

Survey of Seeps and Springs on Bureau of Land Management lands in northern Hinsdale County 2006-2007



**Prepared for:
Bureau of Land Management, Gunnison Field Office
216 N. Colorado
Gunnison, Colorado 81230**

**Prepared by:
Stephanie Neid, Delia Malone, and Jennifer Jones**

**Colorado Natural Heritage Program
Colorado State University
Campus Delivery 8002
Fort Collins, Colorado 80523-8002**

March 1, 2008



**Colorado
State
University**

Knowledge to Go Places

ACKNOWLEDGMENTS

Financial support for this study was provided by the Bureau of Land Management's (BLM) Gunnison Field Office. Art Hayes of the Gunnison Field Office was instrumental in the initiation and success of this project. Special thanks also to Barbara Hite with the BLM State Office for contributing additional financial support for the 2007 field season and expanding our project to evaluate potential wetlands affiliated with mining activities. Thanks also to the Lake Fork Watershed Stakeholders, especially Edna Mason and Lyn Lampert, for assistance with site selection and to Sandy Hayes for assistance with GIS data layers. We greatly appreciate the continued support and assistance of Jay Thompson at the BLM State Office. Thanks to Jodie Bell and Amy Lavender, Colorado Natural Heritage Program staff in Fort Collins, for assistance with data entry and to Mary Olivas and Angie Nielsen at Colorado State University for accounting and contract assistance. Special thanks to George Lampke for volunteer efforts to create an MS Access database for 2007 data entry and analysis.

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EXECUTIVE SUMMARY

Springs and seeps are unique habitats that provide important hydrological, biological, and biogeochemical functions. In the Arid West, springs and seeps may be the only water source for miles and thus tend to concentrate biological activity. The Bureau of Land Management (BLM) completed a Water Source Inventory (WSI) of the Gunnison resource area in 1983. More than 2600 seeps, springs, and water development projects were identified, 582 of which were in Hinsdale County.

Seeps and springs are small wetland ecosystems that are hydrologically supported by groundwater discharge. They are distinctive from other wetland and riparian habitats by the relatively constant water temperature and chemistry of the discharging groundwater. Surveys in other areas of the West have shown that seeps and springs are often hot spots of biological diversity, providing habitat for many uncommon species of plants and animals.

Because human activity has been focused on these ecosystems, leading to alteration and loss of native species, it is important to identify any seeps and springs in good condition, and to assess impacted areas for restoration potential. Further, because these areas can have unique suites of species, the Colorado Natural Heritage Program (CNHP) has evaluated seeps and springs in conjunction with surveys of critical wetland and riparian areas in the region (*e.g.* Gunnison Basin, Mesa County, and Garfield County). A similar effort occurred in Hinsdale County during 2006-2007. The objective of this project was to survey and evaluate proper functioning condition for selected seeps and springs and riparian wetlands on BLM land in Hinsdale County in conjunction with the Survey of Critical Wetland and Riparian Areas in Hinsdale County, CO (funded through the Colorado Department of Natural Resources via a wetland program grant from the Environmental Protection Agency, Region 8 and the Colorado Division of Wildlife). CNHP also evaluated wetlands associated with certain mines to assess the impacts of mining and to investigate whether the mine drainage was affiliated with or had initiated any unique wetland development like iron fens.

A total of 122 seeps and springs were visited during this project; 59 were rated as Proper Functioning Condition, 40 as Functional - at Risk, and 21 as Nonfunctional. Of the 40 sites rated as Functional - at Risk, four had an upward trend, 18 had a downward trend, and 22 had no apparent trend noted. A majority of the surveys at mine sites were Functional - at Risk or Nonfunctional. Twenty-seven of the surveyed sites are located within Potential Conservation Areas (PCAs) and contribute to the overall hydrology of the wetland and riparian features highlighted in the PCAs.

Primary impacts to wetlands at sites visited on BLM lands in Hinsdale County in 2006-2007 were road encroachment, drought, and mining. Other hydrological alterations were mentioned infrequently; impacts from sheep grazing and recreation use were noted.

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INTRODUCTION

Springs and seeps are unique habitats that can provide many important hydrological, biological, and biogeochemical functions. In the Arid West, springs and seeps may be the only water source for miles and thus tend to concentrate biological activity. The Bureau of Land Management (BLM) completed a Water Source Inventory (WSI) of the Gunnison resource area in 1983. More than 2600 seeps, springs, and water development projects were identified, 582 of which were in Hinsdale County.

Seep, Spring, and Fen Ecology

Seeps and springs are small wetland ecosystems that are hydrologically supported by groundwater discharge (Sada et al. 2001; Hynes 1970). These wetlands are considered a “small patch” type of system. Small patch systems usually have distinct boundaries, require specific environmental conditions, and are strongly linked to and dependent upon the landscape around them (Anderson et al. 1999). Seeps and springs are distinctive from other wetland and riparian habitats by the relatively constant water temperature and chemistry of the discharging groundwater (Sada et al. 2001). This water chemistry results from the groundwater being in contact with bedrock minerals for an extended period of time, which equilibrates solute concentrations. Thus, spring water tends to have constant concentrations of dissolved minerals while surface-fed streams vary in response to rainfall and snowmelt (McCabe 1998).

Surveys conducted in the Great Basin have shown that seeps and springs are often hot spots of biological diversity, providing habitat for many uncommon species of plants and animals (Sada et al. 2001). Seeps and springs exhibit diverse floral composition and structural characteristics that provide potential cover for resting, nesting, and feeding for many different organisms, especially birds (Sada et al. 2001). For example, submergent vegetation such as pondweed (*Potamogeton* sp.), duckweed (*Lemna* sp.), ditch-grass (*Ruppia* sp.), horned-pondweed (*Zannichellia* sp.), and watercress (*Rorippa* sp.) provide a food source for waterfowl, while watercress has been shown to be a critical resource for mollusks (Sada and Nachlinger 1996). A unique suite of herbaceous species tend to grow in the moist, nutrient-rich banks of seeps and springs (Carsey et al. 2003). Sedges (*Carex utriculata* and *C. aquatilis*), rushes (*Juncus balticus* and *J. saximontanus*), grasses (*Agrostis gigantea* and *Glyceria striata*), and other herbaceous species such as monkeyflowers (*Mimulus* spp.), heartleaf bittercress (*Cardamine cordifolia*), brook saxifrage (*Saxifraga odontoloma*), arrowleaf ragwort (*Senecio triangularis*), Fendler’s cowbane (*Oxyopolis fendleri*), and alkali crowfoot (*Halerpestes cymbalaria* ssp. *saximontana*), are often found growing along the banks of spring brooks and in spring wetlands; these plants help regulate water temperatures and provide areas for hiding and nesting, in addition to the habitat they provide for macroinvertebrates (Sada and Nachlinger 1996). Some springs in the project area support shrubs such as thinleaf alder (*Alnus incana*) and various willows (*Salix* spp.), which provide excellent habitat for birds and browse for large mammals.

Many springs in western North America are isolated from other wetlands; they frequently flow a short distance before infiltrating back into the ground, and periodically dry out (Hendrickson and Minckley 1984). This lack of connectivity restricts dispersal of many macroinvertebrates and fishes and thus, along with unique environmental characteristics (water chemistry, geology, etc.), has resulted in many unique and endemic species occupying isolated spring wetlands.

