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## **INTRODUCTION**

This is an Oregon/Washington Bureau of Land Management (BLM) Standards of Rangeland Health Evaluation that addresses the Box R Allotment (10137). The Box R Allotment is located north of the Greensprings Highway in T. 39 S., R. 4 E., Sections 32 and 5 Willamette Meridian (Map 1). The entire allotment is approximately 910 acres. The BLM-managed portion of the allotment is 87 acres with one cow permitted from October 1-February 28 however, it appears that this was recorded in error and the allotment is actually used June 20-November 1 totaling five Animal Unit Months (AUMs).

The Box R Allotment is within the Cascade-Siskiyou National Monument (CSNM). The CSNM was reserved in June 2000 by presidential proclamation in recognition of its remarkable ecology and to protect a diverse range of biological, geological, aquatic, archeological, and historic objects. The plant communities of the monument support special status plants and animals, productive wildlife habitat, fisheries, visual resources, and provide recreational opportunities.

### **Vegetation**

The vegetation in this allotment is a mosaic of chaparral (*Ceanothus cuneatus*), prairie, and Oregon white oak (*Quercus garryana*) woodland. The component of mixed-coniferous forest includes (mixed-conifer, Douglas-fir (*Pseudotsuga menziesii*), and white fir (*Abies concolor*). Native grasses, including needlegrass (*Achnatherum*), and Roemer's fescue (*Festuca roemerii*) grow across the allotment, depending on local conditions of soil, topography, and shade. Annual and short-lived perennial weedy grasses, including medusahead (*Taeniatherum caput-medusae*) and bulbous bluegrass (*Poa bulbosa*), grow throughout the allotment.

### **Soils**

The main soil limitations affecting livestock grazing are erosion, compaction, the depth to bedrock, and the steepness of slope. This grazing system and number of cattle using the allotment does not significantly diminish the health and function of the watershed by minimizing use, maintaining adequate vegetative cover, and healthy root systems. These factors aid in maintaining existing infiltration, percolation, runoff and erosion rates. Areas dominated by invasive annual grasses have shallow root zones, and thus are less able than native grassland communities to retain and slowly release moisture, capture leaching nutrients, and stabilize the soil (D'Antonio and Vitousek 1992).

The dominant soils identified in this allotment are the Farva, McMullin and McNull series. These soils are loam, cobbly loam, and clay loam that are shallow (<20") or moderately deep (20"- 40"). These soils are well-drained and permeability rates range from slow to very slow. The subsurface clay content limits water supplying capacity to plants in the summer season. Soils with slopes over 35 percent have rapid runoff and hazard of water erosion is high.

### **Hydrology**

The Box R Allotment encompasses approximately 790 acres of which the BLM manages approximately 87 acres (11 percent). The Box R Allotment lies entirely within the Middle Jenny Creek Level 6 Subwatershed in the Jenny Creek Level 5 Watershed. Beaver Creek runs through both BLM parcels within the allotment. Beaver Creek flows into Corral Creek approximately one-half mile downstream of the allotment boundary which flows into Jenny Creek approximately one-quarter mile downstream. There are four miles of perennial streams, three miles of intermittent streams, and two miles of dry draws within the allotment boundary; however, only a fraction of these stream lengths are on BLM land within the allotment (0.5 miles perennial, 0.4 miles intermittent, 0.09 miles dry draws, and 0.1 miles of ditch).





### **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 August 2, 2007 at a loamy shrub scabland site. Line point intercept transect data was also collected at this ecological site and provides quantitative data on percent bare ground, species composition, plant mortality and decadence, litter cover and dominance of invasive plants.

**Livestock Impact Studies:** This collection of reports includes studies that provide a historic and spatial context to the examination of individual plant and wildlife species. Historic anecdotes and photos provide a glimpse of vegetation condition at the time of Euro-American settlement and the remainder of the 19<sup>th</sup> century. More recent plot (range trend plots) and stand examinations (derived from Natural Resources Conservation Service and Soil and Vegetation Inventory Method) provide a baseline for reexamining change over the past 30 years. Other studies focus on the distribution of weeds, Greene's mariposa lily, native ungulates, aquatic macroinvertebrates, and the Jenny Creek Sucker. All of the above species are examined relative to patterns in topography, vegetation, soils, past management, and utilization by native and non-native ungulates.

