Medford Bureau of Land Management
3040 Biddle Road
Medford, Oregon 97501

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Cove Creek –

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 the Cove Creek Allotment (10112). The analysis area is 1,207 acres with permitted use from May 1-June 15, with 49 cows totaling 75 Animal Unit Months (AUMs) on the Cove Creek Allotment.

Vegetation

Conifer communities create a landscape matrix within which the riparian areas and meadows grazed by livestock are embedded. Riparian areas include open wetland areas incorporating sedges and grasses. Shallow soils define open meadows that may be dominated by California oatgrass on clayey sites or Roemer's fescue on soils with more sand or silt. There are also areas dominated by oak woodland which are comprised primarily of Oregon white oak (*Quercus garryana)* with a smaller component of California black oak (*Quercus kelloggii)*. The shrub component is a mixture of buckbrush (*Ceanothus cuneatus)*, serviceberry (*Amelanchier alnifolia*), and deer brush (*Ceanothus integerrimus)*. Ground cover consists of an assortment of grass and forbs including blue wild rye (*Elymus glaucus)*, Lemmon's needlegrass (*Achnatherum lemonni)*, Idaho fescue *(Festuca idahoensis)*, California oatgrass (*Danthonia californica)*, squirrel tail (*Elymus elymoides)*, prairie junegrass (*Koeleria macrantha)*, California Brome (*Bromus carinatus)*, Secund's bluegrass (*Poa secunda)*, Western buttercup (*Ranunculus occidentalis)*, yampah (*Perideridia sp.)*, harvest brodiaea (*Brodiaea elegans*), slender phlox (*Microsteris gracilis*), tarweed (*Madia sp.)*, lupine (*Lupinus sp.)*, and paintbrush (*Castilleja sp.)* The dry meadows are generally less productive and vulnerable to invasive plant influences from species including medusahead (*Taeniatherum caput-medusea)*, soft brome (*Bromus mollis)*, cheatgrass (*Bromus tectorum)*, bristly dogstail (*Cynosurus echinatus)*, bulbous bluegrass (*Poa bulbosa)* and a variety of other weedy species.

Soils

Soils consist primarily of the Bybee, Carney, Heppsie, Medco, McMullin, Tatouche, and Woodseye soil series. The Bybee soil is very deep and somewhat poorly drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. Permeability is very slow in the Bybee soil. Available water capacity is about 9 inches. The effective rooting depth is limited by a dense layer of clay at a depth of 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The water table, which is perched above the layer of clay, is at a depth of 1 to 3 feet from December through May.

The Carney soil is moderately deep and moderately well drained soil is on alluvial fans and hillslopes. It formed in alluvium and colluvium derived dominantly from tuff and breccia. 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.

The Heppsie soil is moderately deep and well drained soil is on hillslopes. It formed in colluvium derived dominantly from tuff, breccia, and andesite. Permeability is slow in the Heppsie soil. Available water capacity is about 4 inches. The effective rooting depth is 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high.

The McMullin soil is shallow and well drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. Permeability is moderate in the McMullin soil. Available water capacity is about 2 inches. The effective rooting depth is 12 to 20 inches. Runoff is medium or rapid, and the hazard of water erosion is moderate or high.

The McNull soil is moderately deep and well drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. 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.

The Medco soil is moderately deep and moderately well drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. 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.

The Tatouche soil is very deep and well drained. It formed in colluvium derived dominantly from andesite, tuff, and breccia. 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.

Areas of concern for livestock are primarily localized areas of compaction and disturbance in riparian meadows.

Hydrology

This allotment is in the upper reaches of the Bear Creek Watershed near the divide between the Rogue and Klamath basins in the southern Cascade Range. Mild, wet winters and hot, dry summers characterize the Upper Bear Creek Watershed. Elevation within the allotment ranges from 2500 feet to 4900 feet. Rain predominates in the lower elevations (below 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 (USDI 2000:19) This allotment includes riparian meadows, springs and headwater tributaries to Cove Creek and a section of the mainstem of Dosier Creek. Within the allotment boundary, on BLM land there are 2.0 miles of perennial streams, 6.1 miles of intermittent streams, and 4.3 miles of dry draws.

