UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT OFFICE
ASHLAND RESOURCE AREA

ENVIRONMENTAL ASSESSMENT

For the
CONDE CREEK GRAZING ALLOTMENT

LEASE AUTHORIZATION

(DOI-BLM-OR-M060-2010-0027-EA)

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Location: The Conde Creek Allotment is located to the northeast of Howard Prairie Lake in T. 37 S., R. 2 E., in Section 36; T. 37 S., R. 3 E., in Sections 29, 30, 31, and 32; T. 38 S., R. 2 E., in Sections 1, 2, 11, 12, 13; T. 38 S., R. 3 E., in Sections 4, 5, 6, 7, 8, 9, 15, 16, 17, 18, 20, and 21; W.M.. The allotment encompasses approximately 5,346 acres of BLM administered land.

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CHAPTER 1: PURPOSE AND NEED

INTRODUCTION

The Bureau of Land Management (BLM), Ashland Resource Area, proposes to renew the 10-year grazing lease on the Conde Creek Allotment. This Environmental Assessment (EA) documents the environmental analysis conducted to estimate the site-specific effects on the human environment that may result from the renewal of the Conde Creek Allotment Grazing Lease on BLM-administered lands. The analysis documented in this EA will provide the BLM authorized officer, the Ashland Resource Area Field Manager, with current information to aid in the decision-making process. This EA complies with the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA; 40 CFR Parts 1500-1508) and the Department of the Interior's regulations on Implementation of the National Environmental Policy Act of 1969 (43 CFR part 46).

WHAT IS BLM PROPOSING & WHY

The Medford BLM authorizes livestock grazing as a component of its multiple-use program under the Federal Lands Policy and Management Act of 1976 (FLPMA) (43 U.S.C. § 1701 et seq.). The objectives of the regulations set forth under 43 CFR 4100, Grazing Administration, are to "establish efficient and effective administration of public rangelands" so as to "provide for the sustainability of the western livestock industry and communities dependent upon productive, healthy, public rangelands." *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington* meet the requirements and intent of 43 CFR, Subpart 4180 (Fundamentals of Rangeland Health) and provide a basis for assessing the rangeland condition and trend.

A Rangeland Health Assessment was completed for the Conde Creek Allotment in October of 2009 assessing the conditions and trends of the Conde Creek Grazing Allotment against the Standards for Rangeland Health. This document is available on BLM's Website: http://www.blm.gov/or/districts/medford/plans/inventas.php>. A preliminary determination on the results of the assessment find that three of the five standards, Upland Watershed Function, Ecological processes, Native, T & E, and Locally Important Species were being met. The Standards for Riparian/Wetland Watershed Function, and Water Quality were not being met due in part to current livestock grazing management practices (see also relevant assessments below and Chapter 3, Affected Environment). There is a need to develop grazing management for the Conde Creek Grazing Allotment that is operationally and administratively feasible and addresses the requirements of 43 CFR 4180.1, which is to make progress towards meeting the Standards for Rangeland Health in the Conde Creek Grazing Allotment.

The **project area** is defined as BLM-administered lands within the Conde Creek Grazing Allotment. The **analysis area** is the area used to assess the effects to resources affected by the project proposal. The analysis area varies by resource.

SCOPING AND ISSUES

Scoping is the name for the process used to determine the scope of the environmental analysis to be conducted. It is used early in the NEPA process to identify (1) the issues to be addressed, (2) the depth of the analysis, and (3) potential environmental impacts of the alternatives.

Scoping has occurred for the Conde Creek grazing lease authorization. The notice for Grazing Lease Authorization appeared in the Ashland Resource Area's Schedule of Proposed Actions published in Medford's Messenger (BLM's quarterly newsletter) beginning in the fall 2007 edition. Scoping letters were sent on December 1, 2009 to adjacent landowners and interested organizations and individuals.

An interdisciplinary (ID) team of resource specialists reviewed the proposal and all pertinent information, including public input received, and identified relevant issues to be addressed during the environmental analysis. The following questions frame the issues determined to be relevant to the Conde Creek Grazing Lease Renewal proposal. These issues will be used to identify required terms and conditions to focus the analysis of environmental effects that may result from the implementation of BLM's alternatives. Grazing is proposed at varying levels by alternative in the Conde Creek Grazing Allotment. Under the alternatives being analyzed:

- What is the potential for effects to riparian and wetland areas and associated aquatic habitat?
- What is the potential for effects to water resources?
- What it the potential for effects to fish?
- What is the potential for effects to botanical resources?
- What is the potential for effects to wildlife?
- What is the potential for effects to soils and site productivity?

DECISION FRAMEWORK

This Environmental Assessment will provide the information needed for the authorized officer, the Ashland Resource Area Field Manager, to select an alternative for managing grazing in the Conde Creek Grazing Allotment. The Ashland Resource Area Field Manager must decide which alternative to implement, including the No Action alternative. In choosing an alternative, the Field Manager will consider how well the alternative responds to the identified project needs, along with the relative merits and consequences of each alternative related to the relevant issues.

The forthcoming grazing decision will document the authorized officer's rationale for selecting a course of action based on the effects documented in this EA. The decision will also include a determination whether or not the impacts of the proposed action are significant to the human environment. If the impacts are determined not to result in significant effects beyond those disclosed in the 1995 Final EIS, or otherwise determined to not be significant, a Finding of No Significant Impact (FONSI) can be issued and a decision implemented. If this EA determines that the impacts are significant or not within the level of effects identified in the EISs, then a project specific Environmental Impact Statement (EIS) must be prepared.

CONFORMANCE WITH LAND USE PLANS & LEGAL REQUIREMENTS

The actions proposed and analyzed in this EA were developed to be consistent with, and/or tier to the following documents:

1. *Final EIS/ROD for the Medford District Resource Management Plan* (RMP) (1995)
2. *Final Supplemental Environmental Impact Statement and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (Northwest Forest Plan FSEIS 1994 and ROD 1994)
3. *Final SEIS for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2000), and the ROD and *Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2001)
4. *Medford District Integrated Weed Management Plan Environmental Assessment (1998*) and tiered to the *Northwest Area Noxious Weed Control Program* (EIS 1985).

The alternatives are compliant with the direction given for the management of public lands in the Medford District by the Oregon and California Lands Act of 1937 (O&C Act), Federal Land Policy and Management Act of 1976 (FLPMA), Endangered Species Act (ESA) of 1973, Clean Water Act (as amended 1972, 1981, 1987 and 2002), Safe Drinking Water Act of 1974 (as amended 1986 and 1996), Clean Air Act (as amended 1990), Archaeological Resources Protection Act of 1979, Taylor Grazing Act (TGA) of 1934, Public Rangelands Improvement Act of 1978, and National Environmental Policy Act (NEPA) of 1969.

RELEVANT ASSESSMENTS & PLANS

Conde Creek Allotment Rangeland Health Assessment

The Standards for Rangeland Health provide a basis for assessing and monitoring rangeland conditions and trends. The five standards and associated criteria, listed below, were used to assess the conditions and trends in the Conde Creek Grazing Allotment. Preliminary findings documented in the resulting draft Conde Creek Allotment Rangeland Health Determination provided a basis for formulating the BLM's alternatives for renewing the Conde Creek Grazing Leases. The following is a brief summary of the preliminary findings in the Conde Creek Rangeland Health Determination.

Standard 1: Watershed Function- Uplands

Upland soils exhibit infiltration and permeability rates, moisture storage and stability that are appropriate to soil, climate, and landform.

> *Summary of finding*: Recovery from past fire and associated management activities together with the limited influence of livestock at a landscape scale result in meeting the rangeland health standard for upland watershed functions in the Conde Creek Allotment.

Standard 2: Watershed Function – Riparian/Wetland Areas

Riparian/Wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform.

> *Summary of finding*: Several factors influence the functionality of riparian and wetland areas. Management practices including livestock grazing, timber harvest, road construction, and water withdrawals contribute to elevated fine sediment levels, lack of riparian shade, elevated water temperatures, loss of connectivity, aquatic habitat degradation, and excessively low summer flows prevent the attainment of the rangeland health standard for riparian/wetland areas in the Conde Creek Allotment.
>
> Late season livestock use is the primary management practice that continues to negatively impact perennial riparian areas. Other factors directly related to grazing include the degree of consumption of riparian vegetation, the degree of streambank trampling, and the degree of disturbance in wet areas that all influence water quality and temperature.

Standard 3: Ecological Processes

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

> *Summary of finding*: Although repeat fires from the early 20th century, logging, and influence of livestock on meadow succession indicate a slight to moderate departure from expected values of indicators, percentages of non-native species have not been shown to indicate increases from historic levels or encroachment into places that have not already been colonized.
>
> Livestock grazing is currently not considered a significant contributing factor in the rangeland health decline on these dry meadows and the fir forest and semi-wet meadow sites showed departures of none-to-slight from what is expected at these sites within the Conde Creek Allotment.

Standard 4: Water Quality

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

Summary of finding: Several factors influence water quality in the Conde Creek Allotment. Management practices including livestock grazing, timber harvest, road construction, and water withdrawals contribute to elevated fine sediment levels, lack of riparian shade, elevated water temperatures, loss of connectivity, impacts to water quality, aquatic habitat degradation, and excessively low summer flows.

This allotment is not meeting this standard because livestock are negatively affecting; stream temperature, establishment of riparian vegetation, stabilization of streambanks, sediment regimes, and water quality

Standard 5: Native, Threatened and Endangered, and Locally Important Species

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

Summary of finding: The distribution of noxious weeds within the allotment is primarily limited to roadsides and localized disturbed areas. There are no threatened and endangered (T&E) plant species and three species of District Sensitive vascular plants within the Conde Creek allotment. Existing data (although limited) indicates that livestock are not significantly influencing vegetation as it pertains to the "Native, T&E, and Locally Important Species" rangeland health standard of the Conde Creek Allotment.

For terrestrial wildlife species, 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. The mardon skipper butterfly is a Bureau Sensitive Species and is listed as a Federal Candidate species under the U.S. Endangered Species Act. One reproductive site is known within the allotment. Twelve known sites occur in the Ashland Resource Area. The "primary threat" listed for each of these sites is "grazing." Mechanisms through which livestock may impact this species include trampling, eating food sources, and facilitating invasion of non-native plants (Xerces, 2007, 2010; Hosten 2007c).

For aquatic species, Southern Oregon/Northern California (SONC) coho salmon (*Oncorhynchus kisutch*), a "threatened species" under the Endangered Species Act (ESA) and steelhead, a "sensitive" species on the State Director's Special Status Species List (January 2008), are restricted to the lower 0.6 mile of Soda Creek (approximately 1.5 miles downstream of the allotment boundary) where a falls restricts upstream fish passage. A 12' waterfall restricts all upstream fish passage of the above noted species on Dead Indian Creek, approximately 5.0 miles downstream of the allotment boundary. Populations of Little Butte pebblesnails (*Fluminicola* sp. 38) have been documented in this allotment, in the headwaters of Lost Creek. Grazing negatively effects aquatic mollusks and their habitat by disturbing the soil, removing vegetation that provides shade and habitat for the mollusks, and by trampling the mollusks themselves.

Watershed Analysis (USDA/USDI 1997)

Watershed Analysis is a procedure used to characterize conditions, processes and functions related to human, aquatic, riparian and terrestrial features within a watershed. Watershed analysis is issue driven. Analysis teams of resource specialists identify and describe ecological processes of greatest concern in a particular "fifth field" watershed, and recommend restoration activities and conditions under which other management activities should occur. Watershed analysis is not a decision making process. Rather, watershed analysis provides information and non-binding recommendations for agencies to establish the context for subsequent planning, project development, regulatory compliance and agency decisions (See Federal Guide for Watershed Analysis 1995 p. 1).

The Conde Creek Grazing Allotment falls within the Little Butte Creek Watershed Analysis Area. The watershed analysis focused on the use of existing information available at the time the analysis was conducted, and provides baseline information. Additional information, determined to be necessary for completing an analysis of the Conde Creek Grazing Lease Renewal Proposal, has been collected and is considered along with existing information provided by the 1997 Little Butte Creek Watershed Analysis. Management Objectives and Recommendations provided by the watershed analysis were considered and addressed as they applied to this proposal for renewing the grazing lease for the Conde Creek Allotment.

Water Quality Restoration Plan

The BLM is recognized by Oregon Department of Environmental (DEQ) as a Designated Management Agency for implementing the Clean Water Act on BLM-administered lands in Oregon. The BLM has signed a Memorandum of Agreement (MOA) with the DEQ that defines the process by which the BLM will cooperatively meet State and Federal water quality rules and regulations.

To comply with the BLM-DEQ Memorandum of Agreement, the BLM completed the Water Quality Restoration Plan for the North and South Forks Little Butte Key Watershed. This document describes how the Bureau of Land Management (BLM) will meet Oregon water quality standards for 303(d) listed streams on BLM-administered lands within the North and South Forks Little Butte Creek Key Watershed. The organization of this Water Quality Restoration Plan is designed to be consistent with the DEQ's Rogue Basin Water Quality Management Plan (WQMP) when it is completed, and contains information that will support the Oregon Department of Environmental Quality's (DEQ) development of the Rogue Basin Total Maximum Daily Load (TMDL). A TMDL defines the amount of pollution that can be present in the waterbody without causing water quality standards to be violated. The Rogue Basin TMDLs are posted on DEQs website: http://www.deq.state.or.us/WQ/TMDLs/rogue.htm.

A WQMP is developed to describe a strategy for reducing water pollution to the level of the load allocations and waste load allocations prescribed in the TMDL. The approach is designed to restore the water quality and result in compliance with the water quality standards, thus protecting the designated beneficial uses of waters of the state. Through implementation of the RMP, Aquatic Conservation Strategy, and Best Management Practices (RMP, Appendix D), the alternatives are designed to attain the recovery goals for listed streams on federal lands in the North and South Forks Little Butte Key Watershed. Recovery goals are identified in the *Water Quality Restoration Plan for the North and South Forks Little Butte Key Watershed* (USDI BLM 2006). The alternatives draw upon the passive and active restoration management actions recommended for achieving federal recovery goals to varying degrees. Following the WQRP for the North Fork and South Forks Little Butte Creek Key Watershed assures that BLM's management will not violate the Clean Water Act.

CHAPTER 2. ALTERNATIVES

INTRODUCTION

This chapter describes the No Action Alternative, which would continue the existing lease; two Action Alternatives developed by the Interdisciplinary (ID) Team to achieve objectives identified in the Purpose and Need statement in Chapter 1; and an alternative that defers grazing for 10 years. A No Action alternative, which assumes a continuance of the existing lease, is presented to form a base line for analysis. Lease Terms and Conditions, included as required features of Alternatives 1, 2, and 3, are important for reducing impacts of grazing and considered in the analysis of anticipated environmental impacts.

Common to All Grazing Alternatives

GRAZING MANAGEMENT

It is mandatory under all alternatives that Terms and Conditions would be met by the lessees. If it is determined by the BLM at any time that a lessee is not meeting their required Terms and Conditions, corrective measures would be implemented. Corrective measures would include consulting with the responsible lessee and may include withholding the annual use authorization, temporary or permanent reductions in AUMs or lease cancellation. Failure to maintain range improvements to BLM standards could result in an evaluation for damages and compensation to cover maintenance deficiencies based on non-compliance with lease Terms and Conditions, and other penalties defined in 43 CFR 4170 *Penalties*.

A two week shift (from June 16 to June 1) in season of use when range readiness criteria have been met* may be used when weather conditions allow, at the discretion of the Authorized Officer. The two week shift in season of use which is likely to occur in approximately 5 years of a 10 year lease term ** is intended to reduce impacts to riparian areas from late season grazing.

*Range readiness is generally determined to be when the soil moisture is low enough to prevent impacts from livestock hooves on soils, and the stage where plant growth has progressed enough so that grazing may begin without damage to vegetation.
** According to the National Weather Service (NOAA) data, the Conde Creek Allotment area has had .25 inches or less of precipitation in the month of June in 4 out of the last 8 years with continued but slightly improving drought conditions predicted.

Season of Use Definitions
Season of use, as described here, is a general description that may exhibit yearly variations, used mainly for descriptive purposes in the analysis of grazing impacts. In the Conde Creek allotment, hot season grazing occurs during the summer months when temperatures are high and rainfall is low or non-existent. Season-long grazing occurs where cattle have unrestricted access throughout the entire allotment (except in exclosures) for the duration of the permitted season. Late season grazing, for the purposes of this allotment, occurs generally between September 15 and October 15th, when temperatures have decreased from summer highs.

Protective Exclosure
Under all alternatives an extension of an existing exclosure (BLM project number 750535, Aspen Exclosure) will protect an area inhabited by the mardon skipper from livestock grazing, a species that is a federal candidate for listing under the Endangered Species Act. Under the Bureau Special Status Species Policy (BLM Handbook 6840, 2008) candidate species are to be managed as Sensitive Species. The extension increases the size of the current exclosure from approximately ¼ acre to 2.17 acres in size.

Exchange of Use
Exchange of Use (EOU) agreements may be applied for when a lessee owns or controls lands intermingled with federally managed lands. Exchange of use agreements allow cattle grazing on private lands controlled by the lessee to comingle with cattle being managed by the lessee on federal grazing allotments. Exchange of use can be requested on an annual basis.

Noxious Weed Management
Documented noxious weed populations would continue to be treated as prescribed in the 1995 RMP and *Medford District Integrated Weed Management Plan Environmental Assessment (1998*).

Education and Outreach Measures:
The BLM is striving to more fully integrate all BLM programs and activities into actions which will improve the quality and ecological conditions of lands under the BLM management. To aid in meeting the objective set forth in the *BLM Manual 9015: Integrated Weed Management* (9015.06), it is recommended by the Ashland Resource Area Noxious Weed Specialist that lessees feed livestock certified, weed-free

feed for no fewer than 3 days prior to the livestock turnout date, provided livestock are being moved from privately-owned land to lands within the Conde Creek allotment area.

To provide for cooperative weed management opportunities, the Medford BLM Range program would include noxious weed information with the annual grazing application to ensure lessee's receipt of current information regarding noxious weed species of concern.

Monitoring

As funding and priorities allow, periodic monitoring would be conducted to ensure management objectives are met or moving toward meeting the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington*. The following monitoring strategy would apply to Alternatives 1-3. The BLM currently conducts periodic inventories and observations to measure long-term resource condition changes

Trend

Trend monitoring using BLM protocol (TR 4400-4, 1985) consists of data collection at 2 established Nested Plot Frequency Transect study sites on approximately a 5-year interval. BLM has evaluated current monitoring data and determined trend sites are appropriately located and additional monitoring location(s) would be valuable if funding allows.

Upland Utilization

Areas have been selected for conducting key upland forage species utilization studies. Methods currently used on the Conde Creek allotment are the Key Species Method, and Mapping Use Zones using BLM technical reference *Utilization Studies and Residual Measurements* (Cooperative Extension Service et al. 1999).

Hydrologic/Riparian, Habitat, and Photo Point Surveys

Hydrologic/riparian surveys are conducted using the Ashland Resource Area Stream Survey Protocol. . Location, flow duration, channel classification/morphology data is gathered for streams, wetlands, and other hydrologic features. In addition data is collected in regards to; instream large wood; impact descriptions and restoration opportunities, especially as it relates to livestock, transportation, and vegetation. Properly functioning condition (PFC) is assessed during the surveys. These BLM stream surveys were completed for Lost Creek (1998), Conde Creek (1995), and Soda Creek (1995 and 1998). On BLM lands within the allotment ODFW collected habitat survey data in the Conde, Soda, Deer, and Lost Creek basins in 1991 - 1997. Riparian Photo point monitoring occurs at many sites in this allotment (BLM Ashland Fisheries and Range Photo Monitoring 1997-2008).

Baseline Stream Temperature Monitoring

Seasonal 30-minute interval stream temperature data is collected at four long-term monitoring sites within this allotment using USGS and Oregon DEQ-established methodologies. Additionally, stream temperature data has been collected at two other shorter-term sites. 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.

Stream Channel Cross Sections

Stream cross-section measurements are collected at two monumented sites in this allotment. Measurement methodologies include standard cadastral survey techniques and those outlined in Rosgen (1996). Sites are measured at approximately five-year intervals 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.

Special Status Species - Wildlife

Aquatic Macroinvertebrate Monitoring:
Macroinvertebrate monitoring has been conducted by Aquatic Biology Associates at one site within and two downstream of this allotment using methods that meet or exceed state or EPA protocols for the sampling of benthic macroinvertebrates. Three springs in the Conde Creek Allotment were sampled for aquatic mollusk presence, species data, and livestock impacts (Frest and Johannes 2005, USDI 1999-2006). Livestock grazing was measured by a combination of factors (stubble height, trampling, feces, bank destabilization, and bare ground) and was rated on a scale with the same range, as follows: 1- nil or nearly so; 2- light; 3- moderate; 4-heavy; 5- severe. These are not quantitative measures but attempts to divide a complex range continuum, often multi-faceted in cause, into more or less proportionate segments (Frest and Johannes 2005).

Mardon Skipper:
As funding permits, continue cooperative surveys with Xerces Society using day-count monitoring techniques at known Mardon Skipper habitat in Section 7, Township 38 S., Range 3 E., and throughout the allotment to establishing trend information. At Section 7, a high-population site, an extension of an existing exclosure (BLM project number 750535, Aspen Exclosure) will protect Mardon skipper habitat by excluding grazing activities at that location. Day-counts would be conducted by the Xerces Society to determine if the exclosure enhances population numbers in ungrazed habitat areas. BLMs objective is to reduce impacts that may harm the Mardon skipper or its habitat, causing it to be listed as a Threatened or Endangered species.

Special Status Botanical Species
Ongoing monitoring of Bureau Special Status Species populations that are likely to be affected by livestock grazing would consist of measurements assessing population increase or decrease in geographic size and/or population numbers. In the event of a negative change in population size (decrease), exclosures would be constructed and/or adaptive management practices would be employed to protect SSP and to mitigate for further damage.

Additional Monitoring
The following monitoring strategy would apply to Alternatives 2 and 3. Monitoring would occur at riparian areas of concern; currently evaluated as *Functioning at Risk with a Downward Trend* or *Not Functioning* as well as other riparian areas that are currently evaluated as *Functioning at Risk with an Upward Trend* or *Properly Functioning*. Monitoring sites will be chosen in the field in cooperation with the lessees.

Riparian Utilization
Stubble heights would be measured for conformance with Terms and Conditions at key riparian areas representative of use, in accordance with BLM protocol. The key species for each of these sites would be selected at the same time. Areas representative of use will be selected, not an average for the stream within the allotment (Cowley and Burton 2004).

Riparian Functionality
Streambank alteration would be measured for conformance with Terms and Conditions at key riparian areas in accordance with BLM protocol.

ALTERNATIVE 1 – No Action Alternative (no change)

The No-Action Alternative describes a baseline against which the effects of the action alternatives can be compared. This alternative describes the existing conditions and the continuing trends, given the effects of

other present actions and reasonably foreseeable actions identified for the time periods relevant to the resource issues of concern. The analysis of this No-Action Alternative answers the question: What would occur to the resources of concern, if none of the action alternatives take place?

Grazing Management

Under the No Action Alternative, the grazing leases would be renewed authorizing the same animal unit month (AUM) levels, seasons-of-use, and with the same terms and conditions currently in effect (See Table 2-1). The existing grazing leases for the Conde Creek Allotment authorize 591 active AUMs from June 16 to September 30. Additionally, 352 AUMs are permitted under an Exchange of Use Agreement for a total of 943 AUMs. One AUM is the amount of forage necessary for the sustenance of one cow or its equivalent for a period of one month. Total AUMs represent the number of cow/calf pairs multiplied by the number of months included in the season of use. The AUMs in Table 2-1 reflect the forage that would be used on BLM-administered lands and the approved EOU AUMs coming from private lands within the Conde Creek Allotment.

Table 2-1. No Action Alternative – Conde Creek Allotment Use Summary

Authorization	Use Type	Number of Livestock	Season of Use	AUMs	EOU AUMs	Total AUMs
Lessee 1	Active Lease	135 cattle	06/16-9/30	485		485
Lessee 1	Exchange of Use	100 cattle	06/16-9/30		352	352
Lessee 2	Active Lease	33 cattle	06/16-9/30	116		116
Total		268 Cattle		591		943

Terms and Conditions of Current Leases Applicable to the Conde Creek Allotment

These terms and conditions are specified by the authorized officer (shown on page 1 of each lease) and are intended to assist in achieving management objectives, provide for proper range management, and assist in the orderly administration of the public rangelands.

- Turn-out will be based upon range readiness
- Actual use reports are to be returned within 15 days of the off-date
- Maintenance of assigned range improvements is a requirement of the lease
- Billings are due upon receipt and must be paid prior to turn-out
- Late payment may result in unauthorized use, late fees and/or interest penalty
- BLM approved ear tags are required

Range Improvements & Maintenance

There are currently 18 rangeland improvement projects in the Conde Creek Allotment. Under the No Action Alternative, the BLM would continue to maintain 9 projects, 2 projects would be abandoned, and the lessees would maintain 7 of these projects (See Table 2-5 Range Improvement Projects and Map 2-1).

Maintenance of range improvements would continue under the current maintenance responsibility described in Table 2-5, Alternative 1. Maintenance consists of the timely repair through the input of sufficient labor and materials to keep improvements in usable condition for the purposes intended over the normal expected and extended life span (based on required inputs of new materials or updates to design over time). In the event that repairs would no longer be effective in maintaining the proper function of range improvements, the lessees would notify the BLM to determine replacement needs.

Fence maintenance includes: annual inspection by the lessee to meet BLM standards for functionality (including design and materials), keeping wire taut and properly attached to posts, keeping stays functional, repairing structures; gates, drainage crossings, splicing broken wire, replacing segments of wire when worn out, and any other work necessary to keep fences functional.

Maintenance for springs, pipelines, and troughs, includes: annual inspection, repair or replacement of worn or damaged parts, repair of leaks, removing trash or silt, winterizing the facility, and maintaining wildlife escape ramps.

In the event maintenance performance is not done to meet the BLM standard, the BLM may opt to seek damages for repairs from the lessee responsible and take further punitive actions according to 43 CFR 4170 *Penalties*, which may include withholding the annual use authorization, temporary or permanent reductions in AUMs, or lease cancellation.

ALTERNATIVE 2

Alternative 2 was developed to make progress towards meeting Standard 2: Watershed Function - Riparian/Wetland Areas and Standard 4: Water Quality, as required by 43 CFR 4180.1. Two riparian areas that were identified as not meeting the Rangeland Health Standards will be excluded from grazing. Improvement of livestock watering facilities to facilitate distribution throughout the Conde Creek Allotment and additional terms and conditions of the leases will ensure progress towards meeting the Rangeland Health Standards within the time permitted.

Grazing Management

Under Alternative 2, grazing leases AUM levels and seasons-of-use would not be modified.