**Hydrologic/Riparian Surveys:** These surveys were conducted in 1999 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.

**Baseline Stream Temperature Monitoring:** Seasonal 30-minute interval stream temperature data is collected at two long-term monitoring sites on Beaver and Corral Creeks downstream of this allotment using USGS and Oregon DEQ-established methodologies. Stream temperature data was also collected for a short period of time (two or more seasons) at two locations within the northern BLM parcel of this allotment. Temperature monitoring data assists in assessment of Aquatic Conservation Strategy (ACS) Objectives 2, 4, and 9 (USDA/USDI 1994b); for assessment of compliance with state water quality standards; and assists in development of State of Oregon/EPA-required Water Quality Management Plans for the area.

**Gaging Station and Staff Gages: Flow and Water Quality Assessment:** Calculation and assessment of peak, high, and low flows is extremely difficult without actual field measurement and reference over time. Flow data is also required for the meaningful analysis of water quality parameters. Because of rapid fluctuation in stream levels, continuous records are required at a key location to interpret data collected in non-continuous sampling from other locations. Monthly grab samples of turbidity, air temperature, water temperature, pH, flow, fecal coliform, and dissolved oxygen are collected at 11 existing locations within the CSNM. Streamflow is measured at two sites (Beaver and Corral Creeks) downstream of the allotment. A continuous record (15-minute interval) of stream stage, water and air temperature is collected at one location in the CSNM. Standard USGS, Oregon DEQ and EPA approved protocols are used in the data collection.

**Stream Channel Cross Sections:** Stream cross-section measurements are collected at two locations downstream of this allotment (Beaver and Corral Creeks). Measurement methodologies include standard cadastral survey techniques and those outlined in Rosgen (1996). Sites are measured at five-year intervals (approximately) and after major flood events. Cross-sections provide a reference point from

which to document changes in channel morphology, conduct flow measurements, and estimate flood flows. Documentation of changes in channel morphology provides an indication of stability and functioning of the upstream surface hydrologic system.

**Rain Gages:** Rainfall data is collected at 15-minute intervals at one site in lower Jenny Creek using tipping bucket rain gage. Daily precipitation is collected at Howard Prairie Dam (NOAA), Parker Mountain (RAWS), and Buckhorn Springs (RAWS). Daily snowfall and snow-on-the-ground is collected at Howard Prairie Dam (NOAA). Assessment of hydrologic response and water quality parameters, as well as many other aspects of ecosystem function, can only be analyzed accurately in the context of recent precipitation. Although year-to-year trends in precipitation tend to be uniform over an area the size of the CSNM, there is substantial variability in precipitation between locations based on terrain, elevation, etc. Precipitation data from a number of sites at varying elevations and locations in and around the monument is needed for interpretation of related data including hydrologic and vegetation conditions.

**Aquatic Macroinvertebrate Monitoring:** Macroinvertebrate monitoring is conducted at two sites downstream of this allotment (Beaver and Corral Creeks) using methods that meet or exceed state or EPA protocols for the sampling of benthic macroinvertebrates. Taxa abundance, taxa richness, and other metrics are measured at 5-6 year intervals. Pebblesnail surveys have not been conducted on this allotment; however, survey data shows that Keene Creek and Chinquapin pebblesnails occur upstream of this allotment in both the Corral and Beaver Creek drainages. Headwaters of these two streams are within one of the four major endemic centers within or near the monument (Frest and Johannes 2005).

**Botany Surveys:** Botany Surveys were conducted on the Box R Allotment in 2007 using the Intuitive Controlled Survey. This method includes a complete survey in habitats with the highest potential for locating Special Status Species. The surveyor traverses through the project area 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 project area has 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.