Map 1- *Map of the Cove Creek Allotment*

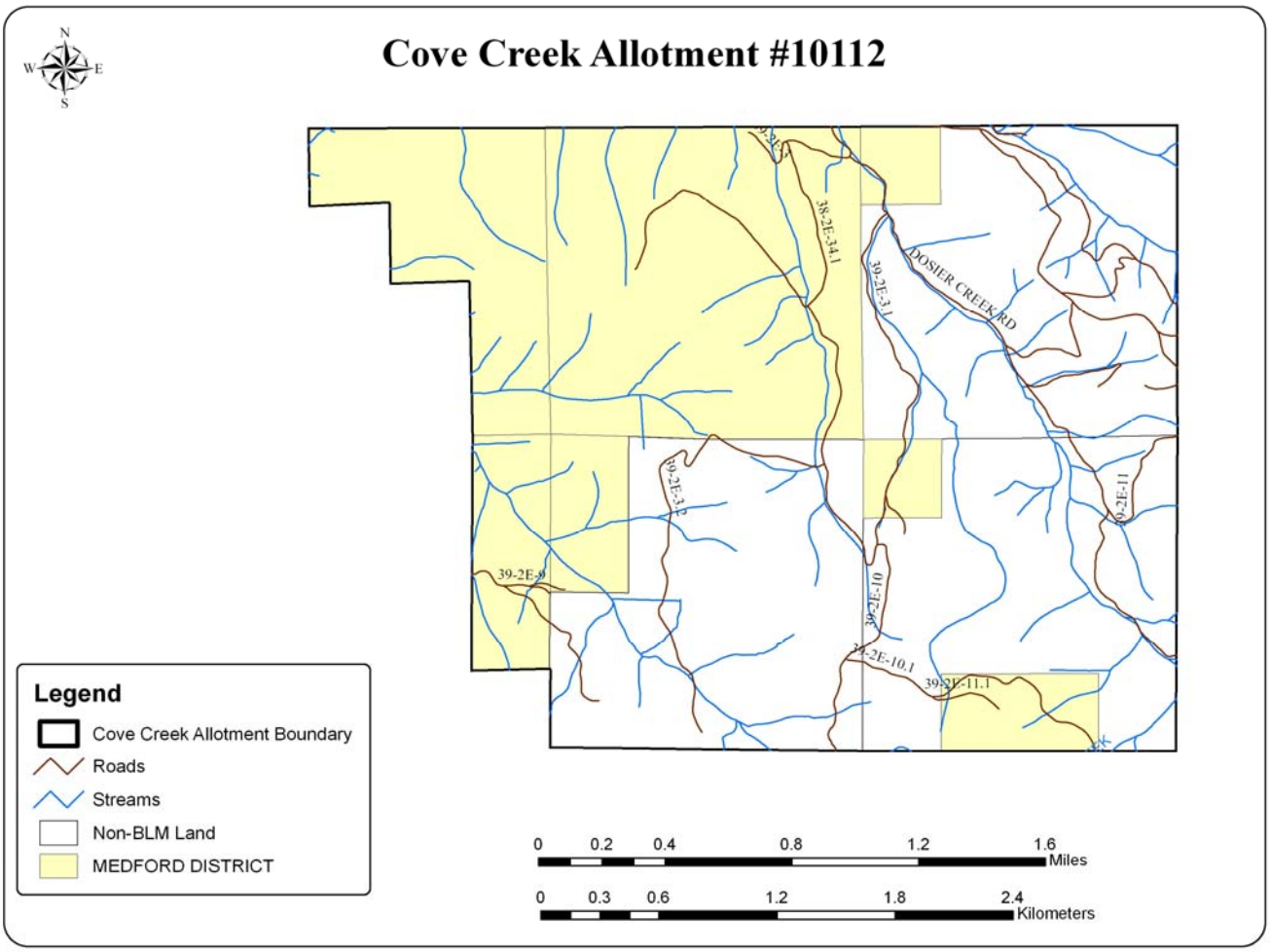


Figure 1. *Actual Use Data*

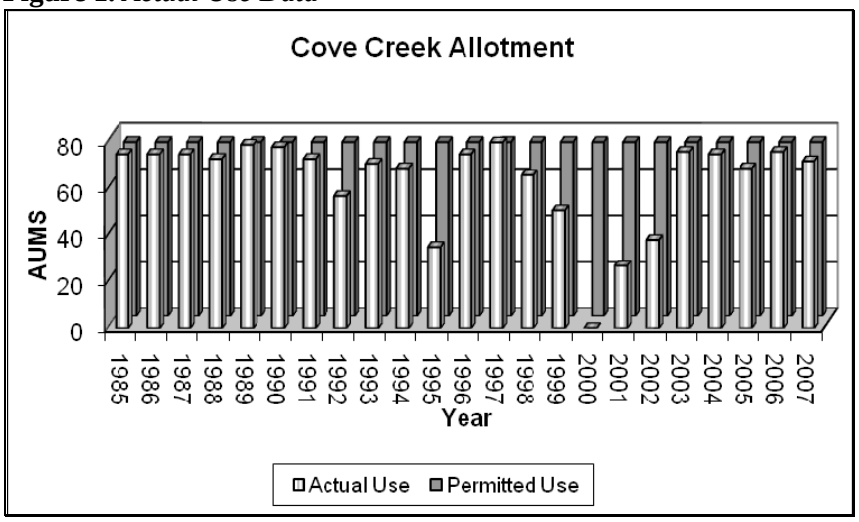
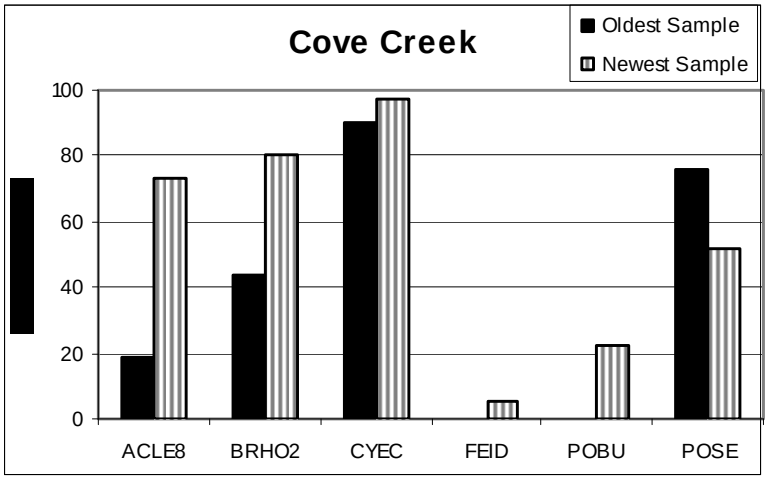


Figure 2. *The collection of trend data using the Nested Frequency Method began on the Cove Creek Allotment in 1990 with subsequent data collected in 1995, 2001, and 2005.*



Species showing significant change include three non-native, invasive, grasses *Bromus hordeaceus* (soft brome) increased 36%, *Cynosurus echinatus* (bristly dogstail) increased 7%, *Poa bulbosa* (bulbous bluegrass) increased 22%. Three native, perennial, bunchgrasses increased *Festuca idahoensis* (Idaho fescue) increased 5%, *Poa secunda* (sandberg bluegrass) decreased 24%, and *Achnatherum lemmonii* (Lemon's needlegrass) increased 54%.

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 Cove Creek Allotment 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) was conducted July 6, 2008 at a semi-wet meadow.

Botany Surveys: Botany Surveys were conducted on the Cove Creek Allotments 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 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.

Proper Functioning Condition (PFC): 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.

Photo Point Monitoring: The BLM established photo point sites to monitor riparian vegetation conditions throughout the 2003 and 2004 grazing seasons. Some of the photo points include a small (1 meter square) exclosure cage designed specifically to show differences in vegetation condition between grazed and ungrazed areas.

Water Quality: BLM collected summer stream temperature data on Dosier Creek and Cove Creek in 1999 as part of a coordinated effort with DEQ for the Bear Creek TMDL.

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 Field Assessment was conducted on the allotment at a semi-wet meadow ecological site in July of 2008. Looking only at indicators pertaining to Soil/Site Stability revealed that all 10 indicators (100%) were rated none to slight and zero were rated, slight to moderate, moderate, moderate to extreme, or an extreme to total departure (Table 8 p.19).

