

EVALUATION AND DETERMINATION
Achieving the OR/WA Standards for Rangeland Health
and
Conformance with the Guidelines for Livestock Grazing Management

Field Office: Medford Determination Date(s): July 8, 2008
 Grazing Allotment Name/Number: Keene Creek/10115

Standard 1 Watershed Function – Uplands

1 <input checked="" type="checkbox"/> Meeting the Standard	5 <input type="checkbox"/> Not Meeting the Standard, cause not determined
2 <input type="checkbox"/> Not Meeting the Standard, but making significant progress towards	
3 <input type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are not significant factors	6 <input checked="" type="checkbox"/> Conforms with Guidelines for Livestock Grazing Management
4 <input type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are significant factors	7 <input type="checkbox"/> Does not conform with Guidelines for Livestock Grazing Management

Causal Factors for Achievement:

The uplands of the Keene Creek Allotment are dominated by conifer communities. Factors influencing upland watershed function are, therefore, related more closely to past timber harvest, associated road construction, and fire suppression rather than livestock management. Grazing in the uplands is restricted to edaphic-mediated meadows.

Rationale for Determination:

Because of limited application of range improvements, the domination of the allotment by woodlands, and historical management conditions that no longer exist, this allotment meets Standard 1.

The upland meadows of the Keene Creek Allotment have not experienced extensive range improvements such as scarification, tilling, and seeding. Historic stocking rates were approximately 10 times greater than current stocking rates. Historic grazing by sheep is considered to have had a strong influence on vegetation condition. Many of the meadows in the Keene Allotment hosted sheep “camps.” Currently, many of the open areas including upland non-conifer communities have stockpounds maintaining high cattle use in adjacent meadows. Consecutively higher vegetation height across years within recently constructed exclosures indicates that soils are decompressing and supporting increased vegetation production. Uplands are dominated by woody vegetation, forcing livestock to graze within riparian areas and meadows. High road densities may serve to

change the flow of water across the landscape thus influencing riparian watershed functions.

Standard 2 Watershed Function – Riparian/Wetland Areas

1 <input type="checkbox"/> Meeting the Standard	5 <input type="checkbox"/> Not Meeting the Standard, cause not determined
2 <input type="checkbox"/> Not Meeting the Standard, but making significant progress towards	
3 <input type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are not significant factors	6 <input type="checkbox"/> Conforms with Guidelines for Livestock Grazing Management.
4 <input checked="" type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are significant factors	7 <input checked="" type="checkbox"/> Does not conform with Guidelines for Livestock Grazing Management

Causal Factors for Non-Achievement:

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.

Rationale for Determination:

Even though streamside riparian areas are generally improving throughout the allotment, current livestock grazing is negatively affecting the return of beaver, development of willow stands, water temperatures, and water quality. Because of these effects, this allotment is not meeting Standard 2.

Vegetation composition expressed as the establishment of vegetation on bare ground, replacement of grass by sedge, and replacement of herbaceous vegetation by riparian shrubs along stream channel riparian areas have improved over the last 10-15 years. While change is slow relative to ungrazed areas, streamside riparian areas are generally improving throughout the Keene Creek Allotment (Hosten and Whitridge 2007). In areas accessible to livestock; however, there are exceptions within the heavy to severe cattle use areas. Riparian and wetland areas in this allotment tend to get heavier use than other drier sites resulting in physical function deficiencies that vary from small-scale “hot spots” to drainage level effects.

Livestock grazing hinders the return of beaver by negatively affecting riparian shrubs propagation in heavy to high severity livestock use areas (Hosten and Whitridge 2007). Exclosure studies indicate high livestock use can impede the development of willow stands. Sites with cobbly substrates show rapid recolonization by willow following the

last flood event. This may be related to the tendency of livestock to avoid cobbly areas (Hosten 2007b, Hosten and Whitridge 2007).