A Rangeland Health Assessment was conducted on the allotment at a loamy shrub scabland ecological site in August of 2007. The indicators pertaining to Soil/Site Stability revealed that eight indicators (80%) were rated none-to-slight; one indicator (10%) was rated slight-to-moderate; one indicator (10%) was rated moderate; and no indicators were rated, moderate-to-extreme, or extreme-to-total departure. Line point intercept data was collected at the ecological site and appropriate levels of ground cover and canopy cover were recorded. Species composition was not what would be expected due to the high percentage of *Poa bulbosa* a non-native perennial grass that was introduced through seeding by the BLM (USDI 2007, Table 4, p.14).

The Box R Allotment lies entirely within the Middle Jenny Creek Level 6 Subwatershed. The road density in the Middle Jenny Creek Subwatershed is 4.43 mi./mi.<sup>2</sup>. High road densities are generally associated with impaired hydrologic function; loss of connectivity; introduction and spread of exotic species and noxious weeds; reductions in site productivity; and increased sediment production.

## **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 include standing water systems such as lakes, ponds, seeps, bogs, and meadows; and 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.

Functioning Condition Assessments were conducted in the riparian areas of the allotment in 1999 (BLM Stream Surveys). These assessments refer to a consistent approach for considering hydrology, vegetation, and erosion/deposition (soils) attributes and processes to assess the condition of riparian areas. Within this allotment, there is one 40-acre BLM parcel in Section 32 and one 46-acre parcel in Section 5, from here on referred to as the northern and southern parcels. Beaver Creek runs through both BLM parcels and a short section of a Corral Creek tributary runs through the southern parcel. Beaver Creek is a tributary to Corral Creek, a tributary to Jenny Creek. Upstream of the northern parcel, a diversion diverts most of Beaver Creek leaving the streambed dry during most of the irrigation season and effectively reducing the amount of streamside vegetation. Where Beaver Creek runs through the southern parcel, the stream is downcut, lacks structure, and at the time of the survey appeared to be vertically and horizontally unstable (USDI 1999). Lacking structure and water for at least part of the year compromises this stream system. The sections of Beaver Creek within the northern BLM parcel of the allotment are Functioning-

at-Risk with a Downward Trend and the section in the southern BLM parcel is Non-Functional; however, this does not appear to be as a result of grazing, but due to the water diversion. BLM surveys (1999) indicated actively eroding stream banks along 15-25 percent of the surveyed reach length in the northern parcel and 80 percent of the surveyed reach length in the southern parcel. Additional surveys conducted on Beaver Creek (ODFW 2003), upstream of the northern parcel noted actively eroding streambanks along 22 percent of the surveyed reach length. Similar surveys by ODFW were not conducted for sections of Beaver Creek that flow through the allotment. The tributary to Corral Creek in the southern parcel is surrounded on either side by an agricultural lease that allows for hay production and pasturage which restricts sinuosity and channel function through this segment.

The Matrix of Pathways and Indicators for the Klamath Province/Siskiyou Mountains considers road densities of less than 2.0 mi./mi.<sup>2</sup> as properly functioning condition and greater than 3.0 mi./mi.<sup>2</sup> as not properly functioning (ODFW 2002, 2003). Road density in the Middle Jenny Creek Subwatershed is 4.43 mi./mi.<sup>2</sup>. Roads within riparian areas can greatly influence aquatic and riparian conditions. Roads contribute to the disruption of aquatic connectivity, large wood and nutrient storage regimes, peak flow routing, aquatic habitat complexity, temperature regimes, channel morphology, and direct sediment inputs from road failures.

### **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. The forested portion of this allotment supports a diverse mix of forest plant communities, where invasive plant species are generally confined to some road-sides or localized disturbed areas (Hosten 2007). The dry meadows and oak woodland plant communities support a diverse mix of plant species. However, invasive plant species are scattered in patches through out the majority of the non-conifer areas, particularly annual grasses. In addition to reducing habitat quality for wildlife, annual grasses have shallower root systems and shorter life cycles than native perennial grasses, and thus have reduced capacity to hold the soil and retain water and nutrients. Medusahead where it is well established interrupts the nutrient cycle as it forms litter mats on the soil surface which decay slowly due to high silica content and retain nutrients. It also grows early in the season thus outcompeting perennial grass seedlings for early soil moisture and nutrients. In areas where these annual grass species are already well established the plant community has likely crossed over a threshold into a less desirable stable state. Introduction and establishment of exotic annual grasses occurred in past decades, and current livestock grazing is not intense enough to contribute to additional conversion of native plant communities to exotic annual grasslands. The spread of bulbous bluegrass, a non-native grass introduced in seeding projects, is problematic for maintaining native dominated communities and can only be indirectly linked to patterns of livestock use (Hosten et al. 2007d).