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.

Functioning Condition Assessments (PFC) were conducted in the riparian areas of the allotment in 2007. The PFC Assessment refers to a consistent approach that takes into consideration attributes and processes of hydrology, vegetation, and soil erosion/deposition to assess the condition of riparian areas. The Cove Creek Allotment has an estimated 22 miles of stream channels on private and federal lands with 8.1 miles on BLM land (GIS data). Of these, 4.5 miles have been assessed for PFC. The surveys indicate that 3.0 stream miles (67%) within the allotment were found to be Functional at Risk with an upward trend (improving). The surveys indicate .5 stream miles (10%) as Functional at Risk with a downward trend (degrading). The surveys rated 0.8 miles (17%) of channels as Non-Functional. Streams classified as Proper Functioning made up 0.3 miles (6%).

According to the BLM stream survey, actively eroding banks and fine sediment percentages were high in the surveyed reaches of the Cove Creek allotment. Within the allotment, 1.8 stream miles on BLM land (24%) were found to have actively eroding banks with the level of erosion greater than 30%. Surveys also showed that 2.6 miles (36%) of the stream reaches had fine sediment levels greater than 30%; this level is above the “desirable” benchmark set by Oregon Dept. of Fish and Wildlife. A one meter exclosure cage was established near a spring in T39 R2E Section 3 to monitor vegetation condition. Photos were taken throughout the 2003 and 2004 grazing seasons to monitor riparian vegetation and soil conditions inside and outside the exclosure. Trampling, soil disturbance, and stubble heights below recommended (6-8”) were observed outside the exclosure and throughout the spring area. In 2007, extensive trampling, soil disturbance, and stubble heights below 6” were observed during stream surveys of riparian areas, wet meadows and springs in T39 R2E Section 3 and Section 11. During field visits in July and November 2008, hydrology staff documented excessive grazing impacts at these locations and the presence of cows in Section 11 five months beyond the permitted season of use.

