.3	10	11	34(3)	4.3
Corral Creek	1992	15.8	7	7	69(8)	4.0
Fredenburg/Jenny	1994	14.9	NA	NA	NA	4.8
Parker/No Name	1994	12.2	NA	NA	NA	4.6
Parker/Jenny	1994	16.8	NA	NA	NA	3.0

*Data generated from GIS.
**Percent of subwatershed that is in transient snow zone (percent of TSZ artificially opened)

Two Parker drainage areas are east of Jenny Creek, Fredenburg/Jenny is west of Jenny Creek on the north end of the subwatershed. Over 65 percent of these drainage areas are in the TSZ. The Farva and Woodcock soils are generally stable. There is some exposure of shallow McMullin and moderately deep, clayey McNull soils west of Jenny Creek. There is even a small area of expansive Carney and Coker clays on the west side of Round Prairie. These are the northern fringe of soils developed from Western Cascade volcanic materials. The overall road density is 4.2 miles per square mile. Overall stream condition/stability is fair. The above information generates the following concerns:

a. There are high road densities except in the Parker/Jenny drainage area.

b. There are moderately high levels of early seral vegetation in the Beaver Creek drainage area.

c. There are local areas of pyrochlastic soils that may be sensitive to management practices.

4. Keene Creek Subwatershed

This subwatershed has four of six drainage areas analyzed for cumulative effects as follows:

Drainage Area	Base Year	% of Sub*	% Early Seral	% Compacted	% TSZ (Open)**	Road Density*
Hyatt	1990	27.8	12	12	0	3.6
Upper Keene	1991	20.5	12	13	1	3.8
Parsnip/Keene	1994	19.5	NA	NA	NA	4.0
Mill/Fairchild	1994	16.1	NA	NA	NA	4.1
Lincoln Creek	1993	9.4	8	11	57(10)	4.7
Lower Keene	1993	6.6	25	11	62(7)	3.8

*Data generated from GIS.
**Percent of subwatershed that is in transient snow zone (percent of TSZ artificially opened)

Soils are highly variable, ranging from the Farva, Pinehurst, Rustler Peak in the Hyatt and Upper Keene drainage areas to Tatouche and McNull soils in the lower part of the subwatershed. Tatouche and McNull are clayey and developed from western cascade volcanics. The overall road density is 3.9 miles per square mile. Overall stream condition/stability is good to fair in the lower part of the subwatershed. The above information indicates the following concerns:

a. There is a high portion of early seral vegetation in lower part of the watershed where pyrochlastic soils are common.

b. Road density is high in the middle part of the subwatershed particularly in the Lincoln Creek drainage area.

c. There is a very high percent of TSZ in the lower part of the subwatershed though the percent of unrecovered openings is low.

Note that Hyatt and Upper Keene drainage areas represent an area that currently has little direct effect on the main stream system due to diversion from Keene Creek Reservoir.

5. Lower Jenny Subwatershed

Only the Oregon Gulch drainage area has been analyzed for cumulative effects out of five drainage areas.

Drainage Area	Base Year	% of Sub*	% Early Seral	% Compacted	% TSZ (Open)**	Road Density*
Oregon Gulch	1991	10.4	4	Low	60(small)	1.9
Rattlesnake/Jenny	1994	30.3	NA	NA	NA	3.7
Skookum Creek	1994	37.6	NA	NA	NA	2.4
Shoat/Jenny	1994	15.2	NA	NA	NA	1.6
California	1994	6.5	NA	NA	NA	0.6

*Data generated from GIS.
**Percent of subwatershed that is in transient snow zone (percent of TSZ artificially opened)

Soils are typically Skookum and McMullin on uplands west of Jenny Creek. These are mixed pyrochlastic and shallow to bedrock soils. On the flows east of Jenny Creek, Greystoke and Pinehurst soils are common. On the plateau/tableland (Agate Flat) adjacent to the south end of Jenny Creek, Randcore-Shoat complex and Campfour-Paragon complex are common soils. Overall road density is 2.5 miles per square mile. Stream condition/stability for Oregon Gulch is fair due to excessive road culvert blowouts. The above information is indicative of the following concerns:

a. Though road density is not high, poor road location has created major problems for Oregon Gulch.

b. Pyrochlastic soils on the west upland slopes may be sensitive to any heavy disturbance.

C. Hydrologic Analysis & Recommendations

Normally a hydrologic assessment is completed for a distinct purpose such as a land use management proposal like gold mining. The assessment on Jenny Creek is therefore painted with a much broader brush because there is no one distinct land use activity to be planned for. However the drive behind watershed analysis in this day and age is essentially for Aquatic Conservation Strategy.

Fisheries production is obviously limited by discharge volumes. If the aim of future management is to increase fisheries production for whatever species and reason, volumes of available water will aid in projecting numbers. If water volume or discharge is a critical

data need, then perhaps a gaging station should be erected at the Lower Crossing station at the mouth of the watershed. A gaging station would provide daily discharge values and would assist us in determining peak and low flow events. A gaging station at the Lower Crossing station would also be useful in performing watershed assessments or analysis on other unregulated basins in the area since there is a general lack of stations and data on streams like Jenny Creek.

If the aim of future management is a timber sale or a selective cut prescription to improve forest health, the completion of a water balance would be very useful. A water balance is a tool that helps us estimate available water in the soil and that which is available for runoff. It is also useful for projecting evapotranspiration rates and evaporative losses due to plant canopy precipitation interception. Most all the information necessary for completing a water balance is contained in the Jenny Creek assessment. The water balance provides insight to the health of a vegetative community in terms of stress due to drought by providing actual numbers of soil moisture availability. The water balance is driven by inputs and outputs and directed at the soil. Soil and vegetative data are easily acquired whereas climate, discharge and transpiration data are a bit more challenging to obtain and fit to a site. In particular, snowmelt rates provide a real challenge if it is necessary to accurately portray soil moisture conditions and peak runoff events due to melt.

By having this data, an accurate projection of volumes of water in the stream and in the soil could be portrayed. The Soil Conservation Service (SCS) has expressed an interest in placing Snowtel instruments in Jenny Creek, if the BLM has funding for the project. Snowtel sites provide snowpack information with regard to volume of water present, melt rates and climatic data. A few Snowtel sites would provide a more accurate picture of temperature and precipitation distribution than is currently available.

There are some considerations to take into account, if desired future condition includes greater water volume in the stream. It is important to recognize that no hydrologist is able to make rain. However, by reducing use either by vegetation or irrigation demands, water yields or volume may increase to an extent. There is a great deal of research going on at the present time to determine what different forest management prescriptions do in terms of water yield within a watershed. Most notably is Chuck Troendle's work proceeding now at Frasier Experimental Forest in Colorado. There is a good possibility that thinning the forest would produce a greater volume of water. How much water is yet unknown.

Another consideration for producing higher water volumes is species selection for revegetative efforts, particularly in riparian areas. If increased volume is desired, and good cover, riparian recruitment and bank stability are needed for good fisheries habitat, then species selection should favor these parameters. Classical riparian species include broadleaf, water demanding plants and trees such as willows or aspens. These classical species require significantly more water than evergreens do and over a longer period of time. Perhaps selection of riparian species should favor evergreen species for cover, bank stability and recruitment.

VII. RESOURCE MANAGEMENT OBJECTIVES/DESIRED FUTURE CONDITION BY LAND USE DESIGNATIONS

A. Tier 1 Key Watersheds

1. Description

This is a component of the Aquatic Conservation Strategy as stated in the SEIS ROD (Section B). It is designated for the purpose of maintaining or recovering habitat for at risk stocks of anadromous salmonids and resident fish species.

2. Objectives

a. Improve the quality of habitat. Key Watersheds are highest priority for watershed restoration.

b. Reduce existing road mileage. If funding is insufficient to implement reductions, there will be no net increase in the amount of roads in Key Watersheds.

3. Desired Future Condition

High quality habitat for at-risk stocks of resident fish species.

4. Analysis

The SEIS ROD specifically identifies the Jenny Creek Watershed as a Tier 1 Key Watershed. References to watershed analysis, watershed restoration, and road mileage (road density) indicates that inherent in obtaining high quality fish habitat is upland improvements as well as instream and near-stream improvements. As a Tier 1 Key Watershed, this area, for planning and implementation purposes, will be subject to higher priority for watershed restoration. Road density decreases may be possible with involvement and cooperation of large landowners and adequate funding.

The population age structure for the Jenny Creek sucker appears okay. However, reproduction seems to be severely reduced during drought years. The fish may move as much as 10 miles to get good winter habitat. At least some suckers overwinter in sediment-free crevices under rocks. Silt and sand have built up in Jenny Creek during the drought years, because Howard Prairie Dam inhibits spring "flushing flows." Suckers need a combination of riffles and pools. They stay in pools during the day, and feed in riffles at twilight. They can't feed in a sand bottomed pool. Overall, it seems habitat for the Jenny Creek sucker is slowly decreasing, primarily as a result of dams, and in drought years, the small irrigation diversion dams further prevent the fish from accessing areas.

Most of the redband trout spawn in Keene Creek. Keene Creek is in much better condition than it was 20 years ago, but during drought years, access to tributaries is problematic. The mouths of Lincoln Creek and the South Fork of Keene Creek dry up. This may decrease the amount of spawning habitat available, or may severely reduce the number of young trout reared to age 1. Since redband trout are drift feeders, they are not as affected by silt deposition as the Jenny Creek sucker. The trout are more active at cooler temperatures than the sucker.

5. Recommendations

a. Improve aquatic ecosystem health and resiliency by restoring stream floodplains, and try to develop a long-term water management plan that restores flushing flows to Jenny Creek without introducing exotics from the reservoirs.

b. Keep Jenny Creek sucker and redband trout populations healthy by increasing habitat available for fish during dry years, making sure spawning and overwintering habitat is accessible and in good condition, and preventing disease transfer to or genetic dilution of redband trout from stocked rainbow trout in Howard Prairie, Hyatt Lake or private trout farms.

c. Road density reduction targeting subwatersheds and drainage areas with particularly high road density, especially in areas of fragile (sensitive) soils as highest priority candidates for road decommissioning. Prioritize according to local road density, erosion/sedimentation, natural slope, and potential for future water quality/quantity degradation due to use and maintenance limitations.

d. Increased involvement by private property owners, particularly large landholders, is needed to make planning for this watershed truly comprehensive. Development of plan objectives around this umbrella Tier 1 Watershed concept will require cooperation by land managers other than BLM.

B. Fragile (Sensitive) Soil

1. Description

The designation Fragile (Sensitive) Soil, is an administrative designation under the PRMP (page 2-26). The source for the Fragile Soil (Map 10) delineation is the BLM Medford District's Timber Production Capability Classification (TPCC). For the Jenny Creek Watershed, this category refers only to Fragile Mass Movement (FP, for Fragile Pyrochlastic) TPCC category. The Best Management Practices (BMP) for fragile soils were designed for roads, timber harvest, silviculture, wildfire and rights-of-way. However, the ROD's Late Successional Reserve allocation, and other designations such as the Cascade/Siskiyou Ecological Emphasis Area have overridden timber production as an

objective for most of this designation (except west fringe of Township 39 South, Range 3 East, Sections 17 and 20).

2. Objectives

To minimize surface disturbance on fragile suitable commercial forestland. The following BMP should be used in the fragile soil areas:

a. Avoid fragile soils when planning road systems.

b. Design haul roads with rock surface.

c. Use slotted risers, trash racks, or over-sized culverts to prevent culvert plugging.

d. Stabilize cutbanks on FP soils using rock buttressing.

e. Decommission or obliterate temporary spur roads as appropriate for site-specific condition using methods such as scarifying the road bed, planting tree seedlings or grass, restoring the natural ground contour, and water barring.

f. Minimize ditch cleaning to retard slumping of road and cutbanks.

g. Block unsurfaced roads on fragile soils to prohibit motorized vehicle use.

h. Avoid tractor yarding for timber harvest. Employ helicopter yarding to avoid or minimize new road construction on fragile soils. Use full or partial suspension when cable yarding. Restrict yarding and hauling to dry season (generally May 15 to October 15).

i. Avoid machine piling slash or ripping soils.

j. Apply wildfire suppression on fragile soils based on environmental and operational conditions that exist at time of ignition. Limit the use of tractors and other major surface-disturbing activities on all fragile soils.

k. Assure prompt rehabilitation on fragile soils following wildfire, through seeding or planting of native species

l. Avoid facility construction.

m. Design rights-of-ways to minimize surface disturbance.

3. Desired Future Condition

The quality of runoff water should be equivalent to runoff from like soils in an undisturbed condition.

4. Analysis

The PRMP Fragile (Sensitive) Soils were delineated based on TPCC designations. SCS soil maps are designed to delineate soil types while TPCC delineations are designed for the purpose of addressing timber production productivity. Fragile soils, in this case, are susceptible to mass movement such as rotational slumps and cutbank failures. These high-clay soils also are susceptible to mud flows, dry ravel on cutbanks, and are the source of turbid runoff water. Infiltration/permeability is relatively low. These soils, when disturbed, are a main source of fine sediment and turbidity for fish-bearing streams.

5. Recommendations

a. For the purposes of this document and future plans, use of the SCS Soil Survey is preferred in designating fragile soils. SCS soil series would include Bybee, Tatouche, Medco, Carney, Skookum, and McNull.

b. For future restoration project priorities, the above fragile soils would be considered as very high where surface disturbance, concentrated runoff flow, and/or bare soil conditions are evident. Appropriate protective measures (such as seeding, straw mulching, planting, water bars, sediment traps, road improvements/decommissioning) would be in place for all fragile soils.

c. In the Lincoln Creek drainage area where fragile soils are dominant and road density is greater than four miles per square mile, road density should be reduced to less than four miles per square mile, if practical through decommissioning and/or natural contouring.

d. There should be no new road construction on fragile soils.

C. Deferred Watersheds

1. Description

The designation of Deferred Watershed is a PRMP (page 2-24) Administrative Designation. It represents an area deferred from timber harvest (except salvage) until at least the year

2003, by which time, it will be re-evaluated. This specifically is a small drainage area of the Keene Creek subwatershed that drains into Parsnip Lakes and toward springs that feed Keene Creek. The area was heavily logged, creating large compacted areas and observed sediment in one of the lakes.

2. Objectives

To prevent further sedimentation into the lake.

3. Desired Future Condition

Partial hydrologic recovery of the drainage area in the next decade.

4. Analysis

This small deferred watershed is also within the Late-Successional Reserve (LSR) land allocation. LSRs are identified with an objective to protect and enhance conditions of late-successional and old-growth forest related species (reference SEIS ROD, A-4). It, therefore, is receiving double protection for the long term.

5. Recommendations

a. Maintain existing protection status described in the SEIS ROD and PRMP.

b. Coordinate efforts with private landowners for appropriate monitoring and restoration with the goal of enhancing recovery.

D. Riparian Reserves

1. Description

According to the SEIS ROD, riparian reserves are portions of watersheds where riparian-dependent resources receive primary emphasis, and where special standards and guidelines apply. Standards and guidelines prohibit and regulate activities in Riparian Reserves that retard or prevent attainment of the desired future condition. Riparian Reserves occur at the margins of standing and flowing water, intermittent stream channels and ephemeral ponds, and wetlands on public lands. They generally parallel the stream system, but also include other areas necessary for maintaining hydrologic, geomorphic, and ecologic processes.

Under the Aquatic Conservation Strategy (B-13 of the SEIS ROD), Riparian Reserves are used to maintain and restore riparian structures and functions of intermittent streams, confer benefits to riparian-dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and

riparian area, improve travel and dispersal corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed, even among LSRs.

Standards and guidelines for interim Riparian Reserves are established in the Standards and Guidelines (C-30) of the SEIS ROD. They include five categories of wetlands and the widths of the riparian reserves for each. The five categories and corresponding widths are:

a. Fish-bearing Streams

Riparian Reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest.

b. Permanently Flowing Nonfish-bearing Streams

Riparian Reserves consist of the stream and the area on each side of the stream extending from the edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest.

c. Constructed Ponds and Reservoirs, and Wetlands Greater Than One Acre

Riparian reserves consist of the body of water or wetland and: the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the wetland greater than 1 acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.

d. Lakes and Natural Ponds

Riparian Reserves consist of the body of water and: the area to the outer edges of riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance, whichever is greatest.

e. Seasonally Flowing or Intermittent Streams, Wetlands Less Than One Acre, and Unstable and Potentially Unstable Areas

This category applies to features with high variability in size and site-specific characteristics. At a minimum, the Riparian Reserves must include: the extent of unstable and potentially unstable areas (including earthflows), the stream channel and extending to the top of the

inner gorge, the stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, and extension from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest. (Intermittent streams are defined as any nonpermanent flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria.)

(A site-potential tree height is the average height of the tallest dominant trees - 200 years or older for a given site class.)

Standards and guidelines for Riparian Reserve prohibit or regulate activities that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Watershed analysis and appropriate NEPA compliance are required to change Riparian Reserve boundaries.

Other Standards and Guidelines for Riparian Reserves are provided in the SEIS ROD; pages C-31 to C-38. Included in this section are considerations for timber management, roads management, grazing management, recreation management, minerals management, fire/fuels management and general lands and riparian area management.

Watershed analysis is to take into consideration all species that were intended to be benefitted by the prescribed Riparian Reserve widths. Those species include fish, mollusks, amphibians, lichens, fungi, bryophytes, vascular plants, American marten, red tree voles, bats, and the northern spotted owl.

Interim reserves were planned with the assumption that worst-case management practices would extend to the reserve margins, and a recognition that in many areas past management practices have severely modified riparian ecosystem function (Reid, 1994). The interim reserves were also planned with an assumption that intensive management would take place outside the reserves.

2. Desired Future Condition

Desired future condition for Riparian Reserves includes having riparian/wetland habitats in proper functioning condition. Riparian/wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian/wetland areas is a result of interaction among geology, soil, water and vegetation.

Desired future condition also requires a stable watershed free of activities and circumstances that can impair water quality and quantity.

3. Analysis

The Jenny Creek Watershed is far from achieving desired future condition. Of the estimated 76.5 miles of perennial streams in the watershed, only one half mile of upper Shoat Springs Creek is in proper functioning condition. Fifty-two and one-half miles of the streams in the watershed are functioning at risk, but 9 miles have adequate riparian habitat; and 23.5 miles, are in nonfunctioning condition. The major contributing factors to this situation are water withdrawals, lack of riparian habitat, and sedimentation of streams resulting from past logging and road building, and past and present livestock grazing.

As stated above, Riparian Reserves are intended to benefit a number of species including mollusks, amphibians, lichens, fungi, bryophytes, vascular plants, American marten, red tree voles, bats and the northern spotted owl. The Ashland Resource Area has not made a priority of determining either the presence or habitat needs of many of these species.

4. Recommendations

a. Widths of Riparian Reserves

For the present, interim widths for Riparian Reserves, will be adopted for the Jenny Creek Watershed.

b. Water Quantity

There is little that can be done to compensate for the diminished water quantity in the Jenny Creek Watershed resulting from legal diversion under water rights, except for the possible purchase of senior rights. Restoration efforts that will result in some improvement are as follows: 1.) ensure adequate stocking of trees on managed lands in the watershed; and 2.) support the Oregon Department of Fish and Wildlife in applying for minimum flows on fish-bearing streams to prevent further reduction of flows.

c. Riparian Vegetation

(1) Plant suitable trees and shrubs in riparian areas where adequate shading is lacking.

(2) Reduce or eliminate grazing from riparian areas where adequate cover is lacking, or where damage to existing habitat is occurring.

d. Watershed Stabilization

(1) Roads:

(a) Permanently close unsurfaced roads that are surplus to resource and recreation management needs.

(b) Ensure maintenance of drainage systems on remaining roads to guard against erosion.

(c) Seasonally close unsurfaced roads that are subject to rutting during the wet season.

(2) Stream banks:

(a) Stabilize eroding stream banks.

(b) Eliminate grazing on banks that are subject to erosion.

e. Inventory

A physical stream survey, using the Hank and Reeves method has been completed for much of the Jenny Creek Watershed, but a systematic inventory of functioning condition needs to be undertaken. Stream survey data should be analyzed in fiscal year 1995 to identify stream reaches lacking in desired habitat condition. The inventory for functioning conditions should be completed by the end of fiscal year 1996.

f. Monitoring

The desired future condition and the level of functioning condition within the Riparian Reserves will be monitored over time using photo points and periodic survey of key stream reaches.

E. Area of Critical Environmental Concern (ACEC)

1. Description

Four ACECs are present within the Jenny Creek Watershed. Three are old-growth areas, and the other is Jenny Creek (see MAP 10).

a. Old-Growth ACECs

This includes three remnant old-growth stands on the Dead Indian Plateau containing 332 acres: Moon Prairie, Hoxie Creek and Tin Cup. Hoxie Creek is a mixed conifer old-growth ecosystem that provides wildlife habitat, including an Osprey nest. The wet meadow area provides habitat for waterfowl and other wildlife. Moon Prairie represents a small unentered mixed conifer stand surrounded by massive forest removal. It contains a large Pacific yew stand, and wildlife values for thermal and hiding cover. Tin Cup is a last remnant of undisturbed true fir forest. It contains a unique advancing edge on the frost plateau, and outstanding educational value. It is adjacent to a prairie and is valuable for owls, deer and elk.

b. Jenny Creek ACEC

Jenny Creek ACEC is in 8 parcels including 2 on Keene Creek and 1 on the Redding Resource Area.

2. Objective/Desired Future Condition

Management objectives for the old-growth stands are to maintain them for as natural systems. Hoxie Creek and Tin Cup also were designated for wildlife and botanical values.

Management objectives for Jenny Creek are to protect and improve the stream and adjacent riparian habitat to ensure the survival of the special status species dependent on this system for their survival. This includes the redband trout, Jenny Creek sucker and the northwestern pond turtle.

3. Analysis

All of these ACECs are not available for timber harvest. Off-highway vehicles are restricted to existing roads, and mineral leasing is subject to northern spotted owl consultation. Old-growth areas are stable. The potential impact is primarily from natural causes, such as wind and fire. The condition of Jenny Creek has been discussed in previous sections. Improvement opportunities to Jenny Creek are limited to the extent of cooperation of BLMs neighbors. Over the past few years, there has been much cooperation as seen during the annual Jenny Creek restoration projects.

4. Recommendations

a. As much as feasible, protect old-growth ACECs from fire. Plan activities adjacent to these areas with fire prevention in mind, and also protection from wind damage.

b. Continue cooperative efforts with neighbors to restore Jenny Creek to a healthier condition. Acquire lands along Jenny Creek if the opportunity arises.

F. Research Natural Areas (RNA)

1. Description

a. Oregon Gulch RNA

This area consists of 1047 acres (MAP 10) of mixed conifer forest and manzanita, ceanothus/bunchgrass chaparral communities. This area is one of a few remnant stands with mixed conifer forests in good condition with understories that vary from relatively open bunchgrass dominated savannas to shrub dominated thickets. A federal candidate species, *Calochortus greenei* and *Perideridia howellii*, an assessment species, are also present.

b. Old Baldy RNA

This site consists of 166 acres (MAP 10), and is one of the few remaining natural sites of high elevation white fir with Shasta red fir, mountain hemlock, Pacific silver fir and white pine with interspersed southern Oregon Cascades chaparral communities. It also provides habitat for northern spotted owl.

2. Objective/Desired Future Condition

Management objectives for both RNAs are to maintain the areas for scientific research and baseline study. They also have value for wildlife and botanical special status species.

3. Analysis

Both of the RNAs are not available for timber harvest, closed to off-highway vehicle use and mineral entry. The potential impact is primarily from natural causes, such as wind and fire.

4. Recommendations

As much as feasible, protect RNAs from fire. Plan activities adjacent to these areas with fire prevention in mind, and also protection from wind damage. Coordinate with adjacent land managers (USFS and Klamath Falls RA) to protect the Old Baldy site from their management activities.

G. Cascade/Siskiyou Ecological Emphasis Area

1. Description

The Cascade/Siskiyou ecological emphasis area is located where three physiographical provinces and four varied plant communities exist in close proximity with each other. The area also contains many scattered populations of sensitive and special status plant species. Over 14,000 of the 16,340 acres are within the Jenny Creek watershed, in 2 parcels (MAP 10).

2. Objectives/Desired Future Condition

Management objectives are to maintain and improve existing natural vegetation communities, control invasion of noxious weed species, restrict vehicular traffic to existing roadways and develop a fire management plan that will reintroduce fire into these naturally fire dependent communities. Management will consider the varied plant communities, RNA, ACEC, special status plant and animal populations, crucial deer range for an interstate herd, and the outstanding recreation and scenic values. Greater emphasis will be placed on innovative social processes as a tool for achieving resource objectives through applied stewardship.

3. Analysis

According to the PRMP, timber harvest will be deferred for 10 years pending completion of a management plan. Also off-highway vehicles will be limited to designated roads; and research and monitoring will be initiated to help develop management options for maintaining ecosystems in the area. Analysis will occur as part of the above mentioned planning effort.

4. Recommendations

Begin the planning effort for the ecological emphasis area as soon as personnel and budgets are adequate to complete the task.