Table 2-2. Alternative 2 – Conde Creek Allotment Use Summary

Authorization	Use Type	Number of Livestock	Season of Use	AUMs	EOU AUMs	Total AUMs
Lessee 1	Active Lease	135 cattle	06/16-9/30	485		485
Lessee 1	Exchange of Use	100 cattle	06/16-9/30		352	352
Lessee 2	Active Lease	33 cattle	06/16-9/30	116		116
Total		268 Cattle		591		943

Potential Mitigation Measures

- Two protective exclosures will (In Sec. 7, along Conde Creek and Sec. 31, in the Big Glades area) exclude grazing around two affected riparian areas. The exclosure at Big Glades would have water piped approximately 100 feet into an existing spring box.
- Pump chances that are inaccessible to livestock would be made accessible by pulling the banks back or adding rock where it is possible without affecting the existing stream channels entering or exiting the pump chances. (see table 2-5 and map 2-1).
- Riparian areas determined to have levels of soil disturbance exceeding 20% would be seeded using native seed mixtures. Seeding would be limited by native seed supply and workforce availability.
- An alternate location for the current temporary corral location along Conde Creek in T. 38S. R.3E Section 7 will be constructed along road 38-3E-11 (approximately .2 miles N of current location). This may require cutting trees and adding rock to harden and level the surface to accommodate a 30’x50’ temporary holding pen and allow a truck and trailer to load cattle. Drift fences may be constructed to facilitate herding into the temporary corral.

Terms and Conditions

This alternative would include the following Terms and Conditions. Modifications of the current Terms and Conditions are proposed to ensure progress toward meeting the Standards for Rangeland Health.

- Surcharge livestock will be identified in grazing applications annually by the lessee so that appropriate fees may be included in annual billings prior to turn-out.
- Exchange-of-Use grazing is subject to annual approval by the BLMs Authorized Officer as prescribed in 43 CFR 4130.6-1 *Exchange-of-Use Agreements.* For agreements containing auto-renewal provisions between private parties and the lessee, annual proof of control (receipt of fees paid) must be submitted to the BLM prior to turn-out.
- Turn-out would be based upon range readiness.
- Actual use reports are to be returned within 15 days of off-date.
- Billings are due upon receipt and must be paid prior to turn-out.
- Late payment may result in unauthorized use, late fees and/or interest penalty.
- Lessees are expected to commit continuous, day-long riding and gathering efforts necessary to effectively locate and remove all livestock by the annual authorization period.
- If more than 10 unauthorized cattle are found on the allotment past the take-off date, the following year's take-off date may be adjusted to September 10th, to provide protection from the previous year's late-season unauthorized use due to ineffective removal of livestock. An additional year(s) with the September 10th take off date will be applied if recovery from unauthorized use does not occur.
- Grazing use after the take-off dates may result in unauthorized use fees for forage consumed.
- When an average stubble height of 5 inches is reached and/or there is greater than 20% active, livestock caused bank alteration in the seeps, springs, intermittent and perennial waterways along Conde, Soda and Lost Creeks, or their tributaries, livestock would be moved away from these areas. If any livestock return to these areas they are to be confined and removed from the allotment by the lessee within 3 days. Key areas are dynamic and will change based on utilization patterns.
- BLM approved ear tags may be a requirement of the lease.
- Lessees would conduct active management practices such as herding to promote livestock distribution to reduce grazing use in riparian areas as often as needed to be in compliance.
- Salt/mineral blocks will be placed at hardened locations at least ¼ mile from streams, springs, seeps or other wetlands with riparian vegetation, special status species, and recreation areas and would be rotated monthly to promote livestock distribution and movements into areas where utilization levels are low.
- Lessees are expected to annually commit labor, materials and/or funds necessary to keep improvements fully functional prior to livestock turn-out for the duration of the lease, including during periods of approved nonuse.
- While gathering, livestock will be removed from the Soda Creek meadow fence (Table 2-5 project #750200) in 37S 3E Section 5 within two days.
- To prevent the further spread of nonnative species in the allotment vehicles used for livestock transport and herding (trailers, trucks, all-terrain vehicles [ATVs]), and all motorized vehicles intended for use off of established roadways, must be power-washed prior to entry onto BLM-administered lands. Washing must remove all mud, dirt, excrement, and vegetative debris from vehicles.

Range Improvements & Maintenance

Under Alternative 2 maintenance responsibilities for seven range improvement projects would be transferred to the lessees (Table 2-5, Alternative 2). A new maintenance agreement would be developed after lease renewal has taken place formalizing maintenance responsibilities for each lessee. The requirements for maintenance and associated penalties would be the same as described under Alternative 1.

ALTERNATIVE 3

Alternative 3 was developed to eliminate the impacts to riparian areas occurring as a result of late-season

grazing use, when pressure from cattle on riparian and wetland areas exceeds the rate of vegetation recovery, increases erosion and moves efforts to attain functionality (e.g. efforts made to increase stream shading) away from stated objectives. Under Alternative 3, the EOU animal unit month (AUM) level would be reduced, and the late season of use (beyond August 15) would be eliminated. This reduction in use would be proposed to ensure progress towards meeting Standard 2: Watershed Function - Riparian/Wetland Areas and Standard 4: Water Quality, within one year. Similarly to Alternative 2, terms and conditions would be added to the lease to reduce grazing pressure on riparian and wet areas.

Grazing Management

Under Alternative 3, the Conde Creek Allotment would be grazed for 61 days every year. Grazing leases would be modified to authorize grazing from June 16 to August 15, eliminating a portion of the hot season use (August 16 to September 30). Alternative 3 would permit up to 102 exchange of use AUMs, approximately a 50% reduction in the overall exchange of use described under the No Action and Alternative 2 above. The allotment would be grazed with up to 219 cattle totaling 439 AUMs.

Table 2-3. Alternative 3 – Conde Creek Allotment Use Summary

Authorization	Use Type	Number of Livestock	Season of Use	AUMs	EOU AUMs	Total AUMs
Lessee 1	Active Lease	135 cattle	June 16 - August 15	271		271
Lessee 1	Exchange of Use	51 cattle	June 16 - August 15		102	102
Lessee 2	Active Lease	33 cattle	June 16 - August 15	66		66
Total		219 Cattle		337	102	439

Potential Mitigation Measures

- Two new protective exclosures would be built (In Sec. 7, along Conde Creek and Sec. 31, in the Big Glades area) around two riparian areas. The exclosure at Big Glades would have water piped approximately 100 feet into an existing spring box.
- Pump chances that are inaccessible to livestock would be made accessible by pulling the banks back or adding rock where it is possible to do without affecting the existing stream channels entering or exiting the pump chances. (Table 2-5 and map 2-1)
- Riparian areas determined to have levels of soil disturbance exceeding 20% would be seeded using native seed mixtures. Seeding would be limited by native seed supply and workforce availability.
- An alternate location for the current temporary corral location along Conde Creek in T. 38S. R.3E Section 7 would be constructed along road 38-3E-11 (approximately .2 miles N of current location). This may require cutting trees and adding rock to harden and level the surface to accommodate a 30’x50’ temporary holding pen and allow a truck and trailer to load cattle. Drift fences may be constructed to facilitate herding into the temporary corral.
- A two-year period of rest will be analyzed to determine if it is necessary to suspend grazing because impacted riparian areas would not be able to make progress toward functionality with active grazing without the period proposed for rest.

Terms and Conditions for the Conde Creek Allotment

This alternative would include the following Terms and Conditions. Modifications of the current Terms and Conditions are proposed to ensure progress toward meeting the Standards for Rangeland Health.

- Surcharge livestock will be identified in grazing applications annually by the lessee so that appropriate fees may be included in annual billings prior to turn-out.
- Exchange-of-Use grazing is subject to annual approval by the BLMs Authorized Officer as prescribed in 43 CFR 4130.6-1 *Exchange-of-Use Agreements.* For agreements containing auto-renewal provisions between private parties and the lessee, annual proof of control (receipt of fees paid) must be submitted to the BLM prior to turn-out.

- Turn-out would be based upon range readiness.
- Actual use reports are to be returned within 15 days of off-date.
- Billings are due upon receipt and must be paid prior to turn-out.
- Late payment may result in unauthorized use, late fees and/or interest penalty.
- Grazing use after take-off dates may result in unauthorized use fees for forage consumed.
- When an average stubble height of 5 inches is reached and/or there is greater than 20% active, livestock caused bank alteration in the seeps, springs, intermittent and perennial waterways along Conde, Soda and Lost Creeks, or their tributaries, livestock would be moved away from these areas. If any livestock return to these areas they are to be confined and removed from the allotment by the lessee within 3 days. Key areas are dynamic and will change based on utilization patterns.
- BLM approved ear tags may be a requirement of the lease.
- Lessees would conduct active management practices such as herding to promote livestock distribution to reduce grazing use in riparian areas as often as needed to be in compliance.
- Salt/mineral blocks will be placed at hardened locations at least ¼ mile from streams, springs, seeps or other wetlands with riparian vegetation, special status species, and recreation areas and would be rotated monthly to promote livestock distribution and movements into areas where utilization levels are low.
- Annual maintenance shall bring improvement projects to a fully functional status, according to BLM standards, including design specifications and material standards. Maintenance shall be done prior to livestock turn-out.
- Lessees are expected to commit labor, materials and/or funds necessary to keep improvements fully functional for the duration of the lease, including during periods of approved Nonuse.
- While gathering, livestock will be removed from the Soda Creek meadow fence (Table 2-5 project #750200) in 37S 3E Section 5 within two days.
- To prevent the further spread of nonnative species in the allotment vehicles used for livestock transport and herding (trailers, trucks, all-terrain vehicles [ATVs]), and all motorized vehicles intended for use off of established roadways, must be power-washed prior to entry onto BLM-administered lands. Washing must remove all mud, dirt, excrement, and vegetative debris from vehicles.

Range Improvements & Maintenance

Under Alternative 3 maintenance responsibilities for six range improvement projects would be transferred to the lessees (Table 2-5). A new maintenance agreement would be developed after lease renewal has taken place formalizing maintenance responsibilities for each lessee. The requirements for maintenance and associated penalties would be the same as described under Alternative 1.

ALTERNATIVE 4

This alternative would rest the Conde Creek allotment for a period of 10 years. This alternative serves to speed up the recovery of ecological conditions on BLM-administered lands impacted by past grazing where the potential for recovery exists (i.e. not dominated by invasive annual grasses).

Grazing Management

In accordance with 43 CFR 4110.3-3, active use of the allotment would terminate at the close of the 2011 grazing season. At the end of the 10 years the allotment would be available for grazing and rangeland health conditions would be reevaluated at that time.

Table 2-4. Alternative 4 - Conde Creek Allotment Use Summary

Authorization	Use Type	Number of Livestock	Season of Use	AUMs	EOU AUMs	Total AUMs
Lessee 1	No Lease	0	No grazing 10 years	0		0
Lessee 1	Exchange of Use	0	No grazing 10 years		0	0
Lessee 2	No Lease	0	No grazing 10 years	0		0
Total		0		0	0	0

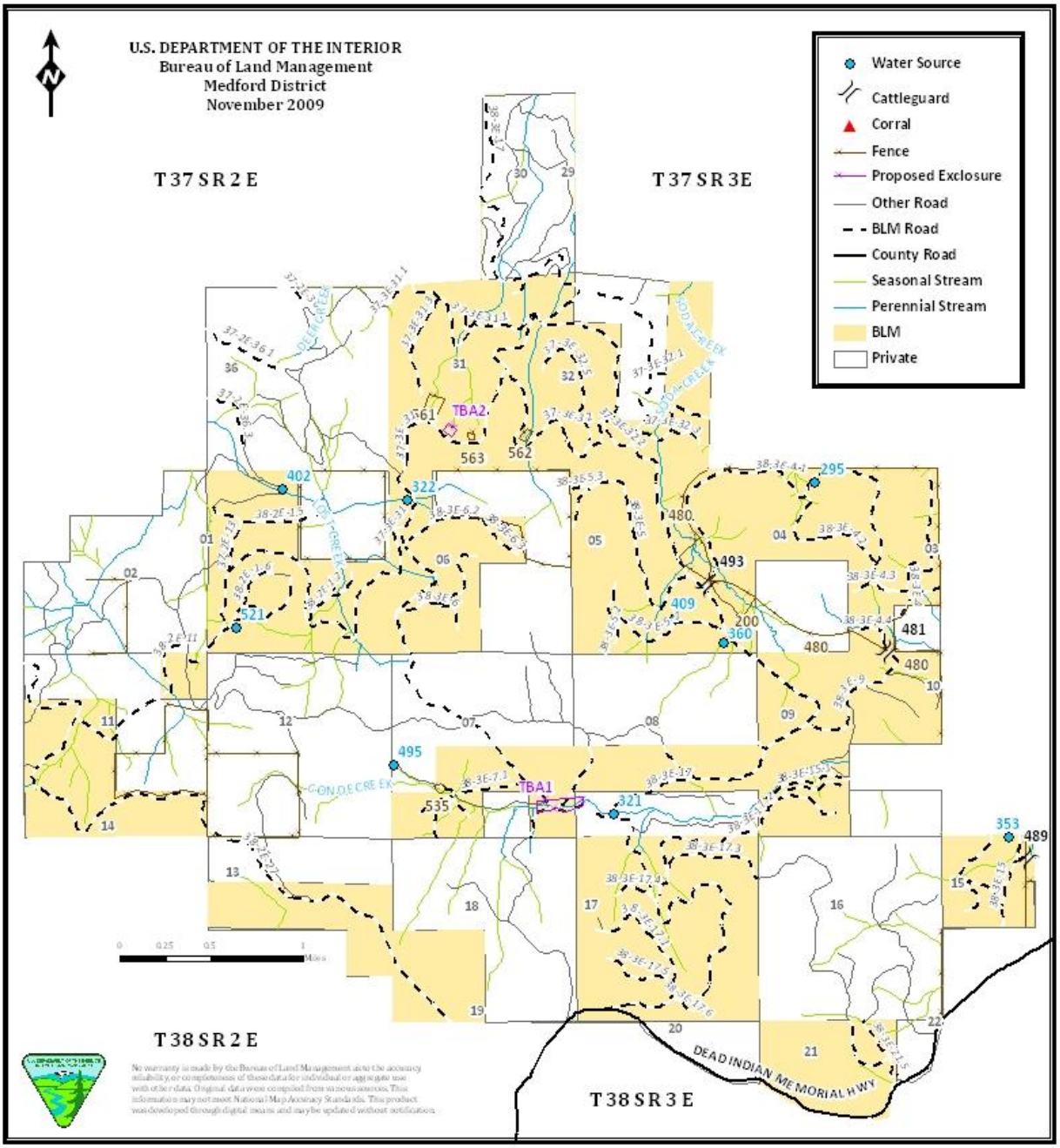
Terms and Conditions

No Terms or Conditions would be required as no lease authorizations to graze would be issued.

Table 2-5. Range Improvement Projects by Maintenance Responsibility by Alternative:

Project Name:	Project Number	Project Type:	Action:	Alt 1:	Alt 2:	Alt 3:	Alt 4:
Soda Creek Meadow Fence	750200	20 Acre Pasture	Maintain	Lessee	Lessee	Lessee	Inactive
Border Spring Headbox	750295	Trough	Abandon/ trough removed	N/A	N/A	N/A	N/A
Conde Fence	750480	Internal fence	Maintain	Lessee	Lessee	Lessee	Inactive
Conde Cattleguard	750481	Internal cattleguard	Maintain	Lessee	Lessee	Lessee	Inactive
Soda Creek Cattleguard	750493	Internal cattleguard	Maintain	Lessee	Lessee	Lessee	Inactive
Brainstorm Spring	750521	Trough	Maintain / nonfunctional	Lessee	Lessee	Lessee	Inactive
Soda Meadow Corral	750526	Wooden Corral	Maintain	Lessee	Lessee	Lessee	Inactive
Dead Indian Pit Reservoir	750353	Reservoir	Abandon / nonfunctional	N/A	N/A	N/A	N/A
Aderondack Reservoir	750360	Reservoir	Maintain	Lessee	Lessee	Lessee	Inactive
Conde Creek Pump Chance 1	750321	Pump Chance	Maintain	BLM	BLM	BLM	Inactive
Conde Creek Pump Chance 2	750322	Pump Chance	Maintain	BLM	BLM	BLM	Inactive
Lost Creek Pump Chance	750402	Pump Chance	Maintain	BLM	BLM	BLM	Inactive
Soda Meadow Pump Chance	750409	Pump Chance	Maintain	BLM	BLM	BLM	Inactive
Conde Creek Check Dams	750495	Riparian	BLM	BLM	BLM	BLM	Inactive
Rainbow Meadow Spr. Exclosure	750561	Riparian Exclosure & Trough	Maintain	BLM	Lessee	Lessee	Inactive
Soda Bill Meadow Excl.	750562	Riparian Exclosure	Maintain	BLM	Lessee	Lessee	Inactive
Big Glade Spring Exclosure	750563	Riparian Exclosure	Maintain	BLM	Lessee	Lessee	Inactive
Aspen Exclosure	750535	Aspen and Mardon Skipper	Maintain	BLM	Lessee	Lessee	Inactive
Deer Creek-Conde Drift Fence & cattleguard	000218	Fence & cattlegurard	Maintain	BLM	Lessee	Lessee	Inactive
Conde Crk. Exclosure	To be assigned (TBA1)	Riparian Exclosure	Maintain	BLM	Lessee	Lessee	Inactive
Big Glade Exclosure 2	To be assigned (TBA2)	Riparian Exclosure & waterline	Maintain	BLM	Lessee	Lessee	Inactive

Map 2-1. Range Improvement Projects



ALTERNATIVE COMPARISON

Table 2-6. Comparison of Alternatives

Comparison Factor	Alternative 1 (No-Action)	Alternative 2	Alternative 3	Alternative 4
Number of Cattle	268	268	219	0
Season-of-Use	06/16 - 9/30	06/16 - 9/30	06/16-08/15	No grazing for 10-years
Active AUMs	591	591	337	0
EOU AUMs	352	352	102	0
Total AUMs	943	943	439	0
Annual # of Days on the Allotment	107	107	61	0
Improvement Responsibility **BLM:** **Lessee:**	 12 7	 6 16	 6 16	 0 0
Terms & Conditions	Same 6 Terms and Conditions as previous lease	10 Additional Terms & Conditions including: • If more than 10 cattle are found on the allotment past the take-off date, the following year's take-off date may be adjusted to September 10th • Livestock will be removed from the Soda Creek meadow fence within two days • Retain average 5" stubble height in key riparian areas • Wash vehicles to prevent weed dispersal	9 Additional Terms & Conditions including: • Livestock will be removed from the Soda Creek meadow fence within two days • Retain average 5" stubble height in key riparian areas • Wash vehicles to prevent weed dispersal	None

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

INTRODUCTION

This chapter forms the scientific and analytical comparison of alternatives and answers the question:

What are the effects of BLM's Alternatives?

The Affected Environment section describes the existing conditions of the project planning area and associated analysis areas, and it sets the environmental baseline for comparing the effects of the alternatives, including the No Action Alternative. The affected environment is described to the level of detail needed to determine the significance of impacts to the environment of implementing Alternatives.

The impact analysis addresses direct, indirect, and cumulative effects on all identified affected resources of the physical, biological, and human environment. The analysis areas for actions proposed under this EA vary by resource. For all resources it includes the project area, which encompasses the areas where actions are proposed for the Conde Creek Lease Renewal.

CONSIDERATION OF CUMULATIVE EFFECTS

The Council on Environmental Quality (CEQ), in guidance issued on June 24, 2005, points out, the "environmental analysis required under NEPA is forward-looking," and review of past actions is required only "to the extent that this review informs agency decision-making regarding the proposed action." The CEQ stated in this guidance that "[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." This is because a description of the current state of the environment inherently includes the effects of past actions. The CEQ guidance specifies that the "CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions." The importance of "past actions" is to set the context for understanding the incremental effects of the alternatives. This context is determined by combining the current conditions with available information on the expected effects of other present and reasonably foreseeable future actions.

The analysis of the effects of other present and reasonably foreseeable actions relevant to the effects of the alternatives is necessary. How each resource analysis uses the information concerning other present and reasonably foreseeable actions is dependent on the geographic scale of concern and attributes considered during each resource analysis. Reasonably foreseeable actions are considered and analyzed as appropriate specific to each affected resource.

Past Silviculture Treatments

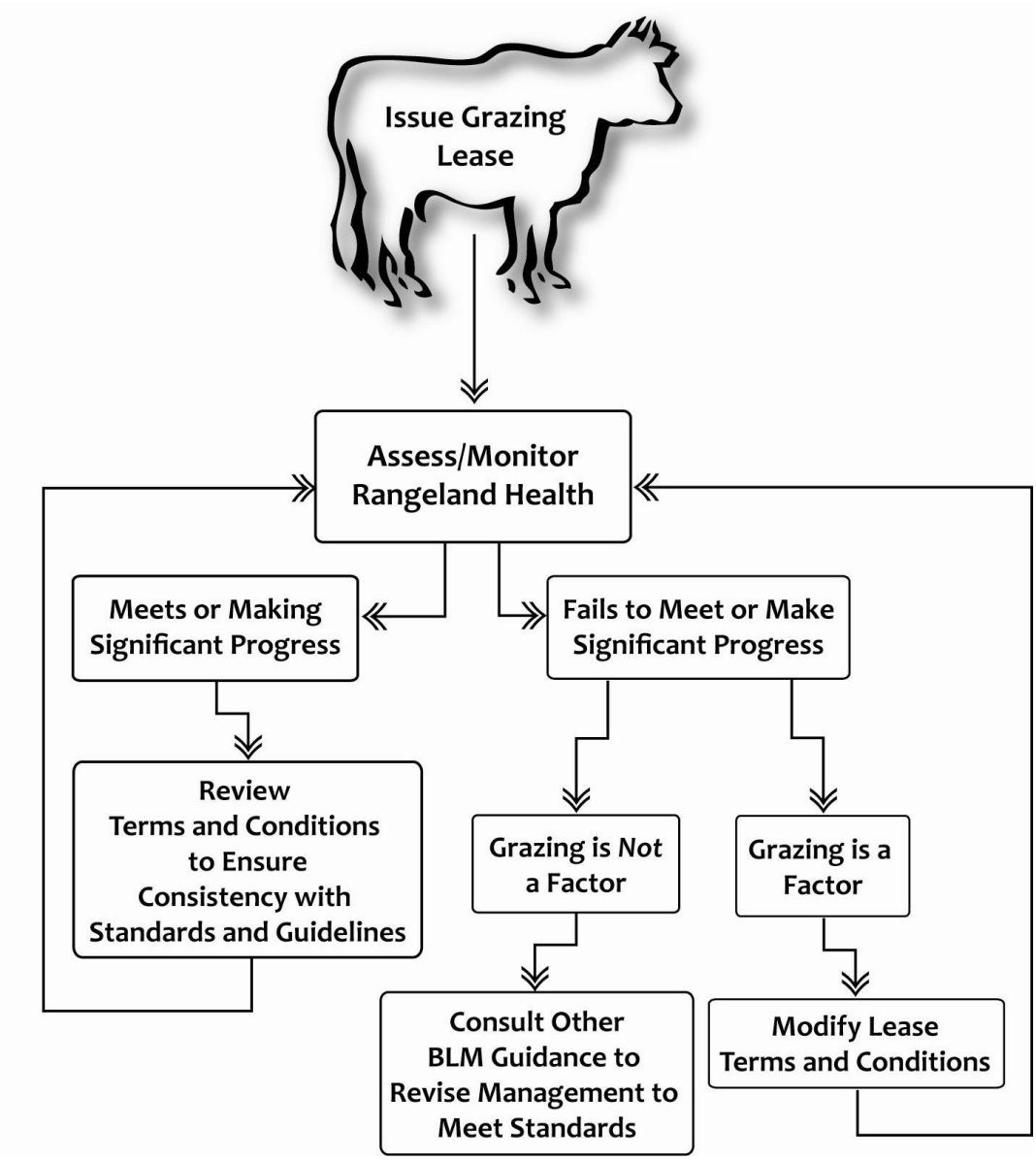
The reforestation units located in the Conde Creek grazing allotment according to Micro*Storms database were commercially harvested with timber removal in late 1960 through 2009. These harvested areas have been planted with seedlings. The vegetation management treatments include: paper mulching/radius scalping and vegetation (brush) cutting. The planted conifer seedlings were treated with combination gopher baiting, trapping and vexar tubes/netting installation. These silviculture treatments were needed for protection of the planted seedlings from rodent damage or browsing from big game animals and grazing cattle in the allotment. There are (93) reforestation units covering 2,435 acres and the TID Canal and PGT Pipeline corridor located in this allotment. The reforestation units are being monitored for seedling survival and growth over time by using the Bureau Stocking Survey Guidelines.

Future Silviculture Treatments

Most of the reforestation units have developed into small pole size stands. The age and stocking level distribution are at minimum to target trees per acre with some overstocked stands. Some units will need a release treatment in the future using precommercial thinning. Silviculture has been active in the reforestation, after harvesting of these units over the past 40 years.

Ashland Resource Area Micro*Storms database records as of 5/20/10, which is based on the Bureau Stocking Survey Guidelines indicates approximately 455 acres are in need of the final precommercial thinning treatment. These areas will be treated over the next four years within our budget constraints. Also, there are approximately 200 acres located in the Conde Creek, Buck Prairie and Burnt Mountain area in which gopher trapping management of rodents is being actively applied each year from June – September. This is required for seedlings survival. These harvest areas (plantations) require gopher trapping and monitoring over a 10 year period for success.

RANGE RESOURCES



AFFECTED ENVIRONMENT

Vegetation in the Conde Creek Allotment is primarily conifer forest (mixed fir and white fir) with areas of hardwood, shrubland, and grasslands. Cattle graze meadows and harvested forest openings within a matrix of varied conifer communities. Plant communities vary in the Conde allotment from mixed-conifer stands of varying ages to open meadows with heavy riparian influences and grass-dominated herbaceous communities. Dry uplands dominated by pine species, incense cedar (*Calocedrus decurrens*) and Manzanita species (*Arctostaphylos* species) are present in some areas, as well.

The conifer-dominated forests, comprised primarily of white fir, ponderosa pine, Douglas fir and incense cedar (*Abies concolor*, *Pinus ponderosa* and *Psuedotsuga menziesii*) generally have low-to-moderate levels of herbaceous species (forbs) present, and moderate-to-high shrub cover, depending both on age of

the stand and the aspect. Dominant species of forbs in mature (mid- to late-seral) conifer stands include prince's pine (*Chimaphila sp*.), inside-out flower (*Vancouveria hexandra*), broadleaf starflower (*Trientalis latifolia*), Scouler's hairbell (*Campanula scouleri*), Pacific trillium (*Trillium ovatum*) and fairy bells (*Disporum hookeri*). Dominant shrubs can include hollyleaved barberry (*Mahonia aquifolium*), common snowberry (*Symphoricarpos albus*) and wild currants (*Ribes* sp.). Younger conifer stands are often dominated by Douglas fir, ponderosa pine and incense cedar, with common snowberry, oceanspray (*Holodiscus discolor*), wild currants and Cascade barberry (*Mahonia nervosa*) often comprising the dominant shrubs. Herbaceous cover in these harvested units is usually grass-dominated (native and non-native).

Riparian areas are a mix of open meadows with riparian influence (ponds, seasonal and perennial wetlands) and drainages that reflect more of a conifer-dominated plant-community (i.e. seasonal and perennial creeks, seeps). The open meadows are primarily shrub and grass-dominated, with grass species including California oatgrass (*Danthonia californica*), Kentucky bluegrass (*Poa pratensis*), Idaho fescue (*Festuca idahoensis*) and bulbous bluegrass (*Poa bulbosa*). Shrub species can include common snowberry, rose spiraea (*Spiraea douglasii*) and wild currant. Scattered conifer species can be found in most meadow areas, primarily on the periphery, and can include Douglas and white firs, ponderosa pine and incense cedar.