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). 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). These conditions also support an intact nutrient and energy cycle (see indicators 13, 14, 15, and 17). The plant communities on this allotment are diverse and support a variety of animal species (indicator 12) (Indicator Summary pg.19 Table8).

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 the energy, nutrient, and hydrologic cycles are balanced and utilization is low enough to not disrupt these cycles. 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. Annual grassland furthermore often accumulates a layer of thatch where decomposition and nutrient cycling are different than in native plant communities (Ehrenfeld 2003; D'Antonio and Vitousek 1992). 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.

Standard 4 Water Quality

Surface water and groundwater quality, influenced by agency actions, complies with the State water quality standards.

The 1996 amendments to the Safe Drinking Water Act (SDWA) mandated that state agencies conduct source water assessments for every public water system. A federally-regulated public water system provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average or at least 25 people for at least 60 days a year. The states must delineate the groundwater and surface water source areas which supply public water systems, inventory each of those areas to determine potential sources of contamination, and determine the most susceptible areas at risk for contamination.

The allotment falls within the source water areas for the cities of Gold Hill, Rogue River, and Grants Pass. The surface water source for these four public water systems is the Rogue River. Cove Creek is a tributary to Walker Creek, a tributary to Bear Creek. Bear Creek is a tributary to the Rogue River. The allotment is located over 38 miles upstream from the closest public water system intake.

A source water assessment is in progress for the Medford Water Commission and assessments have been completed by the DEQ and the Oregon Department of Human Services for the cities of Gold Hill, Rogue River, and Grants Pass. The completed assessments include an inventory of potential contaminant sources within the source water areas. Grazing animals were identified as a potential contaminant source for the Gold Hill, Rogue River, and Grants Pass drinking water protection areas. No other potential contaminant sources that could occur within the allotment were identified in the state source water assessments.

The Oregon Environmental Quality Commission has adopted numeric and narrative water quality standards to protect designated beneficial uses. In practice, water quality standards have been set at a level to protect the most sensitive uses. Cold-water aquatic life such as salmon and trout are the most sensitive beneficial uses in Bear Creek and its tributaries (ODEQ 2004:5). 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. DEQ's 2004/2006 303(d) list is the most recent listing of these streams (ODEQ 2006a).

The BLM is recognized by Oregon DEQ as a Designated Management Agency for implementing the Clean Water Act on BLM-administered lands in Oregon. The BLM and DEQ have a Memorandum of Agreement (MOA) that defines the process by which the BLM will cooperatively meet State and Federal water quality rules and regulations. In accordance with the MOA, the BLM in cooperation with the Forest Service, DEQ, and the Environmental Protection Agency is implementing the *Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters* (USDA and USDI 1999). Under the Protocol, the BLM will protect and maintain water quality where standards are met or surpassed, and restore water quality limited waterbodies within their jurisdiction to conditions that meet or surpass standards for designated beneficial uses. The BLM would also adhere to the State Antidegradation Policy (OAR 2005; 340-041-0004) under any proposed actions. The DEQ has determined the Total Maximum Daily Load (TMDL) for Upper Bear Creek. A water quality restoration plan (WQRP) for BLM-administered lands in the Upper Bear Creek Analysis Area (USDI 2008) was prepared by the BLM and approved by the DEQ. Recovery goals focus on protecting areas where water quality meets standards and avoiding future impairments of these areas, and restoring areas that do not currently meet water quality standards. Necessary federal and state permits would be obtained for any proposed instream

work.

There are no 303(d) listed streams within the Cove Creek Allotment. However, Cove Creek is a tributary to Walker Creek, a stream listed for exceeding the 55.0°F 7-day statistic for spawning salmonids during October 1-May 31. Walker Creek remains a category 4A stream, water quality limited, TMDL approved. BLM collected summer stream temperature data on Dosier Creek, a tributary to Cove Creek, in 1999 as part of a coordinated effort with DEQ for the Bear Creek TMDL. The 7-day statistic for Dosier Creek of 63.7°F at the section 34/3 border did not exceed either the 1996 or the 2004 temperature criteria. However, the proximity of this single year statistic to the temperature criteria warrants acknowledgement. Stream temperature and sedimentation can be affected by grazing.

The *Water Quality Restoration Plan for the Upper Bear Creek Analysis Area* (USDI 2008:22) identified several nonpoint source factors that may result in increased thermal loads including: near-stream vegetation disturbance/removal, channel modifications and widening, dams, diversions, and irrigation districts, and hydromodification–water rights.