#### **Standard 4 Water Quality**

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

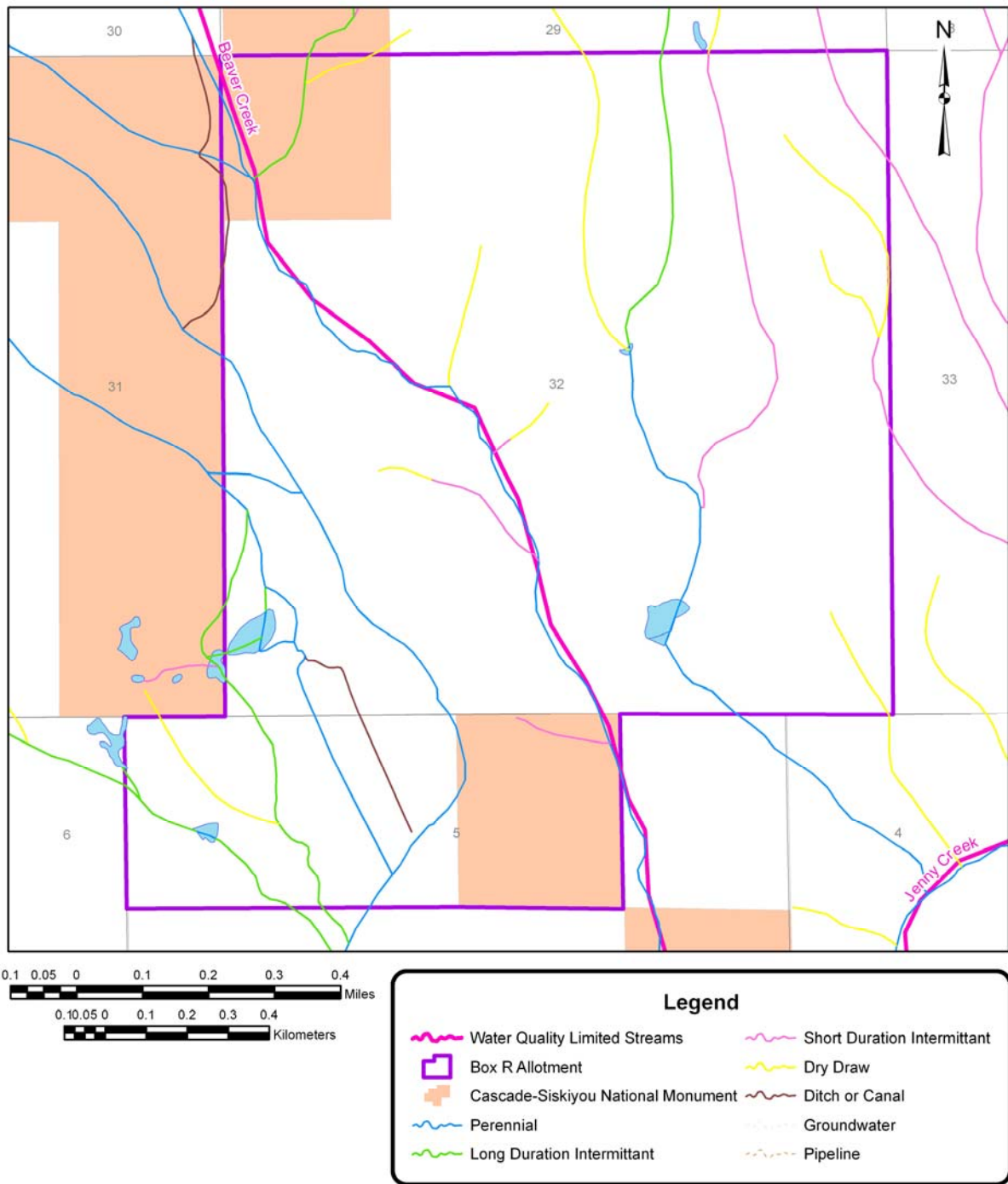
The quality of the water yielded by a watershed is determined by the physical and chemical properties of the geology and soils unique to the watershed, the prevailing climate and weather patterns, current resource conditions, the uses to which the land is put and the quality of the management of those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