Stubble heights less than four inches were observed in the Keene Creek Allotment primarily in Burnt Creek, upper Beaver Creek, Sampson Creek, and Yew Springs. Grazed riparian vegetation allows higher levels of solar radiation to reach water surface in seeps/springs/streams resulting in increased water temperatures. Pedestalling and hoof shear were observed at photo points on seeps and springs in the Burnt Creek, Beaver Creek, and Chinquapin Mountain drainage (USDI 2004, 2005). Repeat photos show the loss of bare ground to vegetation cover throughout the CSNM (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. This is supported by Properly Functioning Condition (PFC) surveys. Conditions recorded at the time of aquatic mollusk surveys described cattle grazing as a negative anthropogenic influence on streamside environments with heavy to severe impacts at 58 percent of the survey sites (Frest and Johannes 2005).

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 reaches in Jenny Creek (29 percent) and Beaver Creek (41 percent) (ODFW 2002, and 2003). BLM Stream Surveys conducted in 1999 found high levels of fine sediment throughout the surveyed reaches in this allotment (USDI 1999).

Impoundments and diversion dams function as sediment traps, effectively disrupting the natural downstream movement of stream substrate, wood, and nutrients. Small impoundments constructed for watering wildlife and livestock create unnatural levels of grazing impacts upstream and downstream of the impoundment by drawing animals to these areas in summer months when water is scarce.

Guidelines in Non-Conformance:

- **Livestock Grazing Management**

1. The season, timing, frequency, duration and intensity of livestock grazing use should be based on the physical and biological characteristics of the site and the management unit in order to: (i) protect or restore water quality.
2. Grazing management plans should be tailored to site-specific conditions and plan objectives. Livestock grazing should be coordinated with the timing of precipitation, plant growth and plant form. Soil moisture, plant growth stage and the timing of peak stream flows are key factors in determining when to graze. Response to different grazing strategies varies with differing ecological sites.

- **Facilitating the Management of Livestock Grazing**

1. The use of practices to facilitate the implementation of grazing systems should consider the kind and class of animals managed, indigenous wildlife, wild horses, the terrain and the availability of water. Practices such as fencing, herding, water development, and the placement of salt and supplements (where authorized) are used where appropriate to: (a) promote livestock distribution (b) encourage a uniform level of proper grazing use throughout the grazing unit (c) 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 (d) protect water quality

2. Roads and trails used to facilitate livestock grazing are constructed and maintained in a manner that minimizes the effects on landscape hydrology; concentration of overland flow, erosion and sediment transport are prevented; and subsurface flows are retained.

- **Accelerating Rangeland Recovery**

3. Structural and vegetative treatments and 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 or restoration of properly functioning condition.

Standard 3 Ecological Processes

1 <input type="checkbox"/> Meeting the Standard	5 <input type="checkbox"/> Not Meeting the Standard, cause not determined
2 <input type="checkbox"/> Not Meeting the Standard, but making significant progress towards	
3 <input type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are not significant factors	6 <input type="checkbox"/> Conforms with Guidelines for Livestock Grazing Management.
4 <input checked="" type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are significant factors	7 <input checked="" type="checkbox"/> Does not conform with Guidelines for Livestock Grazing Management

Causal Factors for Non-Achievement:

Road construction, fire suppression, and livestock impacts associated with moderate to severe average-utilization (six percent of the allotment) negatively influence ecological processes across the Keene Creek Allotment.

Rationale for Determination:

The influence of current livestock grazing on plant succession within spatially restricted plant communities precludes the Keene Creek Allotment from meeting the standard for ecological processes. However, the current management practices have allowed some improvements in riparian conditions over the past 15 years (see rationale under Standard 2).

Livestock influence in the Keene Creek Allotment is generally limited to meadows comprising a small portion of the landscape. The presence of stockponds has maintained intermittent high livestock use in these areas. Small, widely-dispersed patches of noxious weeds through much of the allotment indicate that livestock have localized influence on plant successional processes. Increased rates of riparian vegetation improvement in protected streamside riparian areas and seeps and springs are evidence of altered plant

community successional processes in unprotected riparian areas (both streamside, as well as seeps and springs).

Guidelines in Non-Conformance:

- **Livestock Grazing Management**

1. The season, timing, frequency, duration and intensity of livestock grazing use should be based on the physical and biological characteristics of the site and the management unit in order to: (a) provide adequate cover (live plants, plant litter and residue) to promote infiltration, conserve soil moisture and to maintain soil stability in upland areas.
2. Grazing management plans should be tailored to site-specific conditions and plan objectives. Livestock grazing should be coordinated with the timing of precipitation, plant growth and plant form. Soil moisture, plant growth stage and the timing of peak stream flows are key factors in determining when to graze. Response to different grazing strategies varies with differing ecological sites.
7. Range improvement practices should be prioritized to promote rehabilitation and resolve grazing concerns on transitory grazing land.