Seeps differ from springs in that they often dry periodically. Consequently they support a lower diversity of wetland vegetation. Springs often have a more persistent source of water that provides aquatic habitat and thus support a greater diversity of wetland vegetation (Sada et al. 2001). However, springs supported by relatively small and shallow local aquifers may periodically dry, since the amount of groundwater discharge associated with them varies in response to local precipitation. Springs supported by regional aquifers, or aquifers covering thousands of square kilometers, rarely dry, even during droughts, since the quantity of water within the aquifer is high and the groundwater flow is typically slow (Sada et al. 2001).

Where cool, moist conditions persist—such as at higher elevations in the Southern Rocky Mountains—constant soil saturation provided by upwelling groundwater creates anaerobic conditions in the deeper soil layers. Lack of oxygen combined with cold temperatures dramatically slows or inhibits decomposition leading to the accumulation of organic material in soils, or the formation of peat (Mitsch and Gosselink 1993). Peat accumulation in the Arid West occurs very slowly; estimates range from 10-41 cm per 1000 years (U.S. Fish and Wildlife Service Region 6 1997). In the Southern Rocky Mountains, a wetland is considered a peatland or fen if organic matter (peat) accumulation is at least 40 cm (U.S. Fish and Wildlife Service Region 6 1997). Like seeps and springs, these montane fens also occur as a “small patch” type of system. The intricate relationship of environmental conditions that maintain fens stems from landscape position, groundwater, and climate. Fens usually form where groundwater intercepts the soil surface, often at low points within the landscape or on slopes at higher elevation where climatic conditions do not continuously favor decomposition processes (Crum 1988, Sjors and Gunnarsson 2002, Mitsch and Gosselink 1993, Rondeau 2001).

Water chemistry of fen wetlands (and of seeps and springs) reflects the type of bedrock through which the groundwater flows. There are several categories of peatlands that are derived from distinct water chemistry affiliated with different types of bedrock geology. For example, mineral-rich groundwater of extremely rich fens is basic after percolating through enriched bedrock like dolomites and limestones high in calcium and magnesium bicarbonates and sulfates (Cooper 1996). In contrast, iron fens are mineral-rich but highly acidic; they occur in areas where bedrock contains significant amounts of pyrite (FeS_2), which reacts with groundwater and oxygen to form sulfuric acid (Sares 2005, Cooper and Arp 1998). Iron fens are rare and are largely restricted to the mineral belt of Colorado (Cooper and Arp 1998). They are characterized by limonite precipitate of pyrite that forms local terrace surfaces for peat accumulation, and therefore for fen development. Characteristic flora includes dwarf birch (*Betula nana*), sphagnum mosses (especially *Sphagnum angustifolium*, *S. russowii*, *S. fimbriatum*, and *S. squarrosum*), and

sedges (*Carex aquatilis*, *C. canescens*, and *C. utriculata*) (Cooper and Arp 1998, Carsey et al. 2003). Acid mine drainage may create conditions similar to those in which iron fens develop over time.

Anthropogenic impacts to springs, seeps, and fens

Factors affecting the quality of the seeps and springs in the Gunnison River watershed include hydrological alteration, spring development for livestock grazing, mining, and drought. Changes in species composition occur at seeps and springs that are developed or disturbed from their natural condition. For example, non-native taxa comprise a greater proportion of the riparian vegetation at disturbed springs (Sada and Nachlinger 1996, 1998 as cited in Sada et al. 2001). Additionally, functional changes in spring biota occur when flowing habitats are impounded; species that require lotic (flowing water) habitats are extirpated and replaced by lentic (standing water) taxa (Sada et al. 2001).

Hydrologic alteration has the greatest impacts to fens, seeps, and springs. Hydrologic alteration encompasses any impact to water flow through the wetland systems or to the water balance supplied by surface and groundwater. The two primary impacts to hydrology are at opposite ends of the water supply spectrum, they are flooding of wetland habitat and water diversion from wetland habitat. Alterations can result from either anthropogenic or natural causes. Straightening or diverting streams, digging ditches, building stock ponds and reservoirs, and road building alter both the volume of water flow through the systems and the proportion of the water supply contributed by groundwater relative to surface flow. Transportation corridors may also alter the hydrology of these wetland systems by creating barriers to flow. Alteration to vegetative cover within the watershed can increase the amount of surface flow into the wetlands, shifting the balance between surface and groundwater sources.

Flooding has been a primary cause of fen habitat loss in Colorado. Creation of reservoirs inundates vegetation and dramatically changes the hydrology, thereby destroying the intricate balance that maintains these groundwater-driven systems. Livestock ponds are smaller versions of the same impact, although coupled with the further impacts of grazing and trampling by livestock. Lakes, ponds, and streams are typically more variable in water temperature and chemistry than spring environments (Sada et al. 2001).

Alternatively, reduced water volume to these wetlands also has a significant detrimental impact. Straightening or diverting streams and ditch digging moves water through these systems more quickly and can lead to drying out of the wetlands. Incremental drying of the substrate, especially peat substrates in fens, creates oxidizing conditions instead of anaerobic conditions, shifting the substrate dynamics to a loss of organic matter due to decomposition from conditions that favor slow peat accumulation. As ditches and diversions lower the water table, vegetation composition will shift. Different species of shrubs may colonize areas previously occupied by more hydrophytic herbs adapted to fen conditions (Glaser et al. 1981). Diversions and ditches decrease flow from spring sources and can result in greater variation of water temperature, which causes a shift in the species composition of macroinvertebrate species as well as plants (Chimner et al. 2007, Myers and Resh 1999). Isolated seeps and springs are especially susceptible to

disturbances since they lack connectivity, and thus, have few mechanisms for recolonization via drift and upstream movements. Restoring disturbed wetlands can result in the reestablishment of wetland plant species and adequate vegetation structure; however it does not guarantee the restoration of endemic fauna, especially for species that have limited dispersal capabilities (Myers and Resh 1999).

Domestic livestock grazing has been a traditional livelihood in the Gunnison region since the 1870s (Sowell 2002) initially to support the growing mining district. It has left a broad and sometimes subtle impact on the landscape. Most of the seeps and springs on BLM land at lower elevations have been developed for use as livestock water sources (Doyle 2003). The springs have either been dug out to create a pond or a boxed to capture the water and pipe it to a watering trough. Many riparian areas, seeps, and springs are in rangeland. At higher elevations in Hinsdale County, sheep grazing is the primary use of rangeland. Because surface water is limited, riparian areas, seeps, and springs often serve as the only available water. Long-term, incompatible livestock use of wetlands can potentially erode stream banks, cause stream downcutting, lower water tables, alter channel morphology, impair plant regeneration, establish non-native species, shift community structure and composition, degrade water quality, and diminish general riparian and wetland functions (Windell et al. 1986). Depending on grazing practices and local environmental conditions, impacts can be minimal and largely reversible to severe and irreversible, such as extensive gullying and introduction of non-native or noxious species.