H. Late-Successional Reserves

1. Description

Late-successional reserve is a forest seral stage that includes mature and old-growth age classes. Refer to Map 14 for the area delineation of the Late-Successional Reserve. Sixty-one percent of the LSR is commercial forest land. Eighteen percent of the commercial forest land is less than 80 years old, and 45% is 200 years old or greater.

2. Objectives

Late-Successional Reserves are to be managed to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species, including the northern spotted owl. These reserves are designed to maintain a functional, interacting, late-successional and old-growth forest ecosystem. The reserve should be protected from large-scale fires, insect and disease epidemics, and major human impacts. Specific guidelines for protection buffers for certain sensitive species can be found in Appendix C of the Record of Decision, Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl.

3. Desired Future Condition

The desired future condition for the Late-Successional Reserve is to create forest stands with multi-storied canopy layers and the old-growth forest characteristics as described by Marcot et al. (1991). The intent is to maintain natural ecosystem processes such as gap dynamics, natural regeneration, pathogenic fungal activity, insect herbivory, and low-intensity fire.

4. Analysis

Table 9. Late-successional reserve stands in need of treatment to create multi-storied canopy structure.

FOREST STANDS WITH PRESENT COVER CONDITION	APPROXIMATE ACRES IN NEED OF TREATMENT
Conifer Plantations	1,021
Never Entered, Single Canopy Layered, Needing an Understory	597
Never Entered, Single Canopy Layered, Needing Commercial Thinning	719
Previously Entered Stands, With Single Canopy Layer, Needing an Understory	482
Previously Entered Stands, Needing Precommercial or Commercial Thinning	462
Naturally Established Stands in Need of Precommercial Thinning	99

Within the Jenny Creek Watershed there are approximately 27,290 acres of land with the Late-Successional Reserve designation. Although the designation title creates a picture of all old-growth forests in ones mind, not all of the forest stands meet this criteria. Presently,

there are 3,591 acres of forest with old-growth structure in the Late-Successional Reserve. Only 687 acres of this old-growth structured forest have never been entered for timber harvest. Table 9 describes the present forest structure that could possibly be enhanced and the suggested treatments necessary to create old-growth forest characteristics. All of these acres are probably not available for treatment due to other administrative designations discussed in this chapter.

5. Recommendations

Silvicultural practices should be encouraged to accelerate the development of overstocked young plantations into stands with late-successional and old-growth forest characteristics, and to reduce the risks of large-scale disturbances and unacceptable loss of habitat. Silvicultural treatments inside reserves are subject to review by the Regional Ecosystem Office to ensure that the treatments are beneficial to the creation of late-successional forest conditions. General prescriptions are described below:

a. Guide existing conifer plantations towards old-growth conditions by favoring different age, diameter and height classes. Various tree species as well as tree spacings should be prescribed.

b. The conifer plantations and stands that need precommercial thinning should be treated in a manner that creates multiple canopy layers. Trees of different age classes and species should be designated to leave at random spacings.

c. Stands in need of density management tend to be single canopy layered. When thinning, different species, age, diameter and height classes should be favored. Small gaps in the canopy layer should favor the establishment of natural seedlings.

d. Single canopy layered stands of all commercial age classes should have small openings created in the canopy layer to enable seedlings to become established in the understory.

I. General Forest Management Area

1. Description

The General Forest Management Area (GFMA or matrix) consists of the federal lands outside the six categories of designated areas (Congressionally Reserved Areas, Late-Successional Reserves, Adaptive Management Areas, Managed Late-Successional Areas, Administratively Withdrawn Areas, and Riparian Reserves). The Jenny Creek Watershed does not contain Congressional Reserves nor Adaptive Management Areas. Refer to Map 6 for the area delineation of the General Forest Management Area with riparian areas removed, but not administrative withdrawals. (Map 14 shows GFMA land without riparian reserves removed.) Nineteen percent of the GFMA is in Riparian Reserve, about 3% is

administratively withdrawn, 1% low site or non-commercial woodland, 1% fragile withdrawn, 9% non-forest, and the remaining 2/3 is commercial forest land. Of the commercial forest land, 19% is in plantations, 6% is young stands (35-75 years old), 50% is mature (76-195), and 25% 196 years old or older.

2. Objectives

The matrix objectives for silviculture include: a.) production of commercial yields of wood, including those species such as Pacific yew that require extended rotations, b.) retention of moderate levels of ecologically valuable old-growth components such as snags, logs, and relatively large green trees, and c.) increasing ecological diversity by providing early-successional habitat.

The retention of green trees serves several important functions including snag recruitment, promoting multi-storied canopies, and providing shade and suitable habitat for many organisms in the matrix. Retaining green trees of various sizes, ages, and species, in well-distributed patches as well as dispersed individuals, will promote species diversity. These trees may also act as centers of dispersal for many organisms including plants, fungi, lichens, small vertebrates, and arthropods. Patches of green trees may provide protection for special microsites such as seeps, wetlands, or rocky outcrops.

3. Desired Future Condition

The desired future condition of the matrix lands would result in a mosaic of multi-aged, multi-structured, mixed species stands. Old-growth stands would be created as described by Marcot et.al. (1991). The end result would be a coarse grained landscape pattern. However, multi-storied forest stands would predominate.

Table 10. Description of matrix stands in need of silvicultural treatment.

FOREST STANDS WITH PRESENT COVER CONDITION	APPROXIMATE ACRES IN NEED OF TREATMENT
Conifer Plantations	3,341
Never Entered, Single Canopy Layered, Needing Commercial Thinning	2,059
Previously Entered Stands, With Single Canopy Layer, Needing an Understory	2,352
Previously Entered Stands, Needing Precommercial or Commercial Thinning	1,984

Acreages in table may include riparian reserve. Due to other administrative designations, timber management on these lands may be limited or restricted by other resource goals.

4. Analysis

Within the Jenny Creek Watershed there are approximately 27,561 (GIS) acres of matrix land. Over 9,700 acres are in a condition that it would be desirable to treat in order to reach the desired future condition. Table 10 describes the present forest structure and the suggested treatments to create healthy, multi-storied stands to meet desired resource objectives.

5. Recommendations

a. Guide existing conifer plantations towards old-growth conditions by favoring different age, diameter and height classes. Various tree species as well as tree spacings should be prescribed.

b. Single canopy layered stands of all commercial age classes should have small openings created in the canopy layer to enable seedlings to become established in the understory. When thinning, different species, age, diameter and height classes should be favored if multi-canopy layered stands are desired.

c. Plant previously entered stands needing an understory.

d. Thin previously entered stands which need thinning as described in b. above.

J. Pacific Crest National Scenic Trail (PCNST)

1. Description

The Pacific Crest National Scenic Trail (PCNST) is a 2,638 mile trail between Canada and Mexico. It was designated in 1968 with the passage of the National Trails System Act. Approximately 26 miles are within the Jenny Creek Watershed (see MAP 10).

2. Objectives

The PCNST within the Medford District is to be managed as a Special Recreation Management Area (SRMA) with this designation covering the lands within 50 feet on each side of the trail. The lands within 1/4 mile of either side of the trail are to be managed as Visual Resource Management (VRM) class II lands to protect scenic resources.

3. Desired Future Condition

The desired future condition for the PCNST is to have a trail which meets the management objectives as stated in the PCNST Comprehensive Plan which are:

"Within Federal lands ..., the trail must co-exist in harmony with all other resource uses and activities of the land as determined through the land management planning process. The trail will cross a mosaic of areas differing in primary management emphasis. This could be grazing, key wildlife habitat, special interest such as scenic or geologic, developed recreation, unroaded recreation research natural, or intensive timber management. Viewing and understanding this array of resources and management is one of the primary recreation opportunities to be made available over these portions of trail."

4. Analysis

The trail, as managed, meets the objectives as stated in the Comprehensive Plan, so the desired future condition is already being achieved and will be maintained by the management objectives.

5. Recommendations

a. Some activities along the trail would require considerable informational and interpretive skills to be placed in a positive perspective from the standpoint of the user. This may include interpretive signs.

b. Complete the Surveyor Ancient Forest Interpretive Trail and Watershed Enhancement Project to provide a connector trail from the PCNST to the Surveyor Ancient Forest. See Appendix 14 for a description of the project.

K. Soda Mountain Wilderness Study Area (WSA)

1. Description

The Soda Mountain Wilderness Study Area is a 5,867 acre roadless area south of Soda Mountain and north of the California border. The area has been studied for wilderness values and suitability, and has been recommended by BLM for designation as wilderness. Approximately 600 acres along the eastern boundary of the WSA are within the Jenny Creek Watershed (see MAP 10).

2. Objectives

Section 603 (c) of FLPMA tells BLM how to manage lands under wilderness review in these words:

"During the period of review of such areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands ---- so as <u>not to impair the suitability of such areas for preservation as wilderness</u>." (emphasis added)

3. Desired Future Condition

The desired future condition for the WSA is to have it designated wilderness and to have it remain in as natural a condition as possible. Off-road vehicle (ORV) incursions into the area would cease, and the invasion of non-native species would be stopped. If not designated wilderness, the portion within the Jenny Creek Watershed would be managed as part of the Cascade/Siskiyou Ecological Emphasis Area.

4. Analysis

The WSA currently has ORV problems on an occasional basis (usually associated with deer hunting season), and yellow star thistle grows in the lower elevations of the WSA.

5. Recommendations

a. Increased education and information efforts to help alleviate the ORV problems.

b. Vehicle restrictions or ORV closures on surrounding lands.

c. Increased patrols of the WSA.

d. Consider eliminating hunting within the WSA.

e. Employ the latest techniques for managing alien species within wilderness.

L. Hyatt-Howard Special Recreation Management Area (SRMA)

1. Description

The Hyatt-Howard SRMA is an area around Hyatt Lake and Howard Prairie Reservoir (approximately 42,000 acres) where a commitment has been made to provide specific recreation activities and experiences on a sustained yield basis. Approximately 35,420 acres of the SRMA is within the Jenny Creek Watershed (see MAP 10).

2. Objectives

The management objective for the SRMA is to provide recreation opportunities ranging from semi-primitive to roaded in a natural manner that will:

a. Promote public use and enjoyment of the public lands;

b. Protect natural resource values on the public lands;

c. Minimize conflicts among users; and

d. Protect the health and safety of recreationists who use the public lands.

3. Desired Future Condition

The desired future condition for the SRMA is described in the draft Recreation Area Management Plan (RAMP). In general, additional camping opportunities would be provided, play areas would be constructed, trail opportunities would be expanded, facilities would be improved, and maintenance and use supervision would be increased.

4. Analysis

The existing facilities and opportunities do not adequately serve the needs of the recreating public.

5. Recommendations

Implement the actions contained in the RAMP when finalized.

M. Applegate Trail

1. Description

The Applegate Trail was designated as part of the California National Historic Trail in 1992. This trail was created in 1846 as an alternative route into the Willamette Valley from the Oregon Trail. The trail traverses the watershed from Greensprings summit to Grouse Butte following much of what is now Highway 66 (see MAP 10). Approximately .8 miles is on BLM land, near Lincoln.

2. Objectives

Since there is no evidence of the trail across the BLM parcels, specific protection or interpretation efforts are not appropriate. Activities within the general area of the trail route would require archaeological clearances, and if sites were discovered, appropriate measures could be taken. BLM's objective is to do nothing which would negatively impact sites associated with the Applegate Trail, unless approved by the State Historic Preservation Officer or managing agency.

3. Desired Future Condition

The desired future condition for the Applegate Trail is to have significant segments or features preserved and interpreted for area visitors.

4. Analysis

No significant segments exist on BLM lands within the watershed and there is no apparent evidence of the trail on these parcels.

5. Recommendations

a. Provide interpretive information about the Applegate Trail in brochures, or displays at BLM kiosks or campgrounds.

b. Ensure that BLM personnel are aware of the trail route so it will be considered in all planning actions.

N. Critical Habitat - Northern Spotted Owls

1. Description

Critical habitat is designated by the U.S. Fish and Wildlife Service under the auspices of the Endangered Species Act of 1973, as amended. Critical habitat for the northern spotted owl was designated in January 1992. Critical habitat is defined as those specific areas within the geographic range of the species which have the physical and biological features essential to the conservation of the species. These areas may need special management considerations or protection (see MAP 8).

2. Objectives

The objective for the critical habitat units located in the Jenny Creek Watershed is to provide nesting, roosting, foraging and dispersal habitat for linkage between the western Cascades and Klamath provinces through the I-5 Area of Concern (USFWS, 1993).

3. Desired Future Condition

The goal or desired future condition for that portion of the watershed in critical habitat is to have all lands with the potential to function as nesting, roosting, foraging or dispersal habitat to be functioning as such. For those lands in Late-Successional Reserve, the standards and guidelines for that land use designation will ensure that forest lands with the potential will be managed to meet critical habitat objectives. On those lands designated as matrix, emphasis would be placed on providing nesting, roosting or foraging habitat to improve the chance for successful linkage between the western Cascades and Klamath Mountain provinces.

4. Analysis

There are approximately 35,700 acres of designated critical habitat in the Jenny Creek Watershed. Of this total, approximately 26,700 acres are in Late-Successional Reserve and the remainder, 9,000 acres, is matrix land. There are currently 10,200 acres of nesting, roosting or foraging habitat within the total critical habitat area. Approximately 6,400 acres provide only dispersal habitat. Also, 7,200 acres have the potential to provide nesting, roosting, foraging or dispersal habitat, but presently do not provide any of these functions.

5. Recommendations

a. Maintain existing nesting, roosting, foraging and dispersal habitat on matrix land within designated critical habitat.

b. Put those lands that have the potential, but are not presently functioning as a primary constituent element of critical habitat, on a trajectory to meet one of the components of critical habitat. Emphasis should be on nesting, roosting or foraging habitat.

O. Northern Spotted Owl Activity Center Buffers

1. Description

One hundred acre buffers are to be provided around known (as of January 1, 1994) northern spotted owl nest sites/activity centers that are not in Congressionally Reserved Areas, Late-Successional Reserves, Riparian Reserves, Managed Late-Successional Reserves, or Administratively Withdrawn Areas (SEIS ROD, 1994).

2. Objectives

The objective of these buffers/reserves is to preserve the most important and intensively used areas in northern spotted owl home ranges. Because these areas will also serve as habitat for other species, they are to be maintained even if they become unoccupied by spotted owls (SEIS ROD, 1994).

3. Desired Future Condition

These areas are to be managed under the standards and guidelines for Late-Successional Reserves with emphasis on reducing the risk of natural disaster (SEIS ROD, 1994).

4. Analysis

The buffers within the watershed have been designated and mapped. Approximately 1,100 acres of matrix land are in these buffers.

5. Recommendations

Maintain the existing function of the buffers and reduce the risk of catastrophic loss.

P. Protection Buffers

1. Description

Protection buffers are specified by the SEIS ROD for some rare and locally endemic species.

2. Objectives

The objective of protection buffers is to ensure the long term viability of those species deemed to need protection buffers.

3. Desired Future Condition

Outside of reserves, great gray owl nest sites would receive 1/4 mile buffers and their primary foraging areas, meadows and other natural openings, would be protected by 300 foot buffers. The white-headed woodpecker, black-backed woodpecker, pygmy nuthatch, and flammulated owl would receive additional mitigation by the provision of additional snags across the matrix landscape to meet the full population potential of these species.

4. Analysis

The analysis prepared by the Scientific Analysis Team for the SEIS indicated that additional measures were needed to ensure viability of the following rare and locally endemic species above in areas outside of designated reserves: great gray owl, white-headed woodpecker, black-backed woodpecker, pygmy nuthatch and flammulated owl. An inventory of snags has not been conducted.

5. Recommendations

Implement inventory and monitoring protocols for the species discussed above so that the protection buffers can be applied where needed.

Q. Deer Winter Range

1. Description

There are 15,500 acres of deer winter range in the watershed (see MAP 10). It is located primarily in the Interior Valley Zone. Deer migrate to this area because forage remains available when it is unavailable due to snow in other vegetative zones of the watershed.

2. Objectives

The objectives for deer winter range are to provide adequate forage and thermal cover and to minimize vehicular disturbance during the winter months.

3. Desired Future Condition

The desired future condition would be to have native grasses, forbs and shrubs in good condition, to have all timber stands that are capable of providing thermal cover to be functioning as such, and to maintain open road density at no greater than 1.5 miles per square mile.

4. Analysis

Forage condition on deer winter range is deteriorating due to the encroachment of exotic grasses and forbs, the exclusion of fire from the mountain chaparral vegetative community and overgrazing, particularly on private land. Yellow star thistle, medusahead rye and cheatgrass are some of the more common introduced species that are displacing native grasses and forbs. Compared to native species these exotic weeds are poor producers of forage for deer and livestock.

The primary browse species for deer on the winter range is wedgeleaf ceanothus. Under natural conditions this shrub is regenerated by fire. Due to intensive fire suppression efforts, the fire return interval on winter range is longer and regeneration of wedgeleaf has lagged. Existing plants have become old and decadent and forage quality and quantity have decreased dramatically. The objective of several controlled burns in the watershed has been to regenerate wedgeleaf ceanothus.

Continued grazing by livestock may have a twofold effect on herbaceous forage availability. First, cattle may consume forage that would otherwise be available for deer, and secondly, continual overgrazing reduces the vigor of native species and they may be eventually displaced by exotic species. BLM studies conducted in the early 1980's concluded that cattle do not compete with deer for wedgeleaf ceanothus which is their primary browse species on winter range.

Winter thermal cover generally has the following attributes: conifer stands composed of trees greater than 30 feet in height, canopy closure 70 percent or greater, and the stands are greater than 1/2 acre. Due to natural conditions existing in the Interior Valley Zone, there is not much thermal cover present on the winter range, and it might be argued that thermal cover is not essential. Regardless, it aids deer in energy conservation by retarding heat loss and can make the difference in survival in extreme weather. Thermal cover condition on winter range has been degraded primarily by timber harvest.

Vehicular disturbance has been identified as a major contributing factor causing stress to deer on the winter range. When deer are disturbed their metabolic rate increases and energy reserves are depleted unnecessarily. Open road density greater than 1.5 miles per square mile is generally accepted as a threshold beyond which vehicular disturbance has the potential to become a major factor in energy loss. Open road density on deer winter range is approximately 2.5 miles per square mile at present.

5. Recommendations

a. Convert areas now dominated by exotic grasses and forbs to native species that would be endemic to the sites.

b. Regenerate decadent brushland.

c. Ensure overgrazing does not occur on the winter range.

d. Put timber stands with the potential to function as thermal cover on a silvicultural trajectory that will enable them to attain this function.

e. Reduce open road densities to 1.5 miles per square mile.

R. Elk Management Area

1. Description

The elk management area in the Jenny Creek Watershed was established to emphasize elk management in the Interior Valley Zone of the watershed. The elk management area encompasses 15,300 acres of the watershed and overlays deer winter range (MAP 10).

2. Objectives

The objectives are to improve habitat condition, and to keep the population in balance with deer use on the winter range.

3. Desired Future Condition

The desired future condition is to have elk numbers in balance with deer numbers and available forage so that deer are not displaced from the winter range and habitat conditions are not degraded.

4. Analysis

Elk are expanding at a notable rate in the watershed. A small herd can be found regularly in that portion of the watershed that is deer winter range. This overlap in use introduces competition for forage during the winter months between deer and elk. As described in a previous section on deer winter range, habitat conditions on winter range are judged as being only fair. Given this habitat condition, the increasing elk herd could be a detriment to wintering deer. A combination of improved habitat conditions, especially forage conditions, and a regulated elk population would minimize the competition between elk and wintering deer.

5. Recommendations

a. Reference the recommendations for deer winter range.

b. Monitor the elk population.

c. Keep elk populations in balance with deer populations and deer forage needs.

S. Livestock Grazing Forage Use Allocations

1. Description

The Medford District Grazing Management Program Environmental Impact Statement (EIS) was completed in April of 1984. The EIS analyzed the impacts that would result from livestock grazing within the allotments on the Medford District (included Klamath Falls RA of Lakeview District). A Rangeland Program Summary/Record of Decision (RPS) was published in September of 1984 and documents the decisions which guide the rangeland program.

The initial livestock forage use levels reported within the RPS have been adjusted in some instances. These changes and the existing livestock forage allocations were described earlier under the Rangeland/Livestock section, in Part I of this document. Livestock grazing use within the Jenny Creek Watershed includes all or part of 13 separate grazing allotments and affects 14 livestock operations.

2. Objectives

The primary goal of the rangeland program is to provide livestock forage as one of the many uses of the public lands while maintaining or improving range condition and riparian areas.

The current management objectives for the Rangeland program as described in the Rangeland Program Summary are to: a.) implement grazing management on non-forest land to improve or maintain vegetation conditions to benefit livestock, wildlife, and wild horses, and b.) on forest land, the goal is to coordinate livestock grazing with timber management objectives so that use of forage will not impair productivity of the land, while balancing economic use with natural and cultural values.

Although the wording of various objective statements varies by document, the emphasis on riparian improvement and maintenance or improvement of rangeland conditions is a common thread throughout these documents. (See also Rangeland Reform Proposal, The Range of Our Vision, Medford District Rangeland Program Summary, Medford District Monitoring Plan, Medford District Proposed Resource Management Plan, SEIS ROD.)

3. Desired Future Condition

The desired future condition for the rangeland program would consist of the following key components within the Jenny Creek Watershed.

a. To provide healthy and productive riparian systems with diverse plant and wildlife species which purify water, and dissipate stream energy.

b. To provide suitable habitat conditions which ensure survival and perpetuation of special status species.

c. Manage for vigorous and healthy rangeland ecosystems which provide for watershed function and soil stability, and provide forage for existing livestock operations.

4. Analysis

Since completion of the Medford District Rangeland Program Summary, the initial efforts of staff have involved collection of short-term monitoring data. The primary goal of this data collection was to ensure that livestock numbers are within the carrying capacity of the range. This action is the backbone of the rangeland management program and provides the first step toward ensuring plant vigor, rangeland health, and watershed condition.

Currently the stocking rates within the watershed are believed to be within carrying capacity with two possible exceptions. Further utilization studies are presently being completed within the Jenny Creek and Buck Mountain Allotments. These studies will determine whether there are distribution problems or stocking rate problems.

Weed encroachment into the watershed continues to expand. Yellow star thistle is moving upslope primarily from the California border. Canada thistle is spreading throughout the watershed on road systems. These two weed species are seen as the most problematic within

the watershed. Populations are predicted to continue expanding. Both species thrive on disturbed sites and yellow star thistle is a superior competitor on clay soils.

Substantial improvement in riparian health has occurred within the watershed on public lands and some private forest lands during the past six years. The emphasis on riparian restoration and Jenny Creek Riparian Volunteer projects are responsible for this improved condition. Fencing, enclosures, spring development, planting streamside vegetation and livestock handling have contributed to this success.

Extensive research by Dietz and also Hickey suggests that critical growth- period rest is not a requirement for grass plants if enough leaf is retained to replenish root reserves. Grazing during most of the growing period followed by dormancy due to dry conditions may limit vigor on lower elevation ranges in the watershed. The majority of grass plants within the watershed are not limited by utilization or dry conditions.

If stocking rates within the watershed are within the carrying capacity of the land, then animal husbandry practices must be considered as contributing to the remaining problems. These include conflicts within the rural interface, livestock distribution with localized excessive utilization and loss of streamside vegetation within riparian zones. Rangeland management direction must be accompanied by good animal husbandry practices or these issues would not be resolved. Practices needed include riding, animal placement, timely movement and removal of stock, salting, water development and possibly fencing to enhance distribution. The above discussion on livestock handling is seen as the weakest link in present management and should be the focal point for future actions.

Water development within the watershed has shown positive results. Fence construction at lower elevations may be cost effective, while snow damage at higher elevations tends to create a maintenance problem. This also results in periodic major expenditures to reconstruct these fences. Construction of these fences at taxpayer expense is a favored solution by some ranchers as it reduces times spent to manage livestock.

5. Recommendations

In order to resolve the issues brought forward within the assessment for the Jenny Creek Watershed the following recommendations are offered:

a. Develop a program to map and document the encroachment of noxious weeds within the watershed. This program should discourage ground disturbing activities and ensure that disturbed sites are seeded to prevent invasion. Work closely with Oregon Department of Agricultural staff to encourage continued development and release of biological control agents.

b. Develop a site specific allotment management plan for those allotments within the watershed which require improved management to meet land use objectives. A thorough review of proposed improvements to resolve distribution and management problems should be completed.

c. Continue to work with rural interface homeowners to resolve conflicts. Current regulation and State Law do not favor private homeowners within open range areas. The Bureau should continue to look into these cases as a good neighbor. In some instances where livestock operations are not responsive to resolution of complaints, the Bureau may have to remove the operator or the grazing lease in total.

T. Wild Horse Management Area

1. Description

The Medford District Grazing EIS and Rangeland Program Summary established allocations for livestock grazing, wildlife and wild horses. A total of 250 AUMs of available forage from the public lands was designated to meet the needs of the Pokegama wild horse herd. These documents also set a maximum population level of 50 horses.

2. Objectives/Desired Future Condition

A revised draft plan for the Pokegama Wild Horse Management Area includes the following objectives:

a. Providing water and rangeland condition to provide sufficient forage.

b. To maintain the free-roaming nature of a healthy herd of 50 animals.