Non-native annual and perennial grass species can be found throughout much of Conde allotment, including smooth brome (*Bromus hordeaceous*), cheat grass (*Bromus tectorum*), dogstail (*Cynosurus echinatus*), ripgut brome (*Bromus diandrus*), bulbous bluegrass (*Poa bulbosa*) and medusahead rye (*Taeniatherum caput-medusae*). Broadleaved weeds that occur within the allotment include Himalayan blackberry (*Rubus discolor*), bull thistle (*Cirsium vulgare*), Klamath weed (*Hypericum perforatum*) and Canada thistle (*Cirsium arvense).* Survey records indicate that the non-native grasses can be found primarily in meadows (dry, wet and semi-wet), clearings and roadsides, while the broadleaved species are generally near existing roads.

ENVIRONMENTAL CONSEQUENCES

Methane Emissions - Greenhouse Gas Production Resulting from Livestock Grazing on the Conde Creek Allotment

Livestock grazing results in methane emissions as a result of ruminant digestion. Methane emission rates from cattle vary widely and depend on many variables (Johnson and Johnson 1995; DeRamus et al. 2003). Estimates for grazing cattle typically range from 80 – 101 kilograms of methane per year per animal (EPA, 2009) or 6.7 -9.2 kilograms of methane per month. This analysis will assume a methane emission rate of 8 kilograms of methane per animal unit month (AUM). Assuming that methane has a global warming potential 21 times carbon dioxide (EPA 2009, p. ES-3), each AUM results in 0.168 metric tons of carbon dioxide equivalent. Continuing to lease this area (in this example) for grazing use at the authorized level of 1,000 AUMs would result in methane emissions of 168 metric tons of carbon dioxide equivalent per year. Current U.S. emissions of methane from livestock total approximately 139 million metric tons of carbon dioxide equivalent per year (EPA 2009, p. 6-2); current U.S. emissions of all greenhouse gases total approximately 7 billion metric tons of carbon dioxide equivalent (EPA 2009, p. 2-4); current global emissions of all greenhouse gases total 25 billion metric tons of carbon dioxide equivalent (Denman et al. 2007, p. 513). This emission would represent 0.0001% of the annual U.S. methane emissions from livestock, and 0.000002% of the annual U.S. emissions of all greenhouse gases, and 0.0000007% of the global emissions of all greenhouse gases. Carbon storage as a result of changes in grazing practices is likely to be small and difficult to predict, especially where a rangeland health assessment has determined that the Standards for Rangeland Health Standards and Guidelines for Livestock Grazing Management are

being met. Therefore, this analysis will assume that changes in grazing practices on allotments would not result in any change in total carbon storage. Livestock grazing can affect rangeland carbon levels, through changes in plant community and changes in ecosystem processes, but the effects have been variable and inconsistent among the ecosystems studied (Schuman et al. 2009). Some studies have found that grazing can result in increased carbon storage compared to no grazing, because of increased plant turnover and changes in plant species composition (Follett et al. 2001). Many changes in rangeland carbon from different grazing practices do not result in substantial changes in total ecosystem carbon, but are redistributions of carbon, for example, from above-ground vegetation to root biomass (Derner and Schuman 2007). Overall, changes in rangeland carbon storage as a result of changes in grazing practices are likely to be small and difficult to predict. Therefore, this analysis will assume that changes in grazing practices on this allotment would not result in any change in total carbon storage.

Livestock grazing currently authorized in the Conde Creek grazing lease represents the highest potential methane production of all the alternatives being analyzed in this EA. As the EPA, working in conjunction with the Oregon DEQ, have set project area limits of 25,000 metric tons of Methane production for projects within the Medford District project area, the Conde Creek Allotment falls well below the production limit to be in compliance with the Council for Environmental Quality's directions for Methane production.

Table 3-1. Methane Production (GHGs) From Grazing on the Conde Creek Allotment

Authorization	Use Type	Number of Livestock	AUMs	Tons CO2 Equiv./AUM	Methane Production (metric tons)
Lessee 1	Active Lease	135 cattle	485	0.168	81.48
Lessee 1	Exchange of Use	100 cattle	352	0.168	59.136
Lessee 2	Active Lease	33 cattle	116	0.168	19.488
Total		268 Cattle	943		160.104

Economic Analysis by Alternative

Costs associated with AUM reductions, AUM replacement and Maintenance of Improvements

The cost tables below estimate some of the costs that the lessees would likely experience from implementation of each alternative. This cost analysis assumes that the lessees would lease private pasture land and does not account for costs associated with feeding hay, cost of transporting animals, or cost of additional herding that may be required to be in compliance with additional terms and conditions.

The fees for Active AUMs are calculated at the 2010 Annual Grazing Fee of $1.35 per AUM and replacement AUMs are calculated at the Average Private Grazing Land Lease Rate per AUM for Oregon of $14.60 per AUM (BLM Instruction Memorandum No. 2010-67).

Table 3-2. Cost Comparison of Alternatives

Comparison Factor	Alternative 1 (No-Action)	Alternative 2	Alternative 3	Alternative 4
Number of Cattle	268	268	219	0
Season-of-Use	06/16 - 9/30	06/16 - 9/30	Two years rest then, 06/16-08/15	No grazing for 10-years
Active AUMs	591	591	337	0
EOU AUMs	352	352	102	0
Total AUMs	943	943	439	0
Active AUM Costs ($1.35/AUM)	$797.85	$797.85	Rest Years = $0.00 $454.95 thereafter	$0.00
Replacement AUM Costs	$0	$0	Rest Years = $13,767.80 $4,365.40 thereafter	$13,767.80

The cost analysis associated with maintenance of range improvements accounts for transfer of improvement maintenance to lessees. Maintenance is considered a cost of doing business associated with grazing authorizations and is reflected in the discounted AUM rate as defined in 43 CFR 4130.8, *Fees*. Table 3-3 illustrates an estimate of the average number of hours necessary to complete the annual maintenance on the Conde Creek Allotment by alternative. Annual maintenance costs are calculated at $8.40 per hour.

Table 3-3. Cost of Maintaining Range Improvements by Alternative

Description	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
Maintenance Responsibility	**BLM**	**Lessee**	**BLM**	**Lessee**	**BLM**	**Lessee**	**BLM**	**Lessee**
Number of Improvements	9	7	5	13	5	11	0	0
Annual Maintenance Time (in hours)	-	8.5	-	18	-	14	-	0
Annual Maintenance Costs	-	$71.40	-	$151.20	-	$117.60	-	0

WATER RESOURCES

Characterization

The *Little Butte Creek Watershed Analysis* (USDI and USDA 1997) provides general water resources background information for the allotment. The *Water Quality Restoration Plan for North and South Forks Little Butte Creek Key Watershed* (USDI 2006) provides additional water quality information about the area.

Climate

Mild, wet winters and hot, dry summers characterize the allotment area. During the winter, the moist, westerly flow of air from the Pacific Ocean results in frequent storms of varied intensities. Rain predominates in the lower elevations (generally less than 3,500 feet) with the majority occurring in late fall, winter, and early spring. A mixture of rain and snow occurs between approximately 3,500 and 5,000 feet; this area is referred to as either the rain-on-snow zone or transient snow zone (USDI 2006). The snow

level in this zone fluctuates throughout the winter in the watershed in response to alternating warm and cold fronts. The transient snow zone occupies approximately 80 percent of the allotment, while the rain-dominated precipitation zone and snow-dominated zone combined occupy about 20 percent of the allotment (20 percent of the total).

During the summer months, the allotment area is dominated by the Pacific high pressure system, which results in hot, dry summers. Summer rainstorms occur occasionally and are usually of short duration and limited area coverage. Air temperatures can display wide variations daily, seasonally, and by elevation. The nearest NOAA weather stations with air temperature data are located at Howard Prairie Dam (located south of the allotment area) and the Medford Weather Station (west of the allotment area). The highest average maximum monthly temperatures occur in July and August, where they reach 79.2°F and 79.7°F at the Howard Prairie Dam Station and 90.5°F and 90.8°F at the Medford Station (USDI and USDA 1997).

Analysis Area Description

The Conde Allotment includes 5,346 acres of federal land administered by the Bureau of Land Management (BLM) and 5,573 acres of interspersed privately owned land. This allotment lies within the Little Butte Creek watershed, which drains to the Upper Rogue River sub-basin. This allotment encompasses the headwaters of several drainages: Lost Creek, Deer Creek, Soda Creek, Conde Creek, Dead Indian Creek**,** and a sliver in the Walker Creek drainage**.** Lost, Deer, and Soda Creeks are tributaries to South Fork Little Butte Creek and Conde Creek is a tributary to Dead Indian Creek. Walker Creek is a tributary to Bear Creek.

Table 3-4. Analysis Areas within the Little Butte Creek Watershed Associated with the Conde Allotment

Analysis Area	BLM Acres/Percent within Analysis Area	Non-BLM Acres/ Percent within Analysis Area	BLM Acres within Allotment	Non-BLM Acres within Allotment	Total Acres within Allotment
Upper Dead Indian Creek	3,146 (52%)	2,915 (48%)	494	689	1183
Conde Creek	1,806 (44%)	2,291 (56%)	1772	1686	3460
Lower Dead Indian Creek	518 (13%)	3,540 (87%)	77	0	77
Soda Creek	4,372 (62%)	2,707 (38%)	1930	1252	3182
Deer Creek	1,637 (53%)	1,423 (47%)	18	248	266
Upper Lost Creek (above Lost Lake outlet)	2,045 (48%)	2,234 (52%)	1055	1698	2754
Totals	**13,524 (47%)**	**15,110 (53%)**	**5346**	**5573**	**10919**

The analysis area is 28,634 acres. Within the allotment boundary, there are 19 miles of perennial streams, 31 miles of intermittent streams, and 30 miles of dry draws. Talent Irrigation District (TID) diverts water from Conde and Dead Indian Creeks into Howard Prairie Reservoir. BLM manage 47 percent of the analysis areas associated with the Conde Allotment. Private lands encompass 53 percent of the analysis areas and include land owned by industrial forest companies, residential landowners, and cattle ranches.

Past Actions

Removal of riparian vegetation, and the shade it provides, contributes to elevated stream temperatures. Past human-caused activities in riparian areas such as timber harvest, road construction, residential and agricultural clearing, and livestock grazing, have reduced the amount of riparian vegetation in the analysis areas (USDI 2006). Water withdrawals during the summer also contribute to elevated stream temperatures. Water withdrawals in the analysis areas date back to the late 1800s and are primarily for irrigation.

Past ground-disturbing activities such as road building, logging, land clearing, agriculture, and livestock grazing contributed sediment to streams in the analysis areas (USDI 2006). Agricultural and residential development along the South Fork Little Butte Creek contributed sediment through channel modification, grazing, and land clearing. Livestock grazing has occurred throughout the analysis areas since the mid 1800s (USDI and USDA 1997). Large numbers of cattle and sheep were driven from lower valley pastures to high plateau meadows each summer during the mid 1800s to early 1900s. These large numbers of livestock had an adverse impact on watershed conditions, especially along stream courses and near springs and meadows (USDI and USDA 1997). After 1930, cattle became the primary livestock in the South Fork Little Butte Creek area. By the early 1960s, livestock grazing on public lands had been reduced by 50 percent and there has been an additional 50 percent reduction since then (USDI and USDA 1997). BLM stream surveys conducted in 1995 and 1998 in the analysis areas (USDI 1995 and 1998) identify numerous locations where livestock grazing is contributing to stream sedimentation through trampling of streambanks.

AFFECTED ENVIRONMENT

Water Quality

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 the Rogue Basin (ODEQ 2004). 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 2006b; 340-041-0004) under any proposed actions.

In December 2008, the ODEQ issued the *Rogue River Basin Total Maximum Daily Load (TMDL).* The TMDL addresses temperature and bacteria (*E. coli*) impairments for an area that includes the North and South Forks Little Butte Creek. TMDLs are numerical loadings that are set to limit pollutant levels such that instream water quality standards are met. The BLM is recognized by Oregon DEQ as a Designated Management Agency (DMA) for implementing the Clean Water Act on BLM-administered lands in Oregon. The BLM and ODEQ 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 will develop or revise existing Water Quality Restoration Plans (WQRPs) as described in the MOA, and they will be the TMDL implementation plans for BLM (ODEQ and USDI 2003). A WQRP for BLM-administered lands in the North and South Forks Little Butte Creek Key Watershed (USDI 2006) was prepared by the BLM and approved by the ODEQ. 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.

The Rogue River Basin temperature TMDL identifies five nonpoint source categories that may result in increased thermal loads: near stream vegetation disturbance removal; channel modifications and widening; hydromodification: dams, diversions, and irrigation districts; hydromodification: water rights; and other anthropogenic sources (ODEQ 2008). The TMDL targets system potential effective shade as the surrogate measure to meet the TMDL load allocation for nonpoint sources. Effective shade is defined as the percent reduction of potential daily solar radiation load delivered to the water surface (ODEQ 2008). It can be measured in the field and relates directly to solar loading.

There are five 303(d) listed streams within the Conde Creek Allotment (Table 3-5). These streams ultimately drain into South Fork Little Butte Creek which is also on DEQ's 2004/2006 303(d) list for exceeding the summer temperature, *E. coli* and sedimentation criterion.

Table 3-5. 2004/2006 303(d) Listings in the Analysis Area (ODEQ 2006a)

Stream Segment	303(d) List Date	Listed Parameter	Season	Applicable Rule (at time of listing)	Total Miles Affected	BLM Miles Affected[1]
Conde Creek	2004	Temperature	Year around	OAR 340-041-0028(4)(b)	4.4	1.1
Dead Indian Creek	2004	Temperature	Year around	OAR 340-041-0028(4)(b)	9.6	1.2
Deer Creek	1998	Sedimentation		OAR 340-041-0365(2)(j)	3.2	1.6
Lost Creek	1998	Sedimentation Temperature	Summer	OAR 340-041-0365(2)(j) OAR 340-041-0365(2)(b)(A)	8.4	4.4
Soda Creek	1998	Sedimentation Temperature	Summer	OAR 340-041-0365(2)(j) OAR 340-041-0365(2)(b)(A)	5.6	5.2

1/ USDI 2006

a. Temperature

There are a total of 7.3 stream miles listed for temperature (4.2 miles for summer temperature and 3.1 miles for year around temperature) in the allotment of which 4.4 miles (0.1 miles on Dead Indian Creek, 1.1 miles on Conde Creek, 1.0 miles on Lost Creek and 2.2 miles on Soda Creek) are on BLM-administered lands.

Stream temperature is influenced by riparian vegetation, channel morphology, hydrology, climate, and geographic location. While climate and geographic location are outside of human control, the condition of the riparian area, channel morphology and hydrology can be altered by land use. Human activities that contribute to degraded thermal water quality conditions include: agricultural activity; rural residential developments; water withdrawals; timber harvests; local and forest access roads; (USDI and USDA 1997). Timber harvest, roads, livestock grazing, and OHV use are the primary impacts specific to federally managed lands that have the potential to affect water quality conditions in the allotment. For the Rogue Basin temperature TMDL, there are four nonpoint source factors that may result in increased thermal loads: stream shade, stream channel morphology, flow, and natural sources (ODEQ 2008).
The BLM collected summertime stream temperature data at locations within the South Fork Little Butte Creek watershed between 1994 and 2005 (Table 3-4). The 7-day statistics for all sites listed in Table 3-6 exceed the established 2004 temperature criteria. Perennial streams are designated as core cold-water habitat, therefore the seven-day-average maximum for these streams may not exceed 16.0°C (60.8°F) outside the salmon and steelhead period of spawning use. Prior to the 2004 list, the Oregon DEQ 7-day maximum listing criteria was 17.8°C (64.0°F).

Table 3-6. Temperature summary for selected streams within the allotment

Stream Name	Period of Record[1]	7-day Statistic (ave. for all years)	Range of 7-day Statistic	
			Minimum	Maximum
Dead Indian Creek (above Conde Creek)	94-01, 03-05	74.9	72.5	77.6
Conde Creek (above TID diversion)	94-97, 99-03, 05	72.1	69.2	74.0
Conde Creek @ lower BLM line, Sec. 9 NE1/4 SW1/4	98-01	73.6	73.1	74.8
Lost Creek (above Coon Creek)	95-96, 98-01, 03-05	70.1	64.8	72.8
Soda Creek (near South Fork confluence)	94-01, 03-05	67.7	63.6	70.4
Soda Creek at Section 5/32 line	98	73.3	73.3	73.3

1/ Temperature measured from June to September

The BLM administered lands along the assessed reaches of Conde and Lost Creek meet the target shade (Table 3-7). However, shade values determined for Conde Creek represent the forested reaches along the stream. Field observations of the riparian meadows by BLM hydrology and fisheries staff along Conde Creek indicate a lack of woody shrub species. Soda Creek is currently below the target shade threshold. Of the 4.9 miles assessed for shade on Soda Creek, only the upper 0.8 mile is in need of additional shade. Existing shade on this upper reach is 12 percent and target shade is 80 percent. Current shade on the rest of Soda Creek is equal to the target shade.

Table 3-7. Percent-Effective Shade Targets for BLM-Managed Lands within or near the Allotment Boundaries (ODEQ 2004: Appendix A)

Stream	Tributary to	Stream Miles Assessed on BLM	Current Shade[1] (%)	Target Shade[1] (%)	Additional Shade Needed[2] (%)	Time to Recovery[3] (years)
Conde Creek	Dead Indian Creek	1.1	88	88	0	0
Lost Creek	South Fork Little Butte Creek	4.4	92	92	0	0
Soda Creek	South Fork Little Butte Creek	4.9	78	89	11	30

1/ Current shade and target shade refer to percent-effective shade defined as the percent reduction of solar radiation load delivered to the water surface. Shade values are averages for all BLM stream miles assessed.

2/ Additional shade needed is the increase in percent-effective shade required to meet the target shade.

3/ If current shade is greater than or equal to the target shade, the time to recovery is listed as 0 years. If current shade is less than the target shade, the time to recovery is listed as the number of years needed to reach full system potential percent-effective shade. At a value equal to the target shade or ≥ 80 percent effective shade, a stream is considered recovered and the stream should not be a candidate for active restoration. Additional shade should come from passive management of the riparian area. Any increase over the target shade or 80 percent effective shade is considered a margin of safety. Years to recovery are a weighted average of recovery time for individual stream reaches.

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).

Water withdrawals have the potential to greatly impact surface water temperatures within the Little Butte Creek (USDI 2006). Talent Irrigation District (TID) diverts water from Conde and Dead Indian Creeks into Howard Prairie Reservoir. There are numerous small water developments within the allotment including pump chances and small reservoirs. BLM has water rights to store water at six locations in the allotment 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.

b. Sediment

Sediment is a natural part of a healthy stream system with equilibrium between sediment input, routing, and in-stream storage. Under natural conditions, there is generally a balance between the amount of fine sediment, coarse bed load sediment, and larger elements of instream structure (i.e. wood, boulders). Sedimentation results from either stream channel or upland erosion. Disturbances that change riparian vegetation, increase the rate or amount of overland flow, or destabilize a stream bank may increase the rates of stream bank erosion and result in sedimentation increases (ODEQ 2004). Disturbances in the uplands that remove vegetation, reduce soil stability on slopes, or channel runoff can increase sediment inputs (ODEQ 2004).

Natural erosion processes occurring in the allotment area such as landslides, surface erosion, and flood events contribute to increased sedimentation (USDI and USDA 1997). Sediment sources resulting from human activities include roads; logging (tractor skid trails, yarding corridors, and landings); off-highway vehicle (OHV) trails, and concentrated livestock grazing in riparian zones.

In advance of a TMDL setting specific numeric targets for the planning area, the Oregon statewide narrative criteria found in OAR 340-041-0007(1) (ODEQ 2006b) is the water quality criteria that applies to BLM management.

> *(1) Notwithstanding the water quality standards contained in this Division, the highest and best practicable treatment and/or control of wastes, activities, and flows must in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels, and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels.*

Improper livestock management contributes to sedimentation through bank trampling and the reduction or elimination of riparian vegetation. BLM stream surveys in 1995 (Conde Creek), and 1998 (Lost, Soda, and South Fork Little Butte Creeks) noted many reaches with these types of grazing impacts. Most reaches with grazing impacts were on tributaries to the sediment listed streams; however, mainstem reaches of Conde, Lost, and Soda Creeks were also identified. The BLM allotment acres within the drainage area of sediment listed streams are summarized in Table 3-6.

Table 3-8. Allotment Acres draining to Sediment Listed Streams (BLM-Administered Lands)

Deer Creek and Tributaries	Lost Creek and Tributaries	Soda Creek and Tributaries	South Fork Little Butte Creek and Tributaries
18 ac.	1,055 ac.	1,928 ac.	5,347 ac.

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.

c. Coliform

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

The *Rogue River Basin TMDL* (ODEQ 2008) addresses bacteria (*E. coli*) and acknowledges that the management of federal forest lands does not typically contribute to elevated levels of *E. coli* that are the basis for the listings in the Rogue Basin (ODEQ 2008). The *Water Quality Restoration Plan for BLM-Administered Lands in the North and South Forks Little Butte Creek Key Watershed* (USDI 2006) includes the following recovery goal for *E. coli*: manage livestock to prevent concentrations in streams or riparian zones. There are no *E. coli*-listed streams on BLM-administered lands within the Conde Creek Allotment.

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 surveys in 1995 and 1998 identified negative water quality impacts within the allotment that were grazing related.

Livestock grazing is managed in accordance with the *Standards and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington* (USDI 1997) and the BLM grazing regulations. These documents provide guidance for grazing management activities to ensure water quality will be maintained, protected and/or restored.

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

The Preliminary Determination and Evaluation found that the allotment was “Not Meeting the Standard, current livestock grazing management practices are significant factors” and “Does not conform with Guidelines for Livestock Grazing Management” for Standard 4 Water Quality. (USDI 2007b).

The Guidelines for Livestock Grazing Management (USDI 1997) that are not being achieved for Standard 4 include:

- Adequate cover and plant community structure to promote streambank stability, debris and sediment capture, and floodwater energy dissipation in riparian areas.
- Promote livestock distribution.
- Avoid unwanted or damaging concentrations of livestock on streambanks, in riparian areas and other sensitive areas such as highly erodible soils, unique wildlife habitats and plant communities.
- Protect water quality.
- Animal introductions in riparian and wetland areas must be compatible with the capability of the site, including the system’s hydrologic regime, and contribute to the maintenance and restoration

of properly functioning condition.

Watershed Analysis Recommendations

The allotment falls within the state delineated source water areas for the Medford Water Commission and the cities of Gold Hill, Rogue River, and Grants Pass. The surface water source for these four public water systems is the Rogue River. Little Butte Creek is a tributary to the Rogue River. The allotment is located over 27 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 *Water Quality Restoration Plan for the North and South Forks of Little Butte Creek Key Watershed* (USDI 2006) 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 North and South Forks of Little Butte Creek Key Watershed* (USDI 2006) identifies percent-effective shade targets for major perennial and fish-bearing streams on BLM-administered lands (Table 3-7). Streams are considered recovered where current shade achieves the target shade or is 80 percent or greater. Conde and Lost Creeks are considered recovered (Table 3-7). However, shade values determined for Conde Creek incorporate only the forested reaches along the stream. Field observations of the riparian meadows by BLM hydrology and fisheries staff along Conde Creek document a lack of woody shrub species. Current shade is less than the target on BLM-administered lands for Soda Creek (Table 3-7).

The *Water Quality Restoration Plan for the North and South Forks of Little Butte Creek Key Watershed* (USDI 2006) 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 Little Butte Creek watershed such as landslides, surface erosion, and flood events contribute to increased sedimentation (USDI 2006). 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 and USDA 1997).

Riparian Condition

Riparian areas (streams, wetlands, springs, and seeps) within the allotment were inventoried in 2007 using BLM's *Process for Assessing Proper Functioning Condition,* Technical Reference 1737-9 (USDI 1993). The process used an interdisciplinary evaluation to rate riparian areas as either "Proper Functioning Condition", "Functioning at Risk", or "Nonfunctional". The ratings are defined as:

Proper Functioning Condition (PFC) – Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop ponding

and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation.

Functional—At Risk (FAR) – Riparian-wetland areas that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation. The functional-at risk category is further defined by a trend: upward, downward, or not apparent.

Nonfunctional – Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, etc., as listed above. The absence of certain physical attributes, such as a floodplain where one should exist, is an indicator of nonfunctioning conditions.

PFC assessments were conducted during BLM stream surveys (1995, 1998) in Conde (1995), Lost (1998), and Soda (1995 and 1998). Not all streams within the allotment were surveyed for PFC. Therefore, it should be noted that the data in Table 5 is not inclusive of all stream miles. Only perennial and intermittent streams are assessed for PFC. For all stream miles evaluated within the allotments for PFC, approximately half were characterized as either functioning properly or functioning at risk with an upward trend. On stream reaches identified as functioning at risk with a downward trend or as nonfunctional, surveyors noted that overutilization by cattle may be contributing to destabilization of streambanks and instream sedimentation. The season of use on this allotment (June16 – September 30) allows cattle to access riparian areas from late spring to early fall, allowing no time for plant regrowth or bank stabilization prior to winter rains. Cattle tend to linger and congregate in riparian areas throughout the entire grazing season because of convenience of forage, water, and shade.

Table 3-9. Proper Functioning Condition Assessment for Stream Reaches on BLM-Administered Lands within the Allotment.

Stream Name	Stream Miles Assessed	Proper Functioning Condition (% of assessed miles)	Functional-At Risk, Trend Upward (% of assessed miles)	Functional-At Risk, Trend Not Apparent (% of assessed miles)	Functional-At Risk, Trend Downward (% of assessed miles)	Nonfunctional (% of assessed miles)
Dead Indian Creek	1.0	-	-	-	70	30
Lost Creek	2.0	55	39	-	6	-
Soda Creek	8.1	24	15	13	29	19
Conde Creek	5.5	31	28	8	30	3

Stream surveys (BLM 1995 and 1998) found actively eroding streambanks along 55% of surveyed reaches in Conde Creek, 34% in Soda Creek, and 46% in Dead Indian Creek. Streambank alteration (Cowley and Burton 2004) measurements of 33-49% were observed at two sites along Conde Creek and one site along Soda Creek in 2005. Repeated field observations show active erosion occurring along many of the perennial stream banks as a result of grazing (BLM 2003-2008). Focused cattle use along perennial seeps, springs, and channels in the late summer and early fall result in bank disturbance and streamside vegetation consumption leaving stream channels and banks vulnerable to seasonal high flow events and subsequent sediment increases and channel widening. While this sediment would be mobilized at a time when turbidities are naturally elevated, exposed and disturbed banks would be susceptible to continued degradation throughout the winter months with no time for recovery post-grazing season.

The common observation of siltation in seeps, springs, streams and ponds on the Conde Creek Allotment indicates bank destabilization and sediment transport along watercourses. This has been observed

repeatedly along most perennial water courses in the allotment over the last 10 years by BLM hydrology and fisheries staff.

The Preliminary Determination and Evaluation found that the allotment was "Not Meeting the Standard, current livestock grazing management practices are significant factors" and "Does not conform with Guidelines for Livestock Grazing Management" for Standard 2 Watershed Function—Riparian/Wetland Areas (USDI 2007b).