Mining activity can be detrimental to wetlands. Mining activity can alter the hydrology of wetlands. Mine tailings dumped in or near wetland or riparian areas can alter surface flow and sediment fluxes (Chimner et al. 2007). Peat mining directly removes the fen substrate, irrevocably altering its hydrology and soil chemistry, thus eliminating that type of wetland (Johnson 2000). Alteration of water chemistry may also shift species composition.

Objectives

Because human activity has been focused on these ecosystems, leading to alteration and loss of native species, it is important to identify any seeps and springs in good condition, and to assess impacted areas for restoration potential. Further, because these areas can have unique suites of species, the Colorado Natural Heritage Program (CNHP) has been contracted to evaluate subsets of the seeps and springs identified in the 1983 Water Source Inventory in conjunction with surveys of critical wetland and riparian areas in the region (Gunnison Basin: Doyle 2003 and Rocchio et al. 2003a; Mesa County: Doyle et al. 2003 and Rocchio et al. 2003b; Garfield County: Rocchio et al. 2001a and Rocchio et al. 2001b). A similar effort occurred in Hinsdale County during 2006-2007. The objective of this project was to survey and evaluate proper functioning condition for selected seeps and springs (lentic) and riparian (lotic) wetlands on BLM land in Hinsdale County. This project was completed in conjunction with the Survey of Critical Wetland and Riparian Areas in Hinsdale County, CO, with additional financial support from the Colorado Department of Natural Resources (funded via a wetland program grant from the Environmental Protection Agency, Region 8) and the Colorado Division of Wildlife

(Neid and Jones 2008). Because of the high concentration of historic mining activity on what is now BLM land in Hinsdale County, there was an opportunity to evaluate wetlands associated with mines to assess the impacts of mining and to investigate whether the mine drainage was affiliated with or had initiated any unique wetland development like iron fens.

Project Area

BLM lands in Hinsdale County are concentrated in the northern third of the county in the Gunnison River watershed (see Figure 1). These lands comprise approximately 124,270 acres (50,290 ha) extending west and southwest of Lake City, north from Lake City along the Lake Fork of the Gunnison River and across the northeast corner of Hinsdale County in the Powderhorn Lakes area and eastward. This area is in the San Juan Mountains in the Southern Rocky Mountain ecoregion (Bailey et al. 1994) in the heart of the San Juan Caldera volcanic complex (Blair et al. 1996). The area ranges in elevation from 8,355 to 14,025 feet (2547 to 4275 m) including some of the highest peaks in Colorado and high plateaus of the Powderhorn Lakes area. Vegetation in this area is predominantly alpine vegetation above approximately 11,500 feet (3535 m; Carrara et al. 1984), below which occurs subalpine spruce-fir forest, and a mosaic of aspen forest and mountain parks. The study area includes Cebolla Creek, Powderhorn Creek, and the Lake Fork of the Gunnison River with its primary tributary, Henson Creek. The Henson Creek watershed was a mining center in Hinsdale County in the late 1800's (Blair et al. 1996).

METHODS

Survey Site Selection

General survey areas were selected in the 2006-2007 field surveys from the 582 seeps, springs, and water development projects identified in the Hinsdale County portion of the BLM 1983 WSI. Clusters of springs and seeps were targeted in all watersheds with BLM land in Hinsdale County; due to the elevations in Hinsdale County, these areas had some likelihood of supporting rare fen wetlands. Additional sites were selected based on recommendations by the Lake Fork Watershed Stakeholders group or added because of their close proximity to other targeted inventory areas in Hinsdale County. In 2007, sites were selected with BLM staff using the same criteria as for the 2006 inventory with additional sites added by BLM staff to target abandoned mines with known draining adits.

GPS coordinates of the WSI points were provided by BLM staff and used to navigate to the site locations. Site assessments included rating of Proper Functioning Condition (Bureau of Land Management 1998a, 1998b, 1998c; Bureau of Land Management 1999), generating of a plant species list, classifying wetland and riparian plant associations present (Carsey et al. 2003), collecting water chemistry data, and noting soil characteristics. In 2007, bird lists were generated at some sites. In addition to the standard identification information on Proper Functioning Condition forms, GPS coordinates were collected and elevation determined from 7.5 minute USGS topographic

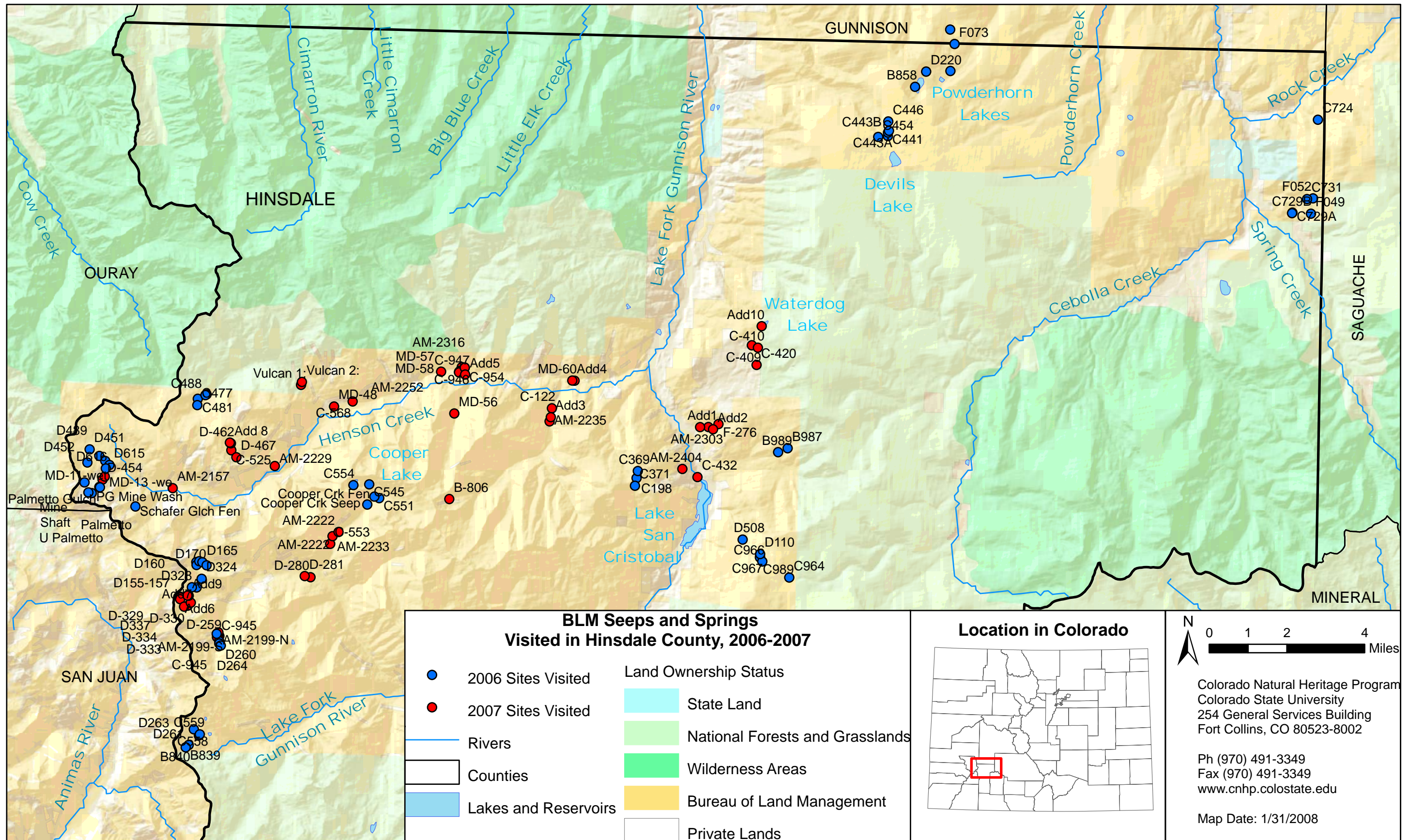


Figure 1. Seeps, springs, and fens visited on BLM lands in Hinsdale County in 2006-2007.