The *Water Quality Restoration Plan for the Upper Bear Creek Analysis Area* (USDI 2008:25) identifies percent-effective shade targets for major perennial and fish-bearing streams on BLM-administered lands (Table 1). Streams are considered recovered where current shade achieves the target shade or is 80 percent or greater. Dosier Creek is considered recovered (Table 1). Current shade is less than the target on BLM-administered lands for Cove Creek (Table 1).

Table 1. *Percent-Effective Shade Targets for BLM-Administered Lands in the Cove Creek Allotment (USDI 2008)*

Stream Name	Current Shade[1] (%)	Target Shade[1] (%)	Years to Recovery
Cove Creek	70	91	64
Dosier Creek	84	97	0

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.

The *Water Quality Restoration Plan for the Upper Bear Creek Analysis Area* (USDI 2008:23) identifies the effect of channel morphology on stream temperature. Wide channels tend to have lower levels of shade due to simple geometric relationships between shade producing vegetation and the angle of the sun. Channel widening is often related to degraded riparian conditions that allow increased streambank erosion and sedimentation of the streambed. Natural erosion processes occurring in the Upper Bear Creek watershed such as landslides, surface erosion, and flood events contribute to increased sedimentation (USDI 2000:80). Sediment sources resulting from human activities include roads; logging (tractor skid trails, yarding corridors, and landings); concentrated livestock grazing in riparian zones; residential clearing of riparian zones; irrigation ditch blowouts; and poor irrigation practices (USDI 2000:80).

Sedimentation associated with channel erosion is ongoing in some portions of the allotment. During BLM stream surveys (USDI 2007), the tendency for streambank failure was evaluated with a "slump potential" rating (Table 2). Cove Creek has a high number of slumps present. In general, channel stability on BLM-managed lands is expected to improve as Riparian Reserves mature and additional structural material enters the channel area. BLM stream surveys conducted in 2007 in the analysis area (USDI 2007) identify scattered locations in T39S, R2E, Sections 03 and 11 where livestock grazing is contributing to stream sedimentation through trampling of streambanks and springs. In November and December 2008, cows were documented in the riparian areas on private lands within the allotment. The BLM land in the adjacent section (11) is not fenced out. As a result, the riparian areas, wetlands, and springs in Section 11 were heavily over-grazed and hoof-churned during 2008 when

cows were on the allotment five months more than permitted.

Table 2. *Slump Potential Ratings and Slump Presence on BLM-Administered Lands for Stream Reaches Surveyed by BLM (USDI 2008)*

Analysis Area	Stream Miles Surveyed for Slump Presence and Potential	Slump Potential Ratings			Number of Stream Reaches with Slumps Present
		Low (% of miles surveyed)	Medium (% of miles surveyed)	High (% of miles surveyed)	
Dosier Creek	.31		100%		none
Cove Creek	7.8	6%	40%	54%	11

Water withdrawals have the potential to greatly impact surface water temperatures within the Bear Creek Watershed (ODEQ 2007a). There are numerous diversions from Dosier Creek and the tributaries to Cove Creek within the allotment area. There are three authorized diversions within the allotment on BLM land. Oregon Water Resources Department records indicate a point of diversion in section 3 NE ¼ NE ¼ for domestic and livestock use. BLM has two water rights to store water in NW ¼ NW ¼ and SE ¼ SW ¼ of Section 11 for livestock, wildlife, fire suppression, and road operations. The management of water withdrawals is within the jurisdiction of the Oregon Water Resources Department and as such the BLM has no authority in this area.

Riparian Reserves establish protection for all fish-bearing streams as well as nonfish-bearing perennial and intermittent streams, wetlands, lakes, ponds, and unstable areas. Riparian Reserves are adequate to maintain riparian conditions necessary to protect stream shade and restore water temperature over time (USDA and USDI 2005). Over the past 10 years, road construction has declined and road decommissioning and upgrading has increased. Implementation of best management practices during road and logging operations have reduced impacts on water quality. Water quality on federal lands is on an upward trend with reductions in summer stream temperatures and sediment input.

Management measures used to limit the presence of livestock in stream channels or riparian zones in order to reduce sedimentation (USDI 2006a) will also minimize the amount of bacterial contamination in surface water from BLM-managed lands.

Current conditions resulting from past and present actions are summarized as follows. Mass wasting processes such as landslides and debris torrents continue to be the dominant sediment sources in the allotment. Surface erosion from existing roads on all lands contributes to low levels of sediment input primarily at road-stream crossings and where fill slopes closely parallel streams. Streambank trampling from livestock grazing continues to contribute sediment to streams.

Livestock access and concentration in streams or riparian zones continues to allow bacterial contamination in surface water from BLM-managed lands in some locations within the allotment.