3. Analysis

Cancellation of the exchange-of-use grazing leases by Weyerhaeuser Corporation may resolve any problems/competition for spring forage between wild horses and deer. Because of the large percentage of land owned by Weyerhaeuser (61 percent) within the herd management area their cooperation and consultation should be included in development of the draft plan. Population analysis reveals that unauthorized cropping may be taking place within the herd management area.

4. Recommendations

a. Include Weyerhaeuser Corporation as an active participant in the development of both the wild horse management plan and development of objectives for the herd unit.

b. Develop a strategy to determine if unauthorized cropping is occurring or other problems are causing the extremely low recruitment of adults into this herd.

VIII. MONITORING

The concepts and the components of ecosystem monitoring both biophysical and social, have been extensively explored and described in recent work by the Applegate Watershed Ecological Assessment team (Atzet, Preister, Russell, et al., 1994). Hart, Pagel and Whitall, 1994 have also established a context for ecosystem monitoring in the Integrated Ecosystem Monitoring Framework report. It is recommended that these concepts and approaches be adapted for use in the monitoring of the Jenny Creek Watershed

There are two distinct types of monitoring, implementation and validation.

A. Implementation

Implementation monitoring is the review of project operation, to determine whether the intent of the project design was met. Some examples of implementation monitoring would be: an examination of the stand marking, to see if the prescription was properly interpreted; a check to see if the assumptions used in the development of the harvesting plan are correct in regard to the residual stand remaining in good condition following thinning. Implementation monitoring is important because it provides a process and opportunity to revise the operational assumption and make improvements through time. It will also improve the probability of attaining the resource management objectives. The objective here is to examine and monitor social and biophysical issues relative to forest health.

B. Validation

Validation monitoring is the process that determines to what degree the ecological, and perhaps the social, objectives have been achieved. If properly implemented, validation monitoring should consistently facilitate measurable improvements relative to the attainment of goals and objectives. It should also foster an increased understanding of both ecological functions and processes.

C. Monitoring Scale

Monitoring needs to be accomplished at a variety of scales. The scale of the monitoring is largely defined by the scope of the organism or process being monitored. For example, monitoring habitat effectiveness for large animals that range across broad landscapes should occur at a scale that encompasses the range of habitats that are involved or utilized. In addition, there are habitats that may have particularly important constraints and/or needs at more than one scale. For example, a management plan developed for a watershed that is targeted as a high priority for density reduction might reflect the necessity for a higher level

of canopy retention and stand structure in order to provide for needs such as plant migration, dispersion, connectivity or special species, at the province landscape scale. Consequently, monitoring relative to the attainment of objectives would occur at several scales. Monitoring at all scales should be designed such that the information is useful at the next highest scale and can be aggregated upward. For example information and data gathered at the stand level, when aggregated with like stands, might possibly provide information as to the rate of development and ecological potential necessary to understand the development rate of habitat types at the landscape level.

D. Base Line Information

Successful monitoring will require the establishment of base line information at all scales. The degree of resolution and the usefulness of post treatment data depends heavily on the extent it relates to the original baseline information. It is impossible to determine the effects of say, density management on fish populations without knowing population trends prior to treatment. Little baseline information presently exists for both the social and biophysical elements of the Jenny Creek Watershed. Initiatives to begin determining what baseline information is needed as well as processes on how to collect, display, store and use this data should begin as soon as possible.

The time and money expended on monitoring is never lost if the knowledge gained as a result is reinvested in improving the prospects of future success.

IX. SUMMARY OF RECOMMENDATIONS

A. Watershed

The following recommendations are from the Tier 1 Key Watershed, Fragile Soils, Deferred Watersheds, and Riparian Reserves sections. Since subwatersheds that feed into Hyatt, Howard Prairie, and Keene Creek Reservoirs have little if any direct effect on Jenny Creek, project priorities should start with those subwatersheds that are downstream of the reservoirs.

1. Improve aquatic ecosystem health and resiliency by restoring stream floodplains, and try to develop a long-term water management plan that restores flushing flows to Jenny Creek without introducing exotics from the reservoirs.

2. Keep Jenny Creek sucker and redband trout populations healthy by increasing habitat available for fish during dry years, making sure spawning and overwintering habitat is accessible and in good condition, and preventing disease transfer to or genetic dilution of redband trout from stocked rainbow trout in Howard Prairie, Hyatt Lake or private trout farms.

3. Road density reduction targeting subwatersheds and drainage areas with particularly high road density, especially in areas of fragile (sensitive) soils as highest priority candidates for road decommissioning. Prioritize according to local road density, erosion/sedimentation, natural slope, and potential for future water quality/quantity degradation due to use and maintenance limitations.

4. Increased involvement by private property owners, particularly large landholders, is needed to make planning for this watershed truly comprehensive. Development of plan objectives around this umbrella Tier 1 Watershed concept will require cooperation by land managers other than BLM.

5. For the purposes of this document and future plans, use of the SCS Soil Survey is preferred in designating fragile soils. SCS soil series would include Bybee, Tatouche, Medco, Carney, Skookum, and McNull.

6. For future restoration project priorities, the above fragile soils would be considered as very high where surface disturbance, concentrated runoff flow, and/or bare soil conditions are evident. Appropriate protective measures (such as seeding, straw mulching, planting, water bars, sediment traps, road improvements/decommissioning) would be in place for all fragile soils.

7. In the Lincoln Creek drainage area where fragile soils are dominant and road density is greater than four miles per square mile, road density should be reduced to less than four miles per square mile, if practical through decommissioning and/or natural contouring.

8. There should be no new road construction on fragile soils.

9. Maintain existing protection status described in the SEIS ROD and PRMP for deferred watersheds.

10. Coordinate efforts with private landowners for appropriate monitoring and restoration with the goal of enhancing recovery of deferred watersheds.

11. Widths of Riparian Reserves

For the present, interim widths for Riparian Reserves, will be adopted for the Jenny Creek Watershed.

12. Water Quantity

There is little that can be done to compensate for the diminished water quantity in the Jenny Creek Watershed resulting from legal diversion under water rights, except for the possible purchase of senior rights. Restoration efforts that will result in some improvement are as

follows: 1.) ensure adequate stocking of trees on managed lands in the watershed; and 2.) support the Oregon Department of Fish and Wildlife in applying for minimum flows on fish-bearing streams to prevent further reduction of flows.

13. Riparian Vegetation

(1) Plant suitable trees and shrubs in riparian areas where adequate shading is lacking.

(2) Reduce or eliminate grazing from riparian areas where adequate cover is lacking, or where damage to existing habitat is occurring.

14. Watershed Stabilization

(1) Roads:

(a) Permanently close unsurfaced roads that are surplus to resource and recreation management needs.

(b) Ensure maintenance of drainage systems on remaining roads to guard against erosion.

(c) Seasonally close unsurfaced roads that are subject to rutting during the wet season.

(2) Stream banks:

(a) Stabilize eroding stream banks.

(b) Eliminate grazing on banks that are subject to erosion.

15. Inventory

A physical stream survey, using the Hank and Reeves method has been completed for much of the Jenny Creek Watershed, but a systematic inventory of functioning condition needs to be undertaken. Stream survey data should be analyzed in fiscal year 1995 to identify stream reaches lacking in desired habitat condition. The inventory for functioning conditions should be completed by the end of fiscal year 1996.

16. Monitoring

The desired future condition and the level of functioning condition within the Riparian Reserves will be monitored over time using photo points and periodic survey of key stream reaches.

B. ACEC/RNA/CSEEA

1. As much as feasible, protect old-growth ACECs from fire. Plan activities adjacent to these areas with fire prevention in mind, and also protection from wind damage.

2. Continue cooperative efforts with neighbors to restore Jenny Creek to a healthier condition. Acquire lands along Jenny Creek if the opportunity arises.

3. As much as feasible, protect RNAs from fire. Plan activities adjacent to these areas with fire prevention in mind, and also protection from wind damage. Coordinate with adjacent land managers (USFS and Klamath Falls RA) to protect the Old Baldy site from their management activities.

4. Begin the planning effort for the ecological emphasis area as soon as personnel and budgets are adequate to complete the task.

C. Silviculture

Silvicultural practices should be encouraged to accelerate the development of overstocked young plantations into stands with late-successional and old-growth forest characteristics, and to reduce the risks of large-scale disturbances and unacceptable loss of habitat. Silvicultural treatments inside reserves are subject to review by the Regional Ecosystem Office to ensure that the treatments are beneficial to the creation of late-successional forest conditions. General prescriptions are described below apply to both LSR and GFMA lands:

1. Guide existing conifer plantations towards old-growth conditions by favoring different age, diameter and height classes. Various tree species as well as tree spacings should be prescribed.

2. The conifer plantations and stands that need precommercial thinning should be treated in a manner that creates multiple canopy layers. Trees of different age classes and species should be designated to leave at random spacings.

3. Stands in need of density management tend to be single canopy layered. When thinning, different species, age, diameter and height classes should be favored. Small gaps in the canopy layer should favor the establishment of natural seedlings.

4. Single canopy layered stands of all commercial age classes should have small openings created in the canopy layer to enable seedlings to become established in the understory.

5. Plant previously entered stands needing an understory.

D. Recreation

1. Some activities along the Pacific Crest Trail would require considerable informational and interpretive skills to be placed in a positive perspective from the standpoint of the user. This may include interpretive signs.

2. Complete the Surveyor Ancient Forest Interpretive Trail and Watershed Enhancement Project to provide a connector trail from the PCNST to the Surveyor Ancient Forest.

3. Increased education and information efforts to help alleviate the ORV problems within the Soda Mountain WSA.

4. Vehicle restrictions or ORV closures on lands surrounding the WSA.

5. Increased patrols of the WSA.

6. Consider eliminating hunting within the WSA.

7. Employ the latest techniques for managing alien species within wilderness.

8. In the Special Recreation Management Area, implement the actions contained in the RAMP when finalized.

9. Provide interpretive information about the Applegate Trail in brochures, or displays at BLM kiosks or campgrounds.

10. Ensure that BLM personnel are aware of the Applegate Trail route so it will be considered in all planning actions.

E. Wildlife

1. Maintain existing nesting, roosting, foraging and dispersal habitat on matrix land within designated critical habitat.

2. Put those lands that have the potential, but are not presently functioning as a primary constituent element of critical habitat, on a trajectory to meet one of the components of critical habitat. Emphasis should be on nesting, roosting or foraging habitat.

3. Maintain the existing function of the spotted owl buffers and reduce the risk of catastrophic loss.

4. Implement inventory and monitoring protocols for the sensitive species so that the protection buffers can be applied where needed.

5. Convert areas now dominated by exotic grasses and forbs on deer winter range (DWR) to native species that would be endemic to the sites.

6. Regenerate decadent brushland on DWR.

7. Ensure overgrazing does not occur on the winter range.

8. Put timber stands with the potential to function as thermal cover in DWR on a silvicultural trajectory that will enable them to attain this function.

9. Reduce open road densities to 1.5 miles per square mile in DWR.

10. Monitor the elk population.

11. Keep elk populations in balance with deer populations and deer forage needs.

F. Range

The following include recommendations from the Livestock Grazing and Wild Horse Management sections.

1. Develop a program to map and document the encroachment of noxious weeds within the watershed. This program should discourage ground disturbing activities and ensure that disturbed sites are seeded to prevent invasion. Work closely with Oregon Department of Agricultural staff to encourage continued development and release of biological control agents.

2. Develop a site specific allotment management plan for those allotments within the watershed which require improved management to meet land use objectives. A thorough review of proposed improvements to resolve distribution and management problems should be completed.

3. Continue to work with rural interface homeowners to resolve conflicts. Current regulation and State Law do not favor private homeowners within open range areas. The Bureau should continue to look into these cases as a good neighbor. In some instances where livestock operations are not responsive to resolution of complaints, the Bureau may have to remove the operator or the grazing lease in total.

4. Include Weyerhaeuser Corporation as an active participant in the development of both the wild horse management plan and development of objectives for the herd unit.

5. Develop a strategy to determine if unauthorized cropping of wild horses is occurring or other problems are causing the extremely low recruitment of adults into this herd.

X. ADDITIONAL DATA, ANALYSIS, AND RESEARCH NEEDS

In the sense that watershed analysis is an iterative learning and planning process, this document will be revised periodically. Natural resource and cultural inventories, research findings, resource management objectives, environmental factors and natural phenomena can singly or in combination influence a need for changes in landscape design and management plan revision. At this time the interdisciplinary team has identified the following data/analysis/research needs:

A. Silviculture and Ecology

1. More forest health data is needed as follows:

a. Relative density data is useful for the management of conifer stands.

b. Why is there high mortality in some white fir zone timber stands? Is white fir mortality related to drought, soil deficiencies, disease, stand age, or a combination of factors?

c. Where are bark beetle infestations most likely to occur and what species will be most damaging? Also, at what stand densities will excessive mortality result?

d. How much downed woody debris is needed and in what size classes in each plant association to maintain site productivity and natural seedling establishment? Surveys are also needed to tell us the status of downed woody debris in each plant association.

2. What soil mychorrizae are essential for maintaining forest productivity and ecosystem functions?

3. How much water is needed by dominant shrub and tree species in the process of evapotranspiration? (This information is essential for developing water budgets and maintaining a healthy forest in regard to tree survival).

4. What microenvironment conditions are needed for seedling survival and how do these conditions vary by tree species?

5. How essential is fire to the health of forest stands in the white fir zone?

6. What is the ideal tree and shrub species mix for each plant association?

B. Range

Currently the BLM is tracking and reporting the condition of rangelands. The initial data collection for most of the Medford District was completed in the early 1980's. Approximately two-thirds of the Medford District was studied during this early inventory. Future efforts should include completion of ecological site inventory work on areas not initially studied and reinventory of the original sites. Reinventorying should tell us the changes in trends on base-line sites completed ten years earlier.

However, the monitoring program for range condition should be limited to non-forested range sites. Rating grazed forest lands on an ecological basis and adding those acres to the grazed non-forested land skews the perception of grazing management's impact on the land. The seral stage of forested acres is not the product of grazing but of forest management. Range ecological condition rating and monitoring should be confined to non-forested, classic rangelands: natural grasslands, meadows, and oak woodlands.

The collection of data for rangeland management is expected to change dramatically in future years. It is anticipated that "functionality" of both uplands and riparian zones will be the key concepts for monitoring in the future. New monitoring guidelines are currently being developed to address the concept of proper functioning riparian systems and uplands.

It is anticipated that existing monitoring which provides program indicators will continue at the present level. These include riparian photo-points, actual grazing use surveys, utilization trends, and field compliance work. Observation records from trained personnel will also be included to provide indications of problems and recommendations of needed changes.

We need to develop tracking for encroachment of existing noxious weed populations. These studies could record changes in acreage and possible long term indications of why encroachment is taking place. We also need to track new species of noxious weeds within the watershed.

C. Wild Horses

Study is necessary to determine the reason for low recruitment of young adults into the herd. What is happening to the young animals within the Pokegama Herd Management Area?

D. Soils/Cumulative Effects

1. A complete field survey of wetlands in the watershed is needed. The SCS soil map shows poorly drained soils in the north and central part of the watershed. These areas may be wetlands and thus subject to certain management considerations.

2. A field survey of stream morphology is needed (Rosgen, 1994). This would help in the understanding of the stream dynamics of Jenny Creek and major tributaries. Management decisions would be better informed and specific to stream segments.

3. Cumulative Effects Analysis needs to be completed for all drainage areas of the Jenny Creek Watershed. Subwatershed Cumulative Effects Analysis are currently incomplete, especially for the Johnson and Sheepy Creek Subwatersheds. Priorities in management decisions would be improved.

4. One other data gap not in the text of this document would involve soil biology. This would involve:

a. Finding indicator organisms of soil health.

b. Setting up a monitoring network for detecting the above organisms for the various ecotypes and/or soils.

c. Maintain monitoring periodically.

E. Aquatic Resources

Additional data is needed in several categories if managers are to make informed decisions for future management of aquatic resources. These categories are as follows:

1. Functioning Riparian Condition: Functioning condition of Jenny Creek riparian habitat was assumed for given stream reaches for the preparation of this document. A survey is needed to assess proper functioning condition throughout the watershed (Riparian-Wetland Initiative for the 1990's).

2. Macroinvertebrates: A limited survey of mollusks in the Jenny Creek Watershed revealed the presence of eight endemic species. A more thorough survey is needed to determine total distribution and abundance of these species. This survey should also address whether ongoing management practices, such as grazing (SEIS ROD C-6), are impacting any of the populations.

3. Redband Trout: Baseline information for the age and size composition of the redband trout population is lacking. Fish from various stream reaches within the Jenny Creek Watershed need to be sampled to establish data for comparison against future

monitoring.

F. Wildlife

1. Basic inventory and monitoring data for special status species and their habitat, other than the northern spotted owl. Inventory/monitoring data would be used as a foundation for providing appropriate management as required by BLM policy and the SEIS ROD. Based on the data, management plans would be prepared if deemed necessary.

2. Vegetative data specific to wildlife habitat function is lacking. Wildlife habitat data now has to be interpreted from forest inventory data which was collected primarily on commercial forestlands for commercial timber harvest purposes. On non-commercial forestlands there is no existing vegetation database. The data would be used for wildlife habitat relationship evaluation and for prioritizing project areas.

G. Hydrology

The following data needs are necessary to complete a more accurate hydrologic analysis in the future:

1. Climatic Data Needs:

a. Hourly temperatures at Howard Prairie Dam for use on the CFS hydrologic modelling program at the Northwest River Forecast Center. This data can also be constructed but actual data is more reliable.

b. Snowpack volumes, actual snow water equivalents (SWE's) and transient snow zones. This information is useful for determining groundwater recharge, transpiration uses by vegetation, evaporative losses and predicting runoff volumes for such things as fisheries production. These values can be obtained through installation and monitoring of Snotel sites in cooperation with SCS. We are currently negotiating with SCS for Snotel sites in Jenny Creek as of 11-01-94.

c. Actual or empirically derived evapotranspiration (ET) values for conifers dominant in the watershed. There is research being completed that should be available sometime in early 1995 through OSU or the SCS. Potential ET values are necessary for completing water balances which are useful for determining forest health and water availability.

2. Hydrology Data Needs:

a. Discharge values: continuous actual daily discharge values from the Lower Crossing station of Jenny Creek are possible with a stilling well and data logger. This information is necessary for completing actual water balances and determining water

yields from the watershed.

b. Peak discharges and frequencies of such discharges. This is useful for determining disturbances of fisheries habitat, land use impacts, sediment loading and flushing calculations, and general monitoring.

c. Baseline information or pre-dam discharge data of what discharges are possible if there was no interception of flow. This is useful information for determining what previous conditions were like. Information on peak flows and storm events are obtainable through fluvial geomorphologic investigation of benches and high water marks indicative of certain flow volumes.

d. An up-to-date stream survey of all active intermittent streams and year around running streams. This would provide information on road interception, cumulative effects and subsequent sediment loading.

e. Evaporative and seepage losses at Howard Prairie, Hyatt, Keene Creek Dams, and from earthen canals.

H. Special Status Plants

Inventories for special status plants are conducted in response to projects with surface disturbing activities. Therefore, portions of the watershed where no projects have occurred have not been inventoried. If time and money allow, additional inventories could be conducted.

I. Cultural Resources

Inventories for cultural resources are conducted in response to projects with surface disturbing activities. Therefore, portions of the watershed where no projects have occurred have not been inventoried. If additional funding and staffing existed, additional inventories could be conducted.

J. Transportation System

Road Management Objectives (RMO's) have been completed for most roads, however, updating road objectives is a continuous process; and when overall management objectives change, so do the road objectives. In addition, updating the inventory and determining the effectiveness of road closures and the road Maintenance Operations Plan (MOP) is a continuous process and needs updating when overall management objectives change.

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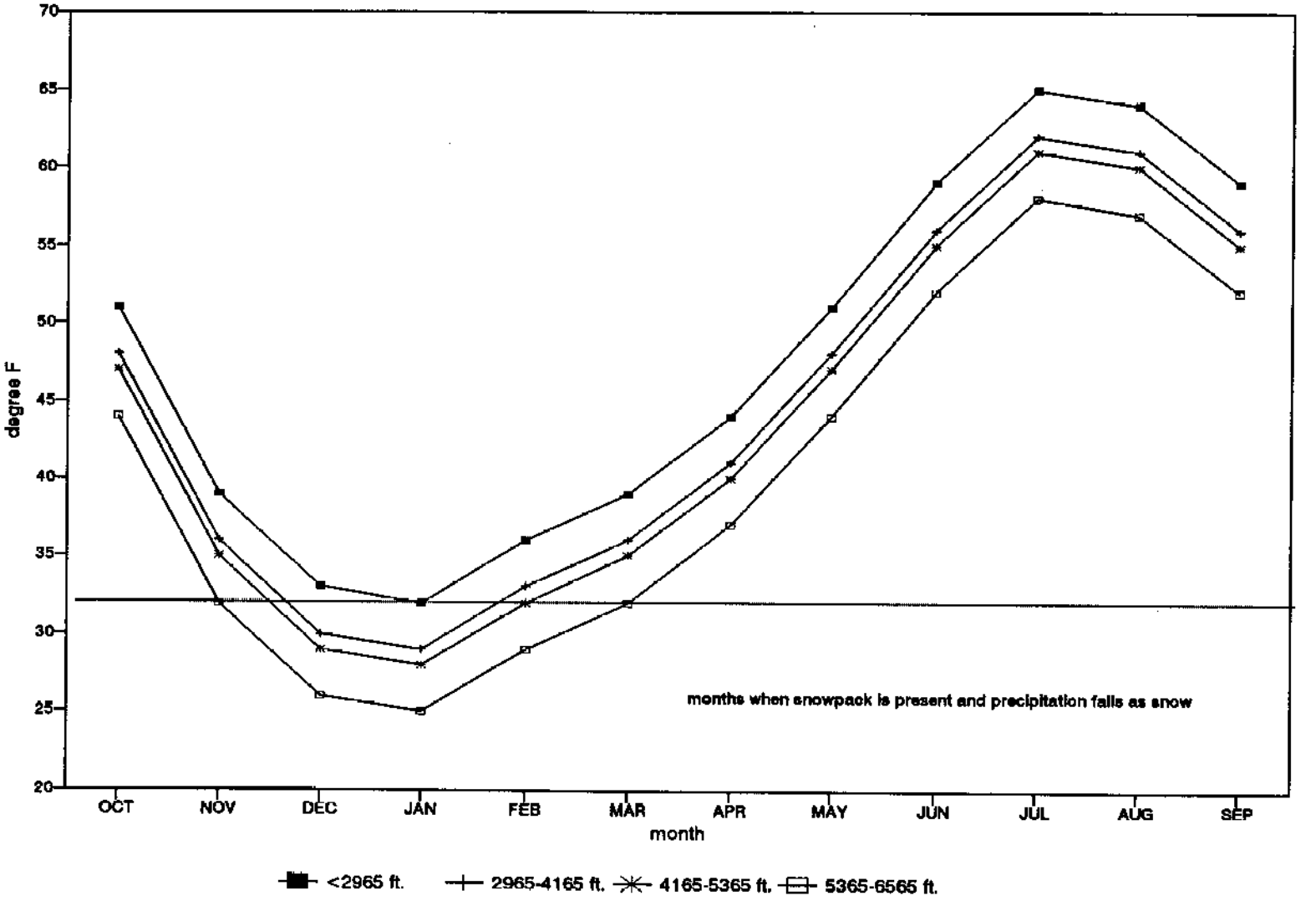
Appendix 1. Precipitation Distribution Based on data from Howard Priarie Dam (1961-1990).