The Guidelines for Livestock Grazing Management (USDI 1997) that are **not** being achieved for Standard 2 include:

- Adequate cover and plant community structure to promote streambank stability, debris and sediment capture, and floodwater energy dissipation in riparian areas.
- Help prevent the increase and spread of noxious weeds.
- Promote livestock distribution.
- Avoid unwanted or damaging concentrations of livestock on streambanks, in riparian areas and other sensitive areas such as highly erodible soils, unique wildlife habitats and plant communities.
- Protect water quality.
- Animal introductions in riparian and wetland areas must be compatible with the capability of the site, including the system's hydrologic regime, and contribute to the maintenance and restoration of properly functioning condition.

ENVIRONMENTAL CONSEQUENCES

As identified in the WQRP (USDI 2006), stream temperature is affected by both shade and channel modification. For achievement of shade targets, the WQRP recommends allow riparian vegetation to grow up to reach target values.

Streamflow also influences stream temperature. The temperature change produced by a given amount of heat is inversely proportional to the volume of water heated (USDA and USDI 2005). A stream with less flow will heat up faster than a stream with more flow given all other channel and riparian characteristics are equal. Trampling by cattle reduces the porosity in wetlands, springs, and seeps and thus reduces the volume of water that can be contained in the macropores. The indirect effect of this compaction is less water storage capabilities and reduced contribution to late-season streamflows.

Stream temperature is driven by the interaction of many variables. The principal source of heat energy for streams is solar energy striking the stream surface (USDA and USDI 2005). Stream surface shade is dependent on riparian vegetation height, location, and density. The ability of riparian vegetation to shade the stream throughout the day depends on vegetation height and the vegetation position relative to the stream. The woody riparian vegetation and groundcover provide a necessary component of shade for the riparian areas in this allotment, especially in the meadow and wetland areas.

Table 3-10 and Table 3-11 show the potential changes to hydrologic processes and water quality from livestock grazing. The effects to streamflow and water quality will be assessed by alternative.
The potential changes to hydrologic processes and water quality from implementing Alternative 1 (No Action) and Alternative 2 (Adaptive Management) and Alternative 3 (Modified Lease) are summarized below in Table 3-10 and Table 3-11.

Table 3-10. Changes to Hydrologic Processes due to Grazing

Changes to Hydrologic Processes that Affect Streamflow	Changes to Streamflow
Peak Flows	
• *Reduced infiltration due to compaction: increases surface run off, decreases groundwater, and reduces time to reach peak.*	• *Reduced time to hydrograph peak.* • *Increased frequency of peak flows.* • *Increased magnitude of peak flows.*
Low Flows	
• *Decreased summer streamflow due to water withdrawals for livestock.* • *Lowered water table due to riparian vegetation removal.*	• *Decreased magnitude of low flows*

Table 3-11. Affects to Water Quality due to Grazing

Changes to Processes that Affect Water Quality	Changes to Water Quality
• *Riparian vegetation removal: reduced stream shade, increased erosion, and increased channel width-depth ratio.* • *Streambank disturbance: increased erosion and increased channel width-depth ratio.* • *Water quality contamination due to livestock in streams.*	• *Increased temperature.* • *Decreased dissolved oxygen.* • *Increased turbidity/sediment.* • *Increased bacteria/pathogens.*

Grazing animals (greater than five large animals or equivalent per acre) were identified as a potential contaminant source for the Gold Hill, Rogue River, and Grants Pass drinking water protection areas. The assessments recognized that concentrated livestock may contribute to erosion and sedimentation of surface water bodies. Grazing in the allotment consists of open range grazing with an average of approximately 268 cows across the 10,919 acres of the allotment.

This allotment is within the source water areas for the cities of Gold Hill, Rogue River and Grants Pass; however, given the numbers of AUMs authorized on this allotment is somewhat low, it is unlikely that this allotment grazed as authorized under the No Action or the three action alternatives is a significant contributor to the identification of grazing as a potential contaminant source.

This analysis is based on the assumption that funding will be available to implement mitigating measures, and that lessees comply with the terms and conditions of the lease..

ALTERNATIVE 1 – No-Action Alternative (no change)

Under the No Action Alternative, the grazing lease on the Conde Creek Allotment would be issued at the same animal unit month (AUM) level, the same season of use and with the same terms and conditions currently in effect. Two existing grazing leases would be renewed for 268 cattle during 6/16 – 9/30 for a total of 943 AUMs.

Grazing under this alternative would continue to impact water quantity through contributing to altered peak and low flow regimes at the site level by continued compaction and reduction of plant cover/litter in the

seeps, spring, streams and uplands within the allotment. Impacts to the riparian areas and wetlands from cattle grazing reduce the resiliency of the watershed to high flow events.

This alternative also affects summer low flows at the site scale through decreased discharge from soil water storage and cattle use of riparian areas and wetlands late into the season.

Grazing under this alternative would continue to impact water quality at the site scale through the trampling of streambanks and the reduction of riparian vegetation contributing to increased sedimentation and water temperatures. Livestock access and concentration in streams would continue to allow bacterial contamination in surface water from BLM-managed lands in some locations within the allotment.

This allotment lacks functioning water improvements. Water improvements as seen in Table 2-5 include; four pump chances, two reservoirs, and two water troughs. Water improvements are well dispersed throughout the allotment although most pump chances are inaccessible to cattle because of very steep banks and two troughs in the allotment do not currently provide water season long. This means that perennial waterways are some of the only sources of fresh water, effectively drawing cattle to these fragile sites.

The physical integrity of the seeps, springs, and streams is compromised under this alternative by grazing of riparian vegetation and the shearing and sloughing of streambanks, increasing stream width and decreasing stream depth, resulting in higher stream temperatures. As mentioned previously, late August and September is the most critical time of the year in terms of protecting the plant cover, plant litter, and organic matter that are necessary to protect banks from erosion, reduce water velocity along the stream edges, and filter out sediments during high water. Late season grazing (through September 30) in this alternative exacerbates the effects to the stream system because as the season progress, the cattle tend to congregate in the riparian areas and wetlands where there is still palatable vegetation, water and shade.

Long-term consequences of continued grazing at current levels would mean the impacted areas identified in the BLM stream surveys (1995/1998) and BLM photo documentation (1997- 2008) would continue to have compaction, eroding banks, and reduced productivity of riparian vegetation. Soil disturbance, post-holing, churning and compaction from cattle loitering in these areas would continue, threatening the water holding capacity of these areas. The intermittent and perennial streams and associated springs would continue to be grazed at the current level of use. Downcutting would continue in the sections of the channel that are unarmored by bedrock and cobble. The stability of the low gradient areas where sediment is being retained by pieces of large wood, woody riparian species, and riparian groundcover would continue to be compromised. Under this alternative, impacts to riparian soils would continue to reduce the soil's ability to retain moisture.

This alternative does not address the findings in the Preliminary Determination and Evaluation that grazing practices in the Conde Creek Allotment are not conforming to the Guidelines for Livestock Grazing Management (USDI 1997) for Standard 2, Watershed Function or Standard 4, Water Quality. This alternative does not alter any of the terms and conditions of the lease to make progress toward: 1) improving plant cover and community structure to promote streambank stability, debris and sediment capture, and floodwater energy dissipation in riparian areas; preventing the spread of noxious weeds; improving livestock distribution; 2) improving water quality; and 3) avoiding unwanted or damaging concentrations of livestock on streambanks and wetland areas.

Animal introductions in riparian and wetland areas must be compatible with the capability of the site, including the system's hydrologic regime, and contribute to the maintenance and restoration of properly functioning condition. This alternative does not meet the ACS objectives at the site level or the 7th field HUC level.

ALTERNATIVE 2

Under this alternative the existing cattle grazing lease authorization would continue at the same AUMs and season of use as Alternative 1. This alternative would include ten additional terms and conditions listed on EA pages 11 and 12 including; stubble height and bank alteration criteria, stricter management requirements with penalties for non-compliance, and four potential mitigation measures.

Terms and Conditions

The addition of terms and conditions requiring removal of livestock when a 5" stubble height and/or 20% bank alteration threshold is met would slightly improve streambank stability and improve the ability of vegetation to trap sediment during higher streamflows. Maintaining adequate riparian vegetation would also reduce the solar radiation and heating of the water surface in seeps/springs/streams.
this term and condition would rely on close monitoring of riparian stubble heights and altered banks in the mid/late season which typically begins in mid-August and coordination with lessees. Both the term requiring earlier take-off date in the years following unauthorized post-season grazing and the term requiring removal of cows from the Soda Creek meadow within in two days of gathering will reduce late season impacts to riparian areas.

Proposed Mitigation Measures

The improvement of existing water facilities would aid in drawing cattle out of the perennial waterways and springs. Access to reliable water sources would decrease use of perennial waterways and may aid livestock distribution across the allotment. Pulling back the banks to improve access to the pump chances would cause short term disturbance of these areas. In order for this mitigation measure to be fully successful, herding techniques would be necessary to aid the dispersal of livestock in the allotment.

The two exclosures proposed as mitigation measures on Conde Creek and the Big Glades area of Soda Creek would improve the conditions of water resources at those locations. Concentrated grazing at the lower end of the Conde Creek meadow system has resulted in disturbed banks, widened channels, elevated fine sediment levels and heavy grazing of riparian vegetation. Fencing this area would allow the recovery of the physical integrity of this site. Fencing the wet meadow in Big Glades would improve conditions at the site level by relieving saturated ground of the trampling effects of cattle. Removal of cattle from the wet meadow/spring complex would reduce compaction and improve the storage capacity of the site. Removal of cattle from both exclosure sites would shift use to other areas and possibly create other hotspots. In the late season, as vegetation becomes unpalatable in the uplands and water become scarce without implementation of mitigation measures improving watering sites, cattle would continue to congregate and linger in the riparian areas in the allotment.

This alternative incorporates some of the Best Management Practices (BMPs) for grazing from the *Medford District RMP* (1995) as part of the Terms and Conditions of the lease. Although the BMPs are already a requirement for any grazing lease on the Medford District to comply with the requirements of the Clean Water Act, emphasizing them in the lease itself may emphasize their importance.

This alternative addresses the findings in the Preliminary Determination and Evaluation that grazing practices in the Conde Creek Allotment were not conforming to the Guidelines for Livestock Grazing Management (USDI 1997). This alternative alters the terms and conditions of the lease to make slight progress toward: 1) improving plant cover and community structure to promote streambank stability, debris and sediment capture, and floodwater energy dissipation in riparian areas; 2) improving livestock distribution; 3) improving water quality; and 4) avoiding unwanted or damaging concentrations of livestock on streambanks and wetland areas.

The current location of the temporary corral in Conde Creek is preventing the attainment of ACS objectives. The corral is located adjacent to Conde Creek, at a road crossing in the lower portion of the Conde meadow system. This location is desirable to the lessees due to the natural funneling the riparian zone provides for collecting cattle at the end of the season. In this arrangement, the main channel of Conde Creek is crossed at several locations when cattle are gathered at this site. Relocating the corral to an upland location would decrease channel disturbance and reduce the concentration of cattle use at the current site.

Standards and Guidelines for Riparain Reserves from the *Medford District RMP* (1995) state

> *For existing livestock handling facilities inside riparian reserves, ensure that aquatic Conservation strategy and riparian reserve objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.*

If selected, the mitigation measures implemented at the specific sites in the allotment would make progress toward meeting the ACS objectives at the site level in those areas.

This alternative would slightly reduce grazing effects along perennial waterways through new terms and conditions, mitigation measures, and constant herding efforts. The 10 additional terms and conditions under this alternative, especially maintaining 5" stubble heights and less than 20% active, livestock caused bank alteration and active herd management would have some local benefits to water resources. Late season use would continue to focus impacts on riparian areas making attainment of ACS difficult although not impossible. The 10 additional terms and conditions and active herd management will be vital for this alternative to meet ACS objectives at the site level and HUC 7 level.

ALTERNATIVE 3

Under this alternative the existing cattle grazing lease authorization would continue but there would be nine additional terms and conditions listed on EA pages 11 and 12 including; stubble height and bank alteration criteria, stricter management requirements with penalties for non-compliance, and five potential mitigation measures. This alternative would also reduce late season grazing by reducing the number of cattle authorized to graze and changing the season of use from June 16 to August 15.

Terms and Conditions

The addition of terms and conditions requiring removal of livestock when a 5" stubble height and/or 20% bank alteration threshold is met would slightly improve streambank stability and improve the ability of vegetation to trap sediment during higher streamflows. Maintaining adequate riparian vegetation would also reduce the solar radiation and heating of the water surface in seeps/springs/streams. These terms would help ensure that in years of low vegetative productivity adequate stubble heights are maintained to protect banks from erosion, reduce water velocity along the stream edges, and filter out sediments during high water flows.

Potential Mitigation Measures

The improvement of existing water facilities would aid in drawing cattle out of the perennial waterways and springs. Access to reliable water sources would decrease use of perennial waterways and may aid livestock distribution across the allotment. Pulling back the banks to improve access to the pump chances would cause short term disturbance of these areas. In order for this mitigation measure to be fully successful, herding techniques would be necessary to aid the dispersal of livestock in the allotment.

The two exclosures proposed as mitigation measures on Conde Creek and the Big Glades area of Soda

Creek would improve the conditions of water resources at those locations. Concentrated grazing at the lower end of the Conde Creek meadow system has resulted in disturbed banks, widened channels, elevated fine sediment levels and excessively grazed riparian vegetation. Fencing this area would allow the recovery of the physical integrity of this site. Fencing the wet meadow in Big Glades would improve conditions at the site level by relieving saturated ground of the trampling effects of cattle. Removal of cattle from the wet meadow/spring complex would reduce compaction and improve the storage capacity of the site. Removal of cattle from both exclosure sites would shift use to other areas and possibly create other hotspots.

This alternative would improve riparian-wetland functions by removing cattle from the allotment late in the season when concentrated livestock use occurs in riparian areas (Hosten et al 2007a). This alternative would improve the physical integrity of the seeps, springs, and streams in the allotment. Eliminating the late season of use would decrease the concentrated grazing of riparian vegetation and the shearing and sloughing of streambanks.

A two year rest period would allow riparian vegetation to reestablish along banks where focused grazing has resulted in disturbed soil and areas of bare soil. A rest period would also provide riparian plants with a respite from disturbance, increasing productivity and distribution giving the riparian areas a boost before grazing resumes. Throughout the allotment, in areas where livestock were the primary destabilizing agent, banks would stabilize and vegetation would become reestablished in areas of disturbance thereby improving stream condition prior to grazing.

This alternative incorporates some of the Best Management Practices (BMPs) for grazing from the *Medford District RMP* (1995) as part of the Terms and Conditions of the lease. Although the BMPs are already a requirement for any grazing lease on the Medford District to comply with the requirements of the Clean Water Act, emphasizing them in lease itself may emphasize their importance.

This alternative addresses the findings in the Preliminary Determination and Evaluation that grazing practices in the Conde Creek Allotment were not conforming to the Guidelines for Livestock Grazing Management (USDI 1997). This alternative alters the terms and conditions of the lease to make progress toward: 1) improving plant cover and community structure to promote streambank stability, debris and sediment capture, and floodwater energy dissipation in riparian areas; 2) improving livestock distribution; 3) improving water quality; and 4) avoiding unwanted or damaging concentrations of livestock on streambanks and wetland areas.

The current location of the temporary corral in Conde Creek is preventing the attainment of ACS objectives. The corral is located adjacent to Conde Creek, at a road crossing in the lower portion of the Conde meadow system. This location is desirable to the lessees due to the natural funneling the riparian zone provides for collecting cattle at the end of the season. In this arrangement, the main channel of Conde Creek is crossed at several locations when cattle are gathered at this site. Relocating the corral to an upland location would decrease channel disturbance and reduce the concentration of cattle use at the current site.

Standards and Guidelines for Riparain Reserves from the *Medford District RMP* (1995) state

> *For existing livestock handling facilities inside riparian reserves, ensure that aquatic Conservation strategy and riparian reserve objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.*

This alternative would reduce site level impacts to water resources. With the inclusion of the relocation of the Conde Creek temporary corral, hydrologic function would be restored and aquatic habitat would improve at the site level and likely at the HUC Level 7 level thus meeting ACS objectives.

ALTERNATIVE 4

Under this alternative, lands within the Conde Creek Allotment would not be available for livestock grazing for a period of ten years. This alternative serves to provide for the recovery of ecological conditions that have been impacted by grazing within the allotment boundary. In accordance with 43 CFR 4110.3-3, permitted use of the allotment would terminate at the close of the 2011 grazing season.

The singular action of eliminating grazing in this allotment is not likely to change the water quality listings for Conde, Dead Indian, Deer, Lost, and Soda Creeks. Past timber harvest on federal and non-federal lands and roads built 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. On federal forested lands, the long-term recovery of shade in the riparian reserves will decrease water temperatures. Under this alternative, with the removal of grazing, over time slight progress would be made toward meeting the water quality standards for temperature.

The elimination of grazing on this allotment would allow riparian vegetation to thrive in the perennial and intermittent streams, and the springs and wet meadow areas associated with these systems. Over time, hoof impacts along streams and springs would heal. Soil disturbance and churning associated with cattle use in these areas would heal, protecting the water holding capacity of these ecosystems. Increases in riparian vegetation where there is sufficient water to support these species would be expected. Improved riparian vegetation would contribute to rooting strength and floodplain/streambank roughness that dissipates erosive energies associated with flowing water. Removing grazing from the allotment would allow historic streambank failures to revegetate. In the absence of grazing, the storage capacity of the trampled wetlands, seeps, and springs would improve and could improve late-season streamflows and decrease stream temperature.

At the site level and likely at the HUC Level 7 level, hydrologic function would be restored to meet the ACS objectives.

Cumulative Effects

Past actions including timber harvest, road construction, residential and agricultural clearing, and livestock grazing are summarized above in the Water Resources Characterization section. Foreseeable future actions including private timber harvest, silvicultural prescriptions, and Off Highway Vehicle Use (OHV) are discussed in the Fisheries Resources section that follows.

Comparison of Cumulative Effects to Water Resources for all Alternatives

Table 3-12 shows a comparison between alternatives of the potential for cumulative effects on stream flows, water quality, and riparian functioning condition.

Table 3-12. Comparison of Alternatives for Cumulative Effects on Streamflows, Water Quality and Riparian Condition

Resource Value Affected	Potential for Cumulative effects on Hydrology by Alternative			
	ALT 1. (No Action)	ALT 2. (Adaptive Management)	ALT 3. (Modified Lease)	ALT 4. (No Grazing)
Peak Flows	Low Negative	Low Negative	Low Negative	Slight Positive
Low Flows	Low Negative	Low Negative	Low Negative	Slight Positive
Bacteria/ Pathogens	Low Negative	Low Negative	Low Negative	None

Resource Value Affected	Potential for Cumulative effects on Hydrology by Alternative			
	ALT 1. (No Action)	ALT 2. (Adaptive Management)	ALT 3. (Modified Lease)	ALT 4. (No Grazing)
Temperature	Mod. Negative	Low-Mod. Neg.	Low Negative	Slight Positive
Turbidity/ Sediment	Mod. Negative	Low-Mod. Neg.	Low Negative	Slight Positive
Riparian Condition	Mod. Negative	Low-Mod. Neg.	Low Negative	Slight Positive

This table is meant to present a continuum of cumulative effects across the alternatives. Alternative 1, 2, and 3 all present a similar low potential for negative effects to peak flows, low flows, bacteria and pathogens. Alternatives 2 and 3 have less potential for negative effects to temperature, turbidity, and riparian condition than alternative 1. Alternative 2 will slightly improve conditions at the site level and the HUC 7. Alternative 3 will improve conditions more rapidly at the site level and the HUC 7 than alternative 2.

FISHERIES RESOURCES

Issues and Concerns

- Dead Indian, Conde, Lost, Soda, and South Fork Little Butte Creeks are listed by ODEQ as water quality limited for exceeding summer high temperature standards while Dead Indian and Conde Creeks exceed the temperature standards year-round. Grazing vegetation along perennial channels decreases shade thereby contributing to high summer water temperatures.
- Deer, Lost, Soda, and South Fork Little Butte Creeks are all listed by ODEQ for exceeding the sediment standard. Bank trampling causes channel simplification and increases fine sediment, degrades undercut banks, widens channels, and causes compaction.
- Late season grazing allows cattle to continue grazing riparian vegetation beyond the 4-6" recommended stubble heights. This "mowed" riparian vegetation has a reduced capacity to trap sediment during elevated flows and does not provide adequate bank protection, shade, or cover.

Discussion of Issues/Concerns (Potential Effects) and Related Research

The effects of sediment on aquatic species:

Four streams within or directly downstream of the allotment exceed state sediment standards. Turbidity and suspended sediment can affect salmonid physiology, behavior and habitat (Bash et al 2001). Physiological effects include but are not limited to reduced reproduction and growth, gill trauma, and osmoregulation. Sigler et al. (1984) found a significant difference between steelhead and coho growth rates in clear versus turbid water. Turbidities in the 25-50 nephelometric turbity units (NTU) range caused a reduction in growth. Behavioral affects include avoidance, territoriality, foraging and predation, and abundance and diversity of prey. Juvenile coho salmon that were acclimated to clear water did not exhibit significant sediment avoidance until the turbidity reached 70 NTUs (Bisson an Bilby 1982); however, Sigler et al (1984) found that turbidities in the 25-50 NTU range caused more young coho and steelhead to emigrate from laboratory streams than did clear water. Increases in sediment and turbidity affect salmonid habitat by reducing permeability of spawning gravels, reducing or eliminating habitat for aquatic insects, filling in pools, and blocking the interchange of subsurface and surface waters (Meehan 1991). When high, fine sediment levels occur in spawning gravels, less spawning occurs, eggs tend to suffocate, and emerging fry become trapped resulting in mortality and reduced production (Philips et al. 1975; Tappel and Bjornn 1983; Chapman 1988; Meehan 1991). Hausle and Coble (1976) reviewed studies on coho salmon and steelhead fry emergence in gravels with concentrations of sand exceeding 20 percent. When concentrations of sand exceed 20 percent in spawning beds, emergence success declined.

The effects of stream temperature on fish
Five streams within or directly downstream of the allotment are included on DEQ's 303(d) list for exceeding temperatures criterion (see Water Resources section). Summer maximum temperature standards were generated for fish, specifically salmonids which have a narrow thermal temperature tolerance. Elevated water temperatures can affect feeding, growth, and survival of salmonids (Meehan 1991). For example, the reported preferred temperature range for coho salmon is between 53.6 and 57.2 degrees F (Meehan 1991). Temperatures outside of the preferred range affect the metabolic performance of fish, altering the balance between energy inputs and outputs (growth). This does not mean that a fish cannot grow at higher or lower temperatures, but that growth is not as efficient outside of the optimum temperature range. As temperature increases so do the metabolic needs of the fish, with decreases in growth, and increases in stress becoming more apparent as temperatures continue to rise, until a point termed the upper lethal limit, where death of the individual is imminent. The upper lethal limit of coho has been reported to be 78.9^0 F (Meehan 1991) and is described as the temperature that kills 50% of all fish exposed within 1,000 minutes.

Stubble height recommendations
Riparian grazing recommendations suggest that four to six inches of forage stubble height should remain on streamside areas at the end of the growing season, after fall frost, to limit potential impacts to the herbaceous plant community, the woody plant community, and streambank stability (Clary 1999). In other situations, fifteen to twenty centimeters (6-8 inches) of stubble height may be required to reduce browsing of willows or limit trampling impact to vulnerable streambanks (Clary and Leininger 2000). According to Hall and Bryant (1995), cattle preference will shift to woody vegetation as stubble height for the most palatable species (Kentucky bluegrass) approaches three inches but in sedge and rush communities the shift will happen earlier, and six to nine inch stubble heights may be more suitable (Marlow comm. 2003).

The effects of disturbance on aquatic mollusks
Studies in seeps and springs found that high diversity and species indicative of clean water were compatible with low to moderate ungulate use (Dinger et al. 2007). Higher use resulted in a loss of intolerant species. There were no statistically significant associations of aquatic mollusk richness with livestock utilization (Barr and Frest In prep.); however, aquatic communities of larger and minimally altered springs are more diverse than are those of small and more disturbed springs. Sada & Vinyard (2002) concluded that spring degradation and biotic population decline and loss were primarily due to anthropogenic factors, including livestock grazing in mollusk-occupied spring habitats. A study examining patterns of aquatic macroinvertebrates in streamside riparian influence found that the combined influence of road density, logging, and livestock reduced aquatic macroinvertebrate richness (Barr et al. In review). Disturbance-intolerant taxa decline with increased average livestock utilization across the Cascade Siskiyou National Monument located approximately 5 miles south of the Conde Creek Allotment.

The effects of increased nutrient loading on fish
Increased inputs of organic nutrients (such as cattle feces) can lead to decreased dissolved oxygen content in aquatic habitats. Increased nutrients may promote increased algal growth, increasing respiration rates and hence oxygen demands by plant material. Additionally, as the additional nutrients and/or algae decompose (an aerobic process), oxygen is depleted from the water at an accelerated rate (Meehan 1991). Elevated water temperatures would exacerbate this situation as warmer water does not allow for as much oxygen saturation as colder water. Dissolved oxygen is a critical habitat element that allows aquatic organisms to respire. As dissolved oxygen levels fall below optimum ranges for particular species of fish, metabolic processes become stressed, growth and development may be hampered, and death ensues if levels fall below critical thresholds, or remain low for long durations. It has been suggested that DO concentrations below 5 mg/L limits growth rates of salmonids (Meehan 1991).

Season of use and the effects on riparian areas:
Hot season (midsummer) grazing exacerbates physical effects to streams as cattle focus on riparian areas because the riparian vegetation is still palatable (upland vegetation has cured and is less palatable), water is available, and there is more shade (Chaney et al 1993). Next to season-long grazing, which is universally recognized as detrimental to riparian areas, repeated or extended grazing during the hot summer season is generally considered most injurious to riparian zones (USDI BLM 1998). Late season (fall) grazing where reduced soil moisture and declining temperatures are the norm, regrowth after the cattle are removed would not occur and cattle are less likely to range away from riparian areas (USDI BLM 1998).

Coho Critical and Essential Fish Habitat:
In 1997 the Southern Oregon/Northern California (SONC) Evolutionary Significant Unit (ESU) of coho salmon (*Oncorhynchus kisutch)* was listed as "threatened" with the possibility of extinction under the Endangered Species Act (ESA) by the National Marine Fisheries Service (NMFS). On May 5, 1999, the National Marine Fisheries Service (NMFS) designated Coho Critical Habitat (CCH) for SONC coho salmon. Critical Habitat includes "all waterways, substrate, and adjacent riparian zones below longstanding, naturally impassable barriers." It further includes "those physical or biological features essential to the conservation of the species and which may require special management considerations or protection...", including all historically accessible waters (F.R. vol. 64, no. 86, 24049). Southern Oregon/Northern California (SONC) coho salmon (*Oncorhynchus kisutch*), a "threatened species" under the Endangered Species Act (ESA) and Klamath Mountain Province (KMP) steelhead, a "sensitive" species on the State Director's Special Status Species List (USDI 2008), are restricted to stream segments at least 1.5 miles downstream of the allotment boundary.

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

Aquatic Conservation Strategy Objectives:
The Aquatic Conservation Strategy (USDI BLM 1995) was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. Under the ACS, Riparian Reserves are used to maintain and restore riparian structures and functions of intermittent streams, confer benefits to riparian-dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, improve travel and dispersal corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed. Guidance for grazing management requires BLM to "adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing. For existing livestock handling facilities inside the Riparian Reserve, ensure that ACS objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities".

