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LAKE CREEK SPRING, LAKE CREEK SUMMER, AND DEER CREEK RENO – STANDARDS OF RANGELAND HEALTH ANALYSIS

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INTRODUCTION

This is an Oregon/Washington Bureau of Land Management (BLM) Standards of Rangeland Health Evaluation that addresses 3 grazing allotments Lake Creek Summer (10122), Lake Creek Spring (10121), and Deer Creek-Reno (10124). The analysis area is 14,355 acres with permitted use totaling 1209 AUMs (Animal Unit Months).

Deer Creek-Reno Allotment

The allotment is 4,025 acres with permitted use from May 1-September 30 with 62 cows totaling 312 AUMs.

Lake Creek Spring Allotment

The allotment is 4,679 acres with permitted use from May 16-July 15 with 173 cows totaling 347 AUMs. The total active AUMs for the Lake Creek Spring Allotment is 447 AUMs. Under the livestock management agreement dated 4/29/98, following a BLM land exchange (Box O), the lessee agreed to a reduction of 100 AUM's (leaving 347 AUM's Active) under voluntary nonuse within the Lake Creek Spring Allotment.

Lake Creek Summer Allotment

The allotment is 5,561 acres with permitted use from July 16-October 15 with 182 cows totaling 550 AUMs. The total active AUMs for the Lake Creek Summer Allotment was 692 AUMs. However, under the livestock management agreement dated 4/29/98, following a BLM land exchange (Box O), the lessee agreed to a reduction of 142 AUMs as voluntary nonuse on the Hunger Flat Allotment (within the Lake Creek Summer Allotment) leaving 550 AUM's of active use.

Vegetation

Cattle grazing commences annually at lower elevations (1,500 feet) on the generally south-facing slopes of the Lake Creek Spring and Deer Creek Reno Allotment. The vegetation there is a mosaic of chaparral (*Ceanothus cuneatus*), prairie, and Oregon white oak (*Quercus garryana*) woodland. Native grasses, including Secund's bluegrass (*Poa secunda*), Roemer's fescue (*Festuca roemerii*), and California oatgrass (*Danthonia Californica*) grow across the elevational range, depending on local conditions of soil, topography, and shade. Annual and short-lived perennial weedy grasses, including medusahead (*Taeniatherum caput-medusae*), smooth brome (*Bromus hordeaceous*), dogstail (*Cynosurus echinatus*), and bulbous bluegrass (*Poa bulbosa*) grow throughout the allotments. The broadleaved weeds are yellow star thistle (*Centaurea solstitialis*), and Canada thistle (*Cirsium arvense).*

Soils

The majority of soils identified on these allotments are the Carney, Medco, McNull, McMullin, and Tatouche series.

Carney - Permeability is very slow in the Carney soil. Available water capacity is about 4 inches. The effective rooting depth is 20 to 40 inches. Runoff is slow or medium, and the hazard of water erosion is slight or moderate. The water table fluctuates between depths of 3.0 and 3.5 feet from December through April.

Medco - Permeability is very slow in the Medco soil. Available water capacity is about 4 inches. The effective rooting depth is limited by a dense layer of clay at a depth of 6 to 18 inches. Runoff is medium or rapid, and the hazard of water erosion is moderate or high. The water table, which is perched above the layer of clay, is at a depth of 0.5 foot to 1.5 feet from December through March.

McNull - Permeability is slow in the McNull soil. Available water capacity is about 4 inches. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate on slope less than 35 percent and high on slopes over 35 percent..

McMullin - The McMullin soil is shallow and well drained. Permeability is moderate and available water capacity is about 2 inches. The effective rooting depth is 12 to 20 inches. Runoff is slow or medium, and the hazard of water erosion is slight or moderate. Rock outcrop consists of areas of exposed bedrock and runoff is very rapid in these areas.

Tatouche - Permeability is moderately slow in the Tatouche soil. Available water capacity is about 8 inches. The effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate on slope less than 35 percent and high on slopes greater that 35 percent.

The Carney and Medco soil have perched water tables often into April so range readiness could be affected on wetter than normal years. These series along with Tatouche have clay loam and clay soil textures on which cattle can have detrimental affects when saturated with water. The McMullin soil is a shallow soil that is often associated with Rock outcroppings which limits the available water for plant growth.

Hydrology

These allotments lie within the Little Butte Creek watershed, which drains to the Upper Rogue River sub-basin. South Fork Little Butte Creek and Antelope Creek comprise the majority of the allotment area. Major drainages within these are Coon, Charley, Deer, Lost, Lake, Harrison, Mud, Osborne, Randle, Soda and Yankee Creeks. Elevation within the allotment ranges from 2500 feet to 4900 feet. Mild, wet winters and hot, dry summers characterize Little Butte Creek Watershed. During the winter months, the moist, westerly flow of air from the Pacific Ocean results in frequent storms of varied intensities. Depending on elevation, average annual precipitation within these allotments ranges from approximately 26 to 40 inches. Winter precipitation in the higher elevations (generally above 5,000 feet) usually occurs as snow, which ordinarily melts during the spring runoff season from April through June. Rain predominates in the lower elevations (generally less than 3,500 feet) with the majority occurring in the late fall, winter, and early spring. A mixture of snow and rain occurs between approximately 3,500 feet and 5,000 feet and this area is referred to as either the rain-on-snow zone or transient snow zone.

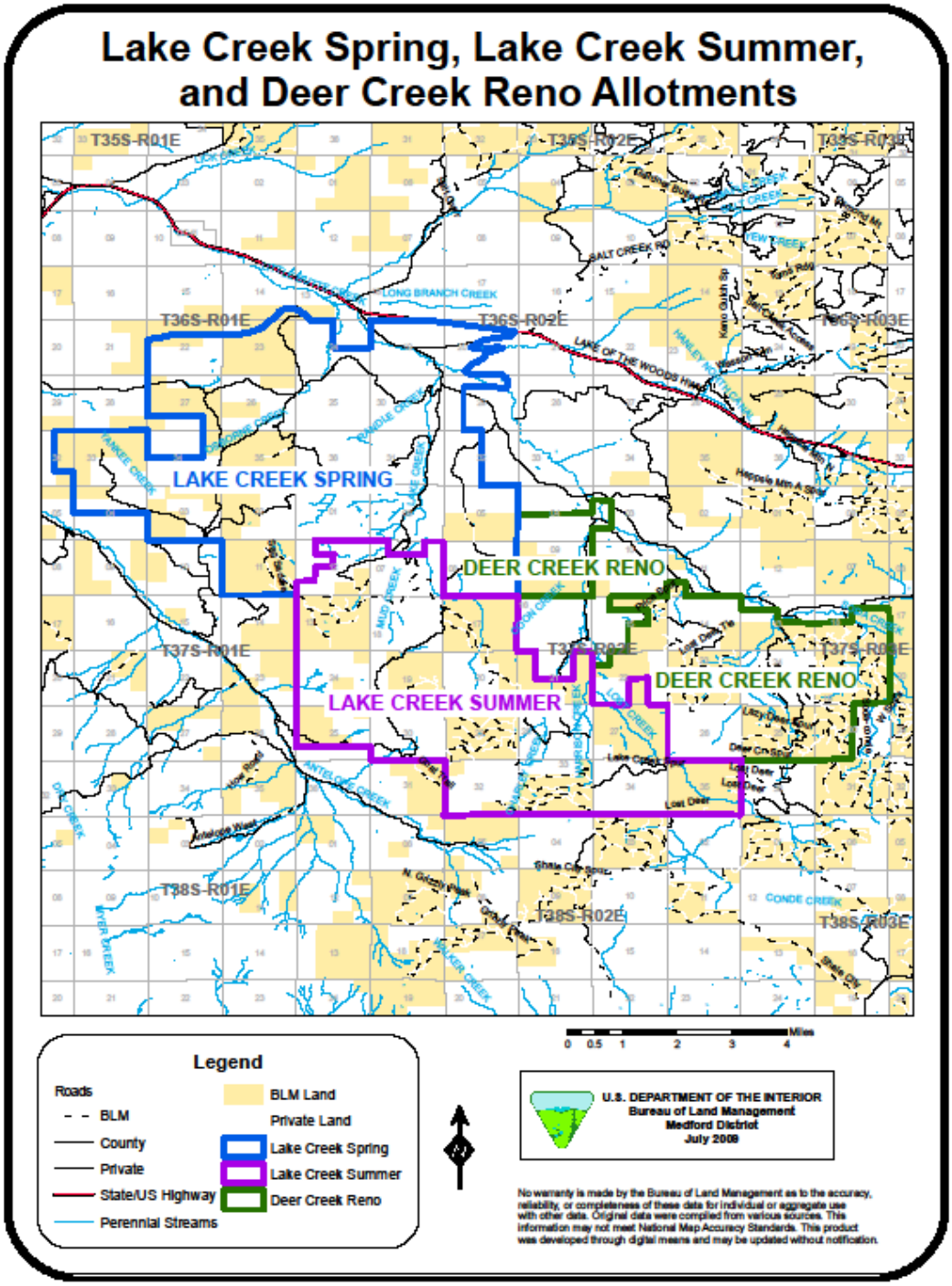
BLM-administered lands occupy a “checkerboard” pattern with private lands in the lower and middle elevations of the Watershed. Some of the large blocks of private lands are managed as industrial forest and ranches, while ownership of the remaining privately-held land in the watershed is typically held in relatively small parcel holdings.