Stream temperatures are on an upward trend (decreasing) on federal land as previously harvested riparian vegetation recovers. However, roads built in riparian areas and livestock grazing that damages shade-producing vegetation in riparian areas will continue to contribute to temperature increases. On non-federal lands, near-stream vegetation disturbance/removal and water withdrawals continue to adversely affect stream temperatures (ODEQ 2004).

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 wildlife:

The diverse plant communities that support wildlife in the allotment are influenced by two major ecoregions that converge in the southern Rogue Valley, the Cascade and Klamath Mountains. The Cascade Mountains support extensive and productive coniferous forests. While the Klamath Mountains are not as productive because of lengthy summer droughts, they remained unglaciated after the Pleistocene epoch and served as a refuge for many plant and animal species. The Klamath Mountains contain some of the highest biodiversity and number of endemic species in North America. Table 3 below lists some of the representative plant communities associated with two sub-ecoregions (Thorson et al., 2003) encompassing the allotment.

Table 3. *Plant communities in the Cove Creek allotment*

Ecoregion	Sub-Ecoregion	Representative Plant Communities
Cascade Mountains	South Cascades	Mixed Douglas-fir and Ponderosa Pine Forest; Mixed Fir and Hemlock Forest; Subapline Meadows at Higher Elevations
Klamath Mountains	Oak Savanna Foothills	Dry Oak woodlands; Pine/Fir/Oak Woodlands; Grassland Savanna; Willow and Cottonwood Riparian Areas.

Grazing occurs throughout all of the plant communities found in the Cove Creek Allotment. The impacts of grazing in the mixed-conifer communities are most notable in the meadows and riparian areas that are interspersed throughout the more dominant conifer matrix. Grazing impacts in the grassland savanna areas are more widespread due to the abundant grasses found in this zone; but, as in the other communities, grazing tends to be concentrated in the meadows and riparian areas.

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.

Special and unique habitat features that support various wildlife species occur within the Cove Creek Allotment. These habitats include seeps and springs, meadows and snags. (USDI 1995). Special Status species that are known or suspected to occur in the allotment are listed in Table 4.

Table 4. *Special Status Species (Terrestrial Wildlife)*

Species	**Status**
northern spotted owl (*Strix occidentalis caurina*)	FT
Lewis' woodpecker (*Melanerpes lewis*)	BS
pallid bat (*Antrozous pallidus*)	BS
fringed myotis (*Myotis thysanodes*)	BS
northwestern pond turtle (*Actinemys marmorata marmorata*)	BS
foothill yellow-legged frog (*Rana boylii*)	BS
coronis fritallary (*Speyeria coronis coronis*)	BS
mardon skipper (*Polites mardon*)	BS, FC
Siskiyou short-horned grasshopper (*Chloealtis aspasma*)	BS
Franklin's bumblebee (*Bombus franklini*)	BS

BS - Bureau Sensitive
FT - Federal Threatened
FC – Federal Candidate

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 5 displays those species that are known or likely to present on the allotment.

Table 5. *Bird Species of Conservation Concern*

Species	**Species Status**
black-throated gray warbler (*Dendroica nigrescens*)	BCC
flammulated owl (*Otus flammeolus*)	BCC
golden eagle (*Aquila chrysaetos*)	BCC
Lewis' woodpecker (*Melanerpes lewis*)	BCC
olive-sided flycatcher (*Contopus cooperi*)	BCC
rufous hummingbird (*Selasphorus rufus*)	BCC
mourning dove (*Zenaida macroura*)	GBBDC
band-tailed pigeon (*Columba fasciata*)	GBBDC

BCC – Birds of Conservation Concern
GBBDC – Game Birds Below Desired Condition

Wildlife Species Not Negatively Affected By Grazing

Some of the special status species found in the allotment are not affected by grazing. The suite of species that would not be affected or affected only to a negligible degree includes the following: **golden eagle**, **flammulated owl**, **Lewis's woodpecker**, **black-throated gray warbler**, **olive-sided flycatcher**, **mourning dove**, **pallid bat**, **fringed myotis** and **northern spotted owl**. Grazing has little or no impacts on these species because it does not physically reduce their numbers nor does it reduce feeding, breeding and sheltering opportunities. These species are primarily associated with the mixed-conifer communities except for Lewis's woodpecker which is more closely associated with the oak woodland communities.

There is one know location for **northern spotted owls** within the Cove Creek allotment but it was not determined if the pair were nesting. Approximately 35% of this allotment contains nesting, roosting and foraging habitat for this species. Northern spotted owls are unlikely to be affected by the current livestock grazing because their preferred habitat is dense forest where livestock seldom forage.

Wildlife Species That May Be Affected By Grazing

Some species of special interest are susceptible to the physical aspects of grazing, e.g., trampling, rubbing, and water quality degradation, while other species are sensitive to the removal of forage that is required for feeding or breeding.