		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
ratio of ppt.		0.14	0.11	0.11	0.07	0.06	0.04	0.01	0.02	0.03	0.07	0.16	0.18
	20	2.80	2.20	2.20	1.40	1.20	0.80	0.20	0.40	0.60	1.40	3.20	3.60
	22.5	3.15	2.48	2.48	1.58	1.35	0.90	0.23	0.45	0.68	1.58	3.60	4.05
	25	3.50	2.75	2.75	1.75	1.50	1.00	0.25	0.50	0.75	1.75	4.00	4.50
ppt.	27.5	3.85	3.03	3.03	1.93	1.65	1.10	0.28	0.55	0.83	1.93	4.40	4.95
inches	30	4.20	3.30	3.30	2.10	1.80	1.20	0.30	0.60	0.90	2.10	4.80	5.40
	32.5	4.55	3.58	3.58	2.28	1.95	1.30	0.33	0.65	0.98	2.28	5.20	5.85
	35	4.90	3.85	3.85	2.45	2.10	1.40	0.35	0.70	1.05	2.45	5.60	6.30
	37.5	5.25	4.13	4.13	2.63	2.25	1.50	0.38	0.75	1.13	2.63	6.00	6.75
	40	5.60	4.40	4.40	2.80	2.40	1.60	0.40	0.80	1.20	2.80	6.40	7.20
	42.5	5.95	4.68	4.68	2.98	2.55	1.70	0.43	0.85	1.28	2.98	6.80	7.65
	45	6.30	4.95	4.95	3.15	2.70	1.80	0.45	0.90	1.35	3.15	7.20	8.10

Appendix 2

Average temperatures by elevation zone
Based on data: Howard Prairie 1961-1990



Appendix 3. Example Water balance from Buncom Watershed
by Scott Boken

	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug
1 Ppt (mm)	21	39	103	108	67	77	77	44	34	20	17	14
2 Temp. F	63.5	56.3	44.3	38.6	40	43.7	47	52.5	57.3	64.4	69	69.7
3 Temp. C	17.5	13.5	6.8	3.7	4.4	6.5	8.3	11.4	14.1	18	20.6	20.9
4 *k factor	0.9	0.76	0.58	0.5	0.5	0.56	0.62	0.69	0.8	0.9	0.98	1
5 *d factor	0.083	0.077	0.067	0.075	0.067	0.066	0.082	0.089	0.099	0.1	0.101	0.094
6 PET (mm/mo)	94	55	20	13	13	18	30	49	78	118	153	148
7 **Ppt-Interception	17	31	81	85	53	61	61	35	27	16	13	11
8 Ppt-I-PET (mm)	-77	-24	61	72	40	43	31	-14	-51	-102	-140	-137
9 APWL (mm)	-521	-545	0	0	0	0	0	-14	-65	-167	-307	-444
10 SM	1	1	62	97	97	97	97	90	60	18	5	1
11 dSM	0	0	62	35	0	0	0	-7	-30	-42	-13	-4
12 AET	17	31	20	13	13	18	30	42	57	58	26	15
13 Deficit	77	24	0	0	0	0	0	7	21	60	127	133
14 Surplus	0	0	0	37	40	43	31	0	0	0	0	0
15 tot. avail. for R.O.	1	0.5	0.3	37	59	73	68	34	17	9	5	3
16 Runoff	0.5	0.3	0.2	19	30	37	34	17	9	5	3	2
17 Detention	0.5	0.2	0.1	18	29	36	34	17	8	4	2	1

* Blanney-Criddle crop and day length coefficients. Day length dependent on latitude.
** Interception is 21% of ppt and is assumed to be constant annually for rain or snow.

Appendix 4. Water inflow into Hyatt Lake and Howard Prairie Reservoir.

HYATT LAKE

MONTH	YEAR	NET INFLOW IN ACRE-FEET
January	1989	467.0
February	1989	355.0
March	1989	2663.0
April	1989	3986.0
May	1989	1384.0
June	1989	-107.8
July	1989	-562.0
August	1989	849.2
September	1989	53.6
October	1989	43.0
November	1989	170.0
December	1989	190.0
January	1990	385.0
February	1990	350.0
March	1990	1405.0
April	1990	1590.0
May	1990	381.0
June	1990	265.0
July	1990	-876.0
August	1990	-846.0
September	1990	-75.1
October	1990	-43.0
November	1990	322.0
December	1990	166.0
January	1991	435.0
February	1991	455.0
March	1991	474.0
April	1991	1923.0
May	1991	371.0
June	1991	2250.8
July	1991	-40.0
August	1991	-366.0
September	1991	41.1
October	1991	0.0
November	1991	346.0
December	1991	354.0

Appendix 4.

MONTH	YEAR	NET INFLOW IN ACRE-FEET
January	1992	193.0
February	1992	466.0
March	1992	683.0
April	1992	489.7
May	1992	27.4
June	1992	-6.4
July	1992	-167.2
August	1992	-75.3
September	1992	-82.0
October	1992	68.5
November	1992	343.5
December	1992	350.7
January	1993	345.8
February	1993	441.5
March	1993	3103.3
April	1993	3294.3
May	1993	2180.3
June	1993	1140.8
July	1993	-22.6
August	1993	-288.8
September	1993	-142.2
October	1993	-7.2
November	1993	21.6
December	1993	230.0

WATER STATUS AS OF AUGUST 31, 1994 478 ACRE-FEET

Appendix 4.

HOWARD PRAIRIE RESERVOIR

MONTH	YEAR	NET INFLOW IN ACRE-FEET
January	1991	755.5
February	1991	1567.7
March	1991	3096.0
April	1991	3492.0
May	1991	5422.5
June	1991	1486.5
July	1991	146.5
August	1991	71.8
September	1991	43.6
October	1991	237.2
November	1991	519.0
December	1991	903.5
January	1992	687.0
February	1992	0.0
March	1992	1885.4
April	1992	796.3
May	1992	128.8
June	1992	79.1
July	1992	4.0
August	1992	0.0
September	1992	0.0
October	1992	63.1
November	1992	384.0
December	1992	1869.3
January	1993	532.1
February	1993	823.8
March	1993	7272.8
April	1993	7173.7
May	1993	4375.7
June	1993	3031.4
July	1993	353.5
August	1993	116.5
September	1993	132.4
October	1993	187.6
November	1993	107.3
December	1993	732.0

WATER STATUS AS OF AUGUST 31, 1994 14,678 ACRE-FEET

Appendix 5. Special status plants within the Jenny Creek watershed.

Botanical Name	Common Name	Habitat	Status	Code	Threats
Asarum wagneri	Green-flowered ginger	Understory of white fire and red fir forests and in open rocky areas.	BS	ASWA 50	Logging, road building, ORVs.
Calochortus greenei	Green's mariposa lily	Chaparral areas, in openings among shrubs, and on grassy slopes. Dry, rocky, clay soil.	FC	CAGR	Grazing, road building, ORVs.
Isopyrum stipitatum	Dwarf isopyrum	Chaparral slopes and foothill woodlands.	AS	ISST	Grazing, logging, road building, ORVs.
Limnanthes floccosa ssp. bellingeriana	Bellinger's meadow-foam	Vernal pools in rocky meadows, with shallow soils, between 2,200′ and 3,500′ elevation.	FC	LIFLB	Road building, ORVs, grazing.
Lithophragma campanulata	Large-flowered hill star	Shaded places in woodlands.	AS	LICA	Logging, road building, ORVs, grazing.
Minulus pygmaeus	Pygmy monkey-flower	Damp sites in open woods, meadows that dry out quickly at the end of spring.	FC	MIPY	Logging, road building, ORVs, grazing.
Nemacladus capillaris	Slender nemacladus	Dry gravelly slopes and burned areas	AS	NECA	Road building, ORVs.
Periderida howellii	Howell's false-caraway	Meadows, moist mountain slopes, along streambanks.	AS	PEHO5	Logging, road building, grazing, ORVs, pond construction, stream projects.
Plagiobothrys figuratus	Coral-seeded allocarya	Vernal pool habitats in rocky, open meadows. Wet in spring and very dry in summer.	FC	PLFIC	Road building, ORVs, grazing.

Appendix 6. Introduced plant species in the Jenny Creek Watershed.

ANNUAL GRASSES:

Bromus rigidus	Ripgut Brome
Bromus commutatus	Hairy Brome
Bromus mollis	Soft Brome
Elymus caput-medusae	Medusahead Wildrye
Cynosurus echinatus	Hedgehog Dogtail
Festuca bromoides	Six-weeks Fescue
Festuca myuros	Rattail Fescue
Avena fatua	Wild Oat
Aira caryophyllia	Silver Hairgrass
Briza minor	Little Quaking Grass
Gastridium ventricosum	Nit Grass
Bromus techtorum	Cheatgrass
Lolium multiflorum	Annual Rye

PERENNIAL GRASSES:

Festuca arundianacea	Alta Fescue
Festuca rubra	Red Fescue
Poa pratensis	Kentucky Bluegrass
Poa compressa	Canada Bluegrass
Holcus lanatus	Common Velvetgrass
Lolium perenne	Perennial Ryegrass
Arrhenatherum elatius	Tall Oatgrass
Agropyron intermedium	Intermediate Wheatgrass
Agropyron trichophorum	Pubescent Wheatgrass
Dactylis glomerata	Orchardgrass
Elymus glaucus	Blue Wildrye
Phleum prateuse	Timothy
Secale cereale l.	Cereal Rye

Appendix 6. Continued

FORBS:

Torilis nodosa	Knotted Hedge Parsley
Daucus carota	Wild Carrot
Lactuca serriola	Prickly Lettuce
Sherardia arvensis	Bluefield Madder
Vicia tetrasperma	Slender Vetch
Erodium cirutorium	Filaree
Hypericum perforatum	Common St. Johnswort
Taraxacum officinale	Common Dandelion
Plantago lanceolata	English Plantain
Galium divaricatum	Spreading Bedstraw
Lathyrus sphaericus	Grass Pea
Hypochaerus radicata	Spotted catsear
Cirsium arvense	Canada Thistle
Centaurea solstitialis L.	Yellow Starthistle
Lotus cornicalatus	Birdsfoot trefoil
Trifolium subterraneum	Subclover
Vicia sativa	Common Vetch

TREES:

Populus spp.	Hybred Cottonwood
Pinus jeffreyi	Jeffrey Pine
Picia engelmannii	Engelman Spruce

Appendix 7

Oregon Freshwater Fish of Jenny Creek Watershed

FISH

G = Game fish by state legal definitions
I = Introduced
S = State Sensitive

Common Name	Scientific Name	Habitat: Streams	Habitat: Lakes	Habitat: Ponds
Pacific Lamprey	*Lampetra tridentata*	X		
Golden Shiner (I)	*Notemigonus crysoleucas*	X	X	X
Speckled Dace	*Rhinichthys osculus*	X		
Marbled Sculpin	*Cottus klamathensis*	X		
Klamath Smallscale Sucker (S) (Jenny Creek Sucker)	*Catostomus rimiculus*	X		
Brown Bullhead (I,G)	*Ameirus nebulosus*	X	X	X
Rainbow Trout (I,G)	*Oncorhynchus mykiss*	X	X	X
Redband Trout (G,S)	*Oncorhynchus mykiss ssp.*	X		
Brook Trout (I,G)	*Salvelinus fontinalis*		X	
Green Sunfish (I,G)	*Lepomis cyanellus*		X	
Pumpkinseed (I,G)	*Lepomis gibbosus*		X	X
Bluegill (I,G)	*Lepomis macrochirus*		X	
Largemouth Bass (I,G)	*Micropterus salmoides*		X	X
Black Crappie (I,G)	*Pomoxis nigromaculatus*		X	
Flathead Minnow	*Pimephales promelas*	X		

Appendix 8
Jenny Creek Watershed
Threatened, Endangered, and Sensitive Fish and Wildlife Species

Species		USFWS			BLM	Oregon		
		Threatened	Endangered	Category 2	Special Status Species	Threatened	Endangered	Sensitive
FISH								
Redband Trout	*Oncorhynchus mykiss ssp.*			X	X			X
Jenny Creek Sucker	*Catostomus rimiculus*			X	X			X
AMPHIBIANS								
Tailed Frog	*Ascaphus truei*				X			X
Foothill Yellow-legged Frog	*Rana boylei*							X
Cascade Frog	*Rana cascadai*				X			X
REPTILES								
Northwestern Pond Turtle	*Clemmys marmorata*			X	X			X
Common Kingsnake	*Lampropeltis getulus*				X			X
California Mountain Kingsnake	*Lampropeltis zonata*				X			X
BIRDS								
American White Pelican	*Pelecanus eryuthrorhynchos*				X			X
Bald Eagle	*Haliaeetus leucocephalus*	X			X	X		
Pererine Falcon	*Falco peregrinus*		X		X		X	
Northern Goshawk	*Accipiter gentilis*			X	X			X
Greater Sandhill Crane	*Grus canadensis*				X			X
Flammulated Owl	*Otus flammeolus*				X			X
Northern Pygmy Owl	*Glaucidium gnoma*							X

Appendix 8
Jenny Creek Watershed
Threatened, Endangered, and Sensitive Fish and Wildlife Species

Species		USFWS			BLM	Oregon		
		Threatened	Endangered	Category 2	Special Status Species	Threatened	Endangered	Sensitive
Northern Spotted Owl	*Strix occidentalis caurina*	X			X	X		
Great Gray Owl	*Strix nebulosa*				X			X
Northern Saw-whet Owl	*Aegolius acadicus*				X			
Lewis' Woodpecker	*Melanerpes lewis*				X			X
Acorn Woodpecker	*Melanerpes formicivorus*							X
Williamson's Sapsucker	*Sphyrapicus thyroideus*							X
White-headed Woodpecker	*Picoides albolarvatus*				X			X
Black-backed Woodpecker	*Picoides arcticus*				X			X
Northern three-toed Woodpecker	*Picoides tridactylus*				X			X
Pileated Woodpecker	*Dryocopus pileatus*				X			X
Pygmy Nuthatch	*Sitta pygmaea*							X
Western Bluebird	*Sialia mexicana*				X			X
Mountain Bluebird	*Sialia currucoides*							X
Mountain Quail	*Oreortyx pictus*			X	X			X
Western Meadowlark	*Stunella neglecta*				X			

Appendix 8
Jenny Creek Watershed
Threatened, Endangered, and Sensitive Fish and Wildlife Species

Species		USFWS			BLM	Oregon		
		Threatened	Endangered	Category 2	Special Status Species	Threatened	Endangered	Sensitive
MAMMALS								
Fringed Myotis	*Myotis thysanodes*				X			X
Pacific Pallid Bat	*Antrozous pallidus*				X			X
Townsend's Big-eared Bat	*Plecotus townsendii*			X	X			X
Ringtail	*Bassariscus astutus*							X
American Marten	*Martes americana*				X			X
Fisher	*Martes pennanti*			X	X			X

Appendix 9. Common riparian tree and shrub species of Jenny Creek.

TREES		SHRUBS	
Common Name	Scientific Name	Common Name	Scientific Name
Black Cottonwood	*Populus tricocarpa*	Blue Elderberry	*Sambucus glauca*
Quaking Aspen	*Populus tremuloides*	Red Osier Dogwood	*Cornus stolonifera*
Oregon Ash	*Fraxinus latifolia*	Serviceberry	*Amelanchier florida*
Red Alder	*Alnus rubra*	Thimbleberry	*Rubus parviflorus*
Oregon White Oak	*Quercus garryana*	Douglas Spirea	*Spiraea douglasii*
California Black Oak	*Quercus kelloggii*		
Douglas Hawthorn	*Crataegus douglasii*		
River Willow	*Salix fluviatilis*		
Sandbar Willow	*Salix sp.*		
Douglas Maple	*Acer glabrum*		
Pacific Dogwood	*Cornus nuttallii*		
Douglas-Fir	*Pseudotsuga menziesii*		
White Fir	*Abies concolor*		
Ponderosa Pine	*Pinus ponderosa*		
Sugar Pine	*Pinus lambertiana*		
Pacific Yew	*Taxus brevifolia*		

Appendix 10
Species List for Jenny Creek Watershed

AMPHIBIANS

Legend
X - General Area of Occurrence
F - Feeding Habitat
R - Habitat Used for Reproduction
C - Cover
S - Oregon Sensitive Species
A - Accidental Occurence
G - Game Species
I - Introduced
D - Incomplete or Discontinuous Distribution
W - Widespread

Common Name	Scientific Name	Habitats																
		Distribution	Coniferous Forest	Deciduous Woods	Riparian	Forest Clearings	Brush	Streams	Lakes and Ponds	Springs and Seeps	Marshes	Meadows	Cliffs and Talus	Temporary Water	Rocks	Downed Wood	Subterranean	Artificial Structure
Northwestern Salamander	*Ambystoma gracile*	W	X	X	X	X		R	R-F						C	C	C	
Long-toed Salamander	*Ambystoma macrodactylum*	W	X	X	X				R-R	R-F	R-F	R-F		R	C	C	C-F	C
Pacific Giant Salamander	*Dicamptodon ensatus*	W	X		R-F			R-F	F	R					C-R	C-R	C	
Roughskin Newt	*Taricha granulosa*	W	X	X	X			R-F	R-F					C	C		C-F	
Ensatina	*Ensatina eschscholtzi*	W	X-F			X-F	X-F								C	C-R	C-R	
Tailed Frog	*Ascaphus truei*	S-D	X-F		X-F			R-F							C	C		
Western Toad	*Bufo boreas*	D	X-F	X-F	X-F		X	R-F	R-F	R-F	R-F	F		X		C	C	C
Pacific Treefrog	*Hyla regilla*	W	X-F	X-F	X-F	X-F	X-F		R-F	R-F	R-F			R-F	C	C	C	C
Foothill Yellow-legged Frog	*Rana boylei*	S-D						R-F										
Cascade Frog	*Rana cascadai*	S-D	X						R-F	R	R-F	R-F	R	R				

Appendix 10

Species List for Jenny Creek Watershed

BIRDS

A - Accidental Occurrence
O - Outer Species
I - Introduced
B - Breeder Not Present Year-Round
N - Nonbreeder
Y - Present Year-Round and Breeder

a - Abundant
c - Common
u - Uncommon
r - Rare
i - Irregular
p - Probable
F - Feeding

L - Loafing
P - Perching
R - Reproduction
T - Threatened
E - Endangered
S - Oregon Sensitive Species

Common Name	Scientific Name	Status in Water-shed	Community Types and Habitat Components																				
			Conifer Forest	Deciduous Woods	Forest Clearings	Brush Fields	Riparian	Streams	Lakes and Ponds	Marshes	Lowland Meadows	Mountain Meadows	Crops - Pastures	Irr. Wild Hay Mdw.	Urban	Cliffs - Tall Rimrock	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Common Loon	*Gavia immer*	u-N							F														
Pied-billed Grebe	*Podilymbus podiceps*	c-Y							F	R													
Horned Grebe	*Podiceps auritus*	u-N							F	F													
Red-necked Grebe	*Podiceps grisegena*	P-B							F	R													
Eared Grebe	*Podiceps nigricollis*	u-N							F	F													
Western Grebe	*Aechmophorus occidentalis*	i-N							F	F													
Clark's Grebe	*Aechmophorus clarkii*	r-N							F	F													
American White Pelican	*Pelecanus eryuthrorhynchos*	S-c-N							F														
Double-crested Cormorant	*Phalacrocorax auritus*	c-N						F	F														
American Bittern	*Botaurus lentigenosus*	r-Y							F	F-R													
Great Blue Heron	*Ardea herodias*	c-Y					R	F	F	F	F	F	F	F			R						
Great Egret	*Casmerodius albus*	u-N					F	F	F	F	F												
Green-backed Heron	*Butorides striatus*	u-Y					R	F	R-F	R-F													
Tundra Swan (Whistling)	*Cygnus columbianus*	u-N						F	F	F			F	F									
Greater White-fronted Goose	*Anser albifrons*	G-u-N						F	F				F						F				
Snow Goose	*Chen caerulescens*	G-r-N						F	F				F						F				
Ross' Goose	*Chen rossii*	G-i-N						F	F				F						F				
Canada Goose	*Branta canadensis*	G-c-Y					R	F	R-F	R-F	F		F	R-F					R	R			R
Wood Duck	*Aix sponsa*	G-c-Y		R			R	F	R-F	R-F			F				R			R	L		
Green-winged Teal	*Anas crecca*	G-c-N						F	F	F	F			F					F				
Mallard	*Anas platyrhynchos*	G-a-Y					R-F	R-F	R-F	R-F	R-F	R-F	F	R-F	F				R-F		L		

Appendix 10

Species List for Jenny Creek Watershed

BIRDS

A - Accidental Occurrence
O - Game Species
I - Introduced
B - Breeder Not Present Year-Round
N - Nonbreeder
Y - Present Year-Round and Breeder

a - Abundant
c - Common
u - Uncommon
r - Rare
i - Irregular
p - Probable
F - Feeding

L - Loafing
P - Perching
R - Reproduction
T - Threatened
E - Endangered
S - Oregon Sensitive Species

Common Name	Scientific Name	Status in Watershed	Community Types and Habitat Components																				
			Conifer Forest	Deciduous Woods	Forest Clearings	Brush Fields	Riparian	Streams	Lakes and Ponds	Marshes	Lowland Meadows	Mountain Meadows	Crops - Pastures	Irr. Wild Hay Mdw.	Urban	Cliffs - Tall Rimrock	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Northern Pintail	*Anas acuta*	G-a-N							F	F	F		F	F					F				
Blue-winged Teal	*Anas discors*	G-r-B							F	R-F	R-F			F					R				
Cinnamon Teal	*Anas cyanoptera*	G-u-B							F	R-F	R-F			F					R				
Northern Shoveler	*Anas clypeata*	G-u-N							F	F	F			F									
Gadwall	*Anas strepera*	G-u-N							F	F	F			F									
Eurasian Wigeon	*Anas penelope*	G-r-N							F	F	F			F									
American Wigeon	*Anas americana*	G-c-N						F	F	F	F			F									
Canvasback	*Aythya valisineria*	G-u-N							F	F	F			F									
Redhead	*Aythya americana*	G-r-N							F	F	F			F									
Ring-necked Duck	*Aythya collaris*	G-c-N							F	F	F			F									
Greater Scaup	*Athya marila*	G-u-N							F	F	F			F									
Lesser Scaup	*Athya affinis*	G-c-N							F	F	F			F									
Common Goldeneye	*Bucephala elangula*	G-u-N						F	F	F													
Barrow's Goldeneye	*Bucephala islandica*	G-i-N						F	F														
Bufflehead	*Bucephala albeola*	G-a-N						F	F														
Hooded Merganser	*Lophodytes cucullatus*	G-u-Y					R		R-F	R-F										R	L		R
Common Merganser	*Mergus merganser*	G-c-Y	R	R			R	R-F	F						F				R	R	L		
Ruddy Duck	*Oxyura jamaicensis*	G-u-N							F	F				F									
Turkey Vulture	*Cathartes aura*	c-B	R-F	R-F	F	F	F	F			F		F	F		R	R			P	R		
Osprey	*Pandion haliaetus*	u-B	R-F	R-F			R	F	F								R			P-R			R
Bald Eagle	*Haliaeetus leucocephalus*	T-u-Y	R				F	F	F	F							R			P			

Appendix 10

Species List for Jenny Creek Watershed

BIRDS

A - Accidental Occurrence
G - Game Species
I - Introduced
R - Breeder Not Present Year-Round
N - Nonbreeder
Y - Present Year-Round and Breeder

a - Abundant
c - Common
u - Uncommon
r - Rare
i - Irregular
p - Probable
F - Feeding

L - Loafing
P - Perching
R - Reproduction
T - Threatened
E - Endangered
S - Oregon Sensitive Species

Common Name	Scientific Name	Status in Water-shed	Community Types and Habitat Components																				
			Conifer Forest	Deciduous Woods	Forest Clearings	Brush Fields	Riparian	Streams	Lakes and Ponds	Marshes	Lowland Meadows	Mountain Meadows	Crops - Pastures	Irr. Wild Hay Mdw.	Urban	Cliffs - Tall Rimrock	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Northern Harrier	*Circus cyaneus*	u-Y								R-F	R-F	F	F	.					R-F				
Sharp-shinned Hawk	*Accipiter striatus*	u-Y	R-F	F	F	F	F								F		R						
Cooper's Hawk	*Accipiter cooperii*	u-Y	R-F	F	F	F	F								F		R						
Northern Goshawk	*Accipiter gentilis*	S-r-Y	R-F	F	F		F					F					R			P	F		
Red-tailed Hawk	*Buteo jamaicensis*	c-Y	R-F	R-F	F	F	R-F	R-F			F	F	F	F	F	R	R			P			P
Rough-legged Hawk	*Buteo lagopus*	u-N								F	F		F	F						P			P
Golden Eagle	*Aquila chrysaetos*	r-N	F				F			F	F		F	F			P			P			P
American Kestrel	*Falco sparverius*	u-Y	R-F	R-F	F	F					F	F	R-F	F	F	F				R			P-R
Merlin	*Falco columbarius*	r-N	F	F	F		F				F		F	F	F		P						P
Prairie Falcon	*Falco mexicanus*	i-N							F		F		F	F		P				P			
Peregrine Falcon	*Falco peregrinus*	E-Y							F		F					P							
Blue Grouse	*Dendragapus obscurus*	G-c-Y	R-F	F	F							F					F	F	R-F		R		
Ruffed Grouse	*Bonasa umbellus*	G-u-Y	R-F	F	F		F										F	F	R-F		R		
Wild Turkey	*Meleagris gallopavo*	G-u-Y	R-F	R-F	F		F												R-F				
California Quail	*Callipepla californica*	G-u-Y					R-F				R-F		R-F		R-F		P	R-F	R-F				P
Mountain Quail	*Oreortyx pictus*	S-G-c-Y	R-F	R-F	R-F	R-F	F					F						F	R-F		R		
Virginia Rail	*Rallus limicola*	G-u-Y								R-F	R-F			R-F									
Sora	*Porzana carolina*	G-c-B								R-F	R-F	R-F		R-F									
American Coot	*Fulica americana*	G-a-Y							F	R-F	F		F	F					F				
Greater Sandhill Crane	*Grus canadensis*	S-r-N								F	F	F	F	F					F				
Killdeer	*Charadrius vociferous*	c-Y					R-F	R-F	R-F	R-F	R-F		R-F	R-F	R-F								