Major land uses in Little Butte Creek Watershed include agriculture, timber, and recreation. Cattle operations are the largest non-forestry agricultural venture.

Streamflows in Little Butte Creek Watershed fluctuate with seasonal variation of precipitation. Moderate to high flows generally occur from mid-November through May. Streamflows during the months of April and May and part of June are augmented by melting snowpack in the high elevations. Low flows for the Little Butte Creek normally coincide with the period of low precipitation from July through September or October. Summer streamflows in the South Fork Little Butte are dramatically altered by transbasin diversions. Water is diverted from South Fork

Little Butte Creek and its tributaries into collection canals that transport the water to Howard Prairie Reservoir in the Klamath Basin.

Map 1. Map of the Lake Creek Spring, Lake Creek Summer, and Deer Creek Reno Allotments

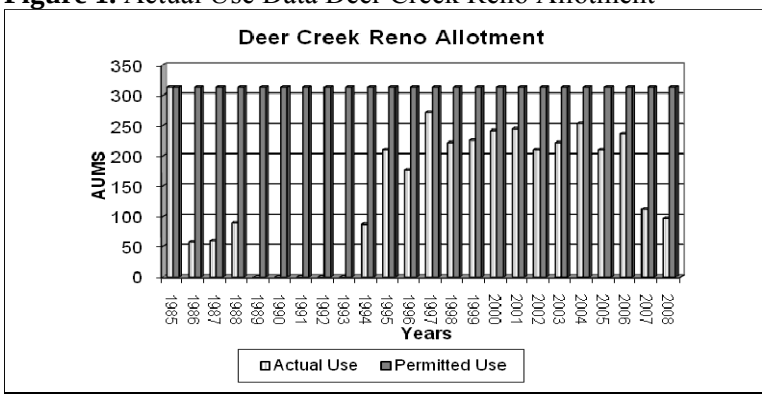


Utilization Data
Utilization data is collected using the key species method (using ocular estimates of forage removed by weight) and mapping use zones (TR 4400-3, 1996). A six class delineation is used (No Use: 0-5 percent, Slight Use: 6-20 percent, Light Use: 21-40 percent, Moderate Use: 41-60 percent, Heavy Use: 61-80 percent, Severe Use: 81-100 percent).

Utilization mapping and transect data collected in 2006 show similar to declining use patterns when compared to historic utilization data. Utilization can be categorized as no use in the heavily forested areas, light to moderate use in the lightly forested areas, light to moderate use in the oak woodland areas on the Lake Creek Summer Allotment. The Lake Creek Spring Allotment is categorized as moderate to heavy use in the oak woodland areas, with some moderate to heavy use in the dry meadows; however, most of the dry meadows receive no to slight use because the annual grasses that dominate these areas are not palatable. Some of the factors that influence livestock distribution are slope, temperature, shelter and water availability, combined with diverse plant communities which results in a complex array of foraging options.

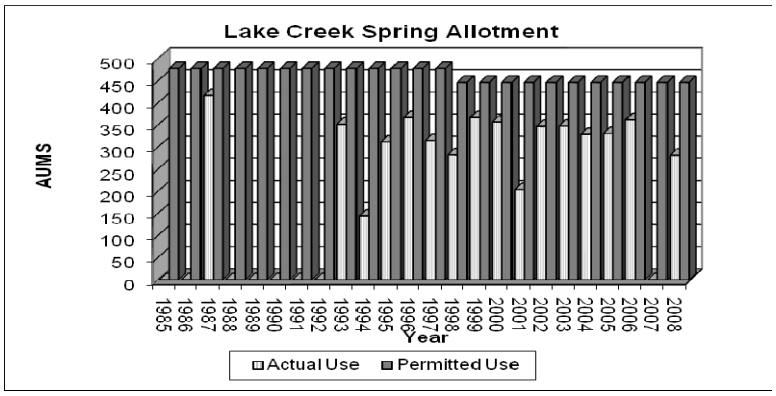
Actual Use Data
Actual use data has been collected since 1985. A summary of the actual use for each allotment is shown below (Figs. 1-3):

Figure 1. Actual Use Data Deer Creek Reno Allotment



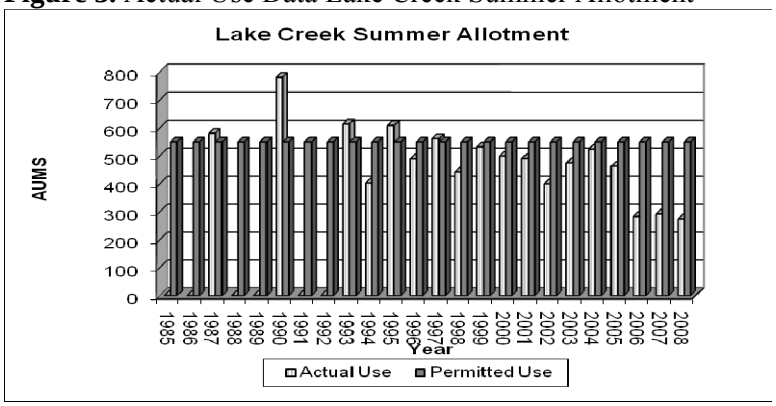
A review of the actual use data shows that the allotment has not been grazed for 5 out of the last 22 years. The average actual use is 187 AUMs in the years that the allotment has been grazed or where actual use data is available.

Figure 2. Actual Use Data Lake Creek Spring Allotment



A review of the actual use data shows that the allotment has not been grazed for 6 out of the last 22 years. The average actual use is 320 AUMs in the years that the allotment has been grazed or where actual use data is available.

Figure 3. Actual Use Data Lake Creek Summer Allotment

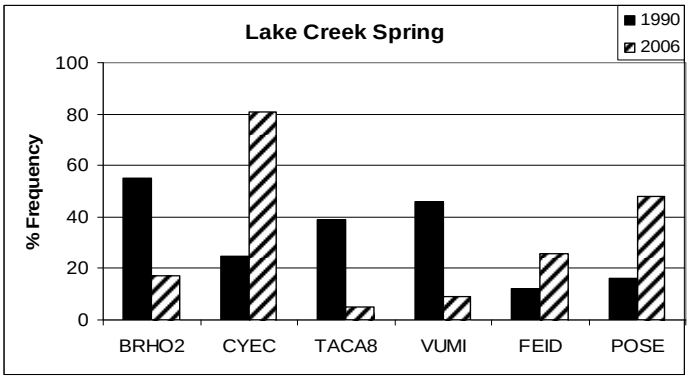


A review of the actual use data shows that the allotment has not been grazed for 4 out of the last 22 years. The average actual use is 484 AUMs in the years that the allotment has been grazed or where actual use data is available.

Nested Frequency Data

The collection of trend data using the Nested Frequency Method began on the Lake Creek Spring Allotment in 1990 with subsequent data collected in 1996, 2001, and 2006.

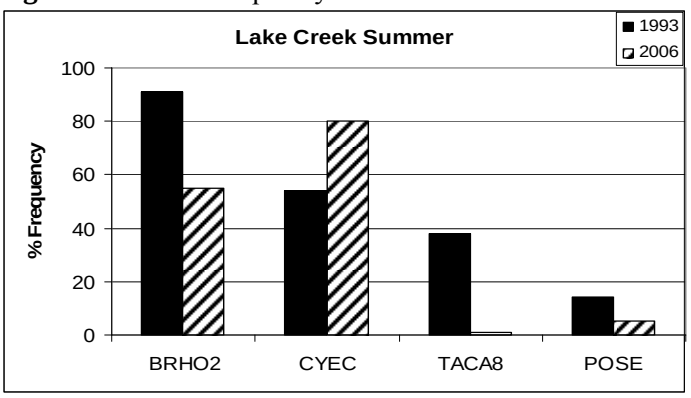
Figure 4. Nested Frequency Data Lake Creek Spring



Species showing significant change include three non-native, invasive, annual grasses *Bromus hordeaceus* (soft brome) decreased 38%, *Cynosurus echinatus* (bristly dogstail) increased 56%, *Taeniatherum caput-medusea* (medusahead) decreased 34%. *Vulpia microstachys*(small fescue) a native annual grass decreased 37%. Two native, perennial, bunchgrasses increased *Festuca idahoensis* (Idaho fescue) increased 14% and *Poa secunda* (sandberg bluegrass) increased 32%. The overall trend at this site is static to slightly improving due to the increase of native perennial grasses. The undesirable non-native species have shifted from one species to another but the overall percentage of non-native species has not increased significantly.

The collection of trend data using the Nested Frequency Method began on the Lake Creek Summer allotment Nested Frequency data was collected in 1993, 1998 and 2006.

Figure 5. Nested Frequency Data Lake Creek Summer



Species showing significant change include three non-native, invasive, annual grasses *Bromus hordeaceus* (soft brome) decreased 36%, *Cynosurus echinatus* (bristly dogstail) increased 26%, *Taeniatherum caput-medusea* (medusahead) decreased 37%. *Poa secunda* (sandberg bluegrass) a native perennial bunchgrass decreased 9%. The overall trend at this site is static to slightly improving. The undesirable non-native species have shifted from one species to another with a substantial decrease in medusahead. The native perennial grass sandberg bluegrass has decreased the transect data has shown increases in other perennial grasses however, they are not significant increases so they are not illustrated in the graph.