maps or GPS unit. Current and historic land use (e.g., grazing, recreational use); indicators of disturbance (such as grazing, flooding, spring “development”), hydrological characteristics, and landscape context of the site were noted when apparent. Water chemistry parameters (pH, EC, temperature) were collected using a portable Hanna Waterproof pH, EC/TDS & temperature meter (model HI 98129). Reference photos were taken of the sites.

Proper Functioning Condition

Each seep/spring visited was assessed using the BLM’s wetland/riparian functional assessment, “Process for Assessing Proper Functioning Condition” using standard Lotic or Lentic Checklists (Bureau of Land Management 1998a, 1998b, 1998c; Bureau of Land Management 1999). Thus, each site was given a rating of:

- (1) **Proper Functioning Condition (PFC)**—a wetland area that supports adequate vegetation, unaltered hydrology, and erosion/deposition features to dissipate floodwaters, stabilize streambanks, etc.
- (2) **Functional - At Risk (FAR)**—a wetland area that is in functional condition but an existing soil, water, or vegetation attribute makes it susceptible to degradation. Upward/downward trend in function due to risk was noted, if apparent.
- (3) **Nonfunctional (NF)**—a wetland area that does not provide adequate vegetation or landform attributes to dissipate floodwaters, improve water quality, etc.

The PFC analysis is not designed to evaluate natural ecological functioning but physical functioning. Therefore, a highly altered spring (excavated and bermed) can be rated as Proper Functioning Condition even though the functions the spring performs excavated and bermed can be very different than the functions of an unaltered spring.

Where occurrences of rare or imperiled species or wetland or riparian natural communities or high quality examples of more common natural communities were found, they were documented as Natural Heritage element occurrence records and incorporated into the Biotics database at CNHP. Significant element occurrences were highlighted with Potential Conservation Areas (PCAs). Natural Heritage methodology and conservation ranking system is found in Appendix A.

RESULTS

A total of 122 seeps and springs were visited during this project, 68 in the 2006 field season and 54 in 2007 (Table 1). Locations of the visited sites are shown in Figure 1. Of these, nine new sites that were not included in the 1983 WSI were added in 2006 and 30 new sites were added in 2007 including the seeps at abandoned mine sites. Individual summaries for 122 of the seeps, springs, fens, and mine adits are included in Appendix B with 2006 survey sites in Appendix B-1 and 2007 sites in Appendix B-2.

Table 1. Seeps, springs, and fens on BLM lands in Hinsdale County visited in 2006-2007. Seeps, springs, and fens on BLM lands in Hinsdale County visited in 2006-2007. New refers to sites not in the WSI data with new sites at abandoned mines denoted with an asterisk.

Survey Year	PFC type	Site ID	new	Site Name	Survey Date	Summary Determination	FAR trend	Potential Conservation Area
2006	lotic	B839		Upper Snare Creek	16-Aug-06	Proper Functioning Condition		Cleveland Gulch
2006	lotic	B840		Upper Snare Creek	16-Aug-06	Proper Functioning Condition		Cleveland Gulch
2006	lotic	B858		Powderhorn Lakes	04-Sep-06	Proper Functioning Condition		
2006	lotic	B987		Slumgullion Slide	18-Aug-06	Nonfunctional		
2006	lotic	B989		Slumgullion Slide	18-Aug-06	Nonfunctional		
2006	lotic	C198		Red Mountain Seeps	06-Aug-06	Proper Functioning Condition		
2006	lotic	C369		Red Mountain Seeps	06-Aug-06	Functional – At Risk	downward	
2006	lotic	C371		Red Mountain Seeps	06-Aug-06	Proper Functioning Condition		
2006	lotic	C441		Devils Lake Seeps	05-Sep-06	Proper Functioning Condition		
2006	lotic	C443A		Devils Lake Seeps	05-Sep-06	Proper Functioning Condition		
2006	lotic	C443B		Devils Lake Seeps	05-Sep-06	Proper Functioning Condition		
2006	lotic	C446		Devils Lake Seeps	05-Sep-06	Nonfunctional		
2006	lentic	C454		Devils Lake Seeps	05-Sep-06	Proper Functioning Condition		
2006	lotic	C477, C478, C479		North Fork of Henson Creek	20-Aug-06	Proper Functioning Condition		
2006	lotic	C481		North Fork of Henson Creek	20-Aug-06	Nonfunctional		
2006	lotic	C488		North Fork of Henson Creek	20-Aug-06	Proper Functioning Condition		American Flats
2006	lotic	C489		North Fork of Henson Creek	20-Aug-06	Proper Functioning Condition		American Flats
2006	lotic	C545		Cooper Creek	29-Jul-06	Proper Functioning Condition		American Flats
2006	lotic	C551		Cooper Creek	29-Jul-06	Proper Functioning Condition		American Flats
2006	lotic	C554		Cooper Lake	29-Jul-06	Proper Functioning Condition		American Flats
2006	lotic	C558		Upper Snare Creek	16-Aug-06	Proper Functioning Condition		American Flats
2006	lotic	C559		Upper Snare Creek	16-Aug-06	Proper Functioning Condition		
2006	lotic	C560		Upper Snare Creek	16-Aug-06	Proper Functioning Condition		
2006	lotic	C724		Devil's Hole Spring	10-Jul-06	Functional – At Risk	downward	
2006	lotic	C729A		Spring Creek Springs	08-Jul-06	Proper Functioning Condition		