Riparian plant community structure influences water quality by shading, thus maintaining lower water temperature. Repeat photos show a general improvement in streamside riparian plant community structure, albeit at a slower rate than change within exclosures.

The Oregon Department of Environmental Quality (DEQ) is required by the federal Clean Water Act (CWA) to maintain a list of stream segments that do not meet water quality standards for one or more beneficial uses. This list is called the 303(d) list because of the section of the CWA that makes the requirement. DEQs 2004/2006 303(d) list is the most recent listing of these streams (ODEQ 2006a). Within the Box R Allotment, Beaver Creek is the only stream on DEQs 2004/2006 303 (d) list (Map 2). Beaver Creek is listed for year-around stream temperature (non-spawning core cold water habitat for redband trout from the mouth to stream mile 5.5).

**Map 2. Water Quality Limited Streams within the Box R Allotment.**



The Box R Allotment falls within the source water areas for the city Yreka in California. The water source for Yreka is Fall Creek. Fall Creek is outside the Box R Allotment. A source water assessment has been completed by the California Department of Health Services for the City of Yreka. The assessment includes an inventory of potential contaminant sources within the source water areas. The City of Yreka source water assessment identified open range cattle as a potential contaminating activity. No other potential contaminant sources that could occur on BLM lands were identified in the state source

water assessment.

Roads may alter the groundwater and surface flow patterns locally and may create an imbalance in hydrologic systems. Natural and graveled road surfaces, road cuts, fill slopes, and ditch lines are subject to erosion. Ditch lines that are not effectively drained by relief culverts (cross drains) act as extensions of stream networks that deliver fine sediment, as well as intercepted ground and surface water directly into stream channels. Research (Jones and Grant 1994; Wemple 1994; Wemple, et al. 1996) suggests that roads that contribute to the extension of the stream channel network are related to changes in the timing and magnitude of peak flows. Road cuts intercept subsurface flow, effectively increasing the amount of surface flow, and the ditch lines allow the water to move through the stream systems quicker. The road density in the Middle Jenny Creek Subwatershed is 4.43 mi./mi.<sup>2</sup>.

Macroinvertebrate surveys conducted at the confluence of Beaver and Corral Creeks found cold water biota and intolerant taxa present in low abundance and low richness in erosional habitats (Aquatic Biology Associates 1993). Factors contributing to moderate truncation of the macroinvertebrate community include: high (near lethal) summer water temperatures, loss of habitat complexity, excessive bedrock, poor detrital retention, and reduction of flushing peak flows (Aquatic Biology Associates 1993). In Corral Creek, cold water biota and intolerant taxa are only present in very low abundance and very low richness. Severe truncation of the Corral Creek macroinvertebrate community is attributed to high (near lethal) summer water temperatures, loss of habitat complexity, high sediment levels from erosion, and excessive bedrock (Aquatic Biology Associates 1993).

### **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.

#### Bureau Special Status terrestrial wildlife:

Special Status species known or likely to be present on the allotment are displayed in Table 1.

**Table 1. Special Status Species (Terrestrial Wildlife)**

<b>Species</b>	<b>Species Status</b>
pallid bat ( <i>Antrozous pallidus</i> )	BS
fringed myotis ( <i>Myotis thysanodes</i> )	BS
northwestern pond turtle ( <i>Actinemys marmorata marmorata</i> )	BS
foothill yellow-legged frog ( <i>Rana boylei</i> )	BS
coronis fritillary ( <i>Speyeria coronis coronis</i> )	BS

BS - Bureau Sensitive

BLM recently issued interim guidance for meeting BLM's responsibilities under the Migratory Bird Treaty Act and Executive Order (EO) 13186. Both the Act and the EO promote the conservation of migratory bird populations. The interim guidance was transmitted through Instruction Memorandum (IM) No. 2008-050. The IM 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 and *Game Birds Below Desired Condition* (GBBDC). Table F displays those species that are known or likely to present on the allotment.