- **Facilitating the Management of Livestock Grazing**

1. The use of practices to facilitate the implementation of grazing systems should consider the kind and class of animals managed, indigenous wildlife, wild horses, the terrain and the availability of water. Practices such as fencing, herding, water development, and the placement of salt and supplements (where authorized) are used where appropriate to: (a) provide adequate cover (live plants, plant litter and residue) to promote infiltration, conserve soil moisture and to maintain soil stability in upland areas (b) encourage a uniform level of proper grazing use throughout the grazing unit (c) 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.

Standard 4 Water Quality

1 <input type="checkbox"/> Meeting the Standard	5 <input type="checkbox"/> Not Meeting the Standard, cause not determined
2 <input type="checkbox"/> Not Meeting the Standard, but making significant progress towards	
3 <input type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are not significant factors	6 <input type="checkbox"/> Conforms with Guidelines for Livestock Grazing Management.
4 <input checked="" type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are significant factors	7 <input checked="" type="checkbox"/> Does not conform with Guidelines for Livestock Grazing Management

Causal Factors for Non-Achievement:

Several factors influence water quality in this 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, aquatic habitat degradation, and excessively low summer flows.

Rationale for Determination:

Even though streamside riparian areas are generally improving throughout the allotment, current livestock grazing is negatively affecting stream temperature and water quality. Because of these effects, this allotment is not meeting Standard 4.

There are three streams in the Keene Creek Allotment (Jenny, Grizzly, and Keene Creeks) that are on the Oregon DEQ's 2004/2006 Clean Water Act Section 303(d) list for failing to meet summer temperature (salmonid fish rearing) standards and two streams (Beaver and Dead Indian Creeks) are listed for failing to meet year around temperature (core cold water habitat) (ODEQ 2006).

Vegetation composition expressed as the establishment of vegetation on bare ground, replacement of grass by sedge, and replacement of herbaceous vegetation by riparian shrubs along stream channel riparian areas within the monument have shown improvement over the last 10-15 years. While change is slow relative to ungrazed areas, streamside riparian areas are generally improving throughout the monument portion of the Keene Creek Allotment (Hosten and Whitridge 2007). Livestock utilization in the southern portion of the allotment has primarily been none to slight use over the last several years. Riparian and wetland areas in this allotment tend to receive heavier use than drier sites, resulting in physical function deficiencies that negatively affect water quality at the site and drainage level.

Stubble heights less than four inches were observed in the Keene Creek Allotment primarily in Burnt Creek, upper Beaver Creek, Sampson Creek, and Yew Springs. Grazed riparian vegetation allows higher levels of solar radiation to reach water surface in seeps/springs/streams resulting in increased water temperatures. Pedestalling and hoof shear were observed at photo points on seeps and springs in the Burnt Creek, Beaver Creek, and Chinquapin Mountain drainage (USDI 2004, 2005). Repeat photos show the loss of bare ground to vegetation cover throughout the CSNM (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. This is supported by PFC surveys. Conditions recorded at the time of aquatic mollusk surveys described cattle grazing as a negative anthropogenic influence on streamside environments with heavy to severe impacts at 58 percent of the survey sites (Frest and Johannes 2005).

Macroinvertebrate samples were taken by Aquatic Biology Associates at three stream sites in this allotment and one site just outside the allotment: 1) Grizzly Creek, above Soda Creek confluence (2000); 2) Jenny Creek, below Johnson Creek confluence (1992, 2000); 3) Jenny Creek, downstream of Site 2 (2000); and 4) Soda Creek, near the Grizzly Creek confluence (1994, 2000). At Site 1, water temperature and fine sediment were the limiting factors for macroinvertebrate communities. Site 2 had a weakly developed shredder community, warm-water and fine sediment tolerant species. Abundance and

types of taxa present were indicative of a relatively nutrient-rich stream (1992). Surveys conducted at Site 3 found this stream segment to be lacking large wood and shade. Fine sediment, embeddedness, and lack of shade were limiting habitat features observed at Site 4 (1994). Cold water taxa abundance and richness were rated moderate to good. Resurvey found habitat limited by excessive fine sediment and lack of large wood (2000). Frest and Johannes (2005) observed extensive grazing impacts in 31 of the 37 springs they surveyed in the Keene Creek Allotment.