Survey Year	PFC type	Site ID	new	Site Name	Survey Date	Summary Determination	FAR trend	Potential Conservation Area
2006	lentic	C729B		Spring Creek Springs	09-Jul-06	Proper Functioning Condition		
2006	lotic	C731		Spring Creek Springs	08-Jul-06	Functional – At Risk	not apparent	
2006	lotic	C964		Rambouillet Park Seeps	17-Jul-06	Proper Functioning Condition		
2006	lotic	C966		Hill Seventyone Seeps	17-Jul-06	Proper Functioning Condition		
2006	lotic	C967		Hill Seventyone Seeps	17-Jul-06	Proper Functioning Condition		
2006	lotic	C989		Hill Seventyone Seeps	17-Jul-06	Functional – At Risk	not apparent	
2006	lotic	Cooper Crk Fen	new	Cooper Creek Fen	29-Jul-06	Proper Functioning Condition		
2006	lotic	Cooper Crk Seep	new	Cooper Creek Seep	29-Jul-06	Proper Functioning Condition		
2006	lotic	D110		Hill Seventyone Seeps	17-Jul-06	Proper Functioning Condition		
2006	lotic	D155,156,157		Upper Cleveland Gulch	28-Jul-06	Proper Functioning Condition		
2006	lotic	D160		Upper Cleveland Gulch	28-Jul-06	Proper Functioning Condition		
2006	lotic	D162		Upper Cleveland Gulch	28-Jul-06	Proper Functioning Condition		
2006	lotic	D165		Upper Cleveland Gulch	28-Jul-06	Proper Functioning Condition		
2006	lotic	D170		Upper Cleveland Gulch	28-Jul-06	Functional – At Risk	upward	
2006	lotic	D220		Powderhorn Lakes	05-Sep-06	Proper Functioning Condition		
2006	lotic	D260		American Basin	26-Jul-06	Proper Functioning Condition		
2006	lotic	D261		American Basin	26-Jul-06	Proper Functioning Condition		
2006	lotic	D263		American Basin	26-Jul-06	Proper Functioning Condition		
2006	lotic	D264		American Basin	26-Jul-06	Functional – At Risk	not apparent	
2006	lotic	D324		Cinnamon Pass Seeps	28-Jul-06	Proper Functioning Condition		
2006	lotic	D328		Cinnamon Pass Seeps	28-Jul-06	Proper Functioning Condition		
2006	lotic	D337		Cinnamon Pass Seeps	28-Jul-06	Proper Functioning Condition		
2006	lotic	D451		American Flats	18-Aug-06	Proper Functioning Condition		
2006	lotic	D452		American Flats	19-Aug-06	Nonfunctional		
2006	lotic	D489		Schafer Gulch	20-Aug-06	Proper Functioning Condition		
2006	lotic	D508		Sawmill Park	17-Jul-06	Functional – At Risk	not apparent	Cleveland Gulch
2006	lotic	D614		American Flats	19-Aug-06	Nonfunctional		Cleveland Gulch
2006	lotic	D615		American Flats	19-Aug-06	Nonfunctional		Cleveland Gulch
2006	lotic	D616		American Flats	19-Aug-06	Nonfunctional		Cleveland Gulch

Survey Year	PFC type	Site ID	new	Site Name	Survey Date	Summary Determination	FAR trend	Potential Conservation Area
2006	lotic	F049		Spring Creek Seeps	08-Jul-06	Proper Functioning Condition		
2006	lotic	F052		Spring Creek Seeps	08-Jul-06	Functional – At Risk	downward	
2006	lotic	F073		Powderhorn Lakes Trail	05-Sep-06	Proper Functioning Condition		Cleveland Gulch
2006	lotic	Hidden Lakes Fen	new	Hidden Lakes Fen	05-Sep-06	Proper Functioning Condition		Cleveland Gulch
2006	lotic	Mine Shaft Seep	new	Engineer Pass – Mine Shaft Seep	19-Aug-06	Proper Functioning Condition		
2006	lotic	Palmetto Gulch	new	Palmetto Gulch	10-Sep-06	Functional – At Risk	not apparent	
2006	lotic	PG Mine Wash	new	Palmetto Gulch Mine Wash	10-Sep-06	Functional – At Risk	not apparent	
2006	lotic	Schafer Glch Fen	new	Schafer Gulch Fen	20-Aug-06	Proper Functioning Condition		
2006	lotic	trailside fen	new	Powderhorn Trail Fen	04-Sep-06	Proper Functioning Condition		
2006	lotic	U Palmetto Glch	new	Upper Palmetto Gulch	10-Sep-06	Functional – At Risk	not apparent	
2007	lentic	2199-N	new*	Gnome Mine Wetland-N	04-Oct-07	Functional – At Risk	not apparent	
2007	lentic	2199-S	new*	Gnome Mine Wetland-S	04-Oct-07	Functional – At Risk	not apparent	
2007	lentic	Add10	new	Waterdog Lake	08-Aug-07	Proper Functioning Condition		
2007	lentic	Add4	new*	Henson Creek	21-Aug-07	Functional – At Risk	upward	
2007	lentic	C-432	new*	Golden Fleece Mine Dump	21-Sep-07	Functional – At Risk	downward	
2007	lotic	Add1	new*	Deadman Gulch	10-Aug-07	Functional – At Risk	downward	
2007	lotic	Add2	new*	Deadman Gulch	26-Aug-07	Nonfunctional		
2007	lotic	Add3	new*	Alpine Gulch	13-Aug-07	Nonfunctional		
2007	lotic	Add5	new	Owl Gulch	23-Aug-07	Proper Functioning Condition		
2007	lotic	Add6	new	Cinnamon Pass	03-Sep-07	Proper Functioning Condition		
2007	lotic	Add7	new	Cinnamon Pass	03-Sep-07	Proper Functioning Condition		
2007	lotic	Add8	new	Boulder Gulch	05-Sep-07	Proper Functioning Condition		Lake Fork of the Gunnison River
2007	lotic	Add9	new	Cinnamon Pass	07-Sep-07	Nonfunctional		
2007	lotic	AM- 2229	mine	Boulder Gulch	01-Sep-07	Proper Functioning Condition		

Survey Year	PFC type	Site ID	new	Site Name	Survey Date	Summary Determination	FAR trend	Potential Conservation Area
2007	lotic	AM-2157	new*	Henson Creek/Chicago Tunnel	01-Sep-07	Functional – At Risk	downward	
2007	lotic	AM-2222	new*	Cooper Creek	08-Sep-07	Nonfunctional		
2007	lotic	AM-2233	new*	Cooper Creek	08-Sep-07	Nonfunctional		
2007	lotic	AM-2235	new*	Alpine Gulch	13-Aug-07	Functional – At Risk	downward	Henson Creek
2007	lotic	AM-2252	new*	Henson Creek	24-Aug-07	Nonfunctional		Henson Creek
2007	lotic	AM-2303	new*	Deadman Gulch	11-Aug-07	Nonfunctional		Henson Creek
2007	lotic	AM-2316	new*	Henson Creek	24-Aug-07	Nonfunctional		Henson Creek
2007	lotic	AM-2404	new*	Gladiator Mine	13-Aug-07	Functional – At Risk	upward	Henson Creek
2007	lotic	B-806		Alpine Gulch	15-Aug-07	Proper Functioning Condition		Henson Creek
2007	lotic	C-122		Alpine Gulch	13-Aug-07	Functional – At Risk		Henson Creek
2007	lotic	C-409		Horse Park	09-Aug-07	Functional – At Risk		Henson Creek
2007	lotic	C-410		Horse Park	09-Aug-07	Functional – At Risk		Henson Creek
2007	lotic	C-420		Horse Park	09-Aug-07	Functional – At Risk		
2007	lotic	C-525		Boulder Gulch	05-Sep-07	Proper Functioning Condition		Henson Creek
2007	lotic	C-553		Cooper Creek	08-Sep-07	Functional – At Risk	not apparent	
2007	lotic	C-568		Henson Creek	25-Aug-07	Functional – At Risk	not apparent	
2007	lotic	C-945		American Basin	07-Sep-07	Functional – At Risk	upward	
2007	lotic	C-946		Henson Creek	22-Aug-07	Functional – At Risk	downward	
2007	lotic	C-947		Henson Creek	22-Aug-07	Functional – At Risk	not apparent	
2007	lotic	C-954		Henson Creek	22-Aug-07	Nonfunctional		
2007	lotic	D-259		American Basin	07-Sep-07	Functional – At Risk	downward	
2007	lotic	D-280		Lake Fork Creek	09-Sep-07	Functional – At Risk	not apparent	
2007	lotic	D-281		Lake Fork River	09-Sep-07	Functional – At Risk	not apparent	
2007	lotic	D-329		Cinnamon Pass	03-Sep-07	Functional – At Risk	not apparent	
2007	lotic	D-330		Cinnamon Pass	03-Sep-07	Proper Functioning Condition		
2007	lotic	D-333		Cinnamon Pass	03-Sep-07	Proper Functioning Condition		
2007	lotic	D-334		Cinnamon Pass	07-Sep-07	Functional – At Risk	downward	
2007	lotic	D-454		Palmetto Gulch	02-Sep-07	Functional – At Risk	downward	
2007	lotic	D-462		Boulder Gulch	05-Sep-07	Proper Functioning Condition		
2007	lotic	D-467		Boulder Gulch	05-Sep-07	Proper Functioning Condition		