ASSESSMENT

Rangeland Health Assessments are required on each allotment prior to consideration of grazing lease renewal. These assessments are conducted by an interdisciplinary team of resource specialists who assess ecological processes, watershed functioning condition, water quality conditions, special status species, and wildlife habitat conditions on an allotment. Assessments include field visits to the allotments and evaluation of all available data. All available data will be used to make an overall assessment of rangeland health as described in the *Standards for Rangeland Health and Guidelines and Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington* (Standards and Guidelines) (USDI 1997), in light of the Fundamentals of Rangeland Health at 43 CFR § 4180.1.

The Standards and Guidelines identify five specific standards that are used to determine the degree to which "ecological function and process exist within each ecosystem." Standards address the health, productivity, and sustainability of the BLM-administered public rangelands and represent the minimum acceptable conditions for the public rangelands. The guidelines are management practices that will either maintain existing desirable conditions or move rangelands toward statewide standards within reasonable timeframes.

This assessment summarizes existing resource conditions on the Deer Creek Reno, Lake Creek Spring, and Lake Creek Summer Allotments using information derived from rangeland field assessments; BLM monitoring data; and all other available data in relation to the five specific standards described in the Standards and Guidelines (USDI 1997).

Primary Supporting Data

Data used by the BLM to support this assessment includes, but is not limited to, the following studies and monitoring projects.

Rangeland Health Field Assessments: Field assessments using the protocol described in *Technical Reference 1734-6: Interpreting the Indicators of Rangeland Health* (USDI and USDA 2005) were conducted September 12, 2006 at five distinct ecological types on the Lake Creek Spring Allotment: dry meadow and Douglas fir forest on the Lake Creek Summer Allotment: oak fescue, dry meadow, and pine fescue. Line point intercept transect data was also collected at these ecological sites and provides quantitative data on percent bare ground, species composition, plant mortality and decadence, litter cover and dominance of invasive plants.

Hydrologic/Riparian Surveys: These surveys are conducted using the Ashland Resource Area Stream Survey Protocol. Location, flow duration, channel classification/morphology data for streams, wetlands, and other hydrologic features; instream large wood; impact descriptions and restoration opportunities, especially related to livestock, transportation, and vegetation throughout the allotment is collected. Properly functioning condition (PFC) is assessed during the surveys.

Botany Surveys: Botany surveys were conducted on the Deer Creek Reno, Lake Creek Spring, and Lake Creek Summer Allotments using the Intuitive Controlled Survey. This method includes a complete survey in habitats with the highest potential for locating Special Status plant, lichen, and bryophyte species. The surveyor traverses through the unit enough to see a representative cross section of all the major habitats and topographic features, looking for the target species while en route between different areas. Most of the unit will have been surveyed. When the surveyor arrives at an area of high potential habitat (that was defined in the pre-field review or encountered during the field visit), a complete survey for the target species was made.

Standard 1 Watershed Function - Uplands

To meet this standard, upland Soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate, and landform.

This standard focuses on the basic physical functions of upland soils that support plant growth, the maintenance or development of plant populations and communities, and promote dependable flows of quality water from the watershed.

To achieve and sustain rangeland health, watersheds must function properly. Watersheds consist of three principle components: the uplands, riparian/wetland areas and the aquatic zone. This standard addresses the upland component of the watershed. When functioning properly, within its potential, a watershed captures, stores and safely releases the moisture associated with normal precipitation events (equal to or less than the 25 year, 5 hour event) that falls within its boundaries. Uplands make up the largest part of the watershed and are where most of the moisture received during precipitation events is captured and stored.

While all watersheds consist of similar components and processes, each is unique in its individual makeup. Each watershed displays its own pattern of landform and soil, its unique climate and weather patterns, and its own history of use and current condition. In directing management toward achieving this standard, it is essential to treat each unit of the landscape (soil, ecological site, and watershed) according to its own capability and how it fits with both smaller and larger units of the landscape.

Looking only at indicators pertaining to Soil/Site Stability revealed that 47 indicators (94%) were rated none to slight, 1 indicator (2%) was rated slight to moderate, 2 indicators (4%) were rated moderate, and zero were rated moderate to extreme, or extreme to total departure. Line point intercept data was collected at four of the five ecological sites. Both of the Dry Meadow sites

have over 18% cover of invasive annual grasses. The encroachment and often times domination by these invasive annual grasses is the biggest issue as far as upland health is concerned in these allotments. The change in species composition has impacts on many of the indicators that were rated in the Rangeland Health Field Assessment process. For further information see the summary of findings (Table 10-14). As part of ongoing efforts to restore native ecosystems and reduce the prevalence of invasive annual grasses, 132 acres in Lake Creek Spring Allotment and 80 acres in Lake Creek Summer Allotment were seeded with native grasses in 2004.

Looking at the indicators in the Rangeland Health Assessment pertaining to Hydrologic Function revealed that 43 indicators (86%) were rated none to slight, 5 indicators (10%) were rated slight to moderate, 3 indicators (6%) were rated moderate, and zero were rated moderate to extreme, or extreme to total departure. Plant community composition and distribution relative to infiltration, compaction layer, and bareground were rated as having a moderate departure in the Dry Meadow ecological site (Table 10 and 14).

Standard 2 Watershed Function - Riparian/Wetland Areas

To meet this standard, riparian-wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform.

Riparian-wetland areas are grouped into two major categories: 1) lentic, or standing water systems such as lakes, ponds, seeps, bogs, and meadows; and 2) lotic, or moving water systems such as rivers, streams, and springs. Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Riparian areas commonly occupy the transition zone between the uplands and surface water bodies (the aquatic zone) or permanently saturated wetlands.

Properly functioning condition of riparian and wetland areas describes the degree of physical function of these components of the watershed. Their functionality is important to water quality in the capture and retention of sediment and debris, the detention and detoxification of pollutants, and in moderating seasonal extremes of water temperature. Properly functioning riparian areas and wetlands enhance the timing and duration of stream flow through dissipation of flood energy, improved bank storage, and ground water recharge. Properly functioning condition should not be confused with the Desired Plant Community (DPC) or the Desired Future Condition (DFC) since, in most cases; it is the precursor to these levels of resource condition and is required for their attainment.

The streams and wetlands within the allotments of Lake Creek (Spring/Summer) and Deer Creek Reno drain mainly into the South Fork of Little Butte Creek. A small private section of the Lake Creek Spring allotment is in the North Fork Little Butte creek drainage. Streams within the allotment include Deer Creek, Lost Creek, the lower mile of Soda Creek and two small sections of South Fork Little Butte Creek.

The BLM uses a proper functioning condition (PFC) assessment to determine the condition of stream systems. PFC assessments were conducted during BLM stream surveys in Deer (1996), Lost (1998), Soda (1995 and 1998), and South Fork Little Butte Creeks (1998). PFC is a qualitative method based on quantitative science (USDI and USDA 1998). The assessment places riparian areas into one of four categories: proper functioning, functional at risk, nonfunctional, or unknown. The functional-at risk category is further defined by a trend: upward, downward, or not apparent. This assessment considers hydrology, vegetation, and erosion/deposition attributes and

processes to evaluate the condition of riparian areas. Not all streams within the allotments were surveyed for PFC, this is particularly true for the Lake Creek Spring allotment. Therefore, it should be noted that the data in Table 1 is not inclusive of all stream miles. Only perennial and intermittent streams are assessed for PFC. For all stream miles evaluated within the allotments for PFC, the majority were characterized as either functioning properly or functioning at risk with an upward trend.

Table 1. Proper Functioning Condition Assessment for Stream Reaches on BLM-Administered Lands within the Allotments.

Stream Name	Stream Miles Assessed	Proper Functioning Condition (% of assessed miles)	Functional-At Risk, Trend Upward (% of assessed miles)	Functional-At Risk, Trend Not Apparent (% of assessed miles)	Functional-At Risk, Trend Downward (% of assessed miles)	Nonfunctional (% of assessed miles)
Deer Creek-Reno	17.8	34	21	24	12	10
Lake Creek Spring	0.38	59	39	0	0	0
Lake Creek Summer	10.6	49	29	12	10	0

Deer Creek Reno Allotment

South Fork Little Butte Creek is the main stream system in this allotment. The South Fork Little Butte Creek reach on BLM land is rated functioning at risk with an upward trend. The reaches of Lost Creek and Soda Creek within the allotment are in PFC. Deer Creek is rated as functional at risk with no apparent trend, in the lower reaches (T37 2E 13) and functional at risk with an upward trend in the upper reaches (T 37 2E 23). In the Deer Creek watershed, BLM stream surveys conducted in 1996 and 1998 identified sedimentation from mass-wasting and a deficiency in large woody debris as threats to functionality. Most of the smaller streams are in PFC or are functioning at risk with an upward trend. Smaller streams that are functioning at risk with a downward trend or nonfunctional appear to be primarily impacted by land management activities other than cattle grazing. Causes for compromised water quality include changes in the natural flow regime, channelization, forest management, land clearing, roads and off road vehicle use (sedimentation). Livestock use does not seem to be a major impact on most streams in the allotment. However, stream surveys conducted by BLM in 1998 identified scattered locations of overutilization and excessive hoof/soil impacts in T37S R2E Sections 9, 13, 23, 25. A sub-sample of impacted reaches evaluated in 2002 showed improvements Sections 9, 23, and 25 and Section 13 had no cattle use.

Lake Creek Spring Allotment

At the time of this assessment, only T37S R01E Section 11 has been surveyed for Proper Functioning Condition. The larger stream systems show little impact due to cattle grazing. A section of Yankee Creek appears to be functioning at risk with no apparent trend. This reach has been impacted by scouring and downcutting from the 1997 flood, impacts from an existing road failure, and flow augmentation from irrigation ditches. Smaller streams appear to be at PFC or are functioning at risk with an upward trend, however stream surveys need to be completed before a full assessment can be determined.