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 reaches in Jenny Creek (29 percent) and Beaver Creek (41 percent) (ODFW 2002, and 2003). BLM Stream Surveys conducted in 1999 found high levels of fine sediment throughout the surveyed reaches in this allotment (USDI 1999). Impoundments and diversion dams function as sediment traps, effectively disrupting the natural downstream movement of stream substrate, wood, and nutrients. Small impoundments constructed for watering wildlife and livestock create unnatural levels of grazing impacts upstream and downstream of the impoundment by drawing animals to these areas in summer months when water is scarce. These impoundments often result in higher water temperatures; lower levels of dissolved oxygen; reduction in disturbance-intolerant macroinvertebrate taxa; increased fine sediment; and loss of riparian vegetation (lack of overhanging and streamside vegetation) (Barr et al. 2007; Parker 1999; Hosten 2007b; Hosten and Whitridge 2007).

Livestock grazing hinders the return of beaver by negatively affecting riparian shrubs propagation in heavy to high severity livestock use areas (Hosten and Whitridge 2007). Exclosure studies indicate high livestock use can impede the development of willow stands. Sites with cobbly substrates show rapid recolonization by willow following the last flood event. This may be related to the tendency of livestock to avoid cobbly areas (Hosten 2007b, Hosten and Whitridge 2007). Development of willow and riparian shrubs provide shade that reduces stream temperatures.

Guidelines in Non-Conformance:

- **Livestock Grazing Management**

1. The season, timing, frequency, duration and intensity of livestock grazing use should be based on the physical and biological characteristics of the site and the management unit in order to: (b) provide adequate cover and plant community structure to promote streambank stability, debris and sediment capture, and floodwater energy dissipation in riparian areas (i) protect or restore water quality.
2. Grazing management plans should be tailored to site-specific conditions and plan objectives. Livestock grazing should be coordinated with the timing of precipitation, plant growth and plant form. Soil moisture, plant growth stage and the timing of peak stream flows are key factors in determining when to graze. Response to different grazing strategies varies with differing ecological sites.

- **Facilitating the Management of Livestock Grazing**

1. The use of practices to facilitate the implementation of grazing systems should consider the kind and class of animals managed, indigenous wildlife, wild horses, the

terrain and the availability of water. Practices such as fencing, herding, water development, and the placement of salt and supplements (where authorized) are used where appropriate to: (a) promote livestock distribution; (b) encourage a uniform level of proper grazing use throughout the grazing unit; (c) 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; and (d) protect water quality.

2. Roads and trails used to facilitate livestock grazing are constructed and maintained in a manner that minimizes the effects on landscape hydrology; concentration of overland flow, erosion and sediment transport are prevented; and subsurface flows are retained.

- **Accelerating Rangeland Recovery**

3. Structural and vegetative treatments and 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 or restoration of properly functioning condition.

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

1 <input type="checkbox"/> Meeting the Standard	5 <input type="checkbox"/> Not Meeting the Standard, cause not determined
2 <input type="checkbox"/> Not Meeting the Standard, but making significant progress towards	
3 <input type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are not significant factors	6 <input type="checkbox"/> Conforms with Guidelines for Livestock Grazing Management.
4 <input checked="" type="checkbox"/> Not Meeting the Standard, current livestock grazing management practices are significant factors	7 <input checked="" type="checkbox"/> Does not conform with Guidelines for Livestock Grazing Management (list Guidelines No(s) in non-conformance)

Causal Factors for Non-Achievement:

Several factors influence abundance and distribution of native, T&E, and locally important species in this allotment. Past management practices (placement of salt blocks, location of stockponds, timber harvest, historic livestock use), current livestock grazing, fire suppression, environmental factors (elevation, slope, aspect, soils), and high road densities all influence Threatened and Endangered (T&E) and locally important species.