**Table 2. Bird Species of Conservation Concern**

<b>Species</b>	<b>Species Status</b>
rufous hummingbird ( <i>Selasphorus rufus</i> )	BCC
mourning dove ( <i>Zenaida macroura</i> )	GBBDC

BCC - Bird of Conservation Concern

GBBDC - Game Birds Below Desired Condition

Livestock grazing primarily affects wildlife by changing vegetation composition, structure, and function. Grazing can result in a reduction of forage available to native herbivores (e.g. deer and elk), as well as reductions in 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. The presence of livestock can also change local distribution and habitat use by native species due to interspecific behavioral traits. Generally, the extent of impacts to individual T&E species and their habitats are unknown.

Two frog species and one reptile are listed on the Bureau Sensitive list. The foothill yellow-legged frog depends on aquatic environments for their entire life cycles. Foothill yellow-legged frogs are associated with low gradient streams. This species is impacted by issues of water quality and habitat degradation (trampling, wading, and consumption of vegetation) which may be caused by livestock. The northwestern pond turtle, our only Bureau Sensitive listed reptile, may occur within the Box R Allotment. Northwestern pond turtle spend the majority of their life cycle in aquatic environs, but must leave the water to dig terrestrial nests and lay their eggs. These turtles often overwinter in upland settings as well. Both of these activities may be impacted by heavy grazing, and post-holing by livestock.

Species affected by forage removal include rufous hummingbird, mourning dove, coronis fritillary, deer, and elk. Rufous hummingbird, mourning dove, and coronis fritillary are likely affected by grazing due to the removal of plants used for nectaring. Herbaceous vegetation (violets) used by coronis fritillary for ovipositing can also be removed or trampled, and heavy grazing facilitates the invasion of non-native species (Hosten 2007a).

**Table 3. Special Status Species (Aquatic)**

Species	Status
Jenny Creek redband trout ( <i>Oncorhynchus mykiss</i> )	BS

BS- Bureau Sensitive

Special Status Species (Aquatic):

Jenny Creek supports populations of native Jenny Creek suckers (*Catostomus rimiculus*), Jenny Creek redband trout (*Oncorhynchus mykiss*), speckled dace (*Rhinichthys osculus*) and aquatic mollusks (*Fluminicola sp.* 16 and 39). Jenny Creek redband trout (*Oncorhynchus mykiss*) have been confirmed in the Beaver and Corral Creek drainages. The redband trout is considered a “sensitive” species on the Final Interagency Special Status/Sensitive Species List (January 2008). In the Klamath River system, Southern Oregon/Northern California (SONC) coho salmon (*Oncorhynchus kisutch*), a “threatened” species under the Endangered Species Act (ESA) are restricted to habitat below Irongate Reservoir located approximately 15 miles downstream of the Box R Allotment. Pebble snails (*Fluminicola spp.*) have been reported in the Corral and Beaver Creek drainages, upstream of the allotment boundary. Although pebble snail distribution is not well known, the headwaters of these two drainages are within a known endemic hotspot. Very little information exists on the abundance or distribution of the Special Status species caddisflies listed in Table 3.

There are no effects to Special Status or T & E aquatic species or their habitat from this action because: 1) Coho Critical Habitat (CCH) is 15 miles downstream, below a reservoir that acts as a sediment trap in all but the worst flood conditions, 2) very little sign of cattle along the stream segments in this allotment, and 3) irrigation diversion captures flow of Beaver Creek for some portion of the year leaving the stream dry in places.

Bureau Sensitive Status fungi, lichens, and bryophytes:

There are no known occurrences of any Bureau Special Status fungi, lichens, and bryophytes.

Federally Listed, and Bureau Sensitive Status Vascular Plants:

The following Bureau Special Status species occurs in the Box R Allotment (Table 4).