Lake Creek Summer Allotment

Lake and Lost Creeks comprise a majority of the stream systems in this allotment. Both of these stream reaches are in PFC, showing minimal impacts due to cattle grazing. Stream surveys

conducted by BLM in 1998 identified scattered locations of overutilization and excessive hoof/soil impacts in T37S 01E Section 13 and T37S 02E Sections 19, 29, and 33. A tributary to Lake Creek in T37S 02E section 19 had moderate to heavy impacts from cattle use within a meadow reach. A sampling of impacted reaches in sections 13, 19, and 33 were revisited in 2002. Static and improving conditions were observed.

Standard 3 Ecological Processes

To meet this standard, healthy, productive, and diverse plant and animal populations and communities appropriate to soil, climate, and landform are supported by ecological processes of nutrient cycling, energy flow and the hydrologic cycle.

This standard addresses the ecological processes of energy flow and nutrient cycling as influenced by existing plant and animal communities. While emphasis may be on native species, an ecological site may be capable of supporting a number of different native and introduced plant and animal populations and communities while meeting this standard. This standard also addresses the hydrologic cycle which is essential for plant growth and appropriate levels of energy flow and nutrient cycling.

The ability of plants to capture sunlight energy, to grow and develop, plays a role in soil development and watershed function. Nutrients necessary for plant growth are made available to plants through the decomposition and metabolization of organic matter by insects, bacteria and fungi, the weathering of rocks and extraction from the atmosphere. Nutrients are transported through the soil by plant uptake, leaching and by rodent, insect and microbial activity. They follow cyclical patterns as they are used and reused by living organisms.

The ability of rangelands to provide habitat for wildlife and satisfy social and economic needs depends on the buildup and cycling of nutrients over time. Interrupting or slowing nutrient cycling can lead to site degradation, as these lands become increasingly deficient in the nutrients plants require.

Some plant communities, because of past livestock use, fire frequency, or other past extreme or continued disturbances, are incapable of meeting this standard. For example, shallow-rooted winter-annual grasses that completely dominate some sites do not fully occupy the potential rooting depth of some soils, thereby reducing nutrient cycling well below optimum levels. In addition, these plants have a relatively short growth period and thus capture less sunlight than more diverse plant communities. Plant communities like those cited in this example are considered to have crossed the threshold of recovery and often require great expense to be recovered. The cost of recovery must be weighed against the site's potential ecological/economic value in establishing treatment priorities.

There is a healthy mix of live and dead/decaying matter on the rangeland. (Indicators 13 and 14 Tables 10-14). These conditions provide soil cover which helps to prevent erosion and holds water on site reducing runoff and increasing percolation into the soil (Indicators 8, 9, and 11 Tables 10, 10a, 10c, 11-14, and 14c). These conditions also support an intact nutrient and energy cycle (see indicators 13, 14, 15, and 17 Table 10-14). The plant communities on this allotment are diverse and support a variety of animal species (see indicator 12 Table 10, 10b, 11-14, 14b).

The forested portion of these allotments support a diverse mix of forest plant communities and invasive plant species are generally confined to some road-sides or localized disturbed areas. The remaining area of the allotments consist of dry meadow, shrub, and oak woodland plant communities. The oak woodlands in this allotment also support a diverse mix of plant species.

However, invasive plant species are scattered through out the majority of the oak woodlands particularly bristly dogstail. The Nested Frequency data (Figure 4 and 5) indicates that there is a static to slightly upward trend in this plant community in the last 17 years on the Lake Creek Spring Allotment and 14 years on the Lake Creek Summer Allotment. The dry meadows are generally less productive and vulnerable to invasive plant influences from species including medusahead rye, annual bromes, bristly dogstail, yellow starthistle, and a variety of other weedy species (Table 10-14). Current livestock grazing is not considered a significant contributing factor in the rangeland health decline on these dry meadows. However, to improve conditions management tools such as seeding with native plants, herding, resting, and/or changing season of use should be analyzed. It is apparent from the Bureau's upland assessment that the dry meadows have suffered declines in plant productivity, distribution, and vigor.

Standard 4 Water Quality

To meet this standard, surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.

The quality of the water yielded by a watershed is determined by the physical and chemical properties of the geology and soils unique to the watershed, the prevailing climate and weather patterns, current resource conditions, the uses to which the land is put and the quality of the management of those uses. Standards 1, 2 and 3 contribute to attaining this standard.

States are legally required to establish water quality standards and Federal land management agencies are to comply with those standards. In mixed ownership watersheds, agencies, like any other land owners, have limited influence on the quality of the water yielded by the watershed. The actions taken by the agency will contribute to meeting State water quality standards during the period that water crosses agency administered holdings.

Deer Creek Reno Allotment

Water in the allotment consists of 2 ponds on Boise-Cascade land in Section 26, one pond on BLM in the SW 1/4 of Section 23, and several small streams. As of the 2004 Oregon 303(d) list there are four water quality listed streams that run through the allotment boundaries. Lost Creek is listed (mouth to headwaters) as water quality limited for sediment and temperature. Deer Creek is listed (mouth to headwaters) for sediment. Soda Creek is listed (mouth to headwaters) for sediment and temperature. South Fork of Little Butte Creek is listed for sediment, temperature, and E Coli.

Lake Creek Spring

As of the 2004 Oregon 303(d) list there is one water quality listed stream that runs through the allotment boundaries and one that is adjacent to the allotment. Lake Creek runs through the allotment and is listed as water quality limited for sediment, temperature and E Coli (mouth to headwaters). Less than one-quarter mile of Lake Creek runs across BLM lands. Little Butte Creek (mouth to N/S Fork confluence) runs adjacent to the allotment and is listed as water quality limited for sediment, temperature, dissolved oxygen, E Coli and fecal coliform. Antelope Creek (mouth to headwaters) runs adjacent to the allotment and is listed as water quality limited for temperature and E Coli, however there should be no influence on water quality as a result of grazing activity authorized under the Lake Creek Spring grazing lease. A ridge line separates most of the allotment from Antelope Creek and there is a fence that prevents cattle access to Antelope Creek.

Lake Creek Summer

As of the 2004 Oregon 303(d) list there are two water quality listed streams that run through the allotment boundaries and one that is adjacent to the allotment. Lake Creek is listed as water quality limited for sediment, temperature, and E Coli. Less than one-quarter mile of Lake Creek runs across BLM lands. Lost Creek is listed as water quality limited for sediment and temperature. Antelope Creek runs adjacent to the allotment; however there should be no influence on water quality as a result of grazing activity authorized under the Lake Creek Summer grazing lease. A ridge line separates most of the allotment from Antelope Creek and there is a fence that prevents cattle access to Antelope Creek. Much of this allotment consists of higher elevation meadows with mixed ownership. Stream surveys indicate numerous areas with heavy late season grazing and corresponding degraded riparian conditions. Unmanaged OHV use on BLM managed lands is also resulting in adverse impacts to water quality.

Temperature

The Oregon water quality temperature standard that applies to drainages within the allotments was approved by EPA on March 2, 2004 and is found in OAR 340-041-0028 (4) (a-c) (ODEQ 2006). The most sensitive beneficial uses affected by excessive temperatures include resident fish and aquatic life, salmonid fish spawning, and rearing (ODEQ 2004:5).

The BLM collected summertime stream temperature data at locations within the South Fork Little Butte Creek watersheds between 1994 and 2005 (Table 2). The 7-day statistics for all sites listed in Table 2 exceed the established 2004 temperature criteria. Perennial streams are designated as core cold-water habitat; therefore, the seven-day-average maximum for these streams may not exceed 16.0°C (60.8°F) outside the salmon and steelhead period of spawning use.

Table 2. Temperature Summary for Selected Streams within the Allotments

Stream Name	Period of Record[1]	7-day Statistic (ave. for all years)	Range of 7-day Statistic	
			Minimum	Maximum
Deer Creek (near mouth)	94-95, 97-01, 03	64.3	61.2	66.6
Lost Creek (above Coon Creek)	95-96, 98-01, 03-05	70.1	64.8	72.8
Soda Creek (near South Fork confluence)	94-01, 03-05	67.7	63.6	70.4
South Fork Little Butte Creek (near North Fork confluence)	94, 98, 00	78.5	77.9	79.3
Lake Creek (confluence with So Fk Little Butte)	95-01, 05	74.1	70.8	77.4

1/ Temperature measured from June to September

Stream temperature is influenced by riparian vegetation, channel morphology, hydrology, climate, and geographic location. While climate and geographic location are outside of human control, the condition of the riparian area, channel morphology and hydrology can be altered by land use. Human activities that contribute to degraded thermal water quality conditions include: agricultural activity; rural residential developments; water withdrawals; timber harvests; local and forest access roads (USDI and USDA 1997). Timber harvest, roads, OHV, and livestock grazing are the primary impacts specific to federally managed lands that have the potential to affect water quality conditions in the grazing allotments.

The BLM administered lands along the assessed reaches of Deer and Lost Creek meet the target shade. However, South Fork Little Butte and Soda Creeks are currently below the target shade threshold. Small portions of both these streams are within the allotment boundaries, and an even smaller proportion flow through BLM administered lands. Therefore, it is unlikely that grazing is affecting stream shade within the allotment boundaries for these drainages.