The **foothill yellow-legged frog** depends on aquatic environments for their entire life cycle. Foothill yellow-legged frogs are associated with low gradient streams. This species is impacted by issues of degraded water quality and habitat. Habitat degradation caused by cattle occurs through streambank trampling; wading in shallow ponds, springs, and streams; and defecation/urination in springs and seeps. Foothill yellow-legged frogs have been documented in the Cove Creek drainage and suitable habitat exists in this allotment.

The **northwestern pond turtle** is known to occur at several locations adjacent to the Cove Creek allotment and potential habitat occurs within the allotment. Pond turtles inhabit ponds, marshes, and slow moving portions of creeks and rivers, which have rocky or muddy bottoms, but must leave the water to dig terrestrial nests and lay their eggs (Brown 1985). These turtles often overwinter in upland settings and have been known to travel up to 500 meters to find a site. Both of these activities are impacted by heavy grazing, and post-holing by livestock.

Livestock grazing impacts the **Mardon skipper** (butterfly) through direct trampling of eggs, larvae, pupae, and adults (Black et al. 2002). Larval and adult nectaring food sources are destroyed by consumption and trampling by livestock. The native bunch grasses, essential to Mardon skippers, regenerate by seeds that are likely consumed during grazing. Soil disturbance and grazing can facilitate the invasion of non-native species (Xerces 2007). **Coronis fritiallary**, another butterfly, is likely affected by similar impacts of grazing. Coronis fritiallary are, to a great degree, reliant on various species of Viola (violets) for several of its life stages. Although no surveys have been conducted for these species in the allotment, suitable habitat occurs and it's within the range of both species.

Rufous hummingbirds are affected by grazing due to the removal of plants and degradation of shrubs used for nectaring.

The **Siskiyou short-horned grasshopper** is known to occur within 3 miles from this allotment and suitable habitat does exist here. It's thought to be dependent on Elderberry for the egg-laying phase of its life cycle, but has been located in areas without elderberry. Suitable habitat occurs within the Cove Creek allotment. Cattle have been documented to impact elderberry and other vegetation through browsing and use as rubbing objects. Siskiyou short-horned grasshoppers are actively feeding and reproducing from July through September and are likely to be

impacted by reduction of Elderberry vegetation and by grass and forb resources upon which they depend for food and protective cover. As with the Siskiyou short-horned grasshopper, **band-tailed pigeon** are adversely affected by grazing due to the impact to blue elderberry which is a preferred food for this species during migration.

The **Franklin's bumblebee** was once locally common throughout the Rogue and Klamath Basins in southern Oregon. Now known to only one site confirmed active in 2006 (Thorp 2008), the species is in steep decline. This bee species favors open areas with abundant flowering shrub and forb species and rodent burrows used for nesting. Consumption of such shrubs and forbs, and trampling of suitable nesting sites limits the ability of this species to successfully maintain a population at formerly suitable sites. Although no surveys have been conducted for this species in the allotment, suitable habitat occurs and the allotment is within the range of the Franklin's bumblebee.

Big Game Winter Range Area:

Most of the Cove Creek allotment is within an area designated by the Medford RMP as Big Game Winter Range for **deer and elk**. This designation is meant to identify areas to promote forage, and hiding and thermal cover for deer and elk (USDI BLM, 1995). Grazing has little influence on hiding and thermal cover conditions, but it can affect forage conditions. The effect of grazing in this allotment will have minimal impact to designated Big Game Winter Range; however, heavy grazing during the spring can reduce the availability of high quality forage in the winter because the region's summer droughts encumber regrowth.

High quality forage is important to both deer and elk, especially on winter ranges. Forage conditions are declining in areas inhabited by introduced noxious herbaceous species, such as yellow star thistle, bristly dogstail, and medusa head, these species displace native grasses and herbs which generally provide high quality forage. Also, due primarily to fire suppression, large acreage of important browse species such as wedgeleaf ceanothus have become decadent and are not providing the quality forage that younger plants provide. Proper livestock grazing management can help to avoid negative impacts to native plants and provide quality forage for deer and elk.

Special Status Wildlife Species (Aquatic):

There are no Special Status Species of fish or aquatic fauna within the allotment. Approximately 3.5 miles downstream of the allotment, Walker Creek supports populations of steelhead, a Special Status Species. Coho salmon, a threatened species under the Endangered Species Act, have not been observed in Walker Creek but Walker Creek is considered Coho Critical Habitat (CCH) by the National Marine Fisheries Service for the Southern Oregon/Northern California (SONC) Evolutionary Significant Unit. Emigrant Creek supports populations of coho salmon and steelhead approximately 3.7 miles downstream of the allotment boundary. These habitats are also considered CCH and are designated Essential Fish Habitat (EFH) under the Magnuson Stevenson Fisheries Act.