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Common Name	Scientific Name	Status in Water-shed	Community Types and Habitat Components																					
			Conifer Forest	Deciduous Woods	Forest Clearings	Brush Fields	Riparian	Streams	Lakes and Ponds	Marshes	Lowland Meadows	Mountain Meadows	Crops - Pastures	Irr. Wild Hay Mdw.	Urban	Cliffs - Tall Rimrock	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Greater Yellowlegs	*Tringa melanoleuca*	u-N						F	F		F			F	F									
Solitary Sandpiper	*Tringa solitaria*	r-N						F	F	F	F													
Spotted Sandpiper	*Actitis macularia*	u-Y						R-F	R-F															
Western Sandpiper	*Calidris mauri*	c-N							F		F			F	F									
Least Sandpiper	*Calidris minutilla*	u-N						F	F		F			F	F									
Baird's Sandpiper	*Calidris bairdii*	r-N							F	F	F		F											
Dunlin	*Calidris alpina*	u-N							F		F		F											
Long-billed Dowitcher	*Lomnodormus scolopaceus*	u-N							F		F		F	F										
Common Snipe	*Gallinago gallinago*	G-c-Y							F	F	R-F	R-F		R-F										
Wilson's Phalarope	*Phalaropus tricolor*	r-N							F	F	F													
Ring-billed Gull	*Larus delawarensis*	u-N						F	F	F			F	F										
California Gull	*Larus californicus*	u-N						F	F	F			F	F										
Caspian Tern	*Sterna caspia*	u-N						R-F	R-F	F				F										
Rock Dove	*Columba livia*	I-a-Y											F		R-F	R			F					R
Band-tailed Pigeon	*Columba fasciata*	G-c-B	R-F	F	F		F						F		F		R-F	F	F					
Mourning Dove	*Zenaida macroura*	G-c-Y		R-F	R-F		R-F						R-F		R-F	R	R	R-F	R-F					P
Barn Owl	*Tyto albo*	u-Y									F		F	R-F	R-F									R
Flammulated Owl	*Otus flammeolus*	S-u-Y	R-F		F						F	F					R-P			R-P				R
Western Screech Owl	*Otus kennicottii*	u-Y	R-F	R-F	F		R-F				F				R-F		F			R				R
Great Horned Owl	*Bubo virginianus*	c-Y	R-F	R-F	F	F	R-F			F	F	F	F	F		R-F	R-F	F	F	R				R
Northern Pygmy Owl	*Glaucidium gnoma*	S-u-Y	R-F	R-F	F						F	F			F		F			R				

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Species List for Jenny Creek Watershed

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u - Uncommon
r - Rare
i - Irregular
p - Probable
F - Feeding

L - Loafing
P - Perching
R - Reproduction
T - Threatened
E - Endangered
S - Oregon Sensitive Species

Common Name	Scientific Name	Status in Watershed	Community Types and Habitat Components																				
			Conifer Forest	Deciduous Woods	Forest Clearings	Brush Fields	Riparian	Streams	Lakes and Ponds	Marshes	Lowland Meadows	Mountain Meadows	Crops - Pastures	Irr. Wild Hay Mdw.	Urban	Cliffs - Tall Rimrock	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Northern Spotted Owl	*Strix occidentalis caurina*	T-u-Y	R-F														R-F						
Great Grey Owl	*Strix nebulosa*	S-u-Y	R-F		F						F	F					R-P		F	R-P			R
Long-eared Owl	*Asio otus*	i-N		F			F				F		F	F			F		F				
Northern Saw-whet Owl	*Aegolius acadicus*	u-Y	R-F	R-F			F										R-F			R			R
Common Nighthawk	*Chordeilis minor*	u-B	R-F	R-F	R-F	R-F	R-F	F	F	F	R-F	R-F	R-F	F	R-F	R-F	P						R
Vaux's Swift	*Chaetura vauxi*	u-B	R-F	R-F	F	F	R-F	F	F		F	F	F		R-F	F	R			R			R
Calliope Hummingbird	*Stellula calliope*	r-B	R-F	R-F	R-F	F	R-F				F	R-F			F		R	R-F	F				
Rufous Hummingbird	*Selasphorus rufus*	c-B	R-F	R-F	R-F	R-F	R-F				R-F	R-F	R-F		R-F		R	R-F	F				
Belted Kingfisher	*Ceryle alcyon*	c-Y					R-F	F	F	F					F		F			P	R		P
Lewis' Woodpecker	*Melanerpes lewis*	S-r-N		F			F										F			F			P
Acorn Woodpecker	*Melanerpes formicivorus*	S-u-Y	R-F	R-F											F		F			R-F			F
Red-naped Sapsucker	*Sphyrapicus nuchalis*	i-N		R-F			R-F										F			R			
Red-breasted Sapsucker	*Sphyrapicus ruber*	u-Y	R-F	R-F			R-F								R-F		F			R			
Williamson's Sapsucker	*Sphyrapicus thyroideus*	S-i-N	F	F			F										F						
Downy Woodpecker	*Picoides pubescens*	u-Y		R-F			R-F								R-F		F			R-F			
Hairy Woodpecker	*Picoides villosus*	u-Y	R-F				R-F								R-F		F			R-F			
White-headed Woodpecker	*Picoides albolarvatus*	S-r-Y	R-F														F			R-F			
Black-backed Woodpecker	*Picoides arcticus*	S-u-Y	R-F														F			R-F			
Northern Flicker	*Colaptes auratus*	c-Y	R-F	R-F	F		R-F				F	F			R-F		F		F	R-F	F		R
Northern Three-toed Woodpecker	*Picoides tridactylus*	S-p	R-F														R-F			R-F	F		
Pileated Woodpecker	*Dryocopus pileatus*	S-u-Y	R-F				R-F								R-F		F			R-F	F		

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Species List for Jenny Creek Watershed

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F - Feeding

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S - Oregon Sensitive Species

Common Name	Scientific Name	Status in Water-shed	Community Types and Habitat Components																				
			Conifer Forest	Deciduous Woods	Forest Clearings	Brush Fields	Riparian	Streams	Lakes and Ponds	Marshes	Lowland Meadows	Mountain Meadows	Crops - Pastures	Irr. Wild Hay Mdw.	Urban	Cliffs - Tall Rimrock	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Olive-sided Flycatcher	*Contopus borealis*	c-B	R-F	F	F										F		R-F			P-F			
Western Wood Peewee	*Contopus sordidulus*	c-B	R-F	R-F	F	F	R-F				F	F			R-F		R-F						
Willow Flycatcher	*Empidonax traillii*	c-B			R-F		R-F								R-F			R-F					
Least Flycatcher	*Empidonax minimus*	i-N					R-F																
Hammond's Flycatcher	*Empidonax hammondii*	u-B	R-F														R-F						
Dusky Flycatcher	*Empidonax oberholseri*	r-B	R-F	R-F		R-F	R-F										R-F	R-F					
Gray Flycatcher	*Empidonax wrightii*	i-N																R-F					
Pacific-slope Flycatcher	*Empidonax difficilis*	a-B	R-F	R-F			F								R-F		R-F						
Western Kingbird	*Tyrannus verticulis*	u-B									R-F		R-F	R-F	R-F		R-F						R-F
Horned Lark	*Eremophila alpestris*	u-Y											R-F						R-F				
Western Meadowlark	*Stunella neglecta*	c-Y									R-F		R-F						R-F				
Tree Swallow	*Tachycineta bicolor*	a-B		R-F	F	F	R-F	F	F	F	F	F	F	F	R-F					R			P-R
Violet-green Swallow	*Tachycineta thallassina*	a-B			F	F	R-F	F	F	F	F	F	F	F	R-F	R-F				R			P-R
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	u-B					R-F	F	F	F	F		F	F								R	P
Barn Swallow	*Hirundo rustica*	a-B					F	F	F	F	F		F	F	R-F								P-R
Gray Jay	*Perisorcus canadensis*	u-Y	R-F									F					R-F						
Steller's Jay	*Cyanocitta stelleri*	c-Y	R-F		F							F			R-F		R-F						
Scrub Jay	*Aphelocoma coerulescens*	c-Y		R-F	R-F		R-F								R-F		R-F	R-F					
Clark's Nutcracker	*Nucifraga columbiana*	u-Y	R-F									F				P	R						
Black-billed Magpie	*Pica pica*	i-N					F				F		F	F			P	P					
American Crow	*Corvus caurinus*	a-Y		R-F			R	F	F		F		R-F		R-F		R-F						P

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Species List for Jenny Creek Watershed

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Common Name	Scientific Name	Status in Watershed	Community Types and Habitat Components																					
			Conifer Forest	Deciduous Woods	Forest Clearings	Brush Fields	Riparian	Streams	Lakes and Ponds	Marshes	Lowland Meadows	Mountain Meadows	Crops - Pastures	Irr. Wild Hay Mdw.	Urban	Cliffs - Tall Rimrock	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Common Raven	*Corvus corax*	u-Y	R-F	R-F	F		F	F	F	F	F	F	R-F	R-F		R	R		F	P			
Black-capped Chickadee	*Parus atricapillus*	c-Y		R-F		F	R-F								R-F		F	F		R-F	F		R
Mountain Chickadee	*Parus gambeli*	c-Y	R-F			F	R-F										F	F		R-F	F		R
Chestnut-backed Chickadee	*Parus rufescens*	u-Y	R-F			F	R-F										F			R-F	F		R
Bushtit	*Psaltriparus minimus*	a-Y		R-F	R-F	R-F	R-F								F		R-F	R-F					
Red-breasted Nuthatch	*Sitta canadensis*	a-Y	R-F												F		F			R-F			
White-breasted Nuthatch	*Sitta carolinensis*	c-Y	R-F	R-F			R-F								F		F			R-F			R
Pygmy Nuthatch	*Sitta pygmaea*	S-r-N	R-F														F			R-F			
Brown Creeper	*Certhia americana*	u-Y	R-F	R-F											F		R-F			R-F			
Rock Wren	*Salpinctes obsoletus*	u-Y			R-F											R-F					R-F		
Bewick's Wren	*Thryomanes bewickii*	c-Y		R-F	R-F	R-F	R-F								F		F	F		R			R
House Wren	*Troglodytes aedon*	c-B		R-F	R-F	F	R-F								F		F	F		R-F	R-F		R
Winter Wren	*Troglodytes troglodytes*	c-Y	R-F	R-F	F		R-F								F		F	F		R	R-F		
Marsh Wren	*Cistothorus pulustris*	u-Y								R-F													
American Dipper	*Cinclus mexicanus*	c-Y						R-F															
Golden-crowned Kinglet	*Regulus satrapa*	c-Y	R-F	F				F							F		R-F						
Ruby-crowned Kinglet	*Regulus calendula*	c-N	F	F	F	F	F					F			F		F	F					
Western Bluebird	*Sialia mexicana*	S-u-Y			R-F						R-F	R-F	R-F				F		F	R			R
Mountain Bluebird	*Sialia currucoides*	S-u-Y	R-F	R-F	R-F						R-F	R-F			R-F		F		F	R			R
Townsend's Solitaire	*Myadestes townsendi*	u-Y	R-F	F	F		F				F	F					F	F	R		F		
Swainson's Thrush	*Catharus ustulatus*	c-B	R-F	R-F			R-F											R-F	F	F			

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Common Name	Scientific Name	Status in Water-shed	Community Types and Habitat Components																				
			Conifer Forest	Deciduous Woods	Forest Clearings	Brush Fields	Riparian	Streams	Lakes and Ponds	Marshes	Lowland Meadows	Mountain Meadows	Crops - Pastures	Irr. Wild Hay Mdw.	Urban	Cliffs - Tall Rimrock	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Hermit Thrush	*Catharus guttatus*	c-Y	R-F	F	F		F								F		R-F	R-F	F				
American Robin	*Turdus migratorius*	a-Y	R-F	R-F	R-F		R-F				F	F	F		R-F		R-F	R-F	F				R
Varied Thrush	*Ixoreus naevius*	c-Y	R-F	F	F		F				F		F		F		R-F	R-F	F				
Wrentit	*Chamaea fasciata*	u-Y	R-F			R-F												R-F	F				
American Pipit	*Anthus rubescens*	A-c-N						F	F	F	F	F	F										
Bohemian Waxwing	*Bombycilla garrulus*	i-N		F	F		F						F		F		F	F					
Cedar Waxwing	*Bombycilla cedrorum*	a-Y		R-F	F		R-F	F					F		F		R-F	R-F					
European Starling	*sturnus vulgaris*	I-a-Y	R-F	R-F	R-F		R-F				F	F	F	F	R-F		F	F	F	R			P-R
Solitary Vireo	*Vireo solitarius*	u-B	R-F	R-F	R-F		R-F								R-F			R-F					
Hutton's Vireo	*Vireo huttoni*	c-Y	R-F	R-F			F								F		R-F	R-F					
Warbling Vireo	*Vireo gilvus*	c-B		R-F			R-F								F		R-F						
Red-eyed Vireo	*Viero olivaceus*	u-B		R-F			R-F										R-F	R-F					
Tennessee Warbler	*Vermivora peregrina*	i-N					F								F			F					
Orange-crowned Warbler	*Vermivora celata*	a-B		R-F	R-F	R-F	R-F								R-F			R-F					
Nashville Warbler	*Vermivora ruficapilla*	u-B	R-F	R-F	R-F	R-F	F											F	R				
Yellow Warbler	*Dendroica petechia*	c-B					R-F										R-F						

Appendix 10

Species List for Jenny Creek Watershed

MAMMALS

A - Accidental Occurrence
F - Furbearer
G - Game Animal
I - Introduced
W - Widespread

D - Discontinuous Distribution
L - Local Population
X - General Habitat
C - Cover
F - Feeding

H - Hibernating
R - Reproduction
T - Threatened
E - Endangered
S - Oregon Sensitive Species

Common Name	Scientific Name	Distribution	Coniferous Forest	Deciduous Woods	Forest Clearings	Chapparel	Riparian	Streams	Lakes and Ponds	Marshes	Mountain Meadows	Cliffs and Talus	Caves	Rocks and Boulders	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
			Community Types and Habitat Components																		
Pacific Water or Marsh Shrew	*Sorex bendirii*	D	X	X	X		X	X	X	X	X				C-F	C			R-F	R-F	
Pacific Shrew	*Sorex pacificus*	D	X	X			X	X		X						C-F	C-F		R-F	R-F	
Fog Shrew	*Sorex sonomae*	D	X	X				X		X							C-F		R-F	R-F	
Trowbridge's Shrew	*Sorex trowbridgii*	D	X	X			X	X		X						C	C-F		R-F	R-F	
Vagrant Shrew	*Sorex vagrans*	D		X	X		X	X	X	X	X						C-F		R-F	R-F	R-C
Shrew-mole	*Neurotrichus gibbsii*	D	X				X			X						C-F	C-F		R-F	R-F	
Broad-footed Mole	*Scapanus latimanus*	D					X				X										
Coast Mole	*Scapanus orarius*	D	X				X				X								F	R-F	
Townsend's Mole	*Scapanus townsendii*	D			X						X									R-F	
California Myotis	*Myotis californicus*	W	X	X			X	F	F		F	R-F	H					C	R-C		H
Long-eared Myotis	*Myotis evotis*	W	X	X	X		X	F	F		F			H				R-C			R-C
Little Brown Myotis	*Myotis lucifugus*	W	X	X	X		F	F	F	F	F	C						R-C			R-C
Fringed Myotis	*Myotis thysanodes*	S-W	X		X						F	C	H					R-C			R
Long-legged Myotis	*Myotis volans*	W	X	X	X		X		F		F		H					R-C			R-C
Yuma Myotis	*Myotis yumanensis*	D	X				X	F	F	F								R-C			R-C
Hoary Bat	*Lasiurus cinereus*	W	C-F				C-F	F							C						
Silver-haired Bat	*Lasionycteris nocatavigans*	W	R-F															R-C			C
Big Brown Bat	*Eptesicus fuscus*	W	F	F	F		F	F	F	F	F	R-C	H-C					C			R-C
Townsend's Big-eared Bat	*Plecotus townsendii*	S-D	X										R-H								C

Appendix 10

Species List for Jenny Creek Watershed

MAMMALS

A - Accidental Occurrence
F - Furbearer
G - Game Animal
I - Introduced
W - Widespread

D - Discontinuous Distribution
L - Local Population

X - Critical Habitat
C - Cover
P - Feeding

H - Hibernating
R - Reproduction

T - Threatened
E - Endangered
S - Oregon Sensitive Species

Common Name	Scientific Name	Distribution	Community Types and Habitat Components																		
			Coniferous Forest	Deciduous Woods	Forest Clearings	Chapparel	Riparian	Streams	Lakes and Ponds	Marshes	Mountain Meadows	Cliffs and Talus	Caves	Rocks and Boulders	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Pacific Pallid Bat	*Antrozous pallidus*	S-D		X			X	F	F			C	R-C					C			R-C
American Pika	*Ochotona princeps*	D	X										R-H			F					
Brush Rabbit	*Sylvilagus bachmani*	D	X		X		X				X				C-F	R-F	F				
Snowshoe Hare	*Lepus americanus*	D	X	X			X								F	C-F	F		C-R	C-R	
Black-tailed Jackrabbit	*Lepus californicus*	D				X					X					R-F	F				
Mountain Beaver	*Apolodontia rufa*	D	X												F	F				R-C	
Yellow-pine Chipmunk	*Tamias amoenus*	D	X	X	X	X	X							C	C-F	C-F	F		R-C	R-C	
Siskiyou Chipmunk	*Tamias siskiyou*	D	X	X	X	X	X							C	C-F	C-F	F	R-C	R-C	R-C	
Townsend's Chipmunk	*Tamias townsendii*	D	X	X	X	X	X							C	C-F	C-F	F	R-C	R-C	R-C	
Yellow-bellied Marmot	*Marmota flaviventris*	D											R-H			F		R-H			R-H
California Ground Squirrel	*Spermophilus beecheyi*	W									X			C	F	F	F		C	R-H	
Golden-mantled Ground Squirrel	*Spermophilus lateralis*	D	X			X	X							C-R		F	F		C	R-H	
Western Gray Squirrel	*Sciurus griseus*	G-D													R-F						
Douglas Squirrel	*Tamiasciurus douglasii*	W	X	X											R-F		F	R-C	F	F	
Northern Flying Squirrel	*Glaucomys sabrinus*	W	X	X			X								R-F	F	F	R-C	F	F	R-C
Botta's Pocket Gopher	*Thomomys bottae*	D					X				X						F			R-C	
Western Pocket Gopher	*Thomomys mazama*	W			X		X				X						F			R-C	
American Beaver	*Castor canadensis*	F-W	X	X			R-F	R-F	R-F	R-F	R-F				F	F	F			C-R	
Deer Mouse	*Peromyscus maniculatus*	W	X	X	X	X	X				X	X	C-R	R-F			C-F	R-C	R-C	R-C	R-F
Bushy-tailed Woodrat	*Neotoma cinera*	W	X	X		X	X					R-F	C-R	C-R	C-R		F		C-R		C-R

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Common Name	Scientific Name	Distribution	Community Types and Habitat Components																		
			Coniferous Forest	Deciduous Woods	Forest Clearings	Chapparel	Riparian	Streams	Lakes and Ponds	Marshes	Mountain Meadows	Cliffs and Talus	Caves	Rocks and Boulders	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Dusky-footed Woodrat	*Neotoma fuscipes*	W	X	X			X					R-F	C-R	C-R	C-R	C-R	F		C-R		C-R
Creeping Vole	Microtus oregoni	W	X		X		X				X						C-F		R-C	R-C	
Townsend's Vole	*Microtus townsendii*	D					X	X		X	X				F		C-F			R-C	
Common Muskrat	*Ondatra zibethicus*	F-D						X	X	R-F							R-F			R-C	
Pacific Jumping Mouse	*Zepus trinotatus*	D	X				X	X	X	X	X						R-F		R-C	H-R	
Common Porcupine	*Erethizon dorsatum*	D	X	X	X		X			F	F	R-C	R-C	R-C	C-F	C-F	F	R-C	R-C	R-C	
Coyote	*Canis latrans*	W	X	X	X	X	X			X	X	X	C	R-C	C	C	C-F		R-C	R-C	
Red Fox, Native subsp.	*Vulpes vulpes*	F-D			X		X				X			R-C	C	C	C-F			R-C	
Common Gray Fox	*Urocyon cinereoargenteus*	F-W		X	X	X	X	X			X	R-C		R-C	C-F	C-F	C-F		R-C	R-C	
Black Bear	*Ursus americanus*	G-W	X	X	X	X	X				X			R-H	C-F	C-F	F		R-H	R-H	
Ringtail	*Bassariscus astutus*	S-D	X	X	X	X	X					R-F	R-C	R-C	C-F	C-F	C-F		R-C		C
Raccoon	*Procyon lotor*	F-W		X	X		C-F	F	F	F		R-C	R-C	R-C	C-F	C-F	C-F	R-C	C		C
American Marten	*Martes americana*	S-D	X												C-F	C-F	C-F	R-C	C		
Fisher	*Martes pennanti*	S-D	X												C-F	C-F	C-F	R-C	C		
Ermine	*Mustela erminea*	W	X	X			X				X	R-F	R-F	R-F	F	F	F	C-F	R-F	R-F	
Long-tailed Weasel	*Mustela frenata*	W	X	X	X	X	X				X	R-F	R-F	R-F	F	F	F	C-F	F	R-F	
Mink	*Mustela vison*	F-W	X	X	X		X	F	F	F	X			R-F			F		R-F	R-F	
American Badger	*Taxideu taxus*	D	X	X	X	X					R-F	R-F				F	F			R-F	
Western Spotted Skunk	*Spilogale gracilis*	D	X	X	X		R-F				R-F		C	R-F		F	F	R-C	R-F	R-C	R-F
Striped Skunk	*Mephitis mephitis*	W		X	X	X	R-F	F	F	R-F	R-F	R-C	R-C	R-F		F	F		R-F	R-C	R-F

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Common Name	Scientific Name	Distri-bution	Community Types and Habitat Components																		
			Coniferous Forest	Deciduous Woods	Forest Clearings	Chapparel	Riparian	Streams	Lakes and Ponds	Marshes	Mountain Meadows	Cliffs and Talus	Caves	Rocks and Boulders	Trees	Shrubs	Grass and Forbs	Snags	Downed Wood	Subterranean	Artificial Structures
Northern River Otter	*Lutra canadensis*	F-D	X				R	F	F										R	R	
House Cat (Feral)	*Felis catus*	I-D					X			X		R	R		F	F	F		R		R-F
Mountain Lion	*Felis concolor*	G-W	X	X	X	X	X				X	R	R		F	F	F				
Bobcat	*Lynx rufus*	F-W	X	X	X	X	X			X	X	R-F	R	R-F	F	F	F		R-F		
Domestic Wild Horse (Feral)	*Equus caballus*	I-L					X				X						F				
Domestic Pig (Feral)	*Sus scrufa*	D	X	X							X										
Domestic Cow	*Bos taurus*	D									X						F				
Wapiti or Elk	*Cervus elaphus*	G-D	X		X		X			X	X				R-F	R-F	F		C		
Mule Deer	*Odocoileus hermionus*	G-W	X	X	X	X	X			X	X				R-F	R-F	F		C		

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Appendix 10
Species List of Jenny Creek Watershed

REPTILES

Legend
X - General Area of Occurrence
F - Feeding Habitat
R - Habitat Used for Reproduction
C - Cover
S - Oregon Sensitive Species
D - Incomplete or Discontinuous Distribution
L - Local Distribution
W - Widespread in Province

Common Name	Scientific Name		Habitats														
		Distribution	Coniferous Forest	Deciduous Woods	Riparian	Forest Clearings	Brush	Streams	Lakes and Ponds	Springs and Seeps	Marshes	Meadows	Cliffs and Talus	Rocks	Downed Wood	Subterranean	Artificial Structure
Northwestern Pond Turtle	*Clemmys marmorata*	S-D	X	R	R	R		R-F	R-F		R-F						
Western Fence Lizard	*Sceloporus occidentalis*	D	X	X	X	X	X					X	C-F	C-F	C	R	F
Western Skink	*Eumeces skiltonianus*	D	X	X	X	X	X					X	C	C	C-R	C-R	F
Northern Alligator Lizard	*Elgaria coeruleas*	D	X	X	X	X-F	X-F					X	C	C	C		
Southern Alligator Lizard	*Elgaria multicarinatas*			X-F	X-F	X-F						X	C	C	C		
Rubber Boa	*Charina bottae*	W	X	X	X	X	X					X	C	C	C	C	
Ringneck Snake	*Diadophis punctatus*	D	X	X		X	X					R-C		C	R-C	C	R-C
Racer	*Coluber constrictor*	D		X	X	X	X					X	R-C	C	C	R-C	C
Gopher Snake	*Pituophis melanoleucus*	D	X	X		X	X					F	R			R	C
Common Kingsnake	*Lampropeltis getulus*	S	X	X	X		C										
California Mountain Kingsnake	*Lampropeltis zonata*	S	X	X			X							C	C		
Oregon Garter Sanke	*Thamnophis hydrophilus*	D			X			X	X								
Western Terrestrial Garter Snake	*Thamnophis elegans*	D			X			X			X	X		C			C
Northwestern Garter Snake	*Thamnophis ordinoides*	W				X	X					X	X-C	C	C		C
Common Garter Snake	*Thamnophis sirtalis*	W	X		X	X	X	X		X	X			C	C		C
Western Rattlesnake	*Crotalus viridis*	D	X		X	X	X						C	C	C	C	C