Table 3. Percent-Effective Shade Targets for BLM-Managed Lands within or near the Allotment Boundaries (ODEQ 2004: Appendix A)

Stream	Tributary to	Stream Miles Assessed on BLM	Current Shade[1] (%)	Target Shade[1] (%)	Additional Shade Needed[2] (%)	Time to Recovery[3] (years)
Deer Creek	South Fork Little Butte Creek	1.6	95	95	0	0
Lost Creek	South Fork Little Butte Creek	4.4	92	92	0	0
Soda Creek	South Fork Little Butte Creek	4.9	78	89	11	30
South Fork Little Butte Creek	Little Butte Creek	1.4	62	74	12	40

1/ Current shade and target shade refer to percent-effective shade defined as the percent reduction of solar radiation load delivered to the water surface. Shade values are averages for all BLM stream miles assessed.
2/ Additional shade needed is the increase in percent-effective shade required to meet the target shade.
3/ If current shade is greater than or equal to the target shade, the time to recovery is listed as 0 years. If current shade is less than the target shade, the time to recovery is listed as the number of years needed to reach full system potential percent-effective shade. At a value equal to the target shade or ≥ 80 percent effective shade, a stream is considered recovered and the stream should not be a candidate for active restoration. Additional shade should come from passive management of the riparian area. Any increase over the target shade or 80 percent effective shade is considered a margin of safety. Years to recovery are a weighted average of recovery time for individual stream reaches.

Sediment

Improper livestock management can contribute to sedimentation through excessive grazing and trampling within riparian areas. The principal causes of increased sediment are the trampling of streambanks and the reduction or elimination of riparian vegetation. BLM stream surveys in 1996 (Deer Creek) and 1998 (Lost, Soda, and South Fork Little Butte Creeks) noted many reaches with these types of grazing impacts. Most reaches with grazing impacts were on tributaries to the sediment listed streams, however, several reaches of Deer and Soda Creeks were also identified. Sediment listed streams fall within all three allotments (Table 4).

Table 4. Allotments with Sediment Listed Streams (BLM-Administered Lands)

Allotment Name	Deer Creek and Tributaries (Allotment Acres)	Lost Creek and Tributaries (Allotment Acres)	Soda Creek and Tributaries (Allotment Acres)	South Fork Little Butte Creek and Tributaries (Allotment Acres)
Deer Creek Reno	1,613	839	1,111	4,062
Lake Creek Spring				216
Lake Creek Summer	6	2,934		2,940

Total Acres in Allotments	1,619	3,773	1,111	7,218

Riparian vegetation is a key factor involved in all three sediment sources stemming from BLM administered lands. The BLM uses a proper functioning condition (PFC) assessment to determine the condition of riparian areas. PFC is a qualitative method based on quantitative science (USDI and USDA 1998). This assessment considers hydrology, vegetation, and erosion/deposition attributes and processes to evaluate the condition of riparian areas. It can often serve as a surrogate indicator for all the listed parameters.

Coliform

Fecal coliform bacteria are produced in the guts of warm-blooded vertebrate animals, and indicate the presence of pathogens that cause illness in humans. E. coli is a species of fecal coliform bacteria. A variety of everyday activities cause bacterial contamination in surface waters (ODEQ 2004:9). The largest sources of contamination include runoff from agricultural, industrial, rural and urban residential activities (ODEQ 2004:9). Sources of bacteria from BLM-administered lands include animal feces (wild and domestic) and inadequate waste disposal by recreational users. The BLM does not monitor fecal coliform and it is often difficult, as it is with the other parameters, to attribute livestock impacts to the monitoring results.

Stream surveys identified possible grazing related negative water quality impacts within the allotments. Additional assessments and evaluations will identify specific grazing problems that are contributing to sediment, temperature, or bacteria. Corrective management measures will be implemented according to site-specific NEPA analysis.

Standard 5 Native, T&E, and Locally Important Species

To meet this standard, habitats support healthy, productive, and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate, and landform.

Federal agencies are mandated to protect threatened and endangered species and will take appropriate action to avoid the listing of any species. This standard focuses on retaining and restoring native plant and animal (including fish) species, populations and communities (including threatened, endangered and other special status species and species of local importance). In meeting the standard, native plant communities and animal habitats would be spatially distributed across the landscape with a density and frequency of species suitable to ensure reproductive capability and sustainability. Plant populations and communities would exhibit a range of age classes necessary to sustain recruitment and mortality fluctuations.
The plant communities on this allotment are floristically diverse, healthy, and support a wide variety of animal species consistent with the surrounding soil, landscape and climate.

Species are recognized as "special status" if they are federally listed as threatened or endangered, proposed or a candidate for federal listing as threatened or endangered, or if they are a BLM sensitive or assessment species. BLM policy is to manage for the conservation of these species and their habitat so as not to contribute to the need to list and to recover these species.

Looking at the indicators in the Rangeland Health Field Assessment pertaining to Biotic Integrity revealed that 28 indicators (56%) were rated none to slight, 10 indicators (20%) were rated slight to moderate, 3 indicators (6%) was rated moderate, 2 indicators (4%) were rated moderate to extreme, and 2 indicators (4%) were rated extreme to total departure (Tables 10-14).

Bureau Special Status Wildlife
There are a number of habitat types/plant communities in the three Lake Creek Allotments. Based on habitat and range data, there could be approximately 200 vertebrate terrestrial wildlife species present in the allotments.

The major plant communities that support wildlife in the allotments are grouped into two zones based primarily on elevation. These zones are the Interior Valley Zone (low elevation) and Mixed Conifer Zone (mid elevation). Representative plant communities for each zone are presented in the following table.

Table 5. Representative Plant Communities

Vegetation Zones	Representative Plant Communities
Interior Valley Zone	Grassland, Dry and Semiwet Meadows, Shrublands, Dry Oak Woodlands, Riparian
Mixed Conifer Zone	Douglas Fir, Mixed Fir, Pine, Riparian

In addition to the representative plant communities, special/unique habitats that support various wildlife species occur at numerous locations throughout the allotments. These special habitats include cliffs, seeps and springs, caves and meadows (BLM 1995).

The terrestrial wildlife species of special concern in the three Lake Creek allotments are classified in three categories; Special Status Species, Birds of Conservation Concern (including Game Birds Below Desired Condition), and locally important species. Species are recognized as "special status" if they are federally listed as threatened or endangered, proposed or a candidate for federal listing as threatened or endangered, or if they are a BLM sensitive species. BLM policy is to manage for the conservation of these species and their habitat so as not to contribute to the need to list additional species and to recover listed species. Special Status Species known or likely to be present on BLM managed land in the allotments are displayed in the following table.

Table 6. Known or Suspected Special Status Wildlife Species

Common Name	Scientific Name	Status
Northern Spotted Owl	Strix occidentalis caurina	FT - Known
Lewis's Woodpecker	Melanerpes lewis	BS - Suspected
Foothill Yellow-legged Frog	Rana boylii	BS - Suspected
Pacific Pallid Bat	Antrozous pallidus	BS - Suspected
Fringed Myotis Bat	Myotis thysanodes	BS - Suspected
Townsend's Big-eared Bat	Corynorhinus townsendii	BS - Known
Northwestern Pond Turtle	Actinemys marmorata marmorata	BS - Known
Chase Sideband	Monadenia chaceana	BS - Suspected
Travelling Sideband	Monadenia fidelis celeuthia	BS - Suspected
Siskiyou Hesperian	Vespericola sierranus	BS - Suspected

FT = Federal threatened; BS = Bureau Sensitive

Birds of Conservation Concern and Gamebirds Below Desired Condition
BLM has interim guidance for meeting federal responsibilities under the Migratory Bird Treaty Act and Executive Order 13186 (EO). Both the Act and the EO promote the conservation of migratory bird populations. The interim guidance was transmitted through Instruction Memorandum No. 2008-050. The I.M. relies on two lists prepared by the U.S. Fish and Wildlife

Service in determining which species are to receive special attention in land management activities; the lists are *Bird Species of Conservation Concern* (BCC) found in various Bird Conservation Regions (Lake Creek allotments are in BCR 5) and *Game Birds Below Desired Condition* (GBBDC). The following table displays those species that are known or likely to be present in the project area.

Table 7. Bird Species of Conservation Concern

Species	Status
Purple Finch (Carpodacus purpureus)	BCC
Willow Flycatcher (*Empidonax traillii*)	BCC
Olive-sided Flycatcher (*Contopus cooperi*)	BCC
Rufous Hummingbird (*Selasphorus rufus*)	BCC
Mourning Dove (*Zenaida macroura*)	GBBDC
Band-tailed Pigeon (*Columba fasciata*)	GBBDC

Locally Important Species

The allotment is located in one of the areas designated by the Medford RMP as a management area for wintering black-tailed deer (*Odocoileus hemionus columbianus*). Management in these areas is expected to provide seclusion for wintering deer, and to promote improved forage conditions.

Discussion

Livestock grazing impacts wildlife in several ways. Grazing reduces forage available to native herbivores (e.g. deer and elk), and it reduces vegetative ground cover for ground nesting birds, rodents, and other wildlife species dependent on ground cover for protection, food, and breeding sites. Grazing also reduces water quality in seeps, springs, and streams used by native wildlife by means of trampling, urination and defecation. The presence of livestock can also change local distribution and habitat use by native wildlife species due to wildlife-livestock interactions.