Survey Year	PFC type	Site ID	new	Site Name	Survey Date	Summary Determination	FAR trend	Potential Conservation Area
2007	lotic	F-276		Deadman Gulch	10-Aug-07	Nonfunctional		
2007	lotic	MD-11	new*	Roy Pray Mine Wetland	02-Sep-07	Functional – At Risk	not apparent	
2007	lotic	MD-13	new*	Palmetto Gulch wetland	02-Sep-07	Functional – At Risk	downward	
2007	lotic	MD-24	new*	Bluebird Mine	06-Sep-07	Functional – At Risk	downward	
2007	lotic	MD-48	new*	North Fork Henson Ck	26-Aug-07	Functional – At Risk	downward	
2007	lotic	MD-56	new*	Owl Gulch	23-Aug-07	Nonfunctional		
2007	lotic	MD-57	new*	Henson Creek	24-Aug-07	Nonfunctional		
2007	lotic	MD58	new*	Henson Creek	24-Aug-07	Nonfunctional		
2007	lotic	MD60	new*	Henson Creek	21-Aug-07	Functional – At Risk	not apparent	
2007	lotic	vulcan1	new*	North Fork Henson Ck.	27-Aug-07	Functional – At Risk	not apparent	

Of the 122 summarized sites, 59 were rated as Proper Functioning Condition, 40 as Functional - at Risk, and 21 as Nonfunctional, (Table 1). Of the 40 sites rated as Functional - at Risk, four had an upward trend, 18 had a downward trend, and 22 had no apparent trend noted. Conditions that lead to ratings of Functional - at Risk and Nonfunctional include bank slumping, lack of hydrology, excessive bare ground, and gullyng. A majority of the surveys at mine sites were Functional – at Risk or Nonfunctional. Twenty-seven of the surveyed sites are located within Potential Conservation Areas (PCAs) and contribute to the overall hydrology of the wetland and riparian features highlighted in the PCAs. Table 2 lists the significant natural communities associated with seeps, springs, and fens highlighted in PCAs. PCA descriptions and maps are in Appendix C.

Table 2. Natural community elements in PCAs that have evaluated seeps, springs, and fens within the boundaries

PCA Name	Natural Community Global Name	Natural Community Common Name	Grank	Srank	EO Rank
Henson Creek	<i>Alnus incana</i> - <i>Salix drummondiana</i> Shrubland	Montane Riparian Shrubland	G3	S3	A
Lake Fork of the Gunnison River	<i>Populus angustifolia</i> - <i>Picea pungens</i> / <i>Alnus incana</i> Woodland	Montane Riparian Forests	G3	S3	B
Cleveland Gulch	<i>Carex nigricans</i> - <i>Juncus drummondii</i> Herbaceous Vegetation	Alpine Wetlands	GU	S2	B
American Flats	<i>Carex nigricans</i> - <i>Juncus drummondii</i> Herbaceous Vegetation	Alpine Wetlands	GU	S2	A
Henson Creek	<i>Populus angustifolia</i> - <i>Picea pungens</i> / <i>Alnus incana</i> Woodland	Montane Riparian Forests	G3	S3	B

DISCUSSION

Primary impacts to wetlands at sites visited on BLM lands in Hinsdale County in 2006-2007 were road encroachment, drought, and mining. Other hydrological alterations were mentioned infrequently and these were mostly affiliated with mining activity in the vicinity. Impacts from sheep grazing and recreation use were also noted; in some areas selective or excessive browsing appears to have changed community structure and composition.

Road encroachment was mentioned the most often as an impact to wetlands surveyed. Transportation corridors near or in wetlands alter site hydrology. Roads can increase and intensify water flow due to its runoff from relatively impervious surfaces. This reduces percolation and aquifer recharge, which dries the site as well as increases erosion (Forman and Alexander 1998). Alternatively, roads and railways can also impede drainage, backing up water flow and increasing surface water levels. Further, roads (and railroads) are anthropogenic features that fragment and degrade habitat. They can be

conduits for modern alien species and can increase pollutant inputs. In the majority of the sites where this impact was mentioned, the roads lowered the wetland potential due to proximity but were not directly impacting the wetlands by traversing through them.

Several of the seeps and springs in Hinsdale County were dry during the 2006 field season due to extended drought conditions; examples include C446, C481, D489, D614-616, and Palmetto Gulch Mine Wash. According to the Western Regional Climate Center (2008), the Gunnison River Watershed was in the sixth consecutive year with below-average snow pack in the winter prior to the 2006 field season. Conditions ameliorated somewhat throughout Colorado in July 2006 with above average monsoonal moisture. Drying up of springs changes the vegetation and increases the grazing pressure at the remaining flowing springs.

Mining impacts ranged from being mentioned with low impact to significantly disrupting wetland function or even eliminating a wetland. For example, at D160, D162, and D264 past mining activity was noted in the vicinity of wetlands but there was no apparent impact to wetland composition or function. However, at other sites dredging or dewatering by mining activity was noted (*e.g.*, F052). Past mining activity increased water flow from draining adits in several areas, like Palmetto Gulch and Mine Shaft Seep. Mining activity rendered wetlands non-functional at Deadman Gulch and Alpine Gulch. One mining site, Palmetto Gulch, displayed limited nascent wetland formation below mine drainage as evidenced by moss colonization in the drainage channel (PFC forms in this report, Krabacher et al. 2006). Although the development of iron fens is not well-understood, conditions such as those at Palmetto Gulch may be setting the stage for further development of acidic wetland plant communities. As peat development occurs over a long period of time, it may not be appropriate at this time to forecast the trajectory of wetland development at Palmetto Gulch, but considering the hydrology of the area is stabilizing to a modern hydrological profile after the historic mining impacts, it is likely that wetland development will continue.