Tier 1 Key Watersheds:
The South Fork Little Butte Creek drainage and its tributaries are a Tier 1 Key Watershed as identified in the 1995 Record of Decision. "Key watersheds serve as refugia critical to maintaining and recovering habitat for at risk stocks of anadromous salmonids and resident fish species. This system of watersheds provides refugia in areas of high quality habitat and areas of degraded habitat. Key watersheds with high quality conditions serve as anchors for the potential recovery of depressed stocks. Those of lower quality habitat have high potential for restoration and will become future sources of high quality habitat with the implementation of a comprehensive restoration program. Tier 1 watersheds specifically contribute directly

to conservation of at-risk anadromous salmonids, bull trout, and resident fish species. Key watersheds overlay portions of all land use allocations in the district and place additional management requirements or emphasis on activities in those areas." The Little Butte Creek Watershed Analysis (LBWA) was completed in 1997 as per management actions/directions outlined in the Record of Decision (ROD) (USDI BLM 1995). Additional related management actions/direction include: 1) restore watershed processes to recover degraded habitat; 2) focus watershed restoration on removing and upgrading roads; 3) restore stream channel complexity. In-stream structures will only be used in the short term and not as a mitigation measure.

Riparian Reserves:
Riparian Reserves are an important component of the Aquatic Conservation Strategy and the Northwest Forest Plan. Under the ACS, Riparian Reserves are used to maintain and restore riparian structures and functions for the benefit of riparian dependent and associated species and to provide connectivity. These reserves provide a buffer of protection from many proposed management actions and most often actions approved for Riparian Reserves are much less impacting than actions outside reserves. Livestock grazing is just the opposite and in many cases, the impacts to riparian reserves are greater than in any other part of the watershed. Riparian Reserves provide livestock with clear water, palatable vegetation, and shade from the hot summer sun and as such effects occur along many of the perennial reaches including bank and channel disturbance that leads to fine sediment increases and channel widening. Riparian vegetation is grazed along these perennial waterways, negatively impacting vegetative species composition, bank stability, and cover.

Past Actions:
Removal of riparian vegetation, and the shade it provides, contributes to elevated stream temperatures. Past human-caused activities in riparian areas such as timber harvest, road construction, residential and agricultural clearing, and livestock grazing, have reduced the amount of riparian vegetation in the analysis area (USDI 2006 and USDI 2008c). Water withdrawals during the summer also contribute to elevated stream temperatures.

Past ground-disturbing activities such as road building, logging, land clearing, agriculture, recreation, and livestock grazing contributed sediment to streams in the analysis areas (USDI 2006). Agricultural and residential development along the South Fork Little Butte Creek contributed sediment through channel modification, grazing, and land clearing. Livestock grazing has occurred throughout the analysis areas since the mid-1800s (USDI and USDA 1997). Large numbers of cattle and sheep were driven from lower valley pastures to high plateau meadows each summer during the mid-1800s to early 1900s. These large numbers of livestock had an adverse impact on watershed conditions, especially along stream courses and near springs and meadows (USDI and USDA 1997). After 1930, cattle became the primary livestock in the South Fork Little Butte Creek area. By the early 1960s, livestock grazing on public lands had been reduced by 50 percent and there has been an additional 50 percent reduction since then (USDI and USDA 1997). BLM stream surveys conducted in riparian areas of this allotment between 1996 and 2006 identify numerous locations where streambanks have been trampled and damaged by cattle (USDI 1995-2007).

Foreseeable Future Actions:
This section will present projects proposed in the foreseeable future that may add cumulative impacts to fisheries resources on top of anticipated impacts resulting from the Conde Allotment Lease Renewal project, within the analysis area. Anticipated direct and indirect affects to fisheries resources will be described from each action. For any foreseeable future action determined to have any anticipated effects to aquatic habitat, the cumulative effect of the action coupled with effects from the Conde Allotment Lease Renewal will be discussed at the end of this analysis.

<u>Private Timber Harvest:</u> Future timber harvest on private lands would likely occur within the analysis area.

The water resources analysis of this EA addresses future timber harvest on private lands, and assumes that it will continue to occur at a similar rate as has occurred in the past, with similar affects to aquatic habitats. Private lands are governed under state forestry regulations, and as such receive a different level of protection than federal lands. Analysis of effects from private timber harvest generally considers the worst case scenario (i.e. all suitable forested lands would be logged at ~ 60 year tree-growing rotations). At this time, it is not known when or where private timber harvest will occur in the area. This analysis will assume that all suitable private lands will continue to be subject to timber harvest, and that the amount of disturbance to aquatic systems as a result of this harvest will continue similar to present rates, helping to maintain degraded aquatic habitats.

Silviculture Treatments: Silviculture treatments including pruning, pre-commercial thinning, and gopher trapping could occur over the next four to ten years. No-treatment buffers would protect stream systems from instream effects and the proposed silvicultural prescriptions would maintain canopy cover, providing shade along stream corridors

Off-Highway Vehicle Use: Unauthorized use (off existing roads) of OHVs continues to be an issue in isolated portions of this allotment, degrading meadows, creating surface erosion, and compaction.

AFFECTED ENVIRONMENT

Aquatic Organisms and Designated Habitat

Streams within this allotment support populations of rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*O. clarki*), brook trout (*Salvelinus fontinalis*), speckled dace (*Rhinichthys osculus*), Klamath smallscale sucker (*Catostomus rimiculus*), reticulate sculpin (*Cottus perplexus*), and Little Butte pebblesnails.

Downstream of the allotment boundary, Southern Oregon/Northern California (SONC) coho salmon (*O. kisutch*), a "threatened species" under the Endangered Species Act (ESA) and Klamath Mountain Province (KMP) steelhead, a "sensitive" species on the State Director's Special Status Species List (USDI 2008), are restricted to the lower 0.6 mile of Soda Creek (approximately 1.5 miles downstream of the allotment boundary) where a falls restricts upstream fish passage. A 12' waterfall restricts all upstream fish passage of the above noted species on Dead Indian Creek, approximately 5.0 miles downstream of the allotment boundary. Coho and steelhead use about ¼ mile of Deer Creek (approximately 3.0 miles downstream of the allotment boundary) for spawning, rearing and migration (ODFW 2002) before the gradient and narrow channel make the habitat unsuitable. In Lost Creek, steelhead have been confirmed to stream mile 3.7 but gradient restricts CCH to the lower 2.0 miles (approximately 4.0 miles downstream of the allotment boundary).

Riparian and Aquatic Habitat Condition

Past land management and land use activities such as riparian timber harvest, road construction, water withdrawals and developments, and grazing have impacted aquatic habitat within the analysis area. The combined effects of these past activities are simplified stream channels (less wood, fewer pools), increased sedimentation (loss of spawning and rearing habitat), reduced water quantity and quality, and loss of connectivity.

Stream **simplification** is observed throughout much of the allotment. The lack of large wood has been identified as a limiting factor in the South Fork Little Butte Creek (USDI and USDA 1997 and ODFW 1994) and tributary streams within the Conde Creek Allotment. Large wood positively influences stream form and function by creating pools, trapping sediment, providing cover for fish and other aquatic species, and stabilizing banks during high flow events. Past riparian harvest, road construction, and grazing have reduced overstory shade along many of these stream channels. Grazing along perennial waterways further

simplifies stream channels by removing overhanging vegetation that provides cover, bank stability, and shade. Bank trampling has reduced availability of undercut banks and widened channels, altering channel dynamics and decreasing cover for fish. Loss of habitat occurs as a result of water withdrawals and roads restrict meander potential, further simplifying channels.

High road densities, roads in poor condition, riparian roads, and blocked or inadequate culverts contribute sediment to stream channels, reduce connectivity of aquatic and riparian habitat, reduce shade, and decrease large wood available to the stream channel. Road densities in this allotment are well above the 4.0 mi/mi^2 maximum recommended by the watershed analysis (USDI and USDA 1997). Sediment is also contributed at the site level by trampling and hoof shear related to livestock grazing. The season of use on this allotment (June 16 – September 30) allows cattle to access riparian areas from late spring to early fall, leaving banks in a degraded state with no time for plants to regrow or banks to stabilize prior to winter rains. Cattle tend to linger and congregate in riparian areas throughout the entire grazing season because of convenience of forage, water, and shade. Late in the season, when all the upland vegetation has cured, this becomes of greater concern as cattle focus grazing efforts on lush riparian plants and available water causing widespread channel disturbance and vegetation removal along perennial water courses.

Active bank erosion, above the limits of natural variability, is contributing fine sediment to all the streams in this allotment. ODFW surveys (1991-2003) found actively eroding streambanks along 69% of Soda Creek reaches surveyed within the allotment. In Conde Creek, active erosion was observed along 16% of the stream length surveyed (3,736 feet) within the allotment (ODFW 1991-2003). Stream surveys (BLM 1995 and 1998) found actively eroding streambanks along 55% of surveyed reaches in Conde Creek, 34% in Soda Creek, and 46% in Dead Indian Creek. Streambank alteration (Cowley and Burton 2004) measurements of 33-49% were observed at two sites along Conde Creek and one site along Soda Creek in 2005. Repeated field observations show active erosion occurring along many of the perennial stream banks as a result of grazing (USDI BLM 2003-2008).

Fine sediment (sand, silt, clay) exceeded the PFC benchmark of greater than 20 percent fines (Klamath Province/Siskiyou Mountains Matrix of Factors and Indicators) for the following streams: Conde Creek (46%) and Soda Creek (67%) (ODFW 1991-2003). High levels (45%) of fine substrate were also observed in the headwaters of Lost Creek (USDI BLM 1995 and 1998). Soda and Lost Creeks are listed by Oregon Department of Environmental Quality (ODEQ) for exceeding sediment standards.

Water quality and quantity in this allotment are influenced by a diversion system where Talent Irrigation District (TID) diverts water from Conde and Dead Indian Creeks into Howard Prairie Reservoir. Only the Conde Creek diversion is within this allotment (T38S R3E Section 9) however both diversions are unscreened allowing fish from the Howard Prairie Reservoir access to both Dead Indian and Conde Creeks. It is suspected that populations of Klamath speckled dace (*Rhinichthys osculus*) were introduced from Howard Prairie Reservoir into the South Fork of Little Butte Creek through this diversion ditch. The Conde Creek diversion, located upstream of Owens Prairie (T38S R3E Section 9), is a barrier to upstream migrations during most flow conditions and dewaters the stream channel during much of the irrigation season. The diversion traps sediment in low flow conditions but is likely to pass recently deposited sediment in high flow events.

Water quality in this allotment is defined by excessive stream temperatures and fine sediment levels. Stream temperature issues resulting from past riparian harvest and grazing are documented on Dead Indian, Conde, Lost, and Soda Creeks. Fine sediment levels in excess of DEQ standards are documented on Deer, Lost, Soda, and South Fork Little Butte Creeks. Fine sediment levels in the allotment have been negatively influenced by the road drainage network and grazing.

Connectivity is limited by the road drainage network. Roads crossings in particular limit upstream

connectivity in aquatic environments. Pump chances, stock ponds, and other water developments in the allotment further limit upstream and downstream connectivity. Stock pond conversions limit connectivity, increase water temperatures, provide suitable habitat for non-native species, and reduce stream flow in downstream channels. There are 8 converted stockponds or watering developments in the Conde Creek Allotment. Grazing affects connectivity by simplifying channels, degrading habitat quality, and limiting access to high quality areas. At the same time, the instream nature of livestock grazing allows fine sediment and turbidity to be transmitted downstream. Temperature effects are also transmitted downstream.

Proper functioning condition (PFC) surveys were completed on segments of Conde, Lost, and Soda Creeks (see Water Resources). For all stream miles evaluated for PFC within the allotment, approximately half were characterized as either functioning properly or functioning at risk with an upward trend. Where stream reaches were identified as functioning at risk with a downward trend or as nonfunctional, surveyors noted that overutilization by cattle may be contributing to destabilization of streambanks and instream sedimentation.

The frequency and duration of flooding are controlled by topographic position and site condition, seasonal rainfall patterns, and influence of beaver. Exclosure studies indicate high livestock use can impede the development of willow stands (Hosten and Whitridge 2007), a phenomenon most likely occurring in the Conde Creek Allotment. Existing willow and aspen stands show little recruitment from year to year except where cattle have been excluded. Channel downcutting caused by riparian degradation (compaction, sloughing caused by hoof action along banks, stunted riparian plant and root mass development) lowers local water tables and reduces the volume of base stream flow during the critical summer period. This is likely occurring in the upper Conde meadow, the Soda Creek riparian pastures and other seeps and springs targeted by livestock.

Repeat photos show vegetative cover increasing over the long term (Hosten and Whitridge 2007). Other sources of information indicate that areas of high forage use by livestock have more bare ground than less utilized sites (BLM photo point monitoring 2003-2008). This is supported by PFC surveys. Streams and seeps still show considerable disturbance by native and non-native ungulates (Hosten 2007b, Hosten and Whitridge 2007, BLM 2003-2008). Interdisciplinary teams have identified multiple riparian areas where stubble heights do not meet the heights recommended in the literature. Along accessible, perennial waters in this allotment, stubble heights are generally less than two inches by the end of the grazing season (BLM photo point monitoring 2003-2008). The common observation of siltation in seeps, springs, streams and ponds on the Conde Creek Allotment indicates bank destabilization, sediment transport along watercourses, inadequate riparian vegetation. This has been observed repeatedly along most perennial water courses in the allotment over the last 10 years (BLM 2003-2008).

Macroinvertebrate monitoring has been conducted by Aquatic Biology Associates at one site within the allotment and two downstream of this allotment using methods that meet or exceed state or EPA protocols for the sampling of benthic macroinvertebrates. In Conde Creek, upstream of the TID diversion, biotic/habitat integrity was limited by high levels of embeddedness and silt, low flows, lack of shade, and simplified habitat (Aquatic Biology Associates 2001). This same survey found very few positive indicators (feeding group diversity, cold water biota, cold water taxa richness, and habitat complexity) while the negative indicators (collector dominance and tolerant taxa) were moderate.

Portions of the Conde Creek Allotment, specifically the headwaters of Lost Creek, are within a hotspot of *Flumicola* endemism. Three springs in the Conde Creek Allotment were sampled for aquatic mollusk presence, species data, and livestock impacts (Frest and Johannes 2005, USDI BLM 2003-2008). Little Butte pebblesnails (sp. 38) have been confirmed in three locations on the allotment and are suspected throughout the Lost Creek drainage. Pebblesnails have been confirmed in a tributary to Soda Creek but

have not been identified to species.

ENVIRONMENTAL CONSEQUENCES

Effects to Aquatic Organisms and Habitat

This write up is based on the assumption that funding will be available to implement mitigating measures and terms and conditions, and that regular compliance checks will occur to ensure lessees are meeting terms and conditions.

ALTERNATIVE 1 – No-Action Alternative (no change)

Under this alternative, concentrated grazing impacts are observed along accessible reaches of perennial waterways throughout the allotment, exceeding the carrying capacity for these systems. There are several factors facilitating these excessive site level impacts: hot season, season-long, and late season grazing, lack of functioning water improvements and connectivity between perennial waterways and stringer meadows.

In the Conde Creek Allotment, grazing beyond approximately August 15th leads to increased bank disturbance, bare ground, fine sediment, and consumption of riparian vegetation as focused occurs along perennial waterways. Cattle congregate along these perennial waterways for the lush vegetation, cool water, and cooler temperatures. Season-long grazing takes riparian vegetation below the 4-6" minimum recommendation further inhibiting riparian function with inadequate time for vegetative regrowth, root production, and energy storage to occur before fall rains.

Chronic bank disturbance is occurring along most of the accessible perennial waterways causing bank collapse, channel widening, loss of undercut banks, and fine sediment increases, all of which contribute to aquatic habitat degradation. Where cows have direct access to streams and where concentrated use occurs, fine sediment levels increase, covering stream substrate with fine sediment throughout most of the late summer and early fall. Fine sediment (sand, silt, clay) exceeded the PFC benchmark of greater than 20 percent fines (Klamath Province/Siskiyou Mountains Matrix of Factors and Indicators) for Conde, Soda and Lost Creeks impacting aquatic invertebrates in these systems. While sediment is mobilized at a time when turbidities are naturally elevated, exposed and disturbed banks would be susceptible to continued degradation throughout the first winter rains and again in the spring snow melt with no time for recovery post-grazing season. Disturbed banks are then vulnerable to seasonal high flow events where erosion is exacerbated. Elevated fine sediment levels, during late summer and early fall, decreases invertebrate abundance. Compaction of fragile riparian soils reduces the flow patterns and decreases the water storage capacity of these critically important habitats. The Conde Creek corral site, located adjacent to Conde Creek, is compacted and is restricting and channelizing the stream.

The physical integrity of seeps, springs, and streams is further compromised by consumption of riparian vegetation. Riparian vegetation in these areas is usually grazed down to 1-2" stubble heights, leaving virtually no vegetative cover going into winter high flows and subsequent spring runoff events. Where minimum stubble heights are not maintained throughout the grazing season and where repeated grazing inhibits plant vigor, riparian vegetation has a reduced capacity to trap sediment during elevated flows and does not provide adequate bank protection. Additionally, removal of riparian vegetation (grasses, forbs, and shrubs) allows higher levels of solar radiation to reach the water surface in seeps/springs/streams resulting in increased water temperatures. Overhanging vegetation is important for aquatic organisms as it provides physical cover and it provides food as insects fall off the overhanging vegetation, into the water.

This allotment lacks functioning water improvements. Water improvements as seen in Table 2-5 include;

four pump chances, two reservoirs, and two water troughs. Water improvements are well dispersed throughout the allotment although most pump chances are inaccessible to cattle because of very steep banks and two troughs in the allotment do not currently provide water season long. This means that perennial waterways are the only sources of fresh water, effectively drawing cattle to these fragile sites.

Several wet and semi-wet stringer meadow systems in this allotment are linked by roads allowing for easy travel between these sites, increasing the ease with which cattle travel from one perennial waterway to another. The gentle topography of these meadow systems, connecting road systems, lush vegetation at a time when upland vegetation is cured and less palatable, and fresh water encourages use at these fragile sites. While roads facilitate cattle distribution and connectivity between systems, the aquatic system experiences reduced connectivity from road-stream crossings, irrigation withdrawals, and a diversion dam. Migration of aquatic organisms is particularly restricted on Conde Creek at the TID diversion dam site.

As a center of pebblesnail endemism, this area is vulnerable to habitat degradation and associated declines in mollusk populations. Severe grazing impacts were observed at all known pebblesnail sites. Livestock grazing was measured by a combination of factors (stubble height, trampling, feces, bank destabilization, and bare ground) and was rated on a scale described in the Aquatic Macroinvertebrate Monitoring Section (page 7).

In summary, grazing has and will continue to limit habitat complexity and diminished habitat conditions throughout the allotment. This alternative would maintain degraded conditions at the site level, with chronic fine sediment input to aquatic habitat.

ALTERNATIVE 2

This alternative proposes the same number of cattle, same season of use, and same AUMs as Alternative 1. Under this alternative, hot season, late season, and season-long grazing would continue so the effects to aquatic systems would be similar to Alternative 1. There are ten new terms and conditions proposed under this alternative, specifically maintenance of 5” stubble heights in riparian areas and <20% active, livestock caused bank alteration, that would provide a measure of protection for riparian areas, allowing for slightly improved condition of riparian hotspots at the end of each grazing season. There would be a slight decrease in bank trampling and disturbances near water sources due to the term and condition requiring herding of animals away from riparian areas. The success of this alternative is largely dependent on the herding effort because it leaves cows on the allotment late in the season, when cattle tend to focus use along perennial waterways. Potential mitigation measures would improve site level conditions.

Potential Mitigation Measures

Two riparian fences are proposed to improve riparian conditions, one along a stream channel and the other in a wet meadow. The stream channel exclosure on Conde Creek is an area that has historically experienced concentrated grazing impacts from mid-August to the end of the grazing season and has resulted in disturbed banks, widened channels, elevated fine sediment levels and excessively grazed riparian vegetation. Fencing this area would improve on-site conditions as bare dirt, disturbed banks, and fine sediment levels diminish and riparian vegetation recovers to improve bank stability and provide shade. Fencing the wet meadow in Big Glades would improve conditions at the site level by relieving saturated ground of the trampling effects of cattle. This would reduce compaction and eventually improve the water storage capacity of this site. Deflecting use from these sites would certainly increase use at adjacent or nearby sites as displaced cattle search out other sources of water and palatable vegetation in the late summer months. This alternative still leaves numerous seeps, springs, and streams unprotected during the late season when water and forage are limited.

Currently the pump chances on this allotment are non-functional or inaccessible to cattle. Improving these facilities would provide alternate clean water sources throughout the grazing season that are well distributed through the allotment. This may decrease use along perennial stream channels although success will depend on herding techniques applied by the lessees and would have to be monitored to make sure new hot spots are not occurring. Minimal short term disturbance is expected as the pump chance banks are "pulled back" to facilitate cattle use.

The effects of seeding would be minimal because the vegetation would not have an opportunity to get established before the next grazing season.

Relocating the temporary corral from Conde Creek streamside to an upland area close by would improve riparian function at that site. The current corral location, set at the downstream end of the Conde Creek meadow, is a preferred location by the ranchers because the Conde Creek meadow functions as a funnel for herding cows at the end of the grazing season, crossing the main channel of Conde Creek as part of the pathway to the corral. Removing the temporary corral location from Conde Creek would decrease channel disturbance and associated concentrated use allowing this stream section to recover.

Given the extended late season and the logistics of frequent and widespread monitoring, long-term site level improvement is dependent upon successful livestock management. In order for any measurable improvements to occur, constant herding would have to be employed to keep cows out of their favored riparian locations. Monitoring by BLM employees, will determine the efficacy of the terms and conditions and will determine future management changes.

To summarize, late season grazing is the single greatest disturbance to perennial riparian areas because cattle congregate here during the late season as other sources of water and palatable forage diminish. This alternative would slightly reduce grazing effects along perennial waterways through new terms and conditions, mitigation measures, and constant herding efforts.

ALTERNATIVE 3

This alternative proposes grazing from June 16 to August 15, eliminating a significant portion of the hot season/late season grazing (August 16-September 30th). Eliminating these 45 days of grazing would set perennial riparian areas in this allotment on an immediate trajectory of recovery. Cattle tend to start congregating in riparian areas around August 15 when much of the upland vegetation has cured so removing cows from the allotment at this time would provide myriad benefits to the aquatic systems. Vegetative regrowth would occur before fall rains, increasing their capacity to trap sediment and protect stream banks during high fall/winter flows and spring snow melt. Bank disturbance and associated fine sediment would decrease, improving channel stability and reestablishment of undercut banks. Spring habitats would see marked improvement in this alternative, improving habitat for pebblesnails and other aquatic organisms. Disturbed riparian areas would revegetate providing cover, stability, and shade.

This alternative would improve riparian-wetland functions by removing cattle from the allotment during late season when concentrated livestock use occurs in riparian areas thus improving stream channel characteristics and aquatic habitats.

Potential Mitigation Measures

Two riparian fences are proposed to improve riparian conditions, one along a stream channel and the other in a wet meadow. The stream channel exclosure on Conde Creek is in an area that has historically

experienced focused grazing impacts from mid-August to the end of the grazing season resulting in disturbed banks, widened channel, elevated fine sediment levels and heavily grazed riparian vegetation. Fencing this area would improve on-site conditions as bare dirt, disturbed banks, and fine sediment levels diminish and riparian vegetation recovers to improve bank stability and provide shade. Fencing the wet meadow in Big Glades would improve conditions at the site level by relieving saturated ground of the trampling effects of cattle, reducing compaction and eventually improving the water storage capacity of this site. Deflecting use from these sites would certainly increase use at adjacent or nearby sites as displaced cattle search out other sources of water and palatable vegetation.

Currently the pump chances on this allotment are non-functional or inaccessible to cattle. Improving these facilities would provide alternate clean water sources throughout the grazing season that are well distributed through the allotment. This is expected to decrease use along perennial stream channels although success will depend on herding techniques applied by the lessees and would have to be monitored to make sure new hot spots are not occurring. Short term disturbance would occur as the pump chance banks are "pulled back" to facilitate cattle use.

Under this alternative, seeding would improve riparian function by stabilizing areas of bare ground. It is expected that this alternative would alleviate the need for seeding because livestock would be removed before excessive use occurs; however, if necessary, hot spots would be seeded to reduce bare ground. The shortened grazing season would allow this vegetation to become established prior to the next grazing season.

A two year rest period would allow riparian vegetation to reestablish along banks where focused grazing has resulted in disturbed soil and areas of bare dirt. A rest period would also provide riparian plants with a respite from disturbance, increasing productivity and distribution giving the riparian areas a boost before grazing resumes. In two years, banks would stabilize and vegetation would become reestablished in areas of disturbance thereby improving stream condition prior to grazing.

Relocating the temporary corral from Conde Creek streamside to an upland area close by will improve riparian function. The current corral location, set at the downstream end of the Conde Creek meadow, is a preferred location by the ranchers because the Conde Creek meadow functions as a funnel for herding cows at the end of the grazing season. This funnel directs cattle across the main channel of Conde Creek, before entering the corral. Removing the temporary corral location from Conde Creek would decrease channel disturbance and associated concentrated use allowing this area to recover.

In summary, this alternative would reduce site level impacts to aquatic habitats by resting the allotment during the hot and late season. This would allow vegetative regrowth prior to fall rains and spring snow melt and reduce bare soil and bank disturbance along perennial channels by removing cattle from the area before the majority of riparian use occurs.

ALTERNATIVE 4

Removing cows from this allotment for 10 years would immediately improve the physical condition of seeps, springs, and streams by eliminating concentrated use in riparian areas. Livestock caused bank and channel disturbance would cease and associated fine sediment levels would decrease immediately at the site level and downstream. Riparian vegetation would not be grazed so shade, cover, and bank protection would improve in the first year. In the short term (1-3 years), damaged banks would revegetate and stabilize; improving vegetative cover critical to trapping fine sediment, stabilizing banks where applicable, improving shade, and providing cover for aquatic organisms. Stream function would improve as banks

recover from years of grazing related disturbances. By eliminating cattle caused bank disturbance and trampling, fine sediment would be reduced, improving habitat condition and PFC ratings on Conde, Soda, and Lost Creeks. Aquatic habitat conditions would improve in the short and long term. Upland seeps and springs would see marked improvement in this alternative, improving habitat for the Little Butte pebblesnails and other aquatic organisms.

Over the long term (3-10 years), compaction in the uplands and riparian areas from livestock grazing would be reduced, improving ground water storage and recharge. Plant cover and litter would reestablish, filling in areas of bare ground improving the dissipation of flood energy and maintain infiltration and permeability. These changes, over time would enhance the timing and duration of peak flows and improve the availability of summer low flows at the site scale. Willow and other channel-adjacent riparian species would mature over this time providing bank stability, cover, and shade. Shrub recovery can be dramatic following the elimination of livestock grazing (Platts and Rinne 1985, Elmore and Beschta 1987).

Over time, compaction in the uplands and riparian areas from livestock grazing would be reduced, improving ground water storage and recharge. Plant cover and litter would increase, filling in areas of bare ground, improving the sediment filtering capacity, maintaining infiltration and permeability, and providing cover. These changes, over time would enhance the timing and duration of peak flows, improve the availability of summer low flows at the site scale, and reduce seasonal fine sediment levels.