Available allotment data and a cursory check of several areas in the allotments indicate that, generally, grazing in the allotments is light to moderate and fairly well dispersed. However, there are some riparian areas in the allotments that receive concentrated use by cattle. It is in these "hotspots" where grazing has a negative impact to some native wildlife species. Several species of special concern are likely to be negatively affected by the concentrated use in riparian areas.

Yellow-legged frog and Northwestern pond turtle are dependent on riparian and aquatic habitat and are adversely affected when these habitats are degraded. Cattle degrade the riparian habitat through vegetation removal; streambank trampling; trampling in shallow ponds, springs, and streams; and defecation/urination in ponds, springs and streams. Also, pond turtles are sensitive to disturbance, and the presence of cattle near ponds can shorten basking time. This adversely affects them because basking is important for proper digestion.

Willow Flycatchers, as the name implies, are associated with riparian willow thickets (Altman 2003). In southwest Oregon nesting and migratory habitat for this species is almost exclusively riparian habitat, primarily willow (Altman 2003). Sedgwick (2000) lists overgrazing by livestock as a major cause of Willow Flycatcher population decline. Cattle damage includes soil compaction and gullying which dries meadows, willow grazing, and direct nest destruction by cattle as they move through willow thickets. Willow Flycatcher nests are generally only a few feet off the ground so they are susceptible to direct destruction. Willow Flycatchers are likely to be negatively affected by grazing only in areas of utilization "hotspots."

As stated previously, grazing throughout the rest of the allotments appears to be light to moderate and generally well distributed. As a result of this, the remainder of the special status species, birds of conservation concern, and game birds below desired condition known or suspected in the allotments are probably only marginally impacted by the grazing operation or not impacted at all.

The allotments are within an area designated for special management for wintering deer (USDI BLM, 1995). There is not a lot of dietary overlap between livestock and deer (Hosten, P.E. et al. 2007), but the forage reduction due to grazing can be detrimental to deer. Utilization late into the grazing season (mid October) can result in inadequate regrowth by grasses and forbs. This regrowth (fall green-up) is important to deer in building fat reserves that help sustain them during the winter season.

The potential lack of regrowth is exacerbated by the poor forage conditions throughout the allotment. Winter range forage conditions are deteriorating due to the encroachment of noxious grasses and forbs and the exclusion of fire from the mountain shrubland/chaparral plant community. Bristly dogstail and medusahead rye are common introduced species that have displaced native grasses and forbs. Compared to native species, these species are much less palatable and nutritious. Wedgeleaf ceanothus is the primary browse species for deer on the winter range. This shrub is generally regenerated by fire, but due to fire suppression, wedgeleaf has become decadent and forage quality has decreased. There is also a tendency for deer to avoid areas being grazed by cattle.

Bureau Special Status Aquatic Wildlife

Table 8: Special Status Aquatic Species

Species	Species Status
steelhead (Oncorhynchus mykiss)	Oregon-Sensitive
coho salmon (*O. kisutch*)	Federally Threatened

Native anadromous fish in the South Fork Little Butte Watershed include Southern Oregon/ Northern California (SONC) coho salmon (*Oncorhynchus kisutch*), Klamath Mountain Province (KMP) steelhead (*O. mykiss*), spring chinook (*O. tshawytscha*), and Pacific lamprey (*Entosphenus tridentata*). Other native fish in the system include: rainbow trout (*O. mykiss*), cutthroat trout (*O. clarki*), Klamath smallscale sucker (*Catostomus rimiculus*), and reticulate sculpin (*Cottus perplexus*).

Coho Critical and Essential Fish Habitat for the Deer Creek Reno, Lake Creek Spring and Lake Creek Summer Allotments

On May 5, 1999, the National Marine Fisheries Service (NMFS) designated Coho Critical Habitat (CCH) for SONC coho salmon. Critical habitat includes "all waterways, substrate, and adjacent riparian zones below longstanding, naturally impassable barriers." It further includes "those physical or biological features essential to the conservation of the species and which may require special management considerations or protection...", including all historically accessible waters (F.R. vol. 64, no. 86, 24049). CCH within these allotments includes the South Fork Little Butte, Lake Creek, Lost Creek, Soda Creek and Deer Creek.

Essential Fish Habitat (EFH) has been defined by NOAA fisheries as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." This definition includes all waters historically used by anadromous salmonids of commercial value (including coho salmon). In these allotments, EFH is identical to CCH. More information regarding EFH may be found at: **http://www.nmfs.noaa.gov/habitat/habitatprotection/efh/index.htm**

Deer Creek Reno Allotment
Portions of Soda Creek, Deer Creek, Lost Creek and South Fork of Little Butte Creek are contained within the allotment. Less than a quarter of a mile of the South Fork and approximately ½ mile of Soda Creek are on BLM managed lands within the allotment. Both streams support populations of "threatened" (as listed under the Endangered Species Act) coho salmon. Steelhead trout, a Special Status Species, exists in these same reaches of South Fork Little Butte and Soda Creeks as well as the lower 0.10 miles of Deer Creek in T 37-2E-13. Coho Critical Habitat (CCH) has been designated by the National Marine Fisheries Service for the Southern Oregon/Northern California (SONC) Evolutionary Significant Unit of coho, and includes the Soda Creek, Deer Creek, Lost Creek and South Fork Little Butte Creek. This same habitat is also considered Essential Fish Habitat (EFH) under the Magnuson Stevenson Fisheries Act.

All of the fish bearing stream reaches within the allotment have been surveyed by ODFW. The fish bearing reaches of Soda and Deer Creek are constrained and characterized by fast, turbulent flow with hydraulic jumps and chutes formed by boulders and bedrock that dominate the stream channel from the mouth, into the upper plateau. The portion of South Fork Little Butte Creek on BLM is not constrained; however it is dominated by rapids and riffles. These habitat types are typically poor to marginal habitat types for salmonids. They are naturally lacking large wood, pools and spawning gravel that are needed for optimal salmonid production. ODFW habitat surveys also noted high bank erosion rates on these stream reaches; additionally a high amount of silt and sand substrate was observed in Deer Creek.

BLM fisheries staff conducted surveys on the fish bearing reaches in 2008 on South Fork Little Butte. There were no signs of cattle grazing occurring in the vicinity of fish bearing streams on Soda Creek, South Fork Little Butte Creek and Deer Creek on BLM land. The steep terrain along these sections of creek reduces livestock use to none or slight. Observations of cattle use were minimal in Lost Creek, however past surveys indicate post holing and bank erosion in T. 37 R. 2 E., Section 9 where steelhead and CCH are confirmed. BLM Fish/Hydrology staff visited this spot in 2009. Very little evidence of cattle grazing exists, however a small area (10X10 feet) along the bank of Lost Creek was eroding due to past cattle. No studies have been conducted on Lost Creek to determine the quantity of sediment contributed to CCH as a result of grazing, but it is inevitable that displaced and mobilized sediment from these hot spots eventually finds its way into Lost Creek (CCH).

Lake Creek Spring Allotment
No special status fish species exist on public land within the Lake Creek Spring Allotment. On private land within the allotment, CCH, coho salmon, and KMP steelhead are confirmed. In Lake Creek, KMP steelhead were confirmed to river mile 3.1 in 2001 (ODFW) and trout presence was assumed to river mile 5.3. Coho salmon use the lower 2.5 miles of Lake Creek for spawning, rearing, and migration (ODFW 1995). Although it is difficult to establish a cutoff gradient above which coho will not spawn, coho prefer low gradient streams and generally spawn in gradients of less than 3% (ODFW 1995). Therefore, the first 2.5 miles of Lake Creek are designated as CCH and EFH.

The anadromous fish habitat in lower Lake Creek (lower 2.5 miles) is generally in poor condition. The fish bearing reaches of Lake Creek are limited by moderate gradients averaging between 3.4 and 5.9% (ODFW 1994). Sediment is high, large wood is low (7 key pieces per mile) and pool frequency is low. Surveys indicated the amount of actively eroding banks were high (76%) (ODFW 1994). Lake Creek is listed by DEQ for *E.coli*, sediment, and temperature from the mouth to river mile 7.8. Macroinvertebrate sampling found taxa that are tolerant of high stream temperatures and elevated sediment levels indicative of low habitat/biotic integrity. Water quantity and connectivity are major issues for Lake Creek as diversion dams block migration and greatly reduce stream flows for much of the year.

CCH and steelhead habitat are located approximately 0.7 miles downstream of BLM land, in Lake Creek (T. 37 R. 2 E., Section 5). Riparian surveys (1998) conducted on BLM land, in Lake Creek, found the stream in proper functioning condition. The surveys did not make any mention of cattle grazing impacts to aquatic resources. In 2008 a stream survey concluded that the stream was still in good condition and had no signs of cattle impacts.

Lake Creek Summer Allotment
Rainbow and cutthroat trout exist in the upper reaches of Lost and Lake Creeks. No threatened or special status species exist within the Lake Creek Summer Allotment. The allotment boundary is over 1.5 miles from CCH in Lost Creek and over 2 ½ miles from CCH in Lake Creek. The reaches of Lake Creek and Lost Creek in this allotment are properly functioning.