Appendix 11. BLM, MEDFORD DISTRICT ROAD INVENTORY
FOR THE JENNY CREEK WATERSHED

Road Segment	Road Name	Total Length	Cn	Srf Typ	Cl Type	Mntn Lvl	Easement#	Agreement Number	FLPMA RW Grnt#
38 S03 E11.00__	SHELL PEAK	1.62	BL	PRR		2		M0250	
38 S03 E11.01__	SHELL PEAK A SPUR	.98	BL	NAT	CF	2			
38 S03 E11.02__	SHELL PEAK SPUR	.15	BL	NAT		2			
38 S03 E11.04__	SHELL PEAK B SPUR	.80	BL	PRR		2			
38 S03 E11.05__	SHELL PEAK C-SPUR	.83	BL	NAT	CF	2			
38 S03 E11.06__		.44	BL	NAT		1			
38 S03 E11.07__		.14	BL	NAT		1			
38 S03 E12.00__	DEAD INDIAN SPUR	.19	BL	NAT	GT	1	REM-1042		
38 S03 E13.00__	OWENS RD	.78	BL	PRR		2			
38 S03 E13.01__	OWENS A-SPUR	.69	BL	NAT		1			
38 S03 E13.02__	OWENS B-SPUR	.40	BL	NAT		1			
38 S03 E13.03__	OWENS C SPUR	.23	BL	NAT		1			
38 S03 E13.04__	OWENS LOOP SPUR	.17	BL	ASC		2			
38 S03 E13.05__	KENO SPUR	.22	BL	NAT	EB	1			
38 S03 E13.06__	KENO SPUR	.49	BL	ABC		2			
38 S03 E19.00C	BUCK PRAIRIE	1.29	BL	ASC		2		M0690	
38 S03 E19.00D	BUCK PRAIRIE	1.52	BL	ASC		2		M0250	
38 S03 E19.00D	BUCK PRAIRIE	1.52	BL	ASC		2		M0600	
38 S03 E19.00D	BUCK PRAIRIE	1.52	BL	ASC		2		M0660	
38 S03 E22.00__		.40	BL	NAT		2			
38 S03 E23.01__		1.25	BL	NAT		2			
38 S03 E23.02__	BIG TREE ROAD	.70	BL	NAT	EB	2			
38 S03 E23.03__		.44	BL	NAT		1			
38 S03 E23.04__		.52	BL	NAT		2			
38 S03 E25.00A	WILLOW CREEK RD	1.02	BL	ASC		2		M0660	
38 S03 E25.00B	WILLOW CREEK RD	.97	BL	ASC		2			
38 S03 E25.01__	WILLOW CR SPUR	.43	BL	NAT		1			
38 S03 E25.02__	WILLOW CR SPUR	.45	BL	NAT		1			
38 S03 E25.03__	SPUR B	.18	BL	ASC		2			
38 S03 E27.00__		1.50	BL	NAT		2			
38 S03 E27.01A	WILSON TRESPASS	.07	BL	NAT		2		M0660	
38 S03 E27.01B	WILSON TRESPASS	1.15	PV	NAT		2			
38 S03 E27.01C	WILSON TRESPASS	.53	BL	NAT		2		M0660	
38 S03 E27.01D	WILSON TRESPASS	.39	PV	NAT		2			
38 S03 E27.01E	WILSON TRESPASS	.16	PV	NAT		2			
38 S03 E27.01F	WILSON TRESPASS	.05	BL	NAT		2			
38 S03 E27.01G	WILSON TRESPASS	.10	BL	NAT		2			
38 S03 E27.02__	DEAD INDIAN CRK SPUR	.35	BL	NAT	OT	1			
38 S03 E27.03__		.60	BL	NAT		1			
38 S03 E27.04__		.17	BL	NAT		1			
38 S03 E27.05__		.32	BL	NAT		1			
38 S03 E32.00A	COTTONWOOD GLADES	1.93	BL	ASC		2			
38 S03 E32.00B	COTTONWOOD GLADES	.70	BL	NAT		2			
38 S03 E32.03__		.30	BL	NAT		2			
38 S03 E32.05__	TABLE RIDGE SPUR	.22	BL	NAT		2			
38 S03 E33.00__	BUCK DIVIDE	2.90	BL	ASC		4			
38 S03 E33.01__		.55	PB	ABC		2		M0690-118	
38 S03 E33.02__		.40	BL	NAT		1			
38 S03 E33.03__		1.20	BL	ABC		2			
38 S03 E33.04__	COTTONWOOD CREEK	1.00	BL	ABC	GT	2			
38 S03 E33.05A1	COTTONWOOD CREEK	.14	BL	GRR		2			
38 S03 E33.05A2	COTTONWOODCREEK	.36	BL	NAT		2			
38 S03 E34.00__	BUCK DIVIDE A SPUR	.49	BL	GRR		2			
38 S03 E34.01__	BUCK DIVIDE C SPUR	.71	BL	GRR		2			
38 S03 E34.02__	TIN CUP	2.27	BL	NAT		2		M0660-504	
38 S03 E35.00__	WILLOW CREEK T S	.20	BL	ASC		1			
38 S03 E35.01A	C SPUR	.20	BL	ASC		1			
38 S03 E35.01B	C SPUR	.35	BL	NAT		1			
38 S03 E35.02__	SPUR D	.19	BL	ASC		1			
38 S03 E35.03__	E SPUR	.19	BL	ASC		1			
38 S03 E35.04__	BOISE STUB	.12	BL	NAT		2		M0660	
38 S03 E35.05__	WILLOW	.27	BL	ASC		2			
38 S04 E07.00A	GUARD STATION RD	.80	BL	NAT		2		M0800	OR 2817
38 S04 E07.00A	GUARD STATION RD	.80	BL	NAT		2		M0800	OR 4855
38 S04 E07.00B	GUARD STATION RD	.40	BL	NAT		2		M0800	
38 S04 E07.00C	GUARD STATION RD	1.70	BL	NAT		2		M0800	
38 S04 E07.00D	GUARD STATION RD	.47	BL	NAT		2		M0800	
38 S04 E07.01A	MOON PRAIRIE HOOK UP	.36	BL	ABC		2		M0660	OR 3487
38 S04 E07.01B	MOON PRAIRIE HOOK-UP	.61	BL	ABC		2		M0660	
38 S04 E07.01C	MOON PRAIRIE HOOK UP	.65	PV	NAT		2			
38 S04 E07.02__		.45	BL	NAT		1			
38 S04 E07.03__		.27	BL	NAT		1			

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Road Segment	Road Name	Total Length	Cn	Srf Typ	Cl Type	Mntn Lvl	Easement#	Agreement Number	FLPMA RW Grnt#
38 S04 E07.04__		.36	BL	NAT		1			
38 S04 E07.05__		.25	BL	NAT		1			
38 S04 E08.00A	MOON PRAIRIE	1.00	PV	NAT		2			
38 S04 E08.00B	MOON PRAIRIE	1.60	BL	NAT		2			
38 S04 E08.00C	MOON PRAIRIE	.55	PV	NAT		2			
38 S04 E08.00D	MOON PRAIRIE	.17	BL	NAT		2			
38 S04 E19.00__	HOXIE CREEK	1.20	BL	PRR		2			OR 45522
38 S04 E19.01__		.24	BL	NAT		1			
38 S04 E19.02A		.12	BL	NAT		1			
38 S04 E19.02B		.27	BL	NAT		1			
38 S04 E25.00__		.25	BL	NAT		1			
38 S04 E25.01__	UPPER BALDY A SPUR	.30	BL	NAT		1			
38 S04 E25.02__		.26	BL	NAT		2			
38 S04 E26.00A1	BRUSHY GRIFFIN	.40	BL	ASC		2			
38 S04 E26.00A2	BRUSHY GRIFFIN	.47	BL	NAT		2			
38 S04 E26.00B	BRUSHY GRIFFIN	.33	BL	NAT		2			
38 S04 E26.01__		.50	BL	NAT		2			
38 S04 E26.02A1	GRIFFIN PASS SP-P3	.43	BL	ASC	GR	2			
38 S04 E26.02A2	GRIFFIN PASS SP-P3	.33	BL	NAT	GR	2			
38 S04 E26.03__		1.20	BL	NAT		2			
38 S04 E26.04__	UPPER BALDY B SPUR	.60	BL	NAT		2			
38 S04 E26.05__	BALDY HORSE	.57	BL	NAT		1			
38 S04 E26.06__	LOWER BRUSHY	.26	BL	NAT		2			
38 S04 E26.08__		.33	BL	NAT		2			
38 S04 E26.09__			BL	NAT		2			
38 S04 E27.00A	BRUSH MTN SPUR	.30	BL	NAT		1		N0800	
38 S04 E27.00B	BRUSH MTN SPUR	.20	PV	NAT		1		N0800-119	
38 S04 E27.01__		.80	BL	NAT		2			
38 S04 E27.02__	HOXIE BRUSH SPUR	.33	BL	NAT		2			
38 S04 E27.03__	BRUSH MTN. SPUR	.22	BL	NAT		2			
38 S04 E27.04A	BRUSH MTN SPUR	.25	BL	NAT		2		N0800	
38 S04 E27.04A	BRUSH MTN SPUR	.25	BL	NAT		2		N0800	
38 S04 E27.04B	BRUSH MTN SPUR	.13	PV	NAT		1		N0800-119	
38 S04 E27.05__			BL	NAT		2			
38 S04 E29.00__	HOXIE BEAVER	1.71	BL	ASC		2		N0660	
38 S04 E29.01__	HOXIE-LYNX	.33	BL	ASC		2			
38 S04 E29.02__	HOXIE BEAR	.45	BL	NAT		2			
38 S04 E31.00A2			BL	NAT		2			
38 S04 E32.00A	HOWARD PRAIRIE HOOK-UP	.10	BL	BST		4			
38 S04 E32.00B	HOWARD PRAIRIE HOOK-UP	.40	BL	BST		4			
38 S04 E32.00C	HOWARD PRAIRIE HOOK-UP	.63	BL	ASC		4			
38 S04 E32.01__	GRIZZLY CREEK A-SPUR	.60	BL	ABC		2			
38 S04 E32.02A	GRIZZLY CREEK MAINLINE	.62	BL	ASC		3			
38 S04 E32.02A	GRIZZLY CREEK MAINLINE	.62	BL	ASC		3			
38 S04 E32.02B	GRIZZLY CREEK MAINLINE	1.06	BL	ABC		3		N0690-026	
38 S04 E32.02C	GRIZZLY CREEK MAINLINE	1.24	BL	ABC		2			
38 S04 E32.02D	GRIZZLY CREEK MAINLINE	.15	PV	ABC		2		N0690	
38 S04 E32.02E	GRIZZLY CREEK MAINLINE	.88	BL	ABC		2			
38 S04 E32.03__		.27	BL	NAT		1			
38 S04 E33.00__	GRIZZLY CREEK B-SPUR	.26	BL	ABC	OT	1			
38 S04 E33.01__	GRIZZLY CREEK C SPUR	.56	BL	NAT	CF	1			
38 S04 E33.02__	GRIZZLY CREEK D SPUR	.43	BL	NAT	EB	1			
38 S04 E33.03__	OLD MOON PRAIRIE	.25	BL	NAT		1			
38 S04 E33.04A	GRIZZLY JENNY SPUR	.14	BL	ASC		2		N0690	
38 S04 E33.04B	GRIZZLY JENNY SPUR	.22	BL	ASC		2		N0690-037	
38 S04 E33.04C	GRIZZLY JENNY SPUR	.57	BL	NAT		2			
38 S04 E33.05__	GRIZZLY JENNY SPUR	.39	BL	ABC		2			
38 S04 E33.06__	KEMO HOXIE SPUR	.31	BL	ABC		2			
38 S04 E34.00A	BRUSH MTN	.85	BL	ASC	GR	1		N0800	
38 S04 E34.00B1	BRUSH MTN	.14	BL	ASC		1		N0800	
38 S04 E34.00B2	BRUSH MTN	.46	BL	NAT		1			
38 S04 E35.00A1	NAMELESS SPRINGS	.09	BL	ASC		3			
38 S04 E35.00A2	NAMELESS SPRINGS	1.50	BL	ASC		3			
38 S04 E35.00B	NAMELESS SPRINGS	.21	PB	ASC		2		N0690	
38 S04 E35.00C	NAMELESS SPRINGS	.27	BL	ASC		2		N0690-038	
38 S04 E35.00D	NAMELESS SPRINGS	.30	PB	ASC		2		N0690-038	
38 S04 E35.00E	NAMELESS SPRINGS	.86	BL	ASC		2			
38 S04 E35.01__	GRIFFIN PASS	1.80	BL	ASC		2			
38 S04 E35.02__	NAMELESS SPRING SPUR A	.20	BL	NAT		1			
38 S04 E35.03__	NAMELESS SPRING SPUR B	.36	BL	NAT		1			
38 S04 E35.04__	NAMELESS SPRING SPUR C	.72	BL	ASC		2			
38 S04 E35.05__	NAMELESS SPRING SPUR D	.55	BL	NAT		1			
38 S04 E35.06__		.50	BL	NAT		1			

Road Segment	Road Name	Total Length	Cn	Srf Typ	Cl Type	Mntn Lvl	Easement#	Agreement Number	FLPMA RW Grnt#
38 S04 E35.07__	NAMELESS SPRINGS SPUR F	.10	BL	NAT		1			
38 S04 E35.08__	NAMELESS SPRINGS SPUR G	.29	BL	NAT		1			
38 S04 E35.09__	NAMELESS SPRINGS SPUR H	.51	BL	NAT	EB	1			
38 S04 E35.10__	NAMELESS SPRINGS SPUR I	.12	BL	NAT		1			
38 S04 E35.11A	NAMELESS SPRINGS SPUR J	.06	BL	ABC		1			
38 S04 E35.11B	NAMELESS SPRINGS SPUR J	.08	BL	NAT		1			
39 S03 E01.00A	WILLOW CK CROSSING	.07	BL	ASC		2		N0660	
39 S03 E01.00B	WILLOW CK CROSSING	.78	BL	ASC		2			
39 S03 E01.01__	WILLOW CREEK	.09	BL	ASC		2		N0660	
39 S03 E01.02__	WILLOW CREEK	.16	BL	NAT		2			
39 S03 E03.00A	TABLE MTN	.28	BL	ASC		4		N0690-014	OR 47810
39 S03 E03.00B	TABLE MTN	.95	BL	ASC		4			OR 47810
39 S03 E03.00C	TABLE MTN	1.20	BL	ASC		4			OR 47810
39 S03 E03.00D	TABLE MTN	.15	PB	ASC		4		N0800	OR 47810
39 S03 E03.00E	TABLE MTN	1.33	BL	ASC		4			
39 S03 E03.01__		.20	BL	NAT		2			
39 S03 E03.02__		.50	BL	NAT		2			
39 S03 E05.01__	W TABLE MTN	1.20	BL	ABC		2			
39 S03 E05.02__	W TABLE MTN SPUR	1.20	BL	NAT		2			
39 S03 E05.03A	COTTONWOOD GLADES SP	.40	BL	ABC		2			
39 S03 E05.03B	COTTONWOOD GLADES SP	.18	BL	NAT		2			
39 S03 E07.02__	TABLE MTN SPUR	.36	BL	ABC		2			
39 S03 E08.01__	SPUR C	.20	BL	NAT		2			
39 S03 E08.02__		.25	BL	NAT		2			
39 S03 E08.03__	TABLE MTN LOOKOUT	.68	BL	NAT		2			OR 47810
39 S03 E09.00__			BL	NAT		2			
39 S03 E09.01A	E TABLE MTN SPUR	.42	BL	ABC		2			
39 S03 E09.01B	E TABLE MTN SPUR	.48	BL	NAT		2			
39 S03 E09.01C	E TABLE MTN SPUR		BL	NAT		2			
39 S03 E09.02__		.60	BL	NAT		2			
39 S03 E09.03__		.80	BL	NAT		2			
39 S03 E09.04__	E TABLE MTN SPUR	.25	BL	NAT	CF	2			
39 S03 E11.00A	WILDCAT GLADES	.90	BL	ASC		2		N0690-002	
39 S03 E11.00B	WILDCAT GLADES	.38	PB	ASC		1		N0690-002	
39 S03 E11.00C1	WILDCAT GLADES	.34	BL	ASC		1		N0690-002	
39 S03 E11.00C2	WILDCAT GLADES	.76	BL	NAT		1			
39 S03 E11.00D	WILDCAT GLADES	.80	BL	NAT		1		N0690-016	
39 S03 E11.00E	WILDCAT GLADES	.21	BL	NAT		1		N0690	
39 S03 E11.01__	WILDCAT HILLS	.90	BL	NAT		2			
39 S03 E11.02__		.70	BL	NAT		2			
39 S03 E11.03__		.40	BL	NAT		2			
39 S03 E11.04__		.60	BL	NAT		2			
39 S03 E11.05__	E HYATT CUTOFF	.18	BL	ASC		4			
39 S03 E13.00__		.30	BL	NAT		2			
39 S03 E13.01__		.25	BL	NAT		2			
39 S03 E13.02A	BEAVER CK SPUR	.17	BL	ASC		2		N0690	
39 S03 E13.02B	BEAVER CK SPUR	.53	BL	ASC		2			
39 S03 E13.03__	BEAVER CK SPUR	.18	BL	ASC		2		N0690-017	
39 S03 E13.04__	WILDCAT GLADES SPUR	.23	BL	NAT	EB	2			
39 S03 E13.05__		.09	BL	NAT		2			
39 S03 E13.06__	WILDCAT GLADES SPUR	.18	BL	NAT		2			
39 S03 E14.00__	WILDCAT HOOKUP SPUR	.67	BL	NAT	OT	2			
39 S03 E14.01__	E HYATT SPUR	.29	BL	NAT	OT	2			
39 S03 E15.00A	WILDCAT HOOKUP	.21	BL	ABC		2			
39 S03 E15.00B	WILDCAT HOOKUP	.49	BL	NAT		1			
39 S03 E15.01__	E HYATT SPUR	.17	BL	NAT	OT	1			
39 S03 E16.00A	CAMPERS COVE	.14	BL	NAT		2		N0690	
39 S03 E16.01A		.18	BL	NAT		2		N0690	
39 S03 E17.00A1	BURNT CK SPUR	.76	BL	PRR		2			
39 S03 E17.00A2	BURNT CK SPUR	2.56	BL	ASC		2			
39 S03 E17.01__		.30	BL	NAT		2			
39 S03 E17.02__		.20	BL	NAT		2			
39 S03 E21.00A	BURNT CREEK	2.21	BL	ASC		3	RE-N-265		
39 S03 E21.00A	BURNT CREEK	2.21	BL	ASC		3	RE-N-265		
39 S03 E21.01__		.10	PV	NAT		2		N0690-123	
39 S03 E21.02__		1.30	BL	NAT		2			
39 S03 E23.00__		.57	BL	NAT		2			
39 S03 E23.01__	EAST CHINQUAPIN SP	.51	BL	NAT	GR	2			
39 S03 E25.01__	EAST CHINQUAPIN SP	.25	BL	ABC		2			
39 S03 E25.02__	CORRAL CREEK SP	.27	BL	NAT		2			
39 S03 E25.03__	CORRAL CREEK SP	.29	BL	ASC		2			
39 S03 E26.00__	CHINQUAPIN STUB	.37	BL	ABC		2			

Appendix 11. BLM, MEDFORD DISTRICT ROAD INVENTORY
FOR THE JENNY CREEK WATERSHED

Road Segment	Road Name	Total Length	Cn	Srf Typ	Cl Type	Mntn Lvl	Easement#	Agreement Number	FLPMA RW Grnt#
39 S03 E26.01		1.20	BL	ABC		2			
39 S03 E26.02	EAST CHINQUAPIN SP	1.00	BL	ABC		2			
39 S03 E27.00	CHINQUAPIN MTN	2.58	BL	ASC		2			
39 S03 E27.01	HYATT OVERLOOK A SP	.81	BL	NAT		2			
39 S03 E27.02	HYATT OVERLOOK B SP	.82	BL	NAT	GR	2			
39 S03 E27.03	HYATT OVERLOOK C SP	.30	BL	NAT		2			
39 S03 E27.04		.40	BL	PRR		2			
39 S03 E27.05	HYATT REHAB RD	1.74	BL	ASC		2			
39 S03 E27.06			BL	NAT		2			
39 S03 E27.07	CHINQUAPIN MTN SP	.71	BL	NAT	GR	2			
39 S03 E28.00		.57	BL	NAT		2		M0660	
39 S03 E28.01	HYATT REHAB SP.	.17	BL	NAT		1			
39 S03 E29.00		.80	BL	PRR		2			
39 S03 E30.00		.60	BL	PRR		2			
39 S03 E30.01	GREENSPRINGS MTN. SP	.33	BL	GRR	OT	2			
39 S03 E32.00A	LITTLE HYATT LAKE SP	.47	BL	PRR	GT	2			
39 S03 E32.00B	LITTLE HYATT LAKE SP	.15	BL	PRR		2			
39 S03 E32.00C	LITTLE HYATT LAKE SP	.36	BL	PRR		2			
39 S03 E32.00D	LITTLE HYATT LAKE SP	.83	BL	PRR		2			
39 S03 E32.00E	LITTLE HYATT LAKE SP	1.85	BL	PRR		2			
39 S03 E32.01		.40	BL	NAT		2			
39 S03 E32.02		.40	BL	NAT		2			
39 S03 E32.03A	SODA MTN	.50	BL	PRR		3	REN-0126	M0660	
39 S03 E32.03A	SODA MTN	.50	BL	PRR		3	REN-0135	M0660	
39 S03 E32.03A	SODA MTN	.50	BL	PRR		3	REN-0525	M0660	
39 S03 E32.03A	SODA MTN	.50	BL	PRR		3	REN-0126	M0690	
39 S03 E32.03A	SODA MTN	.50	BL	PRR		3	REN-0135	M0690	
39 S03 E32.03A	SODA MTN	.50	BL	PRR		3	REN-0525	M0690	
39 S03 E32.03B	SODA MTN	.85	BL	PRR		3	REN-1055	M0660	
39 S03 E32.03B	SODA MTN	.85	BL	PRR		3	REN-1055	M0690	
39 S03 E32.03C	SODA MTN	.31	BL	PRR		3		M0660	
39 S03 E32.03C	SODA MTN	.31	BL	PRR		3		M0690	
39 S03 E32.03D	SODA MTN	.89	BL	PRR		3	REN-0222	M0690	
39 S03 E32.03D	SODA MTN	.89	BL	PRR		3	REN-0343	M0690	
39 S03 E32.03D	SODA MTN	.89	BL	PRR		3	REN-0440	M0690	
39 S03 E32.03D	SODA MTN	.89	BL	PRR		3	REN-0539	M0690	
39 S03 E32.03E	SODA MTN	1.24	BL	PRR		3	REN-0544	M0690	
39 S03 E32.03F	SODA MTN	.31	BL	PRR		3	REN-0343	M0690	
39 S03 E32.03G	SODA MTN	1.79	BL	PRR		3		M0690	
39 S03 E32.03H	SODA MTN	.03	PB	PRR		2		M0690	
39 S03 E32.03I	SODA MTN	.46	BL	PRR		2		M0690	
39 S03 E32.03J	SODA MTN	.38	PB	ASC		2		M0690	
39 S03 E32.03K	SODA MTN	.89	PB	ASC		2		M0690	
39 S03 E32.03L	SODA MTN	.55	PB	ASC		2		M0690-101	
39 S03 E32.03M	SODA MTN	.80	PV	NAT		2		M0690	
39 S03 E32.03N	SODA MTN	.28	PV	NAT		2		M0690-129	
39 S03 E34.00	E CHINQUAPIN	.36	BL	ASC		3		M0690	OR 41386
39 S03 E34.00	E CHINQUAPIN	.36	BL	ASC		3		M1095	OR 41384
39 S03 E34.01		1.00	BL	NAT		2			
39 S03 E34.02		.30	BL	NAT		2			
39 S03 E34.03		.60	BL	NAT		2			
39 S03 E34.04		.90	BL	NAT		2			
39 S03 E34.05		.70	BL	NAT		2			
39 S03 E34.06A	BEAVER CREEK SPUR	.69	BL	ABC		2			
39 S03 E34.06B	BEAVER CREEK SPUR	.48	BL	NAT		2			
39 S03 E34.06C	BEAVER CREEK SPUR	.27	BL	NAT		2		M0690-054	
39 S03 E34.06D	BEAVER CREEK SPUR	.23	BL	NAT		2			
39 S03 E34.07	TELEPHONE SP (NOT BUILT)	.01	BL	ABC		1			
39 S03 E35.00A1	EAST CHINQUAPIN	.55	BL	ASC		2		M0690	
39 S03 E35.00A1	EAST CHINQUAPIN	.55	BL	ASC		2		M1095	
39 S03 E35.00A2	EAST CHINQUAPIN	.64	BL	ASC		2		M0690	
39 S03 E35.00A2	EAST CHINQUAPIN	.64	BL	ASC		2		M1095	
39 S03 E35.00B	EAST CHINQUAPIN	.79	BL	ASC		2		M0690	
39 S03 E35.00C	EAST CHINQUAPIN	2.29	BL	ASC		2		M0690	
39 S03 E35.01A	CHINQUAPIN DEAD END	.93	BL	ABC	GR	2			
39 S03 E35.01B	CHINQUAPIN DEAD END	.58	BL	NAT		1			
39 S03 E35.02A	BEAVER CREEK	1.47	BL	ASC		2		M0690-003	
39 S03 E35.02A1	BEAVER CREEK	.77	BL	ASC		2			
39 S03 E35.02B	BEAVER CREEK	.97	BL	ASC		2			
39 S03 E35.02C	BEAVER CREEK	.68	BL	ASC		2		M0690-004	
39 S03 E35.02D	BEAVER CREEK	.94	BL	ASC		2		M0690-004	
39 S03 E35.02E	BEAVER CREEK	1.07	BL	ABC		2		M0690	