Attainment of Aquatic Conservation Strategy (ACS) Objectives

The Northwest Forest Plan's (NWFP) Aquatic Conservation Strategy (ACS) has four components: Riparian Reserves, Key Watersheds, Watershed Analysis, and Watershed Restoration. It is guided by nine objectives which are meant to focus agency actions to protect ecological processes at the 5th-field hydrologic scale, or watershed, at the 6th and or 7th fields (subwatershed and or drainage), and at the site level. In this case, Deer Creek and Upper Lost Creek are 7th field drainages. Upper Dead Indian Creek, Conde Creek, and Soda Creek each consist of two 7th field drainages. These drainages are all within the 6th field Upper, Middle, and Lower South Fork Little Butte Creek subwatersheds. All of these are tributaries to the much larger Little Butte Creek 5th field Watershed. How the four components of ACS relate to the Conde Creek Allotment salvage is explained below:

1. Riparian Reserves: Riparian Reserve widths for streams, springs, wetlands, and unstable soils have been determined according to the protocol outlined in the NWFPs Aquatic Conservation Strategy and are listed in the PDFs for the Windy Soda salvage.
2. Key Watersheds: Tier 1 Key Watersheds contribute directly to conservation of at-risk anadromous salmonids, bull trout, and resident fish species. They also have a high potential of being restored as part of a watershed restoration program. The Little Butte Creek Watershed is a designated Key Watershed, above the confluence of the North and South Forks, for anadromous salmonids.
3. Watershed Analysis: BLM completed the Little Butte Creek Watershed Analysis in 1997. The analysis covers the planning area.
4. Watershed Restoration: Most of the restoration activities in the watershed have focused on restoring and facilitating fish passage to provide better access to habitat on private and federal lands. Projects by the local watershed council, ODFW and/or BLM include culvert removal and replacement, dam removal, road decommissioning, and irrigation ditch fish screens and siphoning.

Potential Mitigation Measures

- Two new protective exclosures would be built (In Sec. 7, along Conde Creek and Sec. 31, in the Big Glades area) around two affected riparian areas. The exclosure at Big Glades would have water piped approximately 100 feet into an existing spring box.
- Pump chances that are inaccessible to livestock would be made accessible by pulling the banks back or adding rock where it is possible without affecting the existing stream channels entering or exiting the pump chances.

- Riparian areas determined to have levels of soil disturbance exceeding 20% would be seeded using native seed mixtures. Seeding would be limited by native seed supply and workforce availability.
- An alternate location for the current temporary corral location along Conde Creek in T. 38S. R.3E Section 7 will be constructed along road 38-3E-11 (approximately .2 miles N of current location). This may require cutting trees and adding rock to harden and level the surface to accommodate a 30'x50' temporary holding pen and allow a truck and trailer to load cattle. Drift fences may be constructed to facilitate herding into the temporary corral.

- A two-year period of rest will be analyzed to determine if it is necessary to suspend grazing because impacted affected riparian areas would not be able to make progress toward functionality with active grazing without the period proposed for rest.

With the exception of the two year rest period mitigation measure, each of these mitigation measures would meet Aquatic Conservation Strategy objectives at the site level. If selected, the two-year period of rest would meet ACS objectives at the 7th field level during the rest period.

Evaluation of This Action's Consistency with Northwest Forest Plan Aquatic Conservation Strategy Objectives

Objective 1. *Maintain and restore the distribution, diversity, and complexity of watershed and* ***landscape-scale features*** *<u>to ensure protection of the aquatic systems</u> to which species, populations and communities are uniquely adapted.*

Topography, slope, forest fire regime, climate, and the distribution of soil types and plant communities are some of the landscape-scale features affecting aquatic systems in the Jenny and South Fork Little Butte Creek Watershed. Biological features included in this objective include vegetation, Riparian Reserves, and fish and wildlife habitat.

Under Alternative 1 stream channel complexity is diminished where livestock use within Riparian Reserves results in bank collapse, channel widening, and reduced riparian vegetation. Localized impacts are observed at numerous perennial waterways in the allotment and as such Alternative 1 is not maintaining ACS Objective #1. Native plant communities continue to be at risk for further degradation and conversion. Late season grazing will continue to threaten the health of root systems, nutrient storage capacity and seed bank capacity of native riparian and meadow species, increasing the potential for colonization by nonnative species in those areas. Soil destabilization in areas where vegetation has been trampled or overgrazed, or where nonnative annuals are dominant species, will continue to be a threat to riparian systems' health.

Alternative 2 would see minor improvements over Alternative 1 because of the 5" stubble height and <20% bank disturbance outlined in the terms and conditions. If 5" stubble heights and <20% bank disturbance are maintained throughout the allotment and active herding is conducted effectively then improvements at the site level would occur. Late season use would continue to focus impacts on riparian areas making attainment of ACS difficult although not impossible.

Alternative 3 would restore complexity because of the shortened season of use, at a time of year when much of the rangeland is palatable, allowing for better distribution throughout the allotment and less focus on perennial waterways. Alternative 3 would increase the likelihood that native plant communities (particularly those in the riparian areas) would maintain or improve current levels of native colonization due to the elimination of late-season grazing and seeding in areas where disturbance levels reach or exceed 20%.

Alternative 4 would restore stream channel complexity by eliminating grazing as a source of disturbance. Passive restoration of plant communities would occur by eliminating grazing as a disturbance factor. However, plant community restoration would also be dependent on reducing the likelihood of nonnative species colonization in disturbed areas via seeding and active restoration practices which are not addressed in Alternative 4.

Objective 2. *Maintain and restore* ***spatial and temporal connectivity*** *within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.*

Spatial connectivity is compromised under Alternative 1 as access to refugia is limited by areas of poor habitat quality and because sediment and temperature impacts occurring in the headwater areas are transmitted to downstream habitats.

Alternative 2 see ACS Objective 1.

Spatial connectivity would improve under Alternative 3 by reducing the amount of time that cattle spend on the allotment so that in-channel disturbance is diminished. Removing cattle on August 15 would improve distribution throughout the allotment so that perennial waterways would recover from years of late season disturbance.

Alternative 4 would improve connectivity by eliminating grazing as a source of disturbance.

Objective 3*. Maintain and restore the* ***physical integrity*** *of the aquatic system, including shorelines, banks, and bottom configurations.*

The physical integrity of shorelines, banks, and bottom configurations would be compromised under Alternative 1 as cattle continue to trample stream banks and bottoms. Water, lush vegetation, and cooler temperatures draw cattle to these areas in effect "loving them to death". Where perennial water is accessible to cattle, meaning the topography is not too steep or channels not densely vegetated, cattle linger for most of the grazing season with little incentive to move on. Native plant communities continue to be at risk for further degradation and conversion, affecting the long-term integrity of riparian systems. Late season grazing will continue to negatively impact root systems, nutrient storage capacity and seed bank capacity of native riparian and meadow species, increasing the potential for colonization by nonnative species. Soil destabilization in areas where vegetation has been trampled or overgrazed, or where nonnative annuals are dominant species, will continue to be a threat to riparian systems' health.

Alternative 2, see ACS Objectives 1 and 2.

Under Alternative 3, hot spots would occur however not to the degree that would impact ACS because cows would be moved off the allotment by August 15th, at a time when riparian areas would not have experienced concentrated use and in time for bank stabilization to occur before fall rains. Alternative 3 would increase the likelihood that native riparian plant communities would maintain or improve current levels of native colonization due to the elimination of late-season grazing and seeding in areas where disturbance levels reach or exceed 20%.

Alternative 4 would restore the physical integrity of the aquatic system by eliminating grazing as a source of disturbance. Alternative 4 would allow for passive restoration of riparian plant communities by

eliminating grazing as a disturbance factor. However, riparian plant community restoration would also be dependent on reducing the likelihood of nonnative species colonization in disturbed areas via seeding and active restoration practices which are not addressed in Alternative 4.

Objective 4. *Maintain and restore* ***water quality*** *necessary to support healthy riparian, aquatic and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.*

Water quality continues to be compromised under Alternative 1. The Rogue Basin and Draft Upper Klamath and Lost River Subbasins temperature TMDL identifies four nonpoint source factors result in increased thermal loads: stream shade, stream channel morphology, flow, and natural sources. Under Alternative 1, riparian plant community degradation would continue to negatively impact water quality and cattle continue to trample and overgraze riparian vegetation, effectively reducing the shading function of streamside vegetation. In the meadow systems of the allotment, in the absence of a forested overstory, streambank vegetation such as willows and grass species provide the primary shade for the riparian areas. Consumption of this vegetation increases the exposure of water surfaces to solar heating.

Addressing the Rogue Basin and Draft Upper Klamath and Lost River Subbasins temperature TMDL, the *Water Quality Restoration Plan for the North and South Forks of Little Butte Creek Key Watershed* and the *Draft Water Quality Restoration Plan for the Jenny Creek Watershed* (USDI 2006 and USDI 2008c) 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. Concentrated livestock grazing in riparian zones and channel widening is often related to degraded riparian conditions that allow increased streambank erosion and sedimentation of the streambed.

A stream with less flow will heat up faster than a stream with more flow given all other channel and riparian characteristics are equal. Under alternative 1, trampling by cattle reduces the porosity in wetlands, springs, and seeps and thus reduces the volume of water that can be contained in the macropores. The indirect effect of this compaction is less water storage capabilities and reduced contribution to late-season streamflows.

Under alternative 2, the seven additional terms and conditions will slightly improve the physical integrity of these sites and reduce some of the effects of grazing on riparian vegetation. Maintaining 5” stubble height and less than 20% bank disturbance throughout the allotment will improve water quality. Active herd management will be necessary to promote livestock dispersal so as to prevent the development of other hotspots and overutilization of the woody shrub species and grasses that provide stream shade in the riparian areas. Late season use would continue to focus impacts on riparian areas making attainment of ACS difficult although not impossible.

Water quality would improve under alternative 3. Reducing the season of use would decrease the concentrated grazing of riparian vegetation and the shearing and sloughing of streambanks in the late season. Vegetative regrowth would occur before fall rains, increasing their capacity to trap sediment and protect stream banks. Bank disturbance and associated sediment would decrease, improving channel stability and reestablishment of undercut banks. Improving the riparian plant health under Alternative 3 would improve water quality by ensuring soil stabilization, root function and proper nutrient cycling.

Elimination of grazing under Alternative 4 would allow for passive restoration to the plant community, and therefore, allow for water quality improvement. However, the necessary riparian plant community restoration that would allow for water quality improvements would also be dependent on active restoration activities which are not addressed.

Objective 5. *Maintain and restore the* ***sediment regime*** *under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.*

Alternative 1 contributes sediment through bank trampling and the reduction or elimination of riparian vegetation (see ACS Objective 3).

Alternatives 2, 3 and 4, see ACS Objective 3.

Objective 6. *Maintain and restore* ***instream flows*** *sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.*

Peak and low streamflows are not expected to be influenced beyond the site scale with the implementation of any of the alternatives.

Grazing under alternative 1 would continue to impact water quantity through contributing to altered peak and low flow regimes at the site level by increasing compaction and reducing plant cover/litter in the seeps, spring, streams and uplands within the allotment. Active downcutting in riparian areas, exacerbated by season-long grazing of the streambanks will continue to lower the water table and decrease groundwater storage and yield for summer low flows. During high water, plant cover, plant litter, and organic matter are necessary to protect banks from erosion, reduce water velocity along the stream edges, and filter out sediments. Under alternative 1, summer low flows are affected at the site scale through decreased discharge from soil water storage and cattle use of riparian areas and wetlands late into the season.

Alternative 2, see ACS Objective 1-4.

Under alternative 3, removing cattle on August 15 would allow for the regrowth and maintenance of plant cover, plant litter, and organic residue in the riparian areas going into the rainy season. This, in turn, would help to prevent hydrologic degradation by protecting the banks from erosion, reducing water velocity along the stream edge, and causing sediments to settle out. In addition to the localized positive impacts to the peak flow regime in the allotment, alternative 3 would benefit low summer flows by eliminating cattle use of wetlands and riparian areas at the time of the year when instream flows are limited. Reduction in riparian disturbance will likely improve ground water and bank storage, making more water available for recharge later into the season. Additionally, if two years of rest is selected as a mitigating measure, compaction in the uplands and riparian areas from livestock grazing would begin to recover, improving ground water storage and recharge. Regrowth of riparian vegetation could help stabilize the streambanks, reduce water velocity, and dissipate energy in high water events.

Alternative 4 would result in improving localized impacts on peak and low flows. Conditions in seeps, springs and streams in and downstream of the allotment would improve by eliminating cattle grazing on the allotment. Over time, compaction in the uplands and riparian areas from livestock grazing would be reduced, improving ground water storage and recharge. Plant cover and litter would reestablish filling in areas of bare ground improving the dissipation of flood energy and maintain infiltration and permeability. These changes, over time would enhance the timing and duration of peak flows and improve the availability of summer low flows at the site scale.

Objective 7. *Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in* ***meadows and wetlands****.*

Wetlands would be negatively impacted under Alternative 1 because cattle congregate in these areas

during hot and late season use causing chronic site-level disturbance. Chronic compaction of these areas alters the water table elevation and floodplain inundation.

Alternative 2, see ACS Objectives 1-4.

Alternative 3 would maintain wetlands in current condition as cattle will use these areas but not to the degree they would be used in Alternatives 1 and 2, allowing adequate time for recovery at the end of the grazing season and reducing overall pressure by decreasing AUMs.

Wetland conditions would improve under Alternative 4 by removing cattle from these fragile areas for the next 10 years. Over time, compaction in the uplands and riparian areas from livestock grazing would be reduced, improving ground water storage and recharge.

Objective 8. *Maintain and restore the species composition and structural diversity of* ***plant communities in riparian areas*** *and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of* ***coarse woody debris*** *sufficient to sustain physical complexity and stability.*

Livestock are attracted to Riparian Reserves for their lush vegetation, clear water, and cooler temperatures. Under Alternative 1, chronic site level disturbance in riparian areas alter species composition and structural diversity of plant communities in riparian areas and wetlands.

For Alternatives 2, 3, and 4, see ACS Objectives 1-5.

Objective 9. *Maintain and restore* ***habitat*** *to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.*

Pebblesnail populations are negatively impacted by trampling and fine sediment that occurs under Alternative 1.

For Alternatives 2, 3, and 4, see ACS Objectives 1-8.

BOTANY RESOURCES

AFFECTED ENVIRONMENT

Vegetation in the Conde Creek Allotment is primarily mixed-age conifer forest (mixed fir and white fir) with areas of hardwood, shrubland, and open grass- and forb-dominated meadows that have strong riparian influence. Cattle primarily graze meadows and harvested forest openings within a matrix of varied conifer communities. Dry uplands dominated by pine species, incense cedar (*Calocedrus decurrens*) and Manzanita species (*Arctostaphylos* species) are present in some areas, as well.

The conifer-dominated forests, comprised primarily of white fir, ponderosa pine, Douglas fir and incense cedar (*Abies concolor*, *Pinus ponderosa* and *Psuedotsuga menziesii*) generally have low-to-moderate levels of herbaceous species (forbs and grasses) present, and moderate-to-high shrub cover, depending both on age of the stand and the aspect. Dominant species of forbs in mature (mid- to late-seral) conifer stands include prince's pine (*Chimaphila sp*.), inside-out flower (*Vancouveria hexandra*), broadleaf starflower (*Trientalis latifolia*), Scouler's hairbell (*Campanula scouleri*), Pacific trillium (*Trillium ovatum*) and fairy bells (*Disporum hookeri*). Dominant shrubs can include hollyleaved barberry (*Mahonia*

aquifolium), common snowberry (*Symphoricarpos albus*) and wild currants (*Ribes* sp.). Younger conifer stands are often dominated by Douglas fir, ponderosa pine and incense cedar, with common snowberry, oceanspray (*Holodiscus discolor*), wild currants and Cascade barberry (*Mahonia nervosa*) often comprising the dominant shrubs. Herbaceous cover in these harvested units is often sparse and grass-dominated (native and non-native).

Riparian areas are a mix of open meadows with riparian influence (ponds, seasonal and perennial wetlands) and drainages that reflect more of a conifer-dominated plant-community (i.e. seasonal and perennial creeks, seeps). The open meadows are primarily shrub and grass-dominated, with grass species including California oatgrass (*Danthonia californica*), Kentucky bluegrass (*Poa pratensis*), Idaho fescue (*Festuca idahoensis*) and bulbous bluegrass (*Poa bulbosa*). Shrub species can include common snowberry, rose spiraea (*Spiraea douglasii*) and wild currant.

Non-native annual and perennial grass species can be found throughout much of Conde Creek Allotment, including smooth brome (*Bromus hordeaceous*), cheat grass (*Bromus tectorum*), dogstail (*Cynosurus echinatus*), ripgut brome (*Bromus diandrus*), bulbous bluegrass (*Poa bulbosa*) and medusahead rye (*Taeniatherum caput-medusae*). Broadleaved weeds that occur within the allotment include Himalayan blackberry (*Rubus discolor*), bull thistle (*Cirsium vulgare*), Klamath weed (*Hypericum perforatum*) and Canada thistle (*Cirsium arvense).* Survey records indicate that the non-native grasses can be found primarily in meadows (dry, wet and semi-wet), clearings and roadsides, while the broadleaved species are generally nearer to existing roads.

The Rangeland Health Assessment completed in August 2006 showed that there are varied departures in Biotic Integrity within the allotment, depending on the ecological site being evaluated. Six ecological sites were evaluated: Dry Meadow (Moderate departure), Wet Meadow (None to Slight departure), semi-wet meadow (None to Slight departure, Douglas fir forest (None to Slight departure), and Pine fescue (None to Slight departure).

The forested portion comprises 54% of this allotment and supports a diverse mix of forested plant communities, while the remaining 46% of the allotment consists of dry, wet and semi-wet meadow plant communities and shrublands. These meadows and shrublands also support a diverse mix of plant species, and include both native and nonnative species.

Threatened, Endangered, and Bureau Special Status Species

The Conde Creek Allotment is outside the range of federally listed plants known to occur on the Medford District of the BLM *(Fritillaria gentneri , Limnanthes floccosa, Arabis macdonaldiana,* and *Lomatium cookii)* as defined by the U.S. Fish and Wildlife Service (USDI Fish and Wildlife Service, 2003). No occurrences of any federally listed plant species are known on federal lands within the allotment.

Survey and Manage

Survey and Manage species on the Conde Creek Allotment will be managed per guidance set forth in the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*, which states that all former Protect Sites from Grazing species and Protection Buffer species are either Survey and manage species as described in the standards and guidelines, or are removed from the standards and guidelines because they do not meet the Survey and Manage basic criteria. Known sites are managed as specified for the category to which they are placed, but the land allocations associated with Protection Buffer species sites are returned to their underlying or appropriate surrounding allocation.

Sensitive Vascular Species

A total of 18 populations of special status vascular plants occur within the allotment (Table 3-13). Each of the 3 species that comprise the 18 populations is listed as "Sensitive" per the State Director's list finalized in February 2008.

Table 3-13. Vascular Special Status Species within the Conde Creek Allotment

Scientific Name	Common Name	2008 BLM Status	2001 Survey and Manage Category*	Total # of Populations
Cimicifuga elata	tall bugbane	SEN	--	6
Scirpus pendulus	rufous bullrush	SEN	--	9
Cypripedium montanum	mountain lady's slipper	SEN	C	3

SEN = Sensitive (USDI Oregon State Director's List)

*Survey and Manage: as determined by the 2001 amendment to the 1994 Northwest Forest Plan Record of Decision for Survey and Manage, Protection Buffers and related mitigation measures.

C = Uncommon, and not all known sites or populations are likely to be necessary for reasonable assurance of persistence, as indicated by several factors. Pre-disturbance surveys are practical.

A study of cattle diets indicates that the bulk of their diet is comprised primarily of graminoids (80% of identified species) in areas managed for their use. 16% of that amount was comprised of unidentified grass species and grass-like species (e.g. unidentified sedges and rushes) (Holecheck et al. 1982). Of the special status species sites located within the Conde Creek Allotment, there is one species of graminoid, *Scirpus pendulus,* which is a member of the sedge family. A perennial graminoid, it grows in marshes, wet meadows and ditches, averaging a height of 50-100 cm (Mullens and Showalter 2007). There are 14 sites on BLMs Medford District, the 9 sites in the Conde Creek Allotment represent 64% of the total known District sites. *Scirpus pendulus* may be susceptible to grazing impacts from trampling and its use as forage. The *Scirpus pendulus* populations in this allotment occur in areas receiving varying livestock utilization, averaging light use in most years, with a small portion of one population occurring in an area averaging moderate use. All allotment populations occur in perennially wet areas.

Cimicifuga elata is a perennial broadleaved forb that has reproductive limitations that make colonization into new sites difficult, including its lack of effective seed dispersal and attraction for pollinators when in competition with other flowering plants (due to lack of nectar). Other potential threats include competition with invasive species (Penny and Douglas 2001). *Cimicifuga elata* is not believed to be preferred forage for cattle. The departure from ecological site descriptions due to the introduction and spread of invasive plants and the soil surface's reduced resistance to erosion could affect the populations of *Cimicifuga elata.* There are 118 documented and current sites on the Medford District BLM; the 6 sites in the Conde Creek Allotment represent less than 1% of the total District sites.

Cypripedium montanum is a perennial forb and a member of the orchid family. Habitat includes moist areas, dry slopes and mixed-evergreen or coniferous forest (Hickman 1993). There are 426 documented and current sites of *Cypripedium montanum* on the Medford District BLM, the 3 documented sites in the Conde Creek Allotment area represent less than 1% of the total District sites. The known populations within the Conde Creek Allotment occur in a coniferous upland area, directly adjacent to a meadow, in an area averaging light use.

Lichens and bryophytes (Nonvascular species)

Approximately 23% of the allotment area has been surveyed for Bureau Special Status lichens and bryophytes. Pre-disturbance surveys for lichens and bryophytes were primarily conducted for timber-based management activities (i.e. silviculture treatments and timber sales), and were focused on areas outside of the riparian and grassland areas. There are no known occurrences of species from the 2008 State

Director's List within the allotment. There are 2 documented nonvascular species with Survey and Manage Status in the Conde Creek Allotment (Table 3-14). These 2 species are typically associated with mixed-conifer forested habitat types, including large dead-and-down woody debris commonly found in mature forests. Due to the low level and type of disturbance observed from cattle in these habitat types, a protection/mitigation for these species is not necessary within the scope of allotment activity.

Table 3-14. Nonvascular Special Status Species within the Conde Creek Allotment

Scientific Name	2008 BLM Status	2001 Survey and Manage Category*	Total # of Populations
Buxbaumia viridis	--	D	4
Calicium viride	--	F	3

*Survey and Manage: as determined by the 2001 amendment to the 1994 Northwest Forest Plan Record of Decision for Survey and Manage, Protection Buffers and related mitigation measures.

D= Uncommon. Manage all known sites until high-priority sites can be determined. Pre-disturbance surveys are not practical or not necessary.

F= Uncommon, or Concern for Persistence Unknown. Management of known sites NOT required because species are uncommon, not rare. Until reassignment of species to a new category or removal from list occurs, inadvertent loss of some sites is not likely to change the level of rarity.

Buxbaumia viridis, commonly known as bug-on-a-stick moss, is widespread through the Northwest, and occurs on rotten stumps and logs and on mineral or organic soil in cool, shaded, humid locations at middle elevations. Floodplains and stream terraces are favorable habitats because of the large amount of decayed wood available in late-seral forests, but the species can be found on almost any landform as long as microclimatic conditions are favorable. There are 4 populations within the Conde Creek Allotment area, representing 2% of the total documented sites on the Medford District of the BLM.

Calicium viride, a pin lichen, occurs over bark and wood of conifers and deciduous trees throughout its extensive range. There are 3 documented sites within the Conde Creek Allotment area, representing 4% of the total documented sites on the Medford District of the BLM.

Fungi

Of the 20 species of fungi that are on the Medford District SSP Sensitive list, 17 are Survey and Manage (S&M) Category B species whose status determines that pre-disturbance surveys are impractical and not required. Two of the 20 fungi species are S&M Category E or F where their S&M status is undetermined and pre-disturbance surveys are not required. One species of the 20 fungi is not a S&M species but is a hypogeous (underground) fungus, as are other of the previously referenced fungi where pre-disturbance surveys are impractical. Oregon State Office Information Bulletin No. OR-2004-145 reaffirmed that these surveys were impractical and further stated that Bureau policy (Manual Section 6840) would be met by known site protection and large-scale inventory work (strategic surveys) through fiscal year 2004.

No occurrences of District Sensitive fungi species are known to occur on the Conde Creek Allotment. One District Strategic species of fungi, *Plectania milleri*, is found within the Conde Creek Allotment. This species is listed as Strategic species per the finalized State Director's Special Status Species List of 2008, which requires no mitigation per direction provided in Instruction Memorandum No. OR-2008-038. There are 7 species of Survey and Manage fungi within the allotment (Table 3-15). These 7 species are typically associated with mixed-conifer forested habitats. Due to the low level and type of disturbance from cattle in these habitat types, and the season of authorized use, that protection/mitigation for these species is not necessary within the scope of allotment activity.

Table 3-15. Bureau Special Status Species of Fungi Within the Conde Creek Allotment Area.

Scientific Name	2008 BLM Status	2001 Survey and Manage Category*	Total # of Populations
Gryromitra montana	--	D	13
Helvella compressa	--	B	2
Helvella maculata	--	B	10
Pithya vulgaris	--	D	41
Plectania milleri	STR	B	3
Ramaria rubrievanescens	--	B	1
Sarcosoma mexicana	--	F	40
Sarcosphaera eximia	--	B	8

STR = Strategic (USDI Oregon State Director's List)
*Survey and Manage: as determined by the 2001 amendment to the 1994 Northwest Forest Plan Record of Decision for Survey and Manage, Protection Buffers and related mitigation measures.

B= Rare, and all known sites are managed. Pre-disturbance surveys are not practical.
D= Uncommon. Manage all known sites until high-priority sites can be determined. Pre-disturbance surveys are not practical or not necessary.
F= Uncommon, or Concern for Persistence Unknown. Management of known sites NOT required because species are uncommon, not rare. Until reassignment of species to a new category or removal from list occurs, inadvertent loss of some sites is not likely to change the level of rarity.

Gyromitra montana is characterized by its distinct compact brainlike form with a short, stout stem and large spores. Found near or on the edge of snowbanks in coniferous forests in solitary, scattered populations, there are many documented populations throughout the range of the Northwest Forest Plan. It typically fruits in the spring. There are 13 documented sites in the Conde Creek Allotment, representing 27% of the total sites on the Medford District BLM.

Helvella compressa is a saddle-shaped fungus that grows on soil in low to mid-elevation, mixed forests that often include Douglas fir or oak species. It typically fruits from March through July. There are 2 documented populations within the Conde Creek Allotment, comprising 5% of the total sites on the Medford District BLM.

Helvella maculata is a saddle-shaped fungus that grows at low to mid-elevation under mixed conifers or hardwoods, but is not restricted to old-growth. It typically fruits from September through April. There are 10 documented sites within the Conde Creek Allotment, representing 24% of the total documented sites on the Medford District BLM.

Pithya vulgaris is a saprophytic or needle endophyte that fruits on wet and dead (usually detached) branch tips and twigs of fir species, in montane areas often within several yards of snow banks or within a few weeks of snow melt. It typically fruits from March through May, and in November. There are 41 documented sites occurring within the Conde Creek Allotment, representing 25% of all sites on the Medford District.