In general, wetlands affiliated with mines are impacted in their hydrology and water chemistry (Krabacher et al. 2006). The Henson Creek watershed has heavy metal contamination that has been shown to be impacting elements of zoological biodiversity (Larison 2003, Vinson 2005). It is unknown the extent to which wetland vegetation has been impacted; information in this report can serve as baseline data for monitoring future change in vegetation composition at these sites. Some sites, like Palmetto Mine have some development of wetland vegetation, although it is very limited in extent. Wetland vegetation can serve as a tool for mitigating heavy metal contamination and soil erosion (Sobolewski 1997) but the high elevation of these mining sites may make plant selection difficult for restoration purposes.

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Appendix A. The Natural Heritage Network and Biological Diversity

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Appendix A. The Natural Heritage Network and Biological Diversity

Colorado is well known for its rich diversity of geography, wildlife, plants, and plant communities. However, like many other states, it is experiencing a loss of much of its flora and fauna. This decline in biological diversity is a global trend resulting from human population growth, land development, and subsequent habitat loss. Globally, the loss in species diversity has become so rapid and severe that it has been compared to the great natural catastrophes at the end of the Paleozoic and Mesozoic eras (Wilson 1988). The need to address this loss in biological diversity has been recognized for decades in the scientific community. However, many conservation efforts made in this country have not been based upon preserving biological diversity; instead, they have primarily focused on preserving game animals, striking scenery, and locally favorite open spaces. To address the absence of a methodical, science-based approach to preserving biological diversity, Robert Jenkins, a biologist working with The Nature Conservancy, developed the Natural Heritage Methodology in 1978 (The Nature Conservancy 2000).

Recognizing that rare and imperiled species are more likely to become extinct than common ones, the Natural Heritage Methodology ranks species according to their rarity or degree of imperilment. The ranking system is based upon the number of known locations of the species as well as its biology and known threats. By ranking the relative rarity or imperilment of a species, the quality of its populations, and the importance of associated conservation sites, the methodology can facilitate the prioritization of conservation efforts so the most rare and imperiled species may be preserved first. As the scientific community began to realize that plant communities are equally important as individual species, this methodology has also been applied to ranking and preserving rare plant communities as well as the best examples of common communities.

The Natural Heritage Methodology is used by Natural Heritage Programs throughout North, Central, and South America, forming an international database network. Natural Heritage Network data centers are located in each of the 50 U.S. states, five provinces of Canada, and 13 countries in South and Central America and the Caribbean. This network enables scientists to monitor the status of species from a state, national, and global perspective. It also enables conservationists and natural resource managers to make informed, objective decisions in prioritizing and focusing conservation efforts. For more information on the work of the Natural Heritage Network see www.natureserve.org.

What is Biological Diversity?

Protecting biological diversity has become an important management issue for many natural resource professionals. Biological diversity at its most basic level includes the full range of species on earth, from unicellular bacteria and protists through multi-cellular plants, animals, and fungi. At finer levels of organization, biological diversity includes the genetic variation within species, both among geographically separated populations and among individuals within a single population. On a wider scale, diversity includes variations in the biological communities in which species live, the ecosystems in which

communities exist, and the interactions among these levels. All levels are necessary for the continued survival of species and natural communities, and all are important for the well being of humans. It stands to reason that biological diversity should be of concern to all people.

The biological diversity of an area can be described at four levels:

1. **Genetic Diversity** -- the genetic variation within a population and among populations of a plant or animal species. The genetic makeup of a species is variable between populations within its geographic range. Loss of a population results in a loss of genetic diversity for that species and a reduction of total biological diversity for the region. Once lost, this unique genetic information cannot be reclaimed.
2. **Species Diversity** -- the total number and abundance of plant and animal species and subspecies in an area.
3. **Community Diversity** -- the variety of ecological communities within an area that represent the range of species relationships and interdependence. These communities may be characteristic of, or even endemic to, an area. It is within ecological communities that all life dwells.
4. **Landscape Diversity** -- the type, condition, pattern, and connectedness of ecological communities. A landscape consisting of a mosaic of ecological communities may contain one multifaceted ecosystem, such as a wetland ecosystem. A landscape also may contain several distinct ecosystems, such as a riparian corridor meandering through shortgrass prairie. Fragmentation of landscapes, loss of connections and migratory corridors, and loss of natural communities all result in a loss of biological diversity for a region. Humans and the results of their activities are integral parts of most landscapes.

The conservation of biological diversity must include all levels of diversity: genetic, species, community, and landscape. Each level is dependent on the other levels and inextricably linked. Often overlooked is the reality that humans are also linked to all levels of this hierarchy of diversity. The Colorado Natural Heritage Program believes that a healthy natural environment and human environment go hand in hand, and that recognition of the most imperiled species or communities is an important step in comprehensive conservation planning.

Colorado's Natural Heritage Program

CNHP is the state's primary comprehensive biological diversity data center, gathering information and field observations to help develop statewide conservation priorities. After operating in Colorado for fourteen years, the Program was relocated from the State Division of Parks and Outdoor Recreation to the University of Colorado Museum in 1992 and then in 1994 to the College of Natural Resources at Colorado State University.

CNHP's multi-disciplinary team of scientists and information managers gathers comprehensive information on rare, threatened, and endangered species and significant ecological communities of Colorado. Life history, status, and locational data are incorporated into a continually updated data system. Sources include published and unpublished literature, museum and herbaria labels, and field surveys conducted by knowledgeable naturalists, experts, agency personnel, and our own staff of botanists, ecologists, and zoologists. Information management staff oversee the transcription and mapping of the data and physical locations into the BIOTICS data system. BIOTICS combines an Oracle relational database with a geographic information system (Arc/GIS). The data in the database can be accessed through a variety of attributes, including taxonomic group, global and state rarity rank, federal and state legal status, source, observation date, county, quadrangle map, watershed, management area, township, range, and section, precision, and conservation unit.

CNHP is part of an international network of conservation data centers that uses BIOTICS for its data management. CNHP has effective relationships with several state and federal agencies, including the Colorado Natural Areas Program, Colorado Department of Natural Resources and the Colorado Division of Wildlife, the U.S. Environmental Protection Agency, the U.S. Bureau of Land Management and the U.S. Forest Service. Numerous local governments and private entities also work closely with CNHP. Use of the data by many different individuals and organizations, including Great Outdoors Colorado, encourages a proactive approach to development and conservation thereby reducing the potential for conflict. Information collected by the Natural Heritage Programs around the globe provides a means to protect species before the need for legal endangerment status arises.

Concentrating on site-specific data for each species or community enables the evaluation of the significance of each location with respect to the conservation of natural biological diversity in Colorado and the nation. By using species imperilment ranks and quality ratings for each location, priorities can be established for the protection of the most sensitive or imperiled sites. CNHP's BIOTICS is a GIS based priority-setting system that provides land managers with an effective, proactive land-planning tool. For more information on the work of the Colorado Natural Heritage Program please see www.cnhp.colostate.edu.