Botany

Federally Listed and Bureau Special Status Vascular Plants
The known ranges of three federally listed plants (*Limnanthes floccosa ssp. Grandiflora*, *Lomatium cookii*, and *Fritillaria gentneri)* extend into the northern portion of Lake Creek Spring Allotment (USDI Fish and Wildlife Service, 2003). The entire allotment has been surveyed for these plants once and the federally listed *Fritillaria gentneri* will have second year surveys or equivalent prior to lease renewal. The Lake Creek Summer and Deer Creek Reno allotments are outside the range of federally listed plants known to occur on the Medford District of the BLM *(Fritillaria gentneri* , *Limnanthes floccosa ssp. grandiflora, Arabis macdonaldiana,* and *Lomatium cookii)* as defined by the U.S. Fish and Wildlife Service (USDI Fish and Wildlife Service, 2003). No occurrences of any federally listed plant species are known or expected on federal lands within the grazing allotments. The following special status species have documented occurrences within the grazing allotments:

Table 8: Special Status Species (Vascular Plants)

Species	Status	Occurrences
Saw-tooth sedge (*Carex serratodens*)	BS	3
Coastal lipfern (*Cheilanthes intertexta*)	BS	6
Tall bugbane (*Cimicifuga elata var. elata*)	BS	24
Milo Baker's cryptantha (*Cryptantha milo-bakeri*)	BS	4
Clustered lady's-slipper (*Cypripedium fasciculatum*)	BS	1
Bellinger's meadowfoam (*Limnanthes floccosa ssp. Bellingeriana*)	BS	7
Southern Oregon buttercup (*Ranunculus austrooreganus*)	BS	1
Drooping bulrush (*Scirpus pendulus*)	BS	2

BS - Bureau sensitive

Livestock generally seek out grasses and grass-like plants (graminoids) to form the bulk of their diet (Holechek et al. 1982). Of the special status species sites listed above, the only graminoids are *Carex serratodens* and *Scirpus pendulus*. The *Scirpus pendulus* populations occur in areas seldom visited by livestock, and thus remain generally unaffected by grazing. The *Carex serratodens* populations occur in wet habitats in areas receiving little to no grazing in 2006, and light to moderate grazing in some past years. Because of its wet habitat and its growth of fibrous root masses, *Carex* species generally recover well from herbivory, but severe repeated grazing and trampling could impact populations.

The rest of the special status plants within the allotments are unaffected by livestock due to habitat or life history characteristics. *Cryptantha milo-bakeri* is an annual herb that sets seed and dry up early in the season, often before livestock arrive. *Cheilanthes intertexta* grows in crevasses in boulders or rock cliffs. *Cimicifuga elata var. elata* and *Ranunculus austro-oreganus* are broadleaved forbs that are somewhat toxic, and generally avoided by livestock.

Bureau Special Status fungi, lichens, and bryophytes

Currently there are no known occurrences of any bureau special status nonvascular species within the Lake Creek area grazing allotments.

Noxious Weeds

Field surveys have located a number of noxious weed species within the allotments, including yellow star thistle (*Centaurea solstitialis*), Canada thistle (*Cirsium arvense),* and medusahead rye (*Taeniatherum caput-medusae)*. Many of the weed populations occur along roads or in areas historically disturbed by forestry operations. In the non-conifer habitats preferred by livestock, medusahead and other exotic annual grasses are present in most meadows, and dominant in some areas. Disturbance from historic livestock grazing practices contributed to the invasion and conversion of native perennial grasslands throughout Southern Oregon and California in the past (D'Antonio and Vitousek, 1992). Exotic annual grass infestations are of concern because they alter the ecological functioning of native plant communities, reduce the value of wildlife habitat, and provide inferior forage for wildlife and livestock (D'Antonio and Vitousek, 1992). The areas most likely to experience conversion from native perennial grasslands to exotic annual grasslands have already undergone conversion, and current stocking rates are unlikely to convert additional areas of remnant native grassland. Due to their invasive nature, noxious weeds present on the allotment can continue to spread when left untreated. Field visits to the allotment and BLM monitoring data suggests exotic annual grasses are not spreading rapidly under current grazing regimes. However, areas of moderate to heavy livestock utilization, congregation areas (salt blocks, water sources, shade) and loading areas that experience soil and vegetation disturbance within the allotment are at risk for weed colonization. The BLM weed control program uses herbicides, biological control agents, and hand pulling to treat infestations across the landscape.

RANGELAND HEALTH FIELD ASSESMENT SUMMARY OF FINDINGS

Rangeland Health is defined as the degree in which the integrity of the soil, vegetation, water, and air as well as the ecological processes of the rangeland ecosystem are balanced and sustained (USDA 1997). This qualitative assessment along with quantitative monitoring data is an attempt to look at how well ecological processes such as the water cycle (capture, storage, and safe release of precipitation), energy flow (conversion of sunlight to plant and then animal matter), and nutrient cycle (the cycle of nutrients through the physical and biotic components of the environment) are functioning. The product of this qualitative assessment is not a single rating of rangeland health, but and assessment of three interrelated attributes: Soil/site stability, Hydrologic function, and Biotic integrity. Attributes are rated based on what would be expected for the site or a "reference state" based on soils, climate and topography compared to the current state. The

attributes are split into seventeen indicators that are rated as none to slight, slight to moderate, moderate, moderate to extreme, and extreme to total departures from the reference state. (see table E-G)

Rangeland health field assessments were completed at two ecological sites on the Lake Creek Spring Allotment and at three ecological sites on the Lake Creek Summer Allotment. The ecological sites reviewed and/or assessed with the IDT (Interdisciplinary team) include Douglas fir forest, dry meadow (2), oak fescue and pine fescue. These ecological sites were chosen based on GIS (Global Information Systems) mapping that defined vegetative communities and soils followed by field surveys to determine a representative location to complete the assessment.

Lake Creek Spring Allotment

Location 1: Dry Meadow Summary
The average rating for this location is a None to Slight departure from what would be expected for this site. Twelve indicators (71%) were rated None to Slight, three indicators (18%) were rated Slight to Moderate, zero indicators were rated Moderate, one indicator (5%) was rated Moderate to Extreme, and one indicator (5%) was rated Extreme to Total.

Table 10: Rangeland Health Field Assessment Location 1 Indicator Summary

Location 1: Dry Meadow					
Indicator	Degree of Departure from Ecological Site Description				
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills					✓
2. Water Flow Patterns					✓
3. Pedestals and/or Terracettes					✓
4.Bareground					✓
5. Gullies					✓
6. Windscoured Blowouts					✓
7. Litter movement					✓
8. Soil surface resistance to erosion					✓
9. Soil surface loss or degradation					✓

10. Plant community composition and distribution relative to infiltration				✓	
11. Compaction Layer					✓
12. Functional/Structural groups		✓			
13. Plant mortality/ decadence					✓
14. Litter amount				✓	
15. Annual Production				✓	
16. Invasive Plants	✓				
17. Reproductive capability of Perennial plants					✓

Line Point Intercept

Line point intercept data indicates 74% canopy cover by vascular plants and 4% bare ground, which is defined as soil with nothing above it.

Table 10a- Species Composition

Common name	Scientific name	Life Form	Origin	% Frequency
Lemon's needlegrass	Achnatherum lemonnii	PG	N	26
Sandberg bluegrass	Poa secunda	PG	N	4
Tufted hairgrass	Deschampsia caespitosa	PG	N	8
Bristly dogstail	Cynosurus echinatus	AG	I	18
Medusahead	Taeniatherum caput-medusea	AG	I	18
Field brome	Bromus japonicus	AG	I	12
Smooth brome	Bromus hordeaceous	AG	I	6

PG= Perennial grass, AG=Annual grass N= Native I= Introduced

Table 10b- Ground Cover

Ground Cover	# Of Hits	% Frequency
Litter	41	82
Moss	7	14
Soil	42	84
Rock	1	2

Location 2: Douglas Fir Forest Summary

The overall rating for this location is a None to Slight departure from what would be expected for this site. Fourteen indicators (82%) were rated None to Slight, three indicators (18%) were rated Slight to Moderate departure, and zero indicators were rated Moderate, Moderate to Extreme or Extreme to Total.

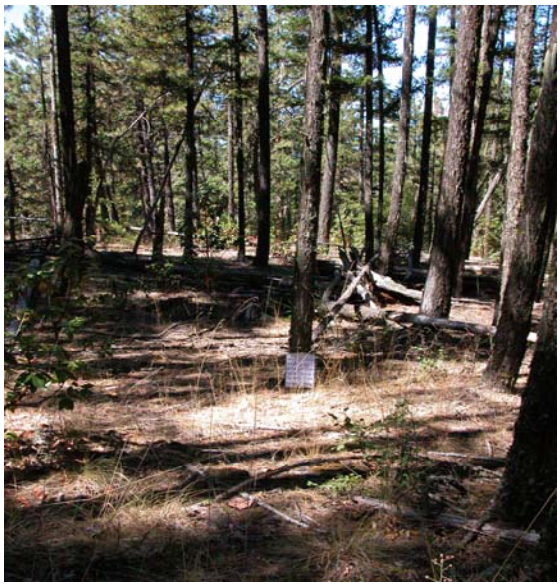


Table 11: Rangeland Health Field Assessment Location 2 Indicator Summary

Location 2: Douglas Fir Forest					
Indicator	Degree of Departure from Ecological Site Description				
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills					✓
2. Water Flow Patterns					✓
3. Pedestals and/or Terracettes					✓
4.Bareground					✓
5. Gullies					✓
6. Windscoured Blowouts					✓
7. Litter movement					✓
8. Soil surface resistance to erosion					✓
9. Soil surface loss or degradation					✓
10. Plant community composition and distribution relative to infiltration					✓
11. Compaction Layer					✓
12. Functional/Structural groups				✓	
13. Plant mortality/ decadence					✓
14. Litter amount					✓
15. Annual Production					✓
16. Invasive Plants				✓	
17. Reproductive capability of Perennial plants				✓	

Lake Creek Summer

Location 1: Pine Fescue Summary
The rating for this location is a None to Slight departure from what would be expected for this site. Seventeen indicators (100%) were rated None to Slight, zero were rated Slight to Moderate, Moderate, Moderate to Extreme, or Extreme to Total.