**Table 4. Special Status Species (Vascular Plants)**

Species	Status	Occurrences*
slender nemacladus ( <i>Nemacladus capillaris</i> )	BS	1

BS - Bureau Sensitive

\*Occurrences can be used synonymously with populations and meta-populations.

The allotment is outside the range of federally listed plants (*Limnanthes floccosa*, *Lomatium cookii*, and *Arabis macdonaldiana*) The Southwest portion of the allotment is within *Fritillaria gentneri* habitat defined by the U.S. Fish and Wildlife Service and there are no known occurrences (USDI Fish and Wildlife Service, 2003).

*Nemacladus capillaris* is an annual herb that is in an area that receives no-slight use by livestock.

Noxious weeds:

In the non-conifer habitats, medusahead and other exotic annual grasses are present in most meadows, and dominant in some areas. Medusahead, where it is well established, interrupts the nutrient cycle as it forms litter mats on the soil surface which decay slowly due to high silica content and retain nutrients. It also grows early in the season thus outcompeting perennial grass seedlings for early soil moisture and nutrients. In areas where these annual grass species are already well established, the plant community has

likely crossed over a threshold into a less desirable stable state. 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. BLM monitoring data in surrounding areas suggests exotic annual grasses are not spreading under current grazing regimes. However, 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 ASSESSMENT 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 an 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 (Table 5).

A Rangeland Health Field Assessment was completed at a loamy shrub scabland ecological site on the Box R Allotment. These ecological sites were chosen by using GIS (Global Information Systems) mapping that defined vegetative communities and soils followed by field surveys to determine a representative location to complete the assessment. The assessment was completed with an interdisciplinary team (IDT).

#### ***Location 1: Loamy Shrub Scabland Summary***

The overall rating for this location is a slight-to-moderate departure from what would be expected for this site. Thirteen indicators (76 percent) were rated none-to-slight, one indicator (six percent) was rated slight-to-moderate, two indicators (12 percent) was rated moderate, one of the indicators (six percent) was rated moderate-to-extreme and none of the indicators were rated extreme-to-total.

**Photo 1.** Photo taken at the Loamy Shrub Scabland ecological site.



**Table 5: RHA location 1 indicator summary**

<b>Location 1: Loamy Shrub Scabland</b>					
<b>Indicator</b>	<b>Degree of Departure from Ecological Site Description</b>				
	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. Windscored 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 56 percent canopy cover by vascular plants and 12 percent bare ground, which is defined as soil with nothing above it. The Line Point Intercept Method consists of observing species that intercept a pin flag when dropped along a 100' tape. Data is collected at 50 points along the transect every 24 inches, always collecting data to the right and standing to the left. Once the pin flag is flush with the ground, record every species it intercepts starting with the first stem, leaf, or plant base intercepted. Each species and/or ground cover is recorded only once. Close-up and general view photographs are taken at each transect. The data is examined by looking at the percent canopy (foliar) cover, percent bareground (soil with nothing over it), and percent basal cover. These percentages are calculated by simply counting the number of intercepts in each category and multiplying them by two.

The basic interpretation of line-point intercept data is that a high percent or increase in canopy cover and basal cover and a low percent or decrease in bare ground, increases soil and site stability, hydrologic function, and biotic integrity.

**Table 5a – Species composition**

Common name	Scientific name	Life Form	Origin	% Frequency
Bulbous bluegrass	<i>Poa bulbosa</i>	PG	I	36
Maiden blue-eyed Mary	<i>Collinsia parviflora</i>	AF	N	2
Lemmon's needlegrass	<i>Achnatherum lemmonii</i>	PG	N	8
Douglas' knotweed	<i>Polygonum douglasii</i>	AF	N	4
Small fescue	<i>Vulpia microstachys</i>	AG	N	4
Chaparral willowherb	<i>Epilobium minutum</i>	AF	N	4

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

**Table 5b- Ground cover**

Ground Cover	# Of Hits	% Frequency
Soil	32	64
Rock	7	14
Moss	5	10
Lichen crust	6	12

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