The Natural Heritage Ranking System

Each of the plant or animal species and ecological communities tracked by CNHP is considered an **element of natural diversity**, or simply an **element**. Each element is assigned a rank that indicates its relative degree of imperilment on a five-point scale (e.g., 1 = extremely rare/imperiled, 5 = abundant/secure). The primary criterion for ranking elements is the number of occurrences, i.e., the number of known distinct localities or populations. The number of occurrences is weighted more heavily than other criteria because an element found in one place is more imperiled than something found in twenty-one places. Also considered in defining the element imperilment rank is the size

of the geographic range, the number of individuals, trends in population and distribution, identifiable threats, and the number of already protected occurrences.

Element imperilment ranks are assigned both in terms of the element's degree of imperilment within Colorado (its State or S-rank) and the element's imperilment over its entire range (its Global or G-rank). Taken together, these two ranks indicate the degree of imperilment of an element. For example, the lynx, which is thought to be secure in northern North America but is known from less than 5 current locations in Colorado, is ranked G5S1. Naturita milkvetch, which is known from 37 locations in the Four Corners Area, is ranked a G3S3, vulnerable both globally and in Colorado. Further, a tiger beetle that is only known from one location in the world at the Great Sand Dunes National Monument is ranked G1S1, critically imperiled both globally and in Colorado. CNHP actively collects, maps, and electronically processes specific occurrence information for elements considered extremely imperiled to vulnerable (S1 - S3). Those with a ranking of S3S4 are "watchlisted," meaning that specific occurrence data are collected and periodically analyzed to determine whether more active tracking is warranted. A complete description of each of the Natural Heritage ranks is provided in Table 1.

This single rank system works readily for all species except those that are migratory. Those animals that migrate may spend only a portion of their life cycles within the state. In these cases, it is necessary to distinguish between breeding, non-breeding, and resident species. As noted in Table 1, ranks followed by a "B", e.g., S1B, indicate that the rank applies only to the status of breeding occurrences. Similarly, ranks followed by an "N", e.g., S4N, refer to non-breeding status, typically during migration and winter. Elements without this notation are believed to be year-round residents within the state.

Legal Designations

Natural Heritage imperilment ranks are not legal designations and should not be interpreted as such. Although most species protected under state or federal endangered species laws are extremely rare, not all rare species receive legal protection. Legal status is designated by either the U.S. Fish and Wildlife Service under the Endangered Species Act or by the Colorado Division of Wildlife under Colorado Statutes 33-2-105 Article 2. State designations apply to animals only; Colorado has no legal list of threatened and endangered plant species (Buckner and Bunin 1992).

In addition, the U.S. Forest Service and Bureau of Land Management recognize some species as "Sensitive". Table 2 defines the special status assigned by these agencies and provides a key to the abbreviations used by CNHP.

Please note that the U.S. Fish and Wildlife Service has issued a Notice of Review in the February 28, 1996 Federal Register for plants and animal species that are "candidates" for listing as endangered or threatened under the Endangered Species Act. The revised candidate list replaces an old system that listed many more species under three categories: Category 1 (C1), Category 2 (C2), and Category 3 (including 3A, 3B, 3C). Beginning with the February 28, 1996 notice, the Service will recognize as candidates for

listing most species that would have been included in the former Category 1. This includes those species for which the Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act. Candidate species listed in the February 28, 1996 Federal Register are indicated in Table 2 with a "C".

Table 1. Definition of CNHP Imperilment Ranks.

Global imperilment ranks are based on the range-wide status of a species. State imperilment ranks are based on the status of a species in an individual state. State and Global ranks are denoted, respectively, with an "S" or a "G" followed by a character. These ranks should not be interpreted as legal designations.	
G/S1	Critically imperiled globally/state because of rarity (5 or fewer occurrences in the world/state; or very few remaining individuals), or because some factor of its biology makes it especially vulnerable to extinction.
G/S2	Imperiled globally/state because of rarity (6 to 20 occurrences), or because of other factors demonstrably making it very vulnerable to extinction throughout its range.
G/S3	Vulnerable throughout its range or found locally in a restricted range (21 to 100 occurrences).
G/S4	Apparently secure globally/state, though it might be quite rare in parts of its range, especially at the periphery.
G/S5	Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
GX	Presumed extinct.
G#?	Indicates uncertainty about an assigned global rank.
G/SU	Unable to assign rank due to lack of available information.
GQ	Indicates uncertainty about taxonomic status.
G/SH	Historically known, but not verified for an extended period.
G#T#	Trinomial rank (T) is used for subspecies or varieties. These species or subspecies are ranked on the same criteria as G1-G5.
S#B	Refers to the breeding season imperilment of elements that are not permanent residents.
S#N	Refers to the non-breeding season imperilment of elements that are not permanent residents. Where no consistent location can be discerned for migrants or non-breeding populations, a rank of SZN is used
SZ	Migrant whose occurrences are too irregular, transitory, and/or dispersed to be reliably identified, mapped, and protected.
SA	Accidental in the state.
SR	Reported to occur in the state, but unverified.
S?	Unranked. Some evidence that species may be imperiled, but awaiting formal rarity ranking.
Notes: Where two numbers appear in a state or global rank (e.g., S2S3), the actual rank of the element falls between the two numbers.	

Element Occurrence Ranking

Actual locations of elements, whether they are single organisms, populations, or plant communities, are referred to as element occurrences. The element occurrence is considered the most fundamental unit of conservation interest and is at the heart of the Natural Heritage Methodology. In order to prioritize element occurrences for a given species, an element occurrence rank (EO-Rank) is assigned according to the estimated viability or probability of persistence (whenever sufficient information is available). This ranking system is designed to indicate which occurrences are the healthiest and ecologically the most viable, thus focusing conservation efforts where they will be most successful. The EO-Rank is based on 3 factors:

Size – a quantitative measure of the area and/or abundance of an occurrence such as area of occupancy, population abundance, population density, or population fluctuation.

Condition – an integrated measure of the quality of biotic and abiotic factors, structures, and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components may include reproduction and health, development/maturity for communities, ecological processes, species composition and structure, and abiotic physical or chemical factors.

Landscape Context – an integrated measure of the quality of biotic and abiotic factors, and processes surrounding the occurrence, and the degree to which they affect the continued existence of the occurrence. Components may include landscape structure and extent, genetic connectivity, and condition of the surrounding landscape.

Table 2. Federal and State Agency Special Designations.

Federal Status:	
1.	U.S. Fish and Wildlife Service (58 Federal Register 51147, 1993) and (61 Federal Register 7598, 1996)
LE	Endangered; species or subspecies formally listed as endangered.
E(S/A)	Endangered due to similarity of appearance with listed species.
LT	Threatened; species or subspecies formally listed as threatened.
P	Potential Endangered or Threatened; species or subspecies formally listed as potentially endangered or threatened.
PD	Potential for delisting
C	Candidate: species or subspecies for which the U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened.
2.	U.S. Forest Service (Forest Service Manual 2670.5) (noted by the Forest Service as “S”)
FS	Sensitive: those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by: <ul style="list-style-type: none"> a. Significant current or predicted downward trends in population numbers or density. b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.
3.	Bureau of Land Management (BLM Manual 6840.06D) (noted by BLM as “S”)
BLM	Sensitive: those species found on public lands, designated by a State Director that could easily become endangered or extinct in a state. The protection provided for sensitive species is the same as that provided for C (candidate) species. This list does not include species that are listed endangered (LE) or threatened (LT).
State Status