Rationale for Determination:

Because current livestock grazing increases water temperatures, tramples vegetation in seeps and springs and along streambanks, and heavily utilizes wet meadows, Standard 5 is not met. In addition, current grazing practices are likely affecting the populations of several special status species and provide for establishment of noxious weeds.

Livestock grazing negatively affects aquatic organisms in this allotment. Increased water temperatures stress aquatic species dependent on cold water (especially trout and pebblesnails). Trampling in seeps/springs and along streams compromises the physical integrity of these environments by increasing compaction, inappropriately altering the width:depth ratio, causing sedimentation, and simplifying habitat. Livestock use, especially in wet areas, changes flow patterns in these naturally sensitive sites. Increased fine sediment levels fill interstitial spaces and cover substrates critical for invertebrate production. 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.

Several BLM Special Status terrestrial wildlife species are negatively affected by the grazing operations in the Keene Creek Allotment. The moderate to severe average utilization in the riparian areas and “wet meadows” produces the greatest negative impacts to native wildlife species. The foothill yellow-legged frog and northwestern pond turtle (BLM sensitive species) are dependent on riparian and aquatic habitat and are negatively affected when these habitats are degraded by cattle. Habitat degradation occurs through streambank trampling and wading in shallow ponds, springs, and streams.

A complex of wet meadows in the allotment is occupied by the Mardon skipper, a federal candidate species. These meadows are overutilized which reduces plants used by this species for nectaring and ovipositing. The impact of grazing to these habitat components likely reduces reproduction for this species. The primary threat listed for each of these sites is grazing (Xerces 2007, Hosten 2007c).

Although not associated with riparian or aquatic habitat, the Siskiyou short-horned grasshopper (BLM sensitive species) may occur within the allotment. It appears to be dependent on elderberry for the egg-laying phase of its life cycle. Cattle impact elderberry through rubbing and/or browsing and this has been noted at the known site. Siskiyou short-horned grasshoppers are actively feeding and reproducing from July through September and are likely to be impacted by reduction of elderberry vegetation and by grass and forb resources which they depend on for food and protective cover.

Weeds are not yet a major issue on the Keene Creek Allotment, though isolated populations of Canada thistle occur dispersed through the landscape. This noxious weed has the ability to dominate afflicted areas. The location of the isolated thistle populations in high use meadows and along road segments in areas of livestock and native ungulate use is indicative that livestock do play a role in the distribution and establishment of weeds in this allotment.

There are no federally listed plant species within the boundary of the Keene Creek Allotment, and most other special status species (*Hackelia bella*, *Cimicifuga elata* var. *elata* and *Nemacladus capillaris*) are unlikely to be affected by livestock, or would recover from intermittent livestock caused damage (*Carex serratodens*). *Limnanthes floccosa* ssp. *Bellingermaniana* and *Plagiobothrys figuratus* spp. would likely be damaged

from trampling and being buried under feces where they occur in vernal pools within heavy use areas.

Guidelines in Non-Conformance:

▪ **Livestock Grazing Management**

1. The season, timing, frequency, duration and intensity of livestock grazing use should be based on the physical and biological characteristics of the site and the management unit in order to: (e) help prevent the increase and spread of noxious weeds; (h) promote soil and site conditions that provide the opportunity for the establishment of desirable plants; (i) protect or restore water quality; and (j) provide for the life cycle requirements, and maintain or restore the habitat elements of native (including T&E, special status, and locally important species) and desired plants and animals.

▪ **Facilitating the Management of Livestock Grazing**

1. The use of practices to facilitate the implementation of grazing systems should consider the kind and class of animals managed, indigenous wildlife, wild horses, the terrain and the availability of water. Practices such as fencing, herding, water development, and the placement of salt and supplements (where authorized) are used where appropriate to: (a) promote livestock distribution; (b) encourage a uniform level of proper grazing throughout the unit; (c) 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; and (d) protect water quality.

▪ **Accelerating Rangeland Recovery**

3. Structural and vegetative treatments and 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 or restoration of properly functioning condition.

/s/ John Gerritsma

7/8/08

John Gerritsma
Field Manager
Ashland Resource Area

Date