Table 12. Rangeland Health Field Assessment Location 1 Indicator Summary

Location 1: Pine Fescue					
Indicator	Degree of Departure from Ecological Site Description				
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills					✓
2. Water Flow Patterns					✓
3. Pedestals and/or Terracettes					✓
4.Bareground					✓
5. Gullies					✓
6. Windscoured Blowouts					✓
7. Litter movement					✓
8. Soil surface resistance to erosion					✓
9. Soil surface loss or degradation					✓
10. Plant community composition and distribution relative to infiltration					✓
11. Compaction Layer					✓
12. Functional/Structural groups					✓
13. Plant mortality/ decadence					✓
14. Litter amount					✓
15. Annual Production					✓
16. Invasive Plants					✓
17. Reproductive capability of Perennial plants					✓

Line Point Intercept

Line point intercept data indicates 58% canopy cover by vascular plants and 2% bare ground, which is defined as soil with nothing above it.

Table 12a- Species composition

Common name	Scientific name	Life Form	Origin	% Frequency

California fescue	Festuca Californica	PG	N	52
Blue wildrye	Elymus glaucus	PG	N	4
Hairy honeysuckle	Lonicera hirsuta	PS	N	2
Oregon grape	Berberis aquifolium	PS	N	2
serviceberry	Amelanchier alnifolia	PS	N	2
Spreading hedgeparsley	Torilis arvensis	AF	I	2

PG= Perennial grass, PS= Perennial shrub AF= Annual forb N= Native I= Introduced

Table 12b- Ground Cover

Ground Cover	# Of Hits	% Frequency
Litter	49	98
Moss	1	2
Soil	49	98
Wood	4	8

Location 2: Oak fescue Summary

The average rating for this location is a None to Slight departure from what would be expected for this site. Fourteen indicators (82%) were rated None to Slight, three indicators (18%) were rated Slight to Moderate, zero indicators were rated Moderate, Moderate to Extreme, or Extreme to Total.

Table 13: RHFA location 2 indicator summary

Location 2: Oak fescue					
Indicator	Degree of Departure from Ecological Site Description				
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills					✓
2. Water Flow Patterns					✓

3. Pedestals and/or Terracettes					✓
4.Bareground					✓
5. Gullies					✓
6. Windscoured Blowouts					✓
7. Litter movement					✓
8. Soil surface resistance to erosion					✓
9. Soil surface loss or degradation					✓
10. Plant community composition and distribution relative to infiltration					✓
11. Compaction Layer					✓
12. Functional/Structural groups				✓	
13. Plant mortality/ decadence					✓
14. Litter amount					✓
15. Annual Production					✓
16. Invasive Plants				✓	
17. Reproductive capability of Perennial plants				✓	

Line Point Intercept
Line point intercept data indicates 90% canopy cover by vascular plants and 2% bare ground, which is defined as soil with nothing above it.

Table 13a- Species composition

Common name	Scientific name	Life Form	Origin	% Frequency
Idaho fescue	Festuca idahoensis	PG	N	46
Chinook brome	Bromus laevipes	PG	N	18
California oatgrass	Danthonia californica	PG	N	8
Oregon white oak	Quercus garryana	T	N	10
Blue wildrye	Elymus glaucus	PG	N	8
Woodland strawberry	Frageria vesca	PF	N	8
Common yarrow	Achillea millefolium	PF	N	8

PG= Perennial grass, PS= Perennial shrub, AF= Annual forb, T=Tree N=Native, I= Introduced

Table 13b- Ground Cover

Ground Cover	# Of Hits	% Frequency
Litter	48	96
Moss	10	20
Soil	41	82
Rock	1	2

Location 3: Dry Meadow Summary
The average rating for this location is a Moderate departure from what would be expected for this site. Eight indicators (47%) were rated None to Slight, two indicators (12%) were rated Slight to Moderate, five indicators (29%) were rated Moderate, one indicator (5%) was rated Moderate to Extreme, and one indicator (5%) was rated Extreme to Total.

Table 14: RHFA location 3 indicator summary

Location 3: Dry Meadow					
Indicator	Degree of Departure from Ecological Site Description				
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills					✓
2. Water Flow Patterns					✓
3. Pedestals and/or Terracettes					✓
4.Bareground			✓		
5. Gullies					✓
6. Windscoured Blowouts					✓
7. Litter movement					✓
8. Soil surface resistance to erosion				✓	
9. Soil surface loss or degradation					✓
10. Plant community composition and distribution relative to infiltration			✓		
11. Compaction Layer			✓		
12. Functional/Structural groups		✓			
13. Plant mortality/ decadence					✓
14. Litter amount				✓	
15. Annual Production			✓		
16. Invasive Plants	✓				
17. Reproductive capability of Perennial plants			✓		

Line Point Intercept

Line point intercept data indicates 84% canopy cover by vascular plants and 8% bare ground, which is defined as soil with nothing above it.

Table 14a- Species Composition

Common name	Scientific name	Life Form	Origin	% Frequency
Chinook brome	Bromus laevipes	PG	N	10

woodrush	Luzula sp.	PGL	N	26
Sandberg bluegrass	Poa secunda	PG	N	8
Smooth brome	Bromus horeaceous	AG	I	16
Bristly dogstail	Cynosurus echinatus	AG	I	44
Medusahead	Taeniatherum caput-medusea	AG	I	20
Spreading hedge parsley	Torilis arvensis	AF	I	8

PG= Perennial grass, AG= Annual grass PGL= Perennial grass-like, AF= Annual forb N= Native I= Introduced

Table 14b- Ground Cover

Ground Cover	# Of Hits	% Frequency
Litter	44	88
Moss	3	6
Soil	47	94
Rock	0	0

References

Altman, B. 2003. Willow Flycatcher. Pp378-381 in Birds of Oregon: A General Reference. D.B. Marshall, M.G. Hunter, and A.L. Contreras, Eds. Oregon State University Press, Corvallis, OR.

D'Antonio, C. M. and Vitousek, P. M. 1992. Biological Invasions by Exotic Grasses, the Grass/Fire Cycle, and Global Change. Annual Review of Ecology and Systematics, 23:63-87.

Oregon Department of Environmental Quality (ODEQ). 2004. Draft Rogue basin riparian condition assessment report. DEQ, Medford, Oregon.

Oregon Department of Environmental Quality (ODEQ). 2006. Oregon administrative rules, chapter 340, division 41, internet address [http://ww.deq.state.or.us/wq/wqrules/wqrules.htm]. DEQ, Portland, Oregon.

Sedgwick, James A. 2000. Willow Flycatcher (Empidonax traillii), The Birds of North America Online (A. Poole, Ed). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/533.

US Department of Agriculture, U.S. Department of the Interior, Bureau of Land Management, and the Oregon Agricultural Exper. Sta. 1993. Soil survey of Jackson County area, Oregon.

U.S. Department of Agriculture, U.S. Department of the Interior, Bureau of Land Management, 1999. Management Recommendations for Survey and Manage Terrestrial Mollusks, V. 2.0.

US Department of the Interior, Bureau of Land Management Medford District, Ashland Resource Area 1984 - 2006. Rangeland monitoring data

US Department of the Interior, Bureau of Land Management, Medford District. 1998 and 1995. Stream and Riparian Survey Data. Medford, OR.

USDI Bureau of Land Management. 1996. Utilization studies and residual measurements (Technical Reference 4400-3). BLM Service Center. Denver Colorado.

US Department of the Interior, Bureau of Land Management, Medford District 1995. Record of Decision and Resource Management Plan.

US Department of the Interior, Bureau of Land Management 1994. Medford District Proposed Resource Management Plan/ Environmental Impact Statement.

US Department of the Interior, Bureau of Land Management 1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl: Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Related Species within the Range of the Northern Spotted Owl.

US Department of the Interior, Bureau of Land Management, Medford District 1993. Medford Grazing Management Program Environmental Impact Statement.

US Department of the Interior, Bureau of Land Management. Portland, OR 1997. Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington.

US Department of the Interior, Bureau of Land Management and USDA Forest Service, 1994. Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old Growth Related Species Within the Range of the Northern Spotted Owl.

USDI, Bureau of Land Management, Medford District Office and USDA, Forest Service. 1997. Little Butte Creek watershed analysis. Medford District Office, Medford, Oregon.

USDI, Bureau of Land Management, USDA, Forest Service, and USDA, Natural Resources Conservation Service. 1998. A user guide to assessing proper functioning condition and the supporting science for lotic areas. Technical Reference 1737-15. BLM National Applied Resource Sciences Center, Denver, CO.

US Department of the Interior, Fish and Wildlife Service, Roseburg Field Office, 2003. Rogue River / South Coast Biological Assessment FY 2004-2008 for Activities that may affect listed species in the Rogue River/South Coast Province, for Medford District Bureau of Land Management, Rogue River and Siskiyou National Forests 11 July 2003. Biological Opinion (FWS) 1-14-03-F-511 20 October 2003.

USDI Bureau of Land Management. 2008. Oregon and Washington Bureau of Land Management special status species list. Portland, Oregon.

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