Road Segment	Road Name	Total Length	Cn	Srf Typ	Cl Type	Mntn Lvl	Easement#	Agreement Number	FLPMA RW Grnt#
39 S03 E35.02F	BEAVER CREEK	.30	BL	ASC		2			
39 S03 E35.03__	BEAVER CREEK SPUR	.45	BL	ABC	OT	2			
39 S04 E01.00__		.45	BL	NAT		2			
39 S04 E01.01__		.28	BL	NAT		2			
39 S04 E03.00__	GRIZZLY CK LOOP	.97	BL	ABC		3			
39 S04 E03.01__		.20	BL	NAT		2		N0690	
39 S04 E03.02__	GRIZZLY CK G SP	.29	BL	ABC		2		N0690	
39 S04 E03.03A	GRIZZLY CK H SP	.07	BL	PRR		2			
39 S04 E03.03B	GRIZZLY CK H SP	.08	PB	PRR		2		N0690-130	
39 S04 E03.03C	GRIZZLY CK H SP	.36	PV	PRR		2		N0690	
39 S04 E03.03D	GRIZZLY CK H SP	.28	BL	NAT		2		N0690-071	
39 S04 E03.04__	GRIZZLY JENNY SP	.44	BL	NAT		1			
39 S04 E05.00A1	JENNY CK	.68	PB	ASC		2		N0690	OR 4605
39 S04 E05.00A2	JENNY CK	.65	PB	ASC		2		N0690	OR 4605
39 S04 E05.00B1	JENNY CK	.72	BL	ASC		2		N0690	OR 4605
39 S04 E05.00B2	JENNY CK	.49	BL	NAT		2			OR 4605
39 S04 E05.00C	JENNY CK	1.40	PV	NAT		2		N0690	OR 4605
39 S04 E05.00D	JENNY CK	.25	BP	NAT		2		N0690	OR 4605
39 S04 E05.00E	JENNY CK	1.20	PV	NAT		2		N0690	OR 4605
39 S04 E05.01__	DAM A SP	.74	BL	NAT		2			
39 S04 E05.02__	DAM B SP	.43	BL	ABC	EB	2			
39 S04 E05.03A	DAM C SP	.27	BL	ABC		2			
39 S04 E05.03B	DAM C SP	.58	BL	ASC		1		N0690-070	
39 S04 E05.04__	DAM D SP	.63	BL	ABC		2			
39 S04 E06.00__	YEW SPRINGS HOOKUP	1.38	BL	ASC		2		N0690	
39 S04 E06.02__	HOWARD WILLOW	.34	BL	ASC	EB	2			
39 S04 E06.03A	HOWARD WILLOW	.66	BL	ABC	GR	2			
39 S04 E06.03B	HOWARD WILLOW	.67	BL	NAT		2			
39 S04 E06.04__	HOWARD WILLOW	.54	BL	NAT	OT	2			
39 S04 E06.05__	S DAM A SP	.55	BL	ABC	GR	2			
39 S04 E07.01__		.25	BL	NAT		2			
39 S04 E07.02__	SODA SPRINGS A SP	.50	BL	ABC		2			
39 S04 E07.03__	SODA SPRINGS C SP	.56	BL	ABC	GR	2			
39 S04 E07.04__	SODA SPRINGS D SP	.15	BL	NAT	OT	2			
39 S04 E07.05__	IRON KETTLE	1.36	BL	ABC		2			
39 S04 E07.06__	IRON KETTLE	.46	BL	NAT	EB	2			
39 S04 E07.07__	IRON KETTLE	.20	BL	NAT	EB	2			
39 S04 E07.08__	SODA SPRINGS F SP	.28	BL	NAT		2			
39 S04 E07.09__	YEW SODA SP	.04	BL	NAT		1			
39 S04 E08.00A1	CRAINE PRAIRIE	.36	PB	PRR		2		N0690	
39 S04 E08.00A2	CRAINE PRAIRIE	.60	PV	PRR		2		N0690	
39 S04 E08.00B1	CRAINE PRAIRIE	.15	BL	ASC		2		N0690	
39 S04 E08.00B2	CRAINE PRAIRIE	.21	BL	ASC		2		N0690	
39 S04 E08.00C	CRAINE PRAIRIE	.50	PB	PRR		2		N0690	
39 S04 E08.00D	CRAINE PRAIRIE	.30	BL	ASC		2		N0690	
39 S04 E08.00E	CRAINE PRAIRIE	.30	BL	NAT		2		N0690	
39 S04 E08.00F	CRAINE PRAIRIE	.50	PV	NAT		2		N0690	
39 S04 E08.01A		1.00	PV	NAT		2		N0690	
39 S04 E08.01B		.02	BL	NAT		1			
39 S04 E08.02A	DOGWOOD SPRINGS	.36	PV	ASC		2		N0690	
39 S04 E08.02B	DOGWOOD SPRINGS	.50	BL	ASC		2			
39 S04 E08.03__	SODA SPRINGS B SP	.76	BL	ABC	GR	2		N0690-027	
39 S04 E09.00A	DELIVERY CANAL	1.20	BL	ABC		2		N0690	
39 S04 E09.01__	GRIZZLY CK	.10	BL	NAT		2		N0690	
39 S04 E09.02A	JENNY CK	.20	BL	ABC		2		N0690-018	
39 S04 E09.02B	JENNY CK	.70	PB	ASC		2		N0690	
39 S04 E09.02C	JENNY CK	1.58	BL	ASC		2		N0690-019	
39 S04 E09.02D	JENNY CK	.03	BL	ASC		2		N0690-025	
39 S04 E09.02E	JENNY CK		BL	ASC		2			
39 S04 E09.03__		.65	BL	PRR		2			
39 S04 E09.04__		.60	BL	NAT		2			
39 S04 E09.05__		.20	BL	NAT		2			
39 S04 E09.06__	DOGWOOD SP	.50	BL	NAT	GR	2			
39 S04 E10.00A	DELIVERY CANAL	.89	PV	ASC		2			
39 S04 E10.00B	DELIVERY CANAL	.02	BL	ASC		2		N0690	
39 S04 E10.00C	DELIVERY CANAL	.12	PB	ABC		2		N0690	
39 S04 E10.00D	DELIVERY CANAL	.33	BL	ABC		2		N0690	
39 S04 E10.00E	DELIVERY CANAL	.13	PB	ABC		2		N0690	
39 S04 E10.00F	DELIVERY CANAL	.32	PB	ABC		2		N0690	
39 S04 E10.00G	DELIVERY CANAL	.53	PB	ABC		2		N0690	
39 S04 E10.00H	DELIVERY CANAL	.50	BL	ABC		2		N0690	
39 S04 E10.00I	DELIVERY CANAL	.76	BL	ABC		2		N0690	

Road Segment	Road Name	Total Length	Cn	Srf Typ	Cl Type	Mntn Lvl	Easement#	Agreement Number	FLPMA RW Grnt#
39 S04 E10.01	MOON PRAIRIE	2.50	PV	PRR		2		M0690	
39 S04 E11.01	JENNY TWIN	.40	BL	NAT		2			
39 S04 E14.01A	DONNAKER	.38	PV	PRR		2		M0690	
39 S04 E14.01B	DONNAKER	.19	PB	NAT		2		M0690	
39 S04 E14.01C	DONNAKER	.25	PV	NAT		2		M0690	
39 S04 E15.00A		.53	BL	ABC		2			
39 S04 E15.00B		.11	PB	ABC		2		M0690-045	
39 S04 E15.00C		.28	BL	ABC		2			
39 S04 E15.01		.50	BL	NAT		2			
39 S04 E15.02	S SP	.53	BL	NAT	GR	2		M0690-021	
39 S04 E15.03		.35	BL	NAT		2			
39 S04 E15.04A1		4.00	BL	ABC		2			
39 S04 E15.04A2		.53	BL	NAT		1			
39 S04 E15.05		.20	BL	NAT		2			
39 S04 E15.06		.10	BL	ABC		2			
39 S04 E16.00	LITTLE CHINQUAPIN	3.50	PV	NAT		2		M0690-110	
39 S04 E16.00	LITTLE CHINQUAPIN	3.50	PV	NAT		2		M0690-112	
39 S04 E16.00	LITTLE CHINQUAPIN	3.50	PV	NAT		2		M0690-120	
39 S04 E16.01	DOGWOOD SP	.10	BL	NAT	GR	1		M0690-068	
39 S04 E17.00A1	YEW SPRINGS	1.29	BL	ASC		2		M0690	
39 S04 E17.00A2	YEW SPRINGS	.17	BL	ABC		2		M0690-020	
39 S04 E17.00B	YEW SPRINGS	.17	PB	ABC		2		M0690	
39 S04 E17.00C	YEW SPRINGS	.27	PB	ABC		2		M0690	
39 S04 E17.00D	YEW SPRINGS	.98	BL	ABC		2		M0690-020	
39 S04 E17.00E	YEW SPRINGS	.89	BL	ABC		2		M0690-064	
39 S04 E17.01A	LITTLE CHINQUAPIN	.60	BL	PRR		2			
39 S04 E17.01B	LITTLE CHINQUAPIN	.56	BL	ASC		2			
39 S04 E17.01C	LITTLE CHINQUAPIN	.23	PB	ABC		2		M0690-119	
39 S04 E17.02		.30	BL	NAT		2			
39 S04 E17.03	CHINQUAPIN SP	.70	BL	NAT	GR	2			
39 S04 E17.04	CHINQUAPIN SP	.30	BL	NAT	GR	2			
39 S04 E17.05	LITTLE CHINQUAPIN SP	.20	BL	NAT		1			
39 S04 E17.06	CHINQUAPIN MTN SP	.35	BL	NAT	GR	1			
39 S04 E17.07	CHINQUAPIN MTN SP	.62	BL	NAT	GR	1			
39 S04 E18.01A1	W LITTLE CHINQUAPIN	.55	PV	ASC		2		M0690	
39 S04 E18.01A2	W LITTLE CHINQUAPIN	.21	PB	ASC		2		M0690	
39 S04 E18.01A3	W LITTLE CHINQUAPIN	.24	BL	ASC		2		M0690	
39 S04 E18.01B	W LITTLE CHINQUAPIN	1.25	BL	ASC		2		M0690	
39 S04 E19.01	FAIRCHILD A SP	1.13	BL	ASC		2			
39 S04 E19.02	BEAVER CK SP	.49	BL	ASC		2			
39 S04 E19.03A	BEAVER CK HOOKUP	.20	BL	ASC		2			
39 S04 E19.03B	BEAVER CK HOOKUP	.41	BL	ASC		2		M0690-015	
39 S04 E19.03C	BEAVER CK HOOKUP	.27	BL	ASC		2		M0690-015	
39 S04 E19.03D	BEAVER CK HOOKUP	.75	BL	ASC		2			
39 S04 E19.04		.02	PV	NAT		2		M0690-113	
39 S04 E21.00		.60	BL	NAT		2			
39 S04 E21.01	DELIVERY CANAL SP	.74	BL	NAT		2		M0690	
39 S04 E21.02			BL	NAT		2			
39 S04 E22.00		.34	PV	GRR		2			
39 S04 E22.01		.35	BL	PRR		2		M0690-046	
39 S04 E23.00A1	MOON PRAIRIE	.46	BL	ABC		2			
39 S04 E23.00A2	MOON PRAIRIE	.32	BL	NAT		2			
39 S04 E23.01A		.53	BL	ASC		2			
39 S04 E23.01B		.14	BL	ASC		2			
39 S04 E23.02A		.30	BL	PRR		2		M0690-124	
39 S04 E23.02B		.24	BL	PRR		2		M0690-047	
39 S04 E23.03A1	FREDENBURG SP	.03	PV	PRR		2		M0690-124	
39 S04 E23.03A2	FREDENBURG SP	1.03	PV	PRR		2			
39 S04 E23.03B	FREDENBURG SP	.86	PV	PRR		2		M0690-125	
39 S04 E23.03C	FREDENBURG SP	.19	BL	NAT		2			
39 S04 E23.05		.18	BL	NAT	OT	1			
39 S04 E23.06	MOON PRAIRIE SP	.27	BL	NAT		2			
39 S04 E23.07		.34	BL	NAT		1			
39 S04 E23.08	MOON PRAIRIE SP	.34	BL	NAT	OT	2			
39 S04 E26.02			BL	NAT		2			
39 S04 E27.00A1	PRAIRIE CK	.43	PB	ABC		2		M0690	
39 S04 E27.00A2	PRAIRIE CK	.65	PB	ABC		2		M0690	
39 S04 E27.00A3	PRAIRIE CK	.68	PB	ABC		2		M0690	
39 S04 E27.00B	PRAIRIE CK	.15	BL	ABC		2			
39 S04 E27.00C	PRAIRIE CK	.18	PB	ABC		2		M0690	
39 S04 E27.00D	PRAIRIE CK	.15	BL	ABC		2			
39 S04 E27.00E	PRAIRIE CK	.24	BL	NAT		2			

Road Segment	Road Name	Total Length	Cn	Srf Typ	Cl Type	Mntn Lvl	Easement#	Agreement Number	FLPMA RW Grnt#
39 S04 E27.01A1	PRAIRIE CK SP	.21	BL	ABC		2		M0690-011	
39 S04 E27.01A2	PRAIRIE CK SP	.43	BL	NAT	GR	2			
39 S04 E27.01B	PRAIRIE CK SP	.18	BL	NAT		2			
39 S04 E31.00A	CORRAL CK	.18	BL	NAT		2		M0690-040	OR 42492
39 S04 E31.00A	CORRAL CK	.18	BL	NAT		2		M0690-040	OR 50673
39 S04 E31.00B	CORRAL CK	.27	BL	NAT		2			
39 S04 E31.01A	CORRAL CK A	.17	BL	NAT		2		M0690-039	
39 S04 E31.01B	CORRAL CK A	.19	BL	NAT		2			
39 S04 E31.02A	BEAVER CK	.30	BL	NAT		2			
39 S04 E31.02B	BEAVER CK		BL	NAT		2			
39 S07 E31.00A1	KENO ACCESS	1.94	BL	BST		4			OR 45522
39 S07 E31.00A2	KENO ACCESS	2.15	BL	BST		4			OR 45522
39 S07 E31.00A3	KENO ACCESS	3.28	BL	BST		4			OR 45522
39 S07 E31.00A4	KENO ACCESS	1.67	BL	BST		4			OR 45522
40 S02 E10.01	SCHOHEIM			NAT		1			
40 S03 E02.00A1	PARSNIP LAKES	.05	BL	NAT		2	RE-M-827	M1006	OR 45385
40 S03 E02.00A2	PARSNIP LAKES	.75	BL	ABC		3		M1006	OR 45385
40 S03 E02.00B	PARSNIP LAKES	.45	BL	NAT		3		M1006	
40 S03 E02.00C1	PARSNIP LAKES	.27	PB	NAT		1		M1006	
40 S03 E02.00C2	PARSNIP LAKES	.30	PB	ASC		3		M1006	
40 S03 E02.00D1	PARSNIP LAKES	.09	BL	ASC		3		M1006	
40 S03 E02.00D2	PARSNIP LAKES	.26	BL	NAT		1			
40 S03 E02.00E	PARSNIP LAKES	.98	BL	NAT		2			
40 S03 E03.00A	EAST HYATT LAKE	.31	BL	BST		5	RE-M-537	M0660	OR 4138
40 S03 E03.00A	EAST HYATT LAKE	.31	BL	BST		5	RE-M-537	M0660	OR 4772
40 S03 E03.00A	EAST HYATT LAKE	.31	BL	BST		5	RE-M-540	M0660	OR 4138
40 S03 E03.00A	EAST HYATT LAKE	.31	BL	BST		5	RE-M-540	M0660	OR 4772
40 S03 E03.00B1	EAST HYATT LAKE	.62	BL	BST		5		M0660	
40 S03 E03.00B2	EAST HYATT LAKE	.44	BL	BST		5		M0660	
40 S03 E03.00C	EAST HYATT LAKE	.96	BL	BST		5		M0660	
40 S03 E03.00D	EAST HYATT LAKE	.64	BL	BST		5			
40 S03 E03.00E	EAST HYATT LAKE	1.25	BL	BST		4			
40 S03 E03.00F	EAST HYATT LAKE	.81	BL	BST		4			
40 S03 E03.00G	EAST HYATT LAKE	.38	BL	BST		4	RE-M-706		
40 S03 E03.00H	EAST HYATT LAKE	.21	BL	BST		4			
40 S03 E03.00I	EAST HYATT LAKE	1.48	BL	BST	GT	4			
40 S03 E03.00J	EAST HYATT LAKE	.26	BL	BST		4			
40 S03 E03.01A	TELEPHONE	.51	PV	BST		2			ORE0556
40 S03 E03.01B	TELEPHONE	.61	BL	ASC		2			ORE0556
40 S03 E03.01C1	TELEPHONE	.78	BL	ASC		2			ORE0556
40 S03 E03.01C2	TELEPHONE	.45	BL	ASC		1			ORE0556
40 S03 E09.00__	SODA MTN SP	.11	BL	PRR		1			OR 2631
40 S03 E11.00__		.10	BL	NAT		2			OR 4538
40 S03 E11.01A	PUCKETT	.57	BL	NAT		2			
40 S03 E12.00A1	MILL CK	1.00	BL	PRR		2			
40 S03 E12.00A2	MILL CK	.51	BL	NAT		2			
40 S03 E12.00B	MILL CK	.31	BL	PRR		2			
40 S03 E12.00C	MILL CK	.74	PB	PRR		2		M0690	
40 S03 E12.01A	LINCOLN CK	.25	BL	PRR		2	RE-M-571		
40 S03 E12.01B	LINCOLN CK	1.10	BL	PRR		2			
40 S03 E12.01C	LINCOLN CK	1.07	BL	PRR		2			
40 S03 E12.01D	LINCOLN CK	.81	PB	PRR		2		M0690-102	
40 S03 E12.01E	LINCOLN CK	.47	PB	PRR		2		M0690	
40 S03 E12.01F	LINCOLN CK	.08	PV	PRR		2		M0690	
40 S03 E12.01G	LINCOLN CK	.30	PB	PRR		2		M0690-102	
40 S03 E12.01H	LINCOLN CK	.60	PV	NAT		2			
40 S03 E12.02A	MTN FIR PIT	.38	PV	NAT		2		M1006	
40 S03 E12.02B	MTN FIR PIT	.21	BL	NAT		2			
40 S03 E12.02C	MTN FIR PIT	.56	PV	NAT		2		M1006	
40 S03 E12.03A	20-MILE SPRINGS	.74	PV	NAT		2			
40 S03 E12.03B	20-MILE SPRINGS	.08	BL	NAT		2			
40 S03 E12.03C	20-MILE SPRINGS	.17	PV	NAT		2			
40 S03 E12.03D	20-MILE SPRINGS	.22	BL	NAT		1			
40 S03 E12.03E	20-MILE SPRINGS	.56	PV	NAT		1			
40 S03 E13.00__	LINCOLN CK SP	.18	BL	NAT		2			
40 S03 E13.01__	LINCOLN CK SP	.16	BL	NAT		2			
40 S03 E14.01__	MILL CREEK EXT	1.72	BL	PRR		2		M0690	
40 S03 E15.00A	PARSNIP LAKE N SP	.15	BL	ASC		2			
40 S03 E15.01__	PARSNIP LAKE	1.70	BL	PRR		2			
40 S03 E15.02__	PARSNIP LAKE	.10	BL	PRR		2			
40 S03 E15.03__	PARSNIP LAKE SP	1.20	BL	PRR		2			
40 S03 E15.04__	PARSNIP LAKE QUARRY	.33	BL	ASC		2			

Road Segment	Road Name	Total Length	Cn	Srf Typ	Cl Type	Mntn Lvl	Easement#	Agreement Number	FLPMA RW Grnt#
40 S03 E16.00__		.93	BL	NAT	OT	2			
40 S03 E23.00__		.64	BL	NAT		2			
40 S03 E23.01__	LINCOLN CK SP	.64	BL	NAT	EB	2			
40 S03 E23.02__		.30	BL	NAT		2			
40 S03 E23.03__		.46	BL	NAT		2			
40 S03 E23.04__	LINCOLN CK SP	.21	BL	NAT	OT	2			
40 S03 E24.00A	KEENE CK RIDGE	1.28	BL	NAT		2			
40 S03 E24.00B	KEENE CK RIDGE	1.34	BL	PRR		2			
40 S03 E24.01__	LINCOLN CK SP	.39	BL	NAT	OT	2			
40 S03 E24.02__	LINCOLN CK TIE	1.26	BL	PRR	GT	2			
40 S03 E24.03__	LINCOLN CK SP	.22	BL	NAT	EB	2			
40 S03 E24.04__		1.26	BL	PRR		2			
40 S03 E24.05__	LINCOLN CK SP	.19	BL	NAT	IN	2			
40 S03 E25.00__	KEENE RIDGE	.28	BL	NAT	OT	2			
40 S03 E25.01__	KEENE RIDGE SP	.20	BL	NAT	OT	2			
40 S03 E27.00A	SODA CAMP SP	.20	BL	NAT		2		N0690	
40 S03 E27.00B	SODA CAMP SP	.03	BL	NAT		2		N0690-006	
40 S03 E27.00C	SODA CAMP SP	.87	BL	NAT		2		N0690	
40 S03 E27.01__	SODA MTN SP	.32	BL	NAT		2			
40 S03 E27.02A	SKOOKUM	2.67	BL	NAT		1			
40 S03 E27.02B	SKOOKUM	1.58	BL	NAT		1			
40 S03 E28.00A	SODA MTN SP	.13	PB	ASC		2		N0690	
40 S03 E28.00B	SODA MTN SP	.73	BL	ASC		2		N0690-007	
40 S03 E28.00C	SODA MTN SP	.68	BL	NAT		2			
40 S04 E03.00A1	JENNY CK	.13	PB	ASC		2		N0690	
40 S04 E03.00A2	JENNY CK	.86	BL	ASC		2	RE-N-625		
40 S04 E03.00A3	JENNY CK	1.33	PB	ASC		2		N0690	
40 S04 E03.00B	JENNY CK	.25	BL	ASC		2		N0690	
40 S04 E03.00C	JENNY CK	.68	PB	ASC		2		N0690	
40 S04 E03.00D1	JENNY CK	.22	BL	PRR		2		N0690	
40 S04 E03.00D2	JENNY CK	.47	BP	PRR		2			
40 S04 E03.00E	JENNY CK	.08	BP	PRR		2		N0690	
40 S04 E03.01A1	COPCO	.82	PV	PRR		2		N0690	
40 S04 E03.01A2	COPCO	.73	PV	PRR		2		N0690	
40 S04 E03.01B	COPCO	.99	PV	PRR		2		N0690	
40 S04 E03.01C1	COPCO	2.15	PV	PRR		2		N0690	
40 S04 E03.01D	COPCO	.11	BP	PRR		2		N0660	OR 36242
40 S04 E03.01D	COPCO	.11	BP	PRR		2		N0690	OR 36242
40 S04 E03.01E	COPCO	.29	PV	PRR		2		N0690	
40 S04 E03.01F	COPCO	.55	BL	PRR		2		N0660	OR 36242
40 S04 E03.01F	COPCO	.55	BL	PRR		2		N0690	OR 36242
40 S04 E03.01G	COPCO	.18	PV	PRR		2		N0690	
40 S04 E03.01H	COPCO	.61	PV	PRR		2		N0690	
40 S04 E03.01I	COPCO	.49	PV	PRR		2		N0690	
40 S04 E03.01J	COPCO	.54	PV	PRR		2		N0690	
40 S04 E03.01K	COPCO	.38	BL	PRR		2		N0660	
40 S04 E03.01K	COPCO	.38	BL	PRR		2		N0690	
40 S04 E03.01L	COPCO	1.61	PV	PRR		2		N0690	
40 S04 E03.01M	COPCO	.06	BP	PRR		2		N0690	
40 S04 E04.00A	W COPCO SP	1.22	PV	NAT		2			
40 S04 E04.00B	W COPCO SP	.64	BL	NAT		1			
40 S04 E05.00A	LOWER BEAVER	.19	BL	NAT		2			OR 44944
40 S04 E05.00B	LOWER BEAVER	.30	PV	NAT		2			
40 S04 E05.00C	LOWER BEAVER	.30	BL	NAT		2			OR 44944
40 S04 E05.00D	LOWER BEAVER	.80	PV	NAT		2			
40 S04 E05.00E1	LOWER BEAVER	.25	BL	NAT		2			
40 S04 E05.00E2	LOWER BEAVER	.25	BL	NAT		2			
40 S04 E05.00F	LOWER BEAVER	.30	PV	NAT		2			
40 S04 E06.00__	WEYCO 134	1.50	PV	NAT		2			
40 S04 E07.00A	KEENE CK	.29	BL	GRR		2		N0690	OR 46135
40 S04 E07.00A	KEENE CK	.29	BL	GRR		2		N1006	OR 46135
40 S04 E07.00B	KEENE CK	.14	PV	PRR		2		N1006	
40 S04 E07.00C1	KEENE CK	.66	BL	PRR		2		N0690	
40 S04 E07.00C1	KEENE CK	.66	BL	PRR		2		N1006	
40 S04 E07.00C2	KEENE CK	.21	BL	PRR		2		N1006	
40 S04 E07.00D	KEENE CK	.29	PV	PRR		2		N1006	
40 S04 E07.00E	KEENE CK	.11	PV	NAT		2		N1006	
40 S04 E07.00F	KEENE CK	.27	PB	PRR		2		N1006	
40 S04 E07.00G	KEENE CK	.63	BL	PRR		2		N0690	
40 S04 E07.00H	KEENE CK	.83	BL	PRR		2		N0690	
40 S04 E07.00I	KEENE CK	.34	PV	NAT		2		N0690-102	
40 S04 E07.00J	KEENE CK	.10	BL	NAT		2			