Plectania milleri is a black cup-shaped sporocarp (the fruit bears spores) that occurs typically in the spring and summer. It is associated with mixed conifer stands, usually found growing underneath trees in the associated litter and debris. There are 166 documented and current sites on the Medford District of the BLM. The sites on the Conde Creek Allotment represent 2% of the total number of sites on the District, and 5% of total sites in the Lower South Fork Little Butte, South Fork Little Butte Creek-Dead Indian and Walker Creek 6th Field Watersheds.

Ramaria rubrievanescens is a coral mushroom that fruits in humus or soil and matures above ground in June, September and October. It is often associated with pine species. There is 1 documented site within the Conde Creek Allotment, which represents 13% of documented sites on the Medford District of the BLM.

Sarcosoma mexicana is a black cup fungus that grows as solitary individuals or in gregarious populations on or near decaying wood, or on litter and soil, and usually in conifer forests at varying elevations. It typically fruits from November through May. There are 40 documented sites within the Conde Creek Allotment, representing 18% of the documented sites on the Medford District BLM.

Sarcosphaera eximia (syns. *S. coronaria*, *S. crassa*) can be found as solitary to clustered individuals on the ground in duff, or beneath the surface of the ground in soil in coniferous forests. It is considered to be widespread across the North America and Europe, and is known from many locations across the range of the Northwest Forest Plan. There are 8 documented sites within the Conde Creek Allotment, representing 20% of documented sites on the Medford District BLM.

Noxious Weeds

It is estimated that weeds in rangeland cause an annual loss of $2 billion annually in the United States, (more than all other pests combined), and have infested an estimated 10% of federal lands. Impacts are numerous, affecting everything from livestock forage quality to habitat and ecosystem health (DiTomaso 2000). "Noxious Weed" describes any plant classified by the Oregon State Weed Board that is injurious to public health, agriculture, recreation, wildlife, or any public or private property. The definition of a B-Designated weed is one "of economic importance which is regionally abundant, but which may have limited distribution in some counties" and treatment methods are determined on a case-by-case basis (Oregon Department of Agriculture Noxious Weed Program).

Field surveys have located populations of four species of noxious weeds within or adjacent to the allotment (Table 3-16). Canada thistle (*Circium arvense*), Klamath weed (*Hypericum perforatum*), medusahead rye (*Taeniatherum caput-medusae*) and Armenian (Himalayan) blackberry (*Rubus discolor*) are all "B-Designated Weeds", as determined by the Oregon Department of Agriculture. There are no species from the federal noxious weed list in the project area.

89% of documented Armenian blackberry, Canada thistle and Klamath weed populations occur along existing roads or other areas that have a disturbance regime due to management activity. Survey records indicate that medusahead rye can be found primarily in meadows (dry, wet and semi-wet) and roadside. The number and sizes of medusahead rye populations are unknown in this allotment.

Table 3-16. Noxious Weed Species Located Within or Adjacent to the Conde Creek Allotment Boundary

Scientific Name	Common Name	Number of Occurrences
Circium arvense	Canada thistle	9
Hypericum perforatum	St. Johnswort	1
Rubus discolor	Himalayan/Armenian blackberry	2
Circium vulgare	Bull thistle	unknown
Taeniatherum caput-medusae	Medusahead rye	unknown

Canada thistle (*Circium arvense*) is a colony-forming (primarily by asexual reproduction) perennial that is a native of Eurasia. This prickly rose-purple flowered plant can produce up to 1500 wind transported seed per flowering shoot. Seed can remain viable in the soil for 20 years. Detrimental effects attributed to the establishment of Canada thistle include displacement of native species, decrease of plant diversity, reduced forage, and it serves as an alternate host for insects and pathogenic microorganisms that attack various crops. Successful control methods include biological, chemical, cultural, and some limited success with mechanical methods. There are 1141 known and current sites reported for the Medford District, with 9 known populations of Canada thistle within the allotment boundary, in areas ranging in average use from light to heavy (21-80%).

Common St. Johnswort (*Hypericum perforatum*) is a perennial forb with extensive creeping rhizomes introduced from Eurasia as an ornamental plant. It is both a toxic and invasive weed. It can form dense stands in meadows, pastures, rangelands, disturbed sites, and along roads. It is toxic to livestock but also has human medicinal value. There is one documented site within the Conde Creek Allotment area; however, this weed is under-reported on the Medford District and active control methods, other than the release and monitoring of biological control agents, are not usually employed. Detrimental effects include displacement of native species, decrease of plant diversity, and reduced forage. Successful control methods include biological and chemical.

Himalayan (Armenian) blackberry (*Rubus discolor*) is a perennial that blooms June to August. It is considered by the Oregon Department of Agriculture to be the most widespread and economically disruptive of all the noxious weeds in Western Oregon. An aggressive competitor, it effectively displaces native plant species, dominates riparian habitats upon introduction, and has a significant economic impact on right-of-way maintenance, agriculture, park maintenance and forest production. Capable of both sexual and asexual reproduction, it is able to quickly spread across landscapes or to jump great distances and create new infestations. Often, as plants reach an appropriate height, stem tips will bend down to the ground and establish a root system. Rhizomes also utilize adventitious rootstalks to enable the plant to spread from a single nutrient source. Long-term control methods are required for effective eradication. There are 603 reported sites of Himalayan blackberry on the Medford District; however, this species is under-reported due to the magnitude of occurrences and improbability of eradication in our area. There are 2 reported sites within the Conde Creek Allotment.

Bull thistle (*Cirsium vulgare*) is a taprooted biennial with spiny stems, leaves, and inflorescences. Each flower head can produce up to 250 seeds. Most seed falls within six feet of the parent plant but is capable of long distance transport by wind and animals. Seed survival is very low, as is seedling and rosette survival. It is estimated to take 200 seeds to produce one flowering plant. Bull thistle seedlings are poor competitors and require bare mineral soil to survive. This weed is a native of Eurasia. There are 1548 sites reported for the Medford District; however, this weed is under-reported on the Medford District as active control methods are not usually employed. Personal knowledge of the Botanist and recent records verify sites within the allotment area. Detrimental effects include displacement of native species, decrease of plant diversity, limits wildlife movement, and reduced forage. Bull thistle is eventually outcompeted by other vegetation for light, moisture, and nutrients.

Medusahead rye (*Taeniatherum caput-medusae*) is a grass that is native to the Mediterranean region of Eurasia, and was introduced to the United States in the late 1800s. The first recorded occurrence of the medusahead rye in Oregon was in Douglas County in 1887, and it can now be found throughout the West. An annual, it usually blooms May to June. Known for its ability to out-compete other grasses by extracting the majority of soil moisture before native perennial grasses have begun their growing season, it is also rich in silica and quickly becomes unpalatable. The stiff awns and hard florets can injure eyes and mouths of grazing animals. Medusahead rye also changes the temperature and moisture dynamics of the soil, which

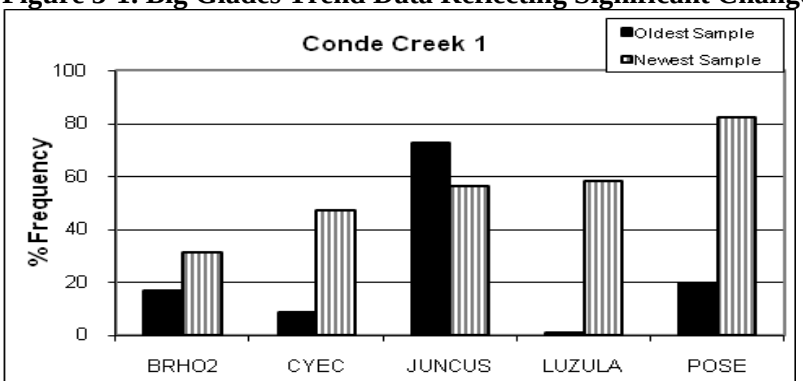
can greatly reduce seed germination of other species, and can create increased fuel for wildfires. Control methods usually involve chemical treatment; currently, there is no known biological control that can effectively manage for this species. There are 10 current, reported sites on the Medford District; however, medusahead rye is underreported District-wide and active control methods are not currently being used for management. Medusahead rye is documented in multiple areas throughout the Conde Creek Allotment, on both BLM and adjacent private lands in semi-wet and dry meadows.
Most of the noxious weed populations occur along roads or in areas with historical disturbance regimes (recreation, forestry, grazing activity, etc.). Due to their invasive nature, noxious weeds present on the allotment can continue to spread when left untreated. Areas of moderate-to-heavy livestock utilization and congregation areas (salt blocks, water sources, shade) that experience soil and vegetation disturbance within the allotment are at risk for weed colonization. To control known populations and prevent future spread of noxious and invasive species, 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. 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.

Introduced Species

Introduced species are species that are nonnative to the ecosystem under consideration, and may adversely affect the proper functioning condition of the ecosystem. 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). Disturbance from historic livestock grazing practices contributed to the invasion and conversion of native perennial grasslands (D'Antonio and Vitousek 1992), including those throughout Southern Oregon and California. Due to their invasive nature, nonnative plant species present on the allotment can continue to spread when left untreated. Although most introduced species in the Conde Creek Allotment are not listed on the ODA Noxious Weed list, they pose a threat to natural plant communities. Recorded surveys and range monitoring plots indicate that there are many nonnative species located within the Conde Creek Allotment.

Most of the introduced species within the Conde Creek Allotment prefer meadows and areas with open canopy closure, and can easily establish in these ecosystems. In regards to the invasive species indicator in the Rangeland Health Assessments conducted in August 2006; the Dry Rocky Meadow site had an extreme departure, due to the presence of introduced (non-native) grass species, the Wet Meadow, Pine/Fescue and Fir sites are all rated as Slight to Moderate departure and the Semi-wet Meadow had a None to Slight departure from the Ecological Site Description for invasive species (USDI 2007b). Trend data does indicate there is nonnative grasses increasing in some meadows; this trend can be seen in the nested frequency data collected at the site located in T37S R03E S31 (Big Glades). Species with significant increases at this site include two nonnative graminoids, soft brome (*Bromus hordeaceous*) and bristly dogstail grass (*Cynosurus echinatus*). Native rushes (*Juncus* species) are showing a significant decrease in frequency, while native woodrushes (*Luzula* species) and a native perennial grass Sandberg bluegrass (*Poa secunda)* are showing an increase in frequency (Figure 3-1).

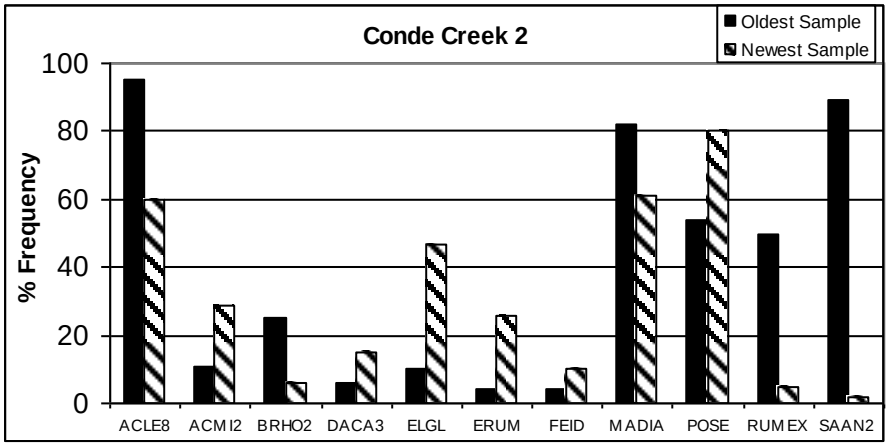
Figure 3-1. Big Glades Trend Data Reflecting Significant Change to Species



BRHO2 - *Bromus hordeaceous* (soft brome)
CYEC -*Cynosurus echinatus* (bristly dogstail grass)
JUNCUS - *Juncus* species (rush species)
LUZULA - *Luzula* species (woodrush species)
POSE- *Poa secunda* (Sandberg bluegrass)

Nested frequency data collected at the site located in T38S R03E S07 (Conde Creek) shows significant change in species including: a decrease in Lemmon's needlegrass (*Achnatherum lemmonii),* and an increase in California oatgrass (*Danthonia californica)*, blue wildrye (*Elymus glaucus),* Idaho fescue *(Festuca idahoensis)*, and Sandberg bluegrass (*Poa secunda)* these species are native, perennial bunchgrasses. Soft brome (*Bromus hordeaceous*) a non-native, invasive, annual grass species is showing a decrease in frequency. Forbs showing a significant change include an increase in perennial native forbs such as common yarrow (*Achillea millefolium),* and sulphur-flower buckwheat (*Eriogonum umbellatum),* and a decrease in annual native forbs tarweed (*madia sp.),* dock (*Rumex sp.)* and prairie burnet (*sanguisorba annua).* The condition of this site is showing an upward trend because of the increase in native perennial grasses and forbs and the decrease of a non-native annual grass (Figure 3-2).

Figure 3-2. Conde Creek Trend Data Reflecting Significant Change to Species



ACLE8- *Achnatherum lemmonii* (Lemmon's needlegrass)
ACMI2- *Achillea millefolium* (common yarrow)
BRHO2 - *Bromus hordeaceous* (soft brome)
DACA3- *Danthonia Californica* (California oatgrass)
ELGL- *Elymus glaucus* (blue wildrye)
ERUM- *Eriogonum umbellatum* (sulphur-flower buckwheat)
FEID- *Festuca idahoensis* (Idaho fescue)
MADIA- *Madia* species (tarweed)
POSE- *Poa secunda* (Secund's bluegrass)
RUMEX – *Rumex* species. (dock)
SAAN2- *sanguisorba annua* (prairie burnet)

ENVIRONMENTAL CONSEQUENCES

Direct, Indirect, and Cumulative Effects to Botany from Implementing Alternatives
This section of the EA will discuss the effects of implementing each of the alternatives and the impacts it would have on botanical resources. This section will also discuss any cumulative effects considering the range of alternatives plus the effects of other actions that are currently happening or will be happening in the foreseeable future. The cumulative effects of actions occurring within this allotment would not differ alternative by alternative.

ALTERNATIVE 1 – No-Action Alternative (no change)

Grazing occurs from June 16-September 30, for a total of 107 days of use. The number of cattle would total no more than 268 animals, for a total of no more than 943 AUMs.

Analysis of Effects Related to Season of Use and AUMs:
Due to the higher elevation of this allotment (3000-5400 feet), many species do not set seed by the June 16 turnout date. Field observations have indicated that some species do not begin to produce fruit and/or seed until mid-to-late July. This is also dependent on the annual snowpack and fluctuations in average temperatures. Because livestock disperse and are not grazing the entire allotment before seed set 40-80% of the plants within the allotment are able to produce seed annually. Herbivory of and damage to the wetland vegetation due to trampling and churning in riparian areas would continue.

Effects on Special Status Species:
Continued grazing does not pose a threat to the persistence of the Bureau Sensitive plant *Cypripedium montanum*, as the 3 known populations occur in an area not preferred by cattle due to steep slope and lack of water. Average utilization data indicates the populations are located in an area that averages "light use" (21-40%); risk for impacts to plants is present but are not high. Early-season field visits in 2009 indicated that the 3 populations show no effects due to grazing.

The 6 *Cimicifuga elata* populations occur in areas considered to be less desirable to cattle due to their lack of perennial water sources. Trampling and loss of seed bank due to livestock-caused soil disturbance would pose threats to the long-term health of these populations. However, average utilization data indicates the populations are located in an area that averages " slight" to "light" use (6-40%); risk for impacts to plants is present but very low.

Under the current grazing authorization, the 9 populations of *Scirpus pendulus* would continue to have the potential to be used as forage and may be damaged by trampling or soil compaction. Populations located near perennial water sources are at a greater risk for disturbance throughout the grazing season. *Scirpus* is not preferred forage for livestock because of its thick fibrous leaves but it can be grazed incidentally and when other preferred forage species are heavily grazed. Vigorous growth above ground and below ground helps protect this species from defoliation and damage from trampling. Data collected as part of the livestock impact study on the Cascade Siskiyou National Monument showed that *Scirpus microcarpus* decreased after being excluded from grazing (inside exclosures), *Scirpus pendulus* could show similar responses to grazing. If monitoring indicates a negative change in population size (decrease), exclosures would be constructed and/or adaptive management practices would be employed to protect Special Status Species and to mitigate for further damage.

While there are no documented impacts to this population, as a ground-dwelling species that grows at the base of coniferous species, *Plectania milleri* is at risk for disturbance during the hot portion of the grazing

season, when livestock may disperse further into the trees for shade. The loss of individuals, however, would not trend this species towards further listing.

Due to fruiting season and the limited use of forested stands in the allotment, the 7 species of Survey and Manage fungi species would persist at their current rates, with limited risk of damage to populations. The loss of individuals, however, would not trend species towards further listing.

There would be no effect on the 2 species of nonvascular Survey and Manage species, due to the substrate types on which each occurs (bark and wood).

Effects on Noxious Weed and Nonnative Invasive Species:
The early season of use that occurs on this allotment allows livestock to graze invasive species such as exotic grasses before they set seed and become unpalatable. However, the species of ODA-listed noxious weeds found in the Conde Creek Allotment have been determined to be largely unpalatable to cattle. Therefore, the presence of cattle is not contributing to the decrease of population sizes of previously reported Class B species (Himalayan blackberry, medusahead rye, Canada thistle, bull thistle and St. Johnswort) through the use of these species as forage. Other nonnative invasive species (e.g. bristly dogstail, ripgut, cheatgrass) are not considered to be preferred forage for livestock. One of the nested frequency transects did have a decrease in the frequency of smooth brome a nonnative invasive annual grass species however, it is unknown if the grazing on this allotment has influenced this change.

Inventory of noxious weeds on the Ashland Resource Area is ongoing. The association between roads, water, and forage utilization implies a synergy between road construction, proximity to water, livestock and wildlife dispersion, with weed establishment (Hosten, 2007a).

The current grazing regime is having no quantifiable effect on the botanical condition in the forested upland areas, particularly those lacking in perennial water sources or those with slopes greater than 30%. These areas are typically described as areas of no- to light-use. Field observations and surveys conducted indicate that these forested upland areas continue to be dominated by native annual and perennial species and the presence of exotic grasses and other non-native plant species is minimal. Plant health in the uplands would persist in its current state if grazing is continued under the current system and cattle continue to average slight-to-light use in these areas.

Localized site and soil disturbance would continue to produce conditions favoring noxious weeds and invasive introduced species, which would lead to loss of native perennial root mass and decreased native seed production. These introduced species are superior competitors for available resources, thereby displacing and excluding native plants. Although the Medford BLM cannot actively or accurately monitor the seed dispersal mechanisms of nonnative species within the Conde Creek Allotment, a study conducted in Oregon in 2007 comparing seed germination rates in fecal matter from cattle, elk and deer confirmed that cattle are responsible for the dispersal of an estimated 20 times more nonnative seed than native ungulates. At the same time, due to the large number of germinable seeds in their fecal pats, cattle were also responsible for being the primary dispersers of native seeds in study areas (Bartuszevige and Endress 2007). Introduced plant species are known to be superior competitors for available resources, thereby displacing and excluding native plants through mechanisms such as higher seed production rates and competing for water, light and nutrients. Livestock would continue to spread introduced seed that passes through their bodies or becomes stuck on their hair and hooves. Introduced species would continue to spread or maintain their current levels, particularly in open disturbed areas, meadows and roadways.

Noxious weeds would continue to spread and establish throughout the area, particularly roadsides and open areas. Site disturbance and a diminishing presence of native grasses and forbs would then be expected to continue to produce conditions favorable to noxious weed invasion. Populations of noxious

weeds selected by the BLM for treatment and control efforts would continue to decrease in size.

ALTERNATIVE 2

The grazing lease would be renewed authorizing the same animal unit month (AUM) levels, and seasons-of-use, with additional terms and conditions.

Analysis of Effects Related to Season of Use and AUMs:
Effects related to Season of Use and AUMS would be the same as in Alternative 1.

Effects on Special Status Species:
Effects to *Cypripedium montanum* populations would be the same as in Alternative 1.

Effects to populations of *Cimicifuga elata* would be the same as in Alternative 1.

Under this Alternative, the 9 populations of *Scirpus pendulus* would continue to face the potential for population decline due to use as forage and damage due to soil disturbance (i.e. trampling, soil compaction and erosion). Implementation of terms and conditions and/or mitigation measures would reduce impacts, but would not eliminate risk of population damage. However, if monitoring indicates a negative change in population size (decrease), exclosures would be constructed and/or adaptive management practices would be employed to protect SSP and to mitigate for further damage.

Effects to populations of *Plectania milleri* and Survey and Manage fungi would be the same as in Alternative 1.

Effects to populations of nonvascular Survey and Manage species would be the same as in Alternative 1.

Additional effects are analyzed in sections addressing proposed Mitigation Measures and Terms and Conditions.

Effects on Noxious Weed and Nonnative Invasive Species:
Effects related to seasons-of-use and AUMs are the same as under Alternative 1.

Additional effects are analyzed in sections addressing Terms and Conditions of the leases and proposed Mitigation Measures.

Analysis of Terms and Conditions:

Reduction in season-of-use based on delinquent livestock removal:
In the event the lessee should fail to remove livestock by the annual authorization period, the following season of use would be adjusted to a take-off date of September 10. Most plant species in the Conde Creek Allotment have set seed prior to this date; seed production would not be directly affected by the 20-day adjustment to the removal date.

Early removal of livestock would decrease the level of soil disturbance in areas that have been heavily grazed in previous years by decreasing the length of time allowed for potential disturbance. These areas of soil disturbance are documented in areas of riparian influence, and the plant species impacted are generally riparian-associated. A 20-day reduction in riparian grazing would provide additional time in the late season for plants to generate new stem and root growth, aiding in nutrient production and carbohydrate storagefor

the following growing season.

Removal of Livestock based on Stubble Height and/or Soil Disturbance:
When an average stubble height of 5 inches is reached, and/or there is greater than 20% active and livestock-caused bank alteration at key areas along Conde, Soda and Lost Creeks, livestock would be moved away from the key areas. If any livestock return to key areas at or below 5 inches, they are to be confined away from key areas and removed from the allotment by the lessee within 3 days.

A documented effect of soil compaction by hoof action is reduced macropore space that reduces infiltration, percolation, root growth and overall plant production (Clary 1995). Removal of livestock when an average stubble height of 5 inches is reached would speed up site recovery by allowing plant growth and regeneration prior to the cessation of the growing season. Seed production and storage could be expected to improve in areas where stubble has been measured at 1 to 2 inches. The reduction in soil disturbance from removal of cattle would reduce the risk for colonization by nonnative species in some areas.

Use of Active Management to Promote Livestock Distribution:
Lessees would conduct active management practices such as herding to promote livestock distribution to reduce grazing use in riparian areas as often as needed to be in compliance.

Active management would reduce the likelihood that plant communities would be overgrazed which would improve plant vigor. Improved cattle distribution would reduce the areas receiving heavy utilization and associated soil disturbance, reducing the risk of nonnative species colonization.

Placement of Salt Blocks ¼ Mile from Designated Areas:
Salt/mineral blocks would be placed at hardened locations at least ¼ mile from designated riparian areas and documented Special Status Plant Species sites, and would be rotated to promote livestock distribution and even utilization of the allotment lands.

Compliance with this Term and Condition would provide further protection for Special Status plant species by ensuring areas of livestock congregation are away from documented sites. Congregation areas (salt blocks, water sources, shade) that experience soil and vegetation disturbance within the allotment are at risk for noxious weed introduction and colonization. Rotation would encourage a more evenly-distributed pattern of use and would reduce soil disturbance, reducing the risk of invasion by nonnative species.
The expectation that this would have a widespread and significant impact on livestock distribution across the allotment as a stand-alone Term and Condition cannot be expected. Bryant (1982) and Martin and Ward (1973) have found that livestock use salt when it is convenient but did not alter behavior patterns to obtain it. The success of this Term and Condition is also dependent on lessee adherence to other Terms and Conditions that require active management, including herding and monitoring.

Washing of Motorized Vehicles Intended for Livestock Transport and/or Herding and Prior to Departure of Established Roadways:
To comply with the objectives set forth in the *BLM Manual 9015: Integrated Weed Management*, all motorized vehicles intended for livestock transport and vehicle use off of designated roadways would be washed to remove dirt, mud and vegetative debris prior to entry onto BLM-administered lands. Adherence to this term and condition would ensure that motorized dispersal and transportation of nonnative plant seed would be limited to designated and traveled roadways. The potential for the introduction of nonnative species would be reduced in comparison to the no-action alternative with the present terms and conditions.

Analysis of Potential Mitigation Measures:

Construction of Protective Exclosures:
The proposed protective exclosures in Sections 7 (Conde Creek meadow) and 31(Big Glades area) would provide protections to riparian vegetation where none currently exists. Botanical surveys conducted in the last 12 years have noted the damage done to riparian vegetation in both of these areas, with surveyors mentioning high levels of trampling, defecation and soil disturbance (USDI 1999-2009). Exclusion of cattle in these two areas would encourage the potential increase of native plant species while eliminating the potential for overgrazing by livestock. By eliminating disturbance from cattle grazing, native plant species found in these areas that are currently trending towards decreases in frequency may begin to trend towards stability or increase in frequency due to improved seed production. Root mass would also be expected to increase due to significant decreases in soil disturbance, thereby improving plant species' ability to store carbohydrates and nutrients through the dormant season.

In addition to the exclosure at the Big Glades site, water would be piped approximately 100 feet into an existing spring box, which would further encourage livestock to congregate away from impacted riparian areas. Like the exclosures, the offsite water would aid in the recovery of riparian vegetation by encouraging later-season growth, nutrient storage, root and seed production, and proper soil aeration to stimulate future seed germination.

Construction of the two exclosures as set forth in the Potential Mitigation Measures will not directly affect the rate of spread of nonnative species or the health of documented Special Status Plant Species within the Conde Creek Allotment.

Seeding of Riparian Areas:
Seeding would occur in areas determined to have soil disturbance exceeding 20%, and would occur with BLM-approved and -provided native seed mixtures as seed supply and workforce allow. Seeding with native species would encourage increased native seed production and storage, and would diminish the potential for soil erosion in those areas where disturbance has occurred. Seeding areas exceeding 20% soil disturbance would encourage repopulation of these areas with native species, rather than nonnative species that outcompete and colonize areas of disturbance.

Success of this mitigation measure is contingent on both the availability of resources (seed and workforce) and the ability to locate areas in need of treatment. Seasonal monitoring and surveys to assess damage will be required for implementation.

Relocating the Temporary Corral:
An alternate location for the current temporary corral location along Conde Creek in T38S R3E Section 7 will be constructed along road 38-3E-11 (approximately .2 miles N of current location). This may require cutting trees and adding rock to harden and level the surface to accommodate a 30'x50' temporary holding pen and allow a truck and trailer to load cattle. Drift fences may be constructed to facilitate herding into the temporary corral.

There are no documented sites of Special Status plant species located in this area. There would be no impact on documented Special Status plant species and impacts to the existing plant community within the Conde Creek Allotment would be minimal.

Soil disturbance associated with installation of the temporary corral and drift fence(s) would create favorable conditions for noxious weeds and nonnative invasive plant species to colonize. The location the temporary corral is currently annually placed is a hardened turn out along an existing road which does not

provide favorable conditions for weed establishment the riparian area above the corral would benefit from reduced soil disturbance associated with the movement of cattle through this area into the corral.