Although no direct effect to designated fish habitat from grazing has been observed within this allotment, several monitoring sites established by fisheries and BLM hydrology staff have documented areas of post holing and bank erosion in upstream tributary reaches. No studies have been conducted in the mainstream channels to determine if and how much sediment may be contributed to CCH as a result of grazing on this allotment, but it can be reasonably presumed that displaced and mobilized sediment from these disturbed areas is eventually deposited into CCH during high flow events. The majority of sediment generated and stored in upland and tributary reaches would likely only be transported and released into CCH as pulses of elevated turbidity during periods of high stream flow. Since the mainstream channels would be experiencing high turbidities during these same periods from other (including natural) sources, sediment increase to CCH above background levels would not be detectable.

Pebblesnail surveys have not been conducted on this allotment; however, this allotment has a large number of springs suitable for pebblesnail habitat. Survey data shows that Keene Creek pebblesnails (Fluminicola n. sp. 16),

a Strategic Species on the Special Status Species list (2007), occur upstream of this allotment in both the Sampson and Cove 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). All populations of pebblesnail are considered at risk because of their endemism, their sensitivity to habitat disturbance, and their life history trait of only breeding once in a lifetime. Pebblesnails are associated primarily with cold springs and headwaters of streams.

Special Status fungi, lichens, and bryophytes:
The allotment was surveyed for Bureau Sensitive Status lichens and bryophytes in the spring of 2007 and there are no known Special Status nonvascular species in the allotment.

Federally Listed, and Bureau Sensitive Status Vascular Plants:
The allotment was surveyed for Bureau Sensitive Status, and federally listed plants in the spring of 2007. The allotment is outside the range of federally listed plants *(Limnanthes floccosa, Lomatium cookii, and Arabis macdonaldiana*). The entire allotment is within *Fritillaria gentneri* habitat defined by the U.S. Fish and Wildlife Service (USDI Fish and Wildlife Service, 2003) however there are no known occurrences.

Table 6. *Special Status Species (Vascular Plants)*

Species	**Status**	**Occurrences**
rhizome bluegrass (*Poa rhizomata*)	BS	3
twotooth sedge (*Carex Serratodens*)	BS	1

BS - Bureau Sensitive

Livestock generally seek out grasses and grass-like plants (graminoids) to form the bulk of their diet (Holechek et al. 1982). *Poa rhizomata* and *Carex serratodens* are both graminoids. The *Poa rhizomata* populations occur in areas that receive slight-light utilization. The *Carex serratodens* population occurs in wet habitats in areas seldom visited by livestock, and thus remain generally unaffected by grazing. 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 would impact populations.

Noxious Weeds:
The allotment was surveyed for state listed noxious weeds in the spring of 2007. The following species from the Oregon Department of Agriculture Noxious weed list were found.

Table 7. *Noxious weeds*

Species	**Occurrences**
yellow starthistle (*Centaurea solstitalis*)	22
Canada thistle (*Cirsium arvense*)	6
Himalayan blackberry (*Rubus discolor*)	1

Other weeds either not on the noxious weed list for Oregon or not surveyed because of its wide distribution include two occurrences of *Dispacus fullonum* (Fuller's teasel) and *Taeniatherum caput-medusae* (medusahead) on clayey soils within the allotments. In the non-conifer habitats, medusahead and other exotic annual grasses are present in most meadows, and dominant in some areas. 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 continue to spread when left untreated. Field visits to the allotment and BLM

monitoring data in surrounding areas suggests exotic annual grasses are not spreading rapidly under current grazing regimes. However, areas that experience soil and vegetation disturbance within the allotment are at risk for weed colonization. Although no weed treatments have been done in this allotment in recent years, the BLM weed control program uses herbicides, biological control agents, and hand pulling to treat infestations across the landscape as time, budget, and personnel constraints allow.

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 8)

A rangeland health field assessment was completed at a semi-wet meadow ecological site. These ecological site was 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 assessments were completed with an IDT (Interdisciplinary team).

***Location 1*: Semi-wet meadow Summary**

The overall rating for this location is a Slight to Moderate departure from what would be expected for this site. Fifteen indicators (88%) were rated None to Slight, two of the indicators (12%) was rated Moderate to Extreme and none of the indicators were rated Slight to Moderate, Moderate, or Extreme to Total.

Photo 1. Photo taken at the semi-wet meadow ecological site.

Table 8: RHFA location 1 indicator summary

Location 1: semi-wet 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					✓

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Kimberly Hackett: Rangeland Management

12/11/08
Steve Slavik; Rangeland Management

12/11/08
Jeff Stephens: Terrestrial Wildlife

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