Appendix 11. BLM, MEDFORD DISTRICT ROAD INVENTORY
FOR THE JENNY CREEK WATERSHED

Road Segment	Road Name	Total Length	Cn	Srf Typ	Cl Type	Mntn Lvl	Easement#	Agreement Number	FLPMA RW Grnt#
40 S04 E07.01A	CORRAL CK	.18	BL	NAT		2		M0690	OR 42692
40 S04 E07.01A	CORRAL CK	.18	BL	NAT		2		M0690	OR 46135
40 S04 E07.01A	CORRAL CK	.18	BL	NAT		2		M0690	OR 50673
40 S04 E07.01B	CORRAL CK	1.10	PV	NAT		2			
40 S04 E07.01C	CORRAL CK	.30	BL	NAT		2		M0690-108	
40 S04 E07.01D	CORRAL CK	.30	PV	NAT		2		M0690	
40 S04 E07.01E	CORRAL CK	.20	PV	NAT		2		M0690	
40 S04 E07.01F	CORRAL CK	.30	PV	NAT		2		M0690	
40 S04 E07.01G	CORRAL CK	.60	BL	NAT		2		M0690-041	
40 S04 E07.01H	CORRAL CK	.47	PV	NAT		2		M0690	
40 S04 E07.01I1	CORRAL CK	.30	BL	NAT		2		M0690	
40 S04 E07.01I2	CORRAL CK	.28	BL	ASC		2			
40 S04 E07.01J1	CORRAL CK	.42	BL	ASC		2			
40 S04 E07.01J2	CORRAL CK	.33	BL	ASC		2		M0690	
40 S04 E07.01K	CORRAL CK	1.30	PV	NAT		2			
40 S04 E07.01L1	CORRAL CK	.20	BL	NAT		2			
40 S04 E07.01L2	CORRAL CK	1.17	BL	ASC		2			
40 S04 E07.01M	CORRAL CK	.10	PV	NAT		2		M0690	
40 S04 E07.02__		.40	PV	NAT		2			OR 46135
40 S04 E08.00B	AIRPORT	.30	BL	NAT		2		M0690	
40 S04 E09.01__		.21	BL	NAT	CF	2		M0690-067	
40 S04 E17.00A	KEENE CK SP	.65	BL	GRR		2		M0690	
40 S04 E17.00B	KEENE CK SP	.61	PB	GRR		2		M0690	
40 S04 E17.00C	KEENE CK SP	.13	BL	GRR		2		M0690	
40 S04 E17.03__	ROSEBUD A-SP	.32	BL	NAT		2			
40 S04 E18.00__	ROSEBUD QUARRY	.35	BL	GRR		2		N1006-008	
40 S04 E18.01__	SCHERER & PUCKETT	3.00	PV	NAT		1	RE-M-20 EXPIRED		
40 S04 E19.00A	WEYCO ROSEBUD	.41	PV	NAT		2		M0690-102	
40 S04 E19.00B	WEYCO ROSEBUD	.27	PV	NAT		2		M0690-102	
40 S04 E19.00C	WEYCO ROSEBUD	.06	PV	NAT		2			
40 S04 E19.00D	WEYCO ROSEBUD	.15	PV	NAT		2			
40 S04 E19.01__		.33	PV	NAT		2		M0690-102	
40 S04 E19.02A	RANDCORE PASS SP	.14	PV	NAT		2		M0690-102	
40 S04 E19.02B	RANDCORE PASS SP	.73	PV	NAT		2			
40 S04 E19.02C	RANDCORE PASS SP	.17	BL	NAT		2			
40 S04 E19.02D	RANDCORE PASS SP	.08	BL	NAT		2			
40 S04 E19.02E	UNIMPROVED JEEP	.72	PV	NAT		2			
40 S04 E19.02F	UNIMPROVED JEEP	.92	BL	NAT		2			
40 S04 E19.03__	W ROSEBUD MTN	.94	BL	GRR		2			
40 S04 E19.04__	ROSEBUD B-SP	.07	BL	NAT	OT	2			
40 S04 E20.00__	N ROSEBUD MTN	1.16	PV	PRR		2		M0690-131	
40 S04 E20.01__	ROSEBUD C-SP	.22	BL	NAT		2		M0690-060	
40 S04 E20.02__	ROSEBUD D-SP	.06	BL	NAT		2		M0690-061	
40 S04 E20.03__	ROSEBUD E-SP	.08	BL	NAT		2		M0690-062	
40 S04 E20.04A	ROSEBUD F-SP	.35	BL	NAT		2		M0690-059	
40 S04 E20.04B	ROSEBUD F-SP	.26	BL	NAT		2			
40 S04 E23.00__	WEYCO HOOKUP	.64	PV	ASC		2		M0690	
40 S04 E30.00A	UNIMPROVED JEEP	.23	BL	NAT		2			
40 S04 E30.00B	UNIMPROVED JEEP	.30	PV	NAT		2			
40 S04 E30.00C	UNIMPROVED JEEP	1.14	BL	NAT		2			
40 S04 E34.00A	LING	.25	PV	NAT		2			
40 S04 E34.00B	LING	.50	BL	NAT		2		M0690	
40 S05 E03.00G	PARKER RD.	2.80	PV	PRR	GT	2		M0690	
41 S04 E03.00__	GRIZZLY FLAT ROAD		BL	NAT		2			
41 S04 E03.01A		.03	BL	NAT		2			
41 S04 E03.01B			BL	NAT		2			
41 S04 E03.02__			BL	NAT		2			
41 S04 E04.00__		.67	BL	NAT		1		N-0660	
41 S04 E09.00__		.01	BL	NAT		1			OR 36242

ROAD INVENTORY GLOSSARY

Cn	Control	
	Bl	BLM control
	PV	private control
	PB	private control BLM improvements
	BP	BLM control private improvements
Srf Typ	Surface Type	
Cl Type	Closure Type	
	CF	camouflage
	GT	gate
	EB	earth Berm
	OT	other
	IN	inaccessible
Mntn Lvl	Maintenance Level	
Easements	BLM has rights to cross private lands	
Agreement Number	Reciprocal Road Use Agreement	
FLPMA	Federal Land Policy Management Act	
RW	Right-of-Way	
Grnt #	Grant Number	

Appendix 12. Range Improvement Projects Within the Jenny Creek Watershed

These projects are in the Ashland Resource Area. Data is currently unavailable for Klamath Falls and Redding Resource Areas.

ALLOTMENT - 20106

NAME	PROJECT#	TWNSP RANGE SEC
MOON PRAIRIE SEED #1	750001	0380S 0040E 017
MOON PRAIRIE SEED #2	750002	0380S 0040E 017
MOON PRAIRIE SEED #3	750010	0380S 0040E 009
JENNY CRK. DETENTION	750054	0380S 0040E 003
BRUSH MOUNTAIN DET.	750060	0390S 0040E 003
HOXIE CREEX DETETION	750067	0380S 0040E 017
MOON PRAIRIE FENCE	750119	0380S 0040E 021
JOHNSON CREEK P.C.	750329	0380S 0040E 035
BIG SPRING P.C.	750330	0380S 0040E 025
HOXIE CREEK P.C.	750331	0380S 0040E 029
QUARRY PUMP CHANCE	750354	0380S 0030E 013
GUARD STA RD. RES.	750355	0380S 0040E 017
BRUSH MTN. RESERVOIR	750357	0390S 0040E 003
BIG FIR RESERVOIR	750358	0380S 0040E 017
SHELL PEAK PAST. FEN	750463	0380S 0030E 015
HOXIE TRIB DAMS	750474	0380S 0040E 029
HOXIE MEADOW FENCE	750492	0380S 0040E 032
WOOD DUCK & SONGBIRD	750497	0390S 0040E 022

ALLOTMENT - 10108

NAME	PROJECT#	TWNSP RANGE SEC
STATELINE FENCE XTEN	750023	0410S 0040E 017
LICKS FENCE	750042	0410S 0040E 009
DEAD HORSE SPRING	750146	0400S 0040E 033
FOX FENCE	750270	0400S 0040E 033
WEST BNDRY CATTLEGRD	750299	0410S 0040E 004
JENNY CREEK SPRING	750471	0410S 0040E 009
JENNY CREEK FENCE	750472	0410S 0040E 009
JENNY CREEK GUARD	750473	0410S 0040E 009
JENNY RIP. FENCE	750476	0410S 0040E 004
JENNY RIP CATTLEGUAR	750485	0410S 0040E 009
LWR JENNY SWING/GATE	750494	0410S 0040E 009

ALLOTMENT - 10109

NAME	PROJECT#	TWNSP RANGE SEC
WRIGHT WATERHOLE	750033	0410S 0040E 007
AGATE FLAT FIRE SEED	750184	0410S 0040E 007

ALLOTMENT - 10110

NAME	PROJECT#	TWNSP RANGE SEC
UPPER GLADE RET. DAM	750022	0400S 0030E 021
ROCK HOLE RET. DAM	750025	0410S 0030E 012
PICKETT GULCH DAM	750026	0410S 0030E 012
OAK STUMP DET. DAM	750021	0410S 0030E 012
LOWER GLADE RET. DAM	750028	0400S 0030E 027
BIG POWERLINE SPRING	750031	0410S 0030E 012
BEAR WALLOW RES.	750032	0410S 0040E 007
STATE LINE WATERHOLE	750036	0410S 0040E 001
CABIN SPRING & DET.	750059	0400S 0040E 031
OREGON GULCH DAM #2	750065	0400S 0040E 029
OREGON GULCH DAM #1	750066	0400S 0040E 029
CABIN 90 DETENTION	750068	0400S 0030E 021
KLAMATH CONTROL FENC	750071	0400S 0030E 027
WEST LICKS DETENTION	750085	0410S 0040E 005
ROCKY DRAW DETENTION	750086	0410S 0040E 005
RANDECORE PASS DET.	750087	0400S 0040E 019
NORTH FORK DETENTION	750088	0400S 0030E 024
HARTWELL DRAW DAMS	750089	0400S 0040E 032
E LICKS DETENTION	750090	0410S 0040E 005
COOKS CAMP DETENTION	750091	0410S 0030E 001
BENCH DETENTION	750092	0400S 0030E 026
SKOOKUM RESERVOIRS	750098	0400S 0040E 031
PARKINSON HOME. RES.	750100	0410S 0040E 007
AGATE FLAT FENCE	750102	0410S 0040E 007
AGATE FLAT EXCLOSURE	750101	0410S 0040E 006
AGATE FLAT PROJ SEED	750130	0410S 0030E 012
WILLOW POND	750134	0410S 0040E 001
WILDLFE & EROSION SD	750143	0400S 0040E 020
SKOOKUM SCAR & SEED	750144	0410S 0040E 001
SKOOKUM CREEK FENCE	750170	0400S 0030E 001
AGATE FLAT SCARIFY 2	750185	0410S 0030E 001
AGATE FLAT HAB PROJ.	750186	0410S 0030E 012
KEENE FENCE	750192	0400S 0030E 025
DEADHORSE/MUDHOLE DA	750218	0400S 0040E 031
LINCOLN CORRAL	750272	0400S 0040E 007
BOVINE CORRAL	750275	0400S 0030E 021
BOX D RANCH FENCE	750296	0400S 0040E 017
ROSEBUD HELIPOND	750291	0400S 0040E 029

ALLOTMENT - 10110 cont.

NAME	PROJECT#	TWNSP RANGE SEC
SEC 35 DETENTION DAM	750298	0400S 0030E 035
HARTWELL DRAW RES.	750305	0400S 0040E 032
EAST LICKS ROAD RES.	750306	0410S 0040E 005
NORTH FORK RES. R	750307	0400S 0040E 019
BENCH DETENTION RES.	750308	0400S 0030E 026
ROSEBUD RESERVOIR	750313	0400S 0040E 021
KEENE CREEK P.C. #1	750334	0400S 0030E 010
LINCOLN CREEK P.C.	750335	0400S 0030E 013
ROSEBUD HELIPOND	750336	0400S 0040E 029
TWIN PINESSPRING RES	750331	0400S 0040E 030
ROOT SPRING RESERVOI	750338	0400S 0040E 030
KEENE CK. RIDGE RES.	750361	0400S 0040E 032
SHOAT SPRING RES.	750396	0410S 0040E 003
LINCOLN CK. P.C. #2	750411	0400S 0030E 023
LINCOLN CK. P.C. #3	750412	0400S 0030E 023
DEADHORSE CATTLEGUAR	750498	0410S 0040E 006
RANDCORE CATTLEGUARD	750499	0400S 0040E 019
STATELINE CATTLEGUAR	750500	0410S 0040E 007
COOKS CAMP CATTLEGUA	750501	0410S 0030E 001
LOWER SKOOKUM RES	750502	0400S 0040E 031
E. KLAMATH CONTROL F	750505	0040S 0040E 030
SODA MTN CATTLEGUARD	750507	0040S 0030E 028
SODA CABIN CATTLEGUA	750508	0400S 0030E 028
N BOX O SWING GATES	750511	0400S 0040E 021
S BOX O SWING GATES	750512	0400S 0040E 033
KEENE CRK BANK STABL	750513	0040S 0040E 017

ALLOTMENT - 10115

NAME	PROJECT#	TWNSP RANGE SEC
POISON CREEK DET DAM	750039	0390S 0030E 008
OLD CABIN DET. DAM	750040	0390S 0030E 029
KEENE CREEK FENCE	750043	0390S 0030E 025
DEAD INDIAN DET DAMS	750046	0380S 0030E 033
COTTONWOOD GLADE DET	750041	0390S 0030E 005
COTTONWOOD DET. DAM	750048	0390S 0030E 008
CHINQUAPIN MTN DET.1	750049	0390S 0030E 023
BURNT CK DET. DAM	750050	0390S 0030E 017
BUCK PRAIRIE DET.	750051	0390S 0030E 003
CABIN GLADE DET.	750052	0390S 0030E 032
N CHINQUAPIN MTN.DET	750053	0390S 0030E 023
GRIZZLY DETENTION	750056	0390S 0030E 011
CRANE PRAIRIE DETS.	750057	0390S 0040E 001
CHINQUAPIN MTN DET.2	750058	0390S 0040E 017

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BLUE JAY DETENTION	750061	0390S 0040E 015
BEAVER CRK DETENTION	750062	0390S 0030E 013
N SAMPSON CREEX DET.	750076	0390S 0030E 018
HEAD OF SAMPSON DET.	750078	0390S 0030E 008
LINDSAY RESERVOIR	750094	0380S 0030E 023
HOWARD PRAIRIE DET.	750096	0380S 0030E 035
LINDSAY SPRING	750099	0380S 0030E 023
ROSENBAUM ENCLOSURE	750110	0380S 0030E 033
HOWARD PRAIRIE FENCE	750126	0380S 0030E 013
LITTLE ROCK CATTLEGO	750293	0390S 0030E 021
LIL HYATT CATTLEGUAR	750294	0390S 0030E 020
DEAD INDIAN RES.	750312	0380S 0030E 033
DEAD INDIAN CRK PC#1	750321	0380S 0030E 033
CORRAL CREEK PC	750328	0390S 0030E 026
SODA CREEK P.C. #1	750332	0390S 0040E 001
SODA CREEK P.C. #2	750333	0390S 0040E 001
BURNT CREEK RES. #2	750344	0390S 0030E 017
COTTONWOOD RES.	750345	0390S 0030E 008
COTTONWOOD RES. #2	750346	0390S 0030E 005
FAIRCHILD SPRING RES	750341	0390S 0030E 035
LITTLE HYAT RES. 1	750348	0390S 0030E 021
GRIZZLY RESERVOIR #1	750349	0390S 0030E 011
LOWER BUCK PRARIE PC	750350	0390S 0030E 003
TABLE MTN. QUARY RES	750351	0390S 0030E 007
CCC CAMP RES.	750313	0390S 0030E 025
GREEN SP. MTN. FENCE	750484	0390S 0030E 032
WOOD DUCK & SONGBIRD	750497	0390S 0040E 022
JENNY CREEK PC #2	750503	0390S 0040E 015
BEAVER CREEK PC #2	750514	0390S 0040E 019
BEAVER CREEK PC #3	750515	0390S 0030E 013
TABLE MTN RECL. RES.	750516	0390S 0030E 007
BUCK DIVIDE SPRING	750518	0390S 0030E 003
ROBCO FREE RES.	750519	0390S 0030E 023
N. KEENE CRK. PC	750520	0390S 0030E 009
BEAVER RESERVOIR	750525	0390S 0030E 013
MILLER GLADE POND	750527	0390S 0030E 005

ALLOTMENT - 10116

NAME	PROJECT#	TWNSP RANGE SEC
HOWARD PRAIRIE FENCE	750126	0380S 0030E 013

Appendix 13. Range site descriptions.

Interior Valley Zone

Sloped Grassland Series

001 (SFG) Steep Foothill Grassland
McMullin soil; south slopes (10 - 60%); elevation 1800 - 4000 ft
bluebunch wheatgrass, Idaho fescue, Lemmon's needlegrass

002 (SMG) Steep Mountain Grassland
McMullin and Woodseye soils; south slopes (10 - 60%); elevation 3000 - 5500 ft
Idaho fescue, bluebunch wheatgrass, Lemmon's needlegrass

Level Grassland Series

003 (HMG) High Mountain Grassland
Woodseye soil; slopes 0 - 10%; elevation above 5000 ft
Idaho fescue, Lemmon's needlegrass, bluebunch wheatgrass

004 (DM) Dry Meadow
Coker, Coker variant and Carney soils; 0 - 10% slopes;
elevations range from 1500 to 5500 ft
California oatgrass, pine bluegrass

005 (SWM) Semiwet Meadow
Bybee, alluvial, Kanutchan and Darrow soils; 0 - 10% slopes;
elevations range from 1500 to 5500 ft
California oatgrass, meadow sedge

Shrublands Series

008 (SS) Shrubby Scabland
Mcmullin and Randcore-Shoat soils; varied slopes and elevations
manzanita, wedgeleaf ceanothus, oak, poison oak
bluebunch wheatgrass

Dry Oak Woodlands Series

009 (MOF) Mahogany/Oak/Fescue
Heppsie soil; slopes moderately steep to steep; elevation 1200 to 4500 ft
birchleaf mountain mahagony, white oak
bluebunch wheatgrass

012 (OPF) Oak/Pine/Fescue
Bogus soil; gently rolling hills or steep south facing slopes;
elevations 1200 to 3500 ft
white oak, ponderosa pine
Idaho fescue

Appendix 13. Continued

Interior Valley Zone--Continued

Dry Oak Woodlands Series--Continued

013 (OPO) Oak/Pine/Oatgrass
Skookum and Skookum-McMullin complex soils;
slopes/aspects vary; elevations 1200 to 4500 ft
white oak, ponderosa pine
California oatgrass, Idaho fescue, pine bluegrass, Canada bluegrass, slender hairgrass, dryland sedge

015 (POF) Pine/Oak/Fescue
Pokegama soil; rolling to moderately steep slopes;
elevations 1200 to 2200 ft
ponderosa pine, white oak, black oak
Idaho fescue, Junegrass, blue wildrye

Mixed Conifer Zone

Douglas-fir Series

020 (DFF) Douglas-fir Forest
Mcnull, Straight and Medco soils; moderately steep to steep slopes;
elevations 1100 to 4100 ft
Douglas-fir, madrone, black oak
western fescue, mountain brome, tall trisetum, Alaska oniongrass, crinkleawn fescue

Mixed Fir/Mixed Pine Series

022 (DMP) Douglas-fir/Mixed Pine
Cobleigh and Geppert soils; slopes/aspects vary;
elevations 1200 to 4500 ft
Douglas-fir, ponderosa pine, sugar pine
western fescue, California fescue, mountain brome, Alaska oniongrass, tall trisetum, blue wildrye

023 (FMP) Mixed Fir/Mixed Pine
Freezner-Geppert, Farva, Hobit, and Pinehurst soils;
south facing moderate to steep slopes; elevations 2000 to 4500 ft
Douglas-fir, white fir, ponderosa pine, sugar pine, black oak, madrone, lodgepole pine, incense-cedar, juniper
western fescue, California fescue, mountain brome, Alaska oniongrass, tall trisetum, crinkleawn fescue

Appendix 13. Continued

Mixed Conifer Zone--Continued

Mixed Fir/Mixed Pine Series - Continued

026 (MFH) Mixed Fir/Oceanspray
tatouche soil, moderately steep to steep north facing slopes;
elevations 4000 to 4500 ft
white fir, Douglas-fir, incense-cedar, oceanspray
western fescue, mountain brome, Alaska oniongrass, tall trisetum, Ross' sedge

028 (MFF) Mixed Fir Forest
Dumont, Freezner-Geppert, Geppert and Cayota soils; slopes/aspects vary;
elevations 4500 to 6000 ft
Douglas-fir, white fir, ponderosa pine, western white pine, Pacific yew
western fescue, mountain brome, Alaska oniongrass, tall trisetum, Ross' sedge

032 (KFC) Klamath Fir Forest Complex*
Oatman, Woodcock, Freezner-Geppert, Geppert, Hobit, Farva and Pinehurst soils;
slopes/aspects vary; elevations 4000 to 6000 ft
white fir, Douglas-fir, ponderosa pine, sugar pine, silver fir, western white pine, lodgepole pine, incense-cedar, mountain hemlock, western hemlock, juniper
mountain brome, various fescues, squirreltail, needlegrasses

White Fir Zone

White Fir Series

027 (WFF) White Fir Forest
Hobit, Farva and Pinehurst soils; cool moist steep north facing slopes;
elevations 4900 to 6000 ft
white fir, Douglas-fir
Alaska oniongrass, shortleaf bluegrass, Ross' sedge

Shasta Red Fir Series

029 (SFF) Shasta Fir Forest
Oatman and Oatman variant soils; above 6000 ft on steep slopes
Shasta red fir.
western fescue, blue wildrye, Ross' sedge.

* Drewien, 1979 SVIM study, placed this complex into mixed fir / mixed pine range site as described by Hickman.

Appendix 14. Description of proposed Surveyor Ancient Forest Interpretative Trail.

State: Oregon	*Project Name:* Surveyor Ancient Forest Interpretative Trail and Watershed Enhancement	*Project Status:* New
County: Klamath	*District/Resource Area:* Lakeview/Klamath Falls	*General Location:* Klamath Falls, Oregon

Land Use/Activity Plan Name and Citation: Klamath Falls RMP

Project Description: The Surveyor Ancient Forest Area surrounds the headwaters to Johnson Creek which empties into a teir 1 watershed, Jenny Creek Watershed. The Surveyor Recreation Site is located at the headwaters of Johnson Creek. This project proposal would involve constructing a combination of a 3 rail wood and barbed wire fence around this 200 acre ancient forest and recreation site to protect the springs, stream banks, and riparian areas from livestock grazing. In addition, an interpretative loop and intertie trail would also be constructed which would educate visitors about watershed stablization, wildlife, and ancient forests. The intertie trail would connect the Pacific Crest Trail with the Surveyor Recreation Site.

Why is project important and how does it help BLM accomplish our mission: This project would provide employment opportunities to nearby timber communities that have been severly impacted by harvest reductions due to the Presidents Forest Plan. This project would not only provide work but also educate the local publics about ancient forests and the President's Aquatic Conservation Strategy and its importance to wildlife and people.

List each phase down to lowest practical options and include costs breakdown:
This project would be completed in two phases. The first phase would be to construct a fence around the Surveyor Forest Area and install a cattle guard. The next phase of the project would be to construct a trail system that will inform the the public about the Aquatic Conservation Strategy.

	Estimated Costs
Phase 1	
3 rail wood fence construction (6,000 linear feet x $16/lf)	$ 96,000
4 strand barbed wire fence construction (8,500 linear feet x $0.57/lf)	5,000
1 cattle guard installation	5,000
Phase 2	
7 miles of trail construction (@ $20,000/mile)	140,000
5 fiberglass interpretative panels (@ $2,000/each)	10,000
	$256,000

*estimates rounded up to the nearest thousand dollars

Project phasing and costs were developed on what level of planning: RMP and Engineering Project Plan

Outyear Operations costs (by program): $5,000	*Requested funding:* $106,000
Outyear Maintenance costs: $10,000	*Total estimated cost of project:* $256,000

Is project part of Maintenance backlog: No

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