ALTERNATIVE 3

Under Alternative 3, the Conde Creek Allotment would be grazed for 61 days every year. Grazing leases would be modified to authorize grazing from June 16 to August 15, eliminating a portion of the hot season use (August 16 to September 30). Alternative 3 would permit up to 102 exchange of use AUMs, about a 50 percent reduction in the overall exchange of use described under the No Action and Alternative 2 above. The allotment would be grazed with up to 219 cattle totaling 439 AUMs.

Analysis of Effects Related to Season of Use and AUMs:
The effects related to the early part of the grazing season June 16th to August would be the same as alternatives one and two.

The elimination of grazing during the hot season (August 16 to September 30) would allow more native plant species (especially those in riparian areas) to produce and retain seed. In combination with conformance with terms and conditions, soil trampling would be lessened, as would the likelihood of overgrazing, particularly in riparian areas that currently receive moderate-to-heavy use.

Effects on Special Status Species:
Cimicifuga elata and *Cypripedium montanum* populations would be further protected by the elimination of the late grazing season because there would be less livestock for a shorter period of time on the allotment.

Under this Alternative, the 9 populations of *Scirpus pendulus* would continue to face the potential for population decline due to use as forage and damage due to soil disturbance (i.e. trampling, soil compaction and erosion). However, a reduction in season-of-use would reduce time that livestock would spend on the allotment. A reduction in AUMs would also reduce the risk for population decline, due to the presence of fewer livestock. If monitoring indicates a negative change in population size (decrease), exclosures would be constructed and/or adaptive management practices would be employed to protect SSP and to mitigate for further damage.

Effects to nonvascular and fungi Special Status and Survey and Manage species would be the same as in Alternatives 1 and 2.

Additional effects are analyzed in sections addressing proposed Mitigation Measures and Terms and Conditions.

Effects on Noxious Weed and Nonnative Invasive Species:
Effects related to seasons-of-use and AUMs are the same as under Alternatives 1 and 2.

Additional effects are analyzed in sections addressing proposed Mitigation Measures and Terms and Conditions.

Analysis of Potential Mitigation Measures:

Construction of Protective Exclosures:
Effects would be the same as in Alternative 2.

Seeding of Riparian Areas:
Effects would be the same as in Alternative 2.

Relocating the Temporary Corral:
Effects would be the same as in Alternative 2.

Two-Year Period of Rest:
A two-year period of rest would likely not result in any appreciable long term effects in regards to botanical resources. Because there is not a monitoring component to this mitigation measure it is hard to predict plant community response in the absence of livestock. However, the following lists the anticipated results/implications for a 2-year cessation of grazing:

1. Sensitive plant species would not be impacted by livestock in the 2-year period of non-grazing. Increase, decrease or no change in population sizes cannot be predicted.
2. Noxious weeds and nonnative plant species would continue to spread throughout the allotment area; however, they would not be moved through the allotment via livestock, and would be primarily limited to the roadsides where they currently exist. Seed dispersal would be both human-caused (vehicles, clothing, etc.), and naturally-occurring (wind, water, wildlife).
3. Livestock-caused ground disturbance would not occur, reducing negative impacts on plant communities correlated with loss of soil, soil compaction, and over-grazing.

<u>Analysis of Terms and Conditions:</u>

Removal of Livestock based on Stubble Height and/or Soil Disturbance:
Effects would be the same as in Alternative 2.

Placement of Salt Blocks ¼ mile from Designated Areas:
Effects would be the same as in Alternative 2.

Use of Active Management to Promote Livestock Distribution:
Effects would be the same as in Alternative 2.

Washing of Motorized Vehicles Prior to Departure of Established Roadways:
Effects would be the same as in Alternative 2.

Washing of Vehicles Intended for Livestock Transport and/or Herding:
Effects would be the same as in Alternative 2.

ALTERNATIVE 4

This alternative would rest the Conde Creek Allotment for a period of 10 years. This alternative serves to provide for the passive restoration and potential recovery of ecological conditions on BLM-administered lands impacted by previous grazing years. This alternative would offer an opportunity to assess the landscape without the presence of livestock at the completion of the 10-year period. The following lists the anticipated results/implications for a 10-year cessation of grazing:

1. Both native and nonnative plant species will continue to produce seed, but both quantity and germination success rates of each cannot be determined without monitoring. Long-term plant community health cannot be assumed without a designated monitoring program set forth

to track both subtle and substantial changes.

2. Sensitive plant species would not be impacted by livestock in the 10-year period of non-grazing. Increase, decrease or no change in population sizes cannot be predicted.
3. Noxious weeds and nonnative plant species would continue to spread throughout the allotment area; however, they would not be moved through the allotment via livestock, and would be primarily limited to the roadsides where they currently exist. Seed dispersal would be both human-caused (vehicles, clothing, etc.), and naturally-occurring (wind, water, wildlife).
4. Livestock-caused ground disturbance would not occur, reducing negative impacts on plant communities correlated with loss of soil, soil compaction, and over-grazing.

TERRESTRIAL WILDLIFE

AFFECTED ENVIRONMENT

Terrestrial Wildlife Habitat

An array of habitat types/plant communities occur in the Conde Creek Allotment. This is reflected in the diversity of terrestrial wildlife species that are present.

The many plant communities that support wildlife in this allotment are grouped into various zones based primarily on elevation. The zones found in the Conde Creek Allotment are the Mixed-Conifer Zone (mid-elevation), and the White Fir Zone (high elevation). Representative plant communities for each zone are presented in Table 3-18 (USDI 1995).

Table 3-18 Elevational zones within the Conde Creek Allotment

Zones	Representative Plant Communities
Mixed Conifer Zone	Douglas Fir, Mixed Fir and Pine, Oak Woodland
White Fir Zone	White Fir, Shasta Red Fir

Special/unique habitats that support various wildlife species occur at multiple locations throughout the allotment. These special habitats include cliffs, seeps and springs, caves, and meadows (USDI 1995a).

Special Status Species

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

Table 3-19. Known or Suspected Special Status Species

Common Name	Scientific Name	Status
Northern Spotted Owl	*Strix occidentalis caurina*	FT - Suspected
Fisher	*Martes pennanti*	FC - Suspected
Mardon Skipper Butterfly	*Polites mardon*	FC - Known
Bald Eagle	*Haliaeetus leucocephalus*	BS - Known
Foothill Yellow-legged Frog	*Rana boylii*	BS - Suspected
Northwestern Pond Turtle	*Actinemys marmorata marmorata*	BS - Suspected

Pallid Bat	*Antrozous pallidus*	BS - Suspected
Fringed Myotis	*Myotis thysanodes*	BS - Suspected
Chase Sideband	*Monadenia chaceana*	BS - Suspected
Travelling Sideband	*Monadenia fidelis celeuthia*	BS - Suspected
Siskiyou Hesperian	*Vespericola sierranus*	BS - Suspected
Siskiyou Short-horned Grasshopper	*Chloealtis aspasma*	BS – Known
Oregon shoulderband Snail	*Helmithoglypta hertleini*	BS - Suspected

FT = Federal threatened
FC = Federal Candidate
BS = Bureau Sensitive

Birds of Conservation Concern and Game Birds below Desired Condition

BLM has interim guidance for meeting federal responsibilities under the Migratory Bird Treaty Act and Executive Order 13186 (EO). Both the Act and the EO promote the conservation of migratory bird populations. The interim guidance was transmitted through Instruction Memorandum No. 2008-050. The Instruction Memorandum 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 (Conde Creek Allotment is in BCR 5) and *Game Birds Below Desired Condition* (GBBDC). The following table displays those species that are known or likely to be present in the project area.

Table 3-20. BCC and GBBDC Bird Species Known or Likely to be Present

Species	Status
Flammulated Owl (*Otus flammeolus*)	BCC
Olive-sided Flycatcher (*Contopus cooperi*)	BCC
Rufous Hummingbird (*Selasphorus rufus*)	BCC
Mourning Dove (*Zenaida macroura*)	GBBDC
Black-throated Gray Warbler (*Dendroica nigrescens*)	BCC
Lewis' Woodpecker (*Melanerpes lewis*)	BCC
Grasshopper Sparrow (*Ammodramus savannarum*)	BCC
Northern Goshawk (*Accipiter gentilis*)	BCC

BCC - Bird of Conservation Concern
GBBDC - Game Birds Below Desired Condition

Grazing occurs throughout all of the vegetative zones found in the Conde Creek Allotment, i.e. Mixed-Conifer Zone, and White Fir Zone. The impacts of grazing in the Mixed-Conifer Zone and White Fir Zone are most notable in the meadows and riparian areas that are interspersed throughout the more dominant conifer matrix.

ENVIRONMENTAL CONSEQUENCES

Wildlife studies have not been conducted in the allotment to discern the impacts of the grazing operation to wildlife or wildlife habitat. However, a wealth of information in the literature exists concerning the effects of grazing on wildlife, which provides a basis for the following analysis.

Under all alternatives an exclosure will protect areas known to be inhabited by the Mardon Skipper. This exclosure will aid this butterfly species through limiting trampling of eggs, larvae, or adults and through increased availability of preferred vegetation for oviposition and nectaring.

ALTERNATIVE 1 – No-Action Alternative (no change)

Livestock grazing primarily impacts wildlife by changing vegetation composition, structure, and function. Livestock operations result in a reduction of forage available to native herbivores (e.g. deer and elk), as well as reductions in vegetative cover for ground nesting birds, burrowing rodents, and other wildlife species dependent on ground cover for protection, food, and breeding sites (e.g. Mardon Skipper Butterfly). Grazing also reduces water quality in seeps, springs, and streams used by native wildlife. The presence of livestock can change local distribution and habitat use by native species due to interspecific behavioral traits. Currently, grazing occurs in all vegetation communities and condition classes in the allotment, but is most prevalent in the grassland/meadow and open forest vegetation communities. Riparian areas are favored grazing sites in all vegetation communities in the allotment.

Species of Special Concern that are Minimally Affected by Grazing

Some of the species of special concern found in the allotment are not greatly affected by grazing.
The suite of species that is not affected or affected to only a minor degree includes the following: Northern Spotted Owl, Bald Eagle, Fisher, Olive-sided Flycatcher, Black-throated Gray Warbler, Flammulated Owl, Northern Goshawk, Pallid Bat and Fringed Myotis. These species are primarily associated with the Mixed-Conifer and White Fir Zones. Grazing does not physically reduce the numbers of these species nor does it appreciably reduce feeding, breeding and sheltering opportunities.
Northern Spotted Owl – There are no known Northern Spotted Owl nest sites in the allotment. Northern Spotted Owls prefer dense forest habitat and grazing is light to non-existent in these areas due to a lack of forage. Grazing does not affect this species in this allotment.
Bald Eagle nests are known to be located near Howard Prairie Lake and may, on occasion occur within this allotment, but are unlikely to be impacted by grazing as neither their treetop nest sites nor the fish and waterfowl upon which they feed are subject to significant impacts from grazing.
Fisher are confirmed to occupy forested habitat near the Conde Creek Allotment. Fisher are unlikely to be impacted by grazing as they primarily utilize forested areas and depend upon large wood for denning sites, and small to medium sized mammals for prey. Denning sites and prey species are unlikely to be impacted by grazing.
Olive-sided Flycatcher and Black-throated Gray Warbler – Flycatchers and warblers feed primarily on insects, and nests are generally located relatively high in conifers (Marshall et al. 2003) where they are not disturbed by cattle. There could be a minor impact to this species if an occasional nest is placed near the ground where nesting could be disrupted by cattle.
Flammulated Owl and Northern Goshawk -- These species are associated with mature forest stands. Grazing impact to these stands is minimal. Thus these species are not affected by grazing in this allotment.
Pacific Pallid Bat and Fringed Myotis – These bats are associated with a variety of habitats including conifer forests and oak-woodlands. They forage primarily on flying insects, and roost in mines, caves, abandoned buildings, and crevices and cavities in large trees. Due to their foraging and roosting habits, impacts from grazing are undetectable.

Species of Special concern that are Physically Affected by Grazing

Some species of special concern are susceptible to the physical aspects of grazing, e.g., trampling, rubbing, and water quality degradation. These include Foothill Yellow-legged Frog, Northwestern Pond Turtle, Travelling Sideband, Chase Sideband, Siskiyou Hesperian, Rufous Hummingbird, and Mourning Dove.
Foothill Yellow-legged Frog and Northwestern Pond Turtle – These species are dependent on riparian and aquatic habitat; therefore, they can be adversely affected when these habitats are degraded by grazing. Habitat degradation occurs through streambank trampling; wading in shallow ponds, springs, and streams; and defecation/urination in springs and seeps. Pond turtles also use upland habitat for nesting and nests can be trampled by cattle.
Travelling Sideband, Chase Sideband, and Siskiyou Hesperian– These mollusks are commonly associated

with rocky, moist, forested areas. Due to the concentrated grazing in riparian areas, habitat quality may be degraded. There also is potential for individuals of these species to be trampled. Impacts to these species would be limited by the tendency of cattle to avoid rocky, forested areas.

Species of Special Concern that are Adversely Affected by Vegetation Removal
Rufous Hummingbird, Mourning Dove, Siskiyou Short-horned Grasshopper, Franklin's Bumblebee, Grasshopper Sparrow, and Mardon Skipper Butterfly can be adversely affected by the reduction in grasses, forbs and shrubs due to grazing.
Rufous Hummingbird and Mourning Dove – These species are common shrub nesters. Browsing and rubbing can disturb nesting activities, and in some cases nests can be destroyed. Doves also occasionally nest on the ground and these nests are susceptible to trampling. Doves are seedeaters and grazing reduces the seed available to this species. Some graminoids because of drought, immaturity, or other stressors such as repeated heavy grazing do not set seed and others may be grazed after seed set. Hummingbirds depend on flowering plants for nectar, and grazing reduces the number of nectar-producing plants that reach the flowering stage. This occurs through both utilization and trampling.

Siskiyou Short-horned Grasshopper - This species is known to occur at one location within the boundary of this allotment. It is often associated with blue elderberry for the egg-laying phase of its life cycle. Siskiyou short-horned grasshoppers are actively feeding and reproducing from July through September and are likely to be impacted by reduction of grass and forb resources upon which they depend for food and protective cover. Suitable habitat occurs at many locations within the Conde Creek Allotment. Cattle have been documented to impact elderberry through use as rubbing objects.

Franklin's Bumblebee – This species was once locally common throughout the Rogue Basin in southern Oregon. And is now known to only one site confirmed active in 2006 (Robbin Thorp Pers. comm.), the species is in steep decline and may have become extinct. The likely cause of this decline is the introduction of a parasitic fungus from Europe and not habitat loss or degradation (Robbin Thorp Pers. comm.). 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 may limit the ability of this species to successfully maintain a population at formerly suitable sites.

Grasshopper Sparrow – This species is likely to be directly affected by grazing. A ground nesting bird, the grasshopper sparrow depends on forbs, grasses and shrubs for protection. Its diet consists of insects and seeds, both of which are negatively impacted by consumption of the vegetation in the open grassland habitat that this bird requires. Several other bird species on these lists (e.g. olive-sided flycatcher, mourning dove, and band-tailed pigeon) depend on either seeds or insects for their diet and may also be affected by grazing in this same manner.

Mardon Skipper Butterfly -- The Mardon Skipper Butterfly is a Bureau Sensitive Species and is listed as a Federal Candidate species under the U.S. Endangered Species Act. At a minimum, one reproductive site is known within the allotment. Twelve known sites occur in the Ashland Resource Area. The "primary threat" listed for each of these sites is "grazing." Mechanisms through which livestock may impact this species include trampling, eating food sources, and facilitating invasion of non-native plants (Xerces, 2007, 2010). With the construction of a protective exclosure at the reproductive site, impacts to the Mardon Skipper are greatly reduced.

Deer and elk -- There is little diet overlap between livestock and deer with greater overlap of preferred forage between livestock and elk. There is a tendency of both deer and elk to avoid areas being grazed by cattle (Hosten, P. E. et al. 2007b). Grazing in this allotment reduces forage during spring, summer, and fall and has corresponding detrimental effects on big game species.

ALTERNATIVE 2

Impacts to wildlife under Alternative 2 would be similar to those under Alternative 1. AUMs would be the same in both Alternatives. Mitigation measures include; construction of two riparian exclosures, improved accessibility of watering sites, seeding of native species in riparian areas, and moving the temporary corral. Other terms and conditions which are likely to lessen impacts to wildlife species include active herding of livestock, removal of livestock when stubble height and/or bank alteration benchmarks are reached, rotation of salt block locations, and adjustment of take-off date to September 10th in years following location of more than 10 unauthorized cattle after designated take-off date. Some riparian associated wildlife species (e.g. terrestrial mollusks) would benefit from the construction of two protective exclosures along riparian areas. Measures noted above which facilitate distribution of livestock will result in improved forage and habitat conditions for wildlife. Disturbance and potential nest trampling of nesting birds would not differ measurably from those under Alternative 1.

ALTERNATIVE 3

Impacts to wildlife under Alternative 3 will be lessened by a reduced season of use, and reduced AUMs. These reductions in livestock use on the allotment would result in more forage and cover available for wildlife species. Impacts to wildlife and wildlife habitats through trampling would also be reduced. The benefits from implementation of Potential Mitigation measures and additional terms and conditions will be the same as under Alternative 2. Disturbance and potential nest trampling of nesting birds would not differ measurably from those under Alternatives 1 and 2.

ALTERNATIVE 4

This alternative would benefit wildlife by eliminating the direct adverse impacts (e.g., nest trampling and trampling of individual mollusks) described in Alternative 1. In the long term, the removal of cattle from the allotment for a 10 year rest period would improve both riparian and upland habitat condition which would benefit native wildlife species.

SOIL RESOURCES

AFFECTED ENVIRONMENT

The soil series found on this allotment are the Bybee, Farva, Kanutchan, McMullin, McNull, Medco, Pinehurst, Sibannac, Tatouche, and Woodseye. These soils are found on slopes ranging from 6 to 60 percent. A brief description is found below and a map displaying the location of the soils on the landscape is on file in the Medford District office.

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 and 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 Farva soil is moderately deep, well drained soil is on hillslopes. Permeability is moderately rapid and

available water capacity is about 3 inches. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate.

The Kanutchan soil is deep, somewhat poorly drained soil is in basins. Permeability is very slow and available water capacity is about 7 inches. The effective rooting depth is limited by the water table, which is within a depth of 1.5 feet from December through May. Runoff is slow, and the hazard of water erosion is slight.

Medco - Permeability is very slow in the Medco soil. Available water capacity is about 4 inches. The effective rooting depth is limited by a dense layer of clay at a depth of 6 to 18 inches. Runoff is medium or rapid, and the hazard of water erosion is moderate or high. The water table, which is perched above the layer of clay, is at a depth of 0.5 foot to 1.5 feet from December through March.
McNull - Permeability is slow in the McNull soil. Available water capacity is about 4 inches. The effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate on slope less than 35 percent and high on slopes over 35 percent.

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

The Pinehurst soil is very deep, well drained soil is on plateaus. Permeability is moderately slow and available water capacity is about 10 inches. The effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight.

The Sibannac soil is very deep, poorly drained soil is in basins. Permeability is moderately slow and available water capacity is about 12 inches. The effective rooting depth is limited by the water table, which is within a depth of 1 foot from January through June. Runoff is slow, and the hazard of water erosion is slight.

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

The Woodseye soil is shallow and somewhat excessively drained. It formed in colluvium derived dominantly from andesite. Permeability is moderate in the Woodseye soil. Available water capacity is about 1 inch. The effective rooting depth is 10 to 20 inches. Runoff is slow or medium, and the hazard of water erosion is slight or moderate. Rock outcrop is intermixed with the Woodseye soil on the landscape consists of areas of exposed bedrock. Runoff is very rapid in these areas.

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

The main effects that livestock grazing has on the soil resource is disturbance leading to increased erosion and increase in bulk density when cattle grazing occurs during wet soil conditions. Cattle can exert both beneficial and detrimental effects on a grazed field. The greatest detrimental concerns, perhaps, are the physical effects of treading. The interaction of several factors will determine the amount of potential damage that may result. Soil moisture content, soil physical properties, type of forage, stocking rate, and

number of days grazed all interact greatly in managing to minimize treading damage. The most basic concept is that the application of weight (cattle) to soil which is wet, will compress more soil into smaller volumes, thereby increasing bulk density of soil (weight per unit volume). The effect of compaction is a diminished volume of soil pore space in the plant rooting zone that can store oxygen and water. Because the effect of treading is greatest at the soil surface, this can lead to decreased soil permeability of both air and water. Lowered rates of water infiltration may lead to higher rates of surface runoff during heavy rains and to greater soil erosion, a problem often related to overgrazing (Wells, 1997).

The nature of the forage can also affect the rate at which treading damage occurs. Established forages that have a prolific rooting system in the top 6 to 10 inches of soil (form a good sod), can absorb more treading energy than those forages that do not form a dense rooting mass, thereby slowing the rate at which soil damage can occur. 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).

From the positive standpoint, large quantities of dung and urine are deposited across the allotment as a result of cattle grazing. In addition to nutrient recycling, organic matter in the dung will increase the rate of organic matter buildup in the soil, which also leads to improved soil physical properties. One of the obvious consequences of using cattle to harvest forages is that nutrient content of ingested forages may be transported from some parts of a field to other parts and re-deposited in urine and feces. Most estimates indicate that about 25%, 20%, and 15%, respectively, of nitrogen (N), phosphorus (P), and potassium (K) contained in forages consumed by grazing cattle is retained in their bodies for support of their various metabolic processes. This means that about 75%, 80%, and 85%, respectively, of N, P, and K passes through the animal and are excreted in urine and feces. Most of the nutrients ingested are, thereby, recycled by the animals, perhaps many times. On grazed fields, these recycled animal nutrients are, or can become, available as plant nutrients. One point of concern, though, is that urination and defecation patterns of grazing cattle do not result in recycling of nutrients uniformly over the field. Grazing practices such as range or pasture management affect the distribution of recycled nutrients (Wells, 1997).

ENVIRONMENTAL CONSEQUENCES

ALTERNATIVE 1 – No-Action Alternative (no change)

Under this alternative the existing cattle grazing operations would continue. The topography of this allotment ranges from gentle in the headwaters of Conde Creek to steep in the Soda Creek area so erosion rates on the landscape ranges from moderate to high. There is a potential for higher than normal erosion rates along stream banks and near water sources. Field observations revealed that impacts to the soil resource such as trampling and an increase in soil erosion beyond natural levels are occurring near the watering areas along stream banks where the cattle congregate. In these areas, forage is reduced at a higher level than across the general landscape and soil disturbance and compaction near the water sources would continue at its current rate.

ALTERNATIVE 2

This alternative is basically a continuation of the existing condition (Alternative 1) except for the stubble height requirement and the five potential mitigation measures. The stubble height requirement would help

reduce the trampling and excessive disturbance in the riparian areas and make slight progress toward meeting the Aquatic Conservation Strategy objectives. All of the suggested mitigation measures and ten terms and conditions would decrease soil disturbance in the local area(s) where cattle congregate for water. The additional terms and conditions would also improve distribution within the allotment which would likely decrease bareground, increase soil surface resistance to erosion, and improve soil stability in areas that currently receive heavy use. The fenced exclosures would prevent seasonal trampling in these perennial wet areas and aid in the stabilization of these riparian areas. As previously mentioned the greatest negative impact that cattle grazing has in this allotment occurs in the riparian areas. Removing the corral from its current location adjacent to Conde Creek will reduce the concentration of urine and fecal deposition that occurs in this location. The area suggested for relocation of the corral may not be the best spot but moving the corral from the current location is necessary to meet the standards and guidelines (GM-2) for Riparian Reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives (USDA, 1994b).

ALTERNATIVE 3

This alternative would reduce the amount of bare soil area across the landscape by taking the cattle off of the allotment in mid –August which reduces the grazing season by 45 days and would allow for additional vegetation growth during the fall "green-up" period. This action alternative would actively promote recovery of the allotment and accelerate progress toward meeting the rangeland health standards and Aquatic Conservation Strategy. The nine additional terms and conditions in this alternative would have the same benefits as in Alternative 2. In addition to the affects to the soil resource of the mitigation previously described in Alternative 2, resting the allotment for a two year period would allow the areas around water sources to increase vegetative cover and reduce the disturbance associated with cattle grazing.

ALTERNATIVE 4

Eliminating cattle grazing from the BLM-administered land for a period of 10 years in this allotment would have moderate positive benefits to the soil resource. Soil disturbance and erosion currently associated with the grazing lease authorization, particularly in the riparian areas and around water sources, would gradually recover to near natural conditions during the ten year rest period.

CULTURAL RESOURCES

This project would not result in restricting access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners or adversely affect the physical integrity of such sacred sites. No sites have been identified in the project area. Executive Order 13007 (Indian Sacred Sites).

This project would have no effect on Indian Trust Resources as none exist in the project area.

This project was determined to have no adverse effects on properties listed or eligible for listing on the National Register of Historic Places. This includes Native American religious or cultural sites, archaeological sites, or historic properties. The proposed project would have no adverse effects on known cultural resources.

RECREATIONAL AND VISUAL RESOURCES

The grazing allotment is not near any established or developed recreation areas or within a Visual Resource Area. Recreation that might occur in the project area would be of a limited and dispersed nature such as people on foot passing through while hunting, exploring the area for wild flowers or mushrooms and activities of this nature. Some off road vehicle recreation occurs within the allotment.

The allotment does not involve any ecologically significant areas such as significant caves, National Monuments, Wilderness Study Areas, Research Natural Areas, or areas listed on the National Register of Natural Landmarks.

CHAPTER 4 - PUBLIC PARTICIPATION

Letters were mailed to interested organizations, community groups, individuals, and other agencies and tribes announcing the proposed action to renew grazing leases in December 2009. A description of the alternatives, expected activities and maps were included in the mailing, along with a request for public input regarding BLM's proposed management activities. Meetings and a field trip were held with the allotment lessee to gather and share information as required by part 4130.2 (b) of the BLM grazing regulations, "…before issuing or renewing grazing permits or leases."

This EA was made available to interested individuals and to the following agencies, organizations, and tribes:

Association of O&C Counties
Audubon Society
Dead Indian Stockman's Association
Hannon Library, Southern Oregon University
Jackson County Commissioners and Courthouse
Jackson Co. Soil and Water Conservation District
Jackson Co. Stockman's Association
Klamath Siskiyou Wildlands Center
Little Butte Watershed Council
Medford Water Commission
National Center for Conservation Science and Policy
Northwest Environmental Defense Center
Oregon Department of Environmental Quality – Medford
Oregon Department of Environmental Quality – Portland
Oregon Department of Fish and Wildlife
Oregon Department of Forestry
Oregon Wild
Pacific Legal Foundation
Rogue River – Siskiyou National Forest
Siskiyou Project – Grants Pass
Southern Oregon Timber Industries Association

Federally Recognized Tribes
Cow Creek Band of Umpqua Indians
Confederated Tribes of Grand Ronde
Confederated Tribes of Siletz
Klamath Tribe
Quartz Valley Indian Reservation (Shasta Tribe)
Shasta Nation

Other Tribes
Confederated Bands [Shasta], Shasta Upper Klamath Indians
Confederated Tribes of the Rogue-table Rock and Associated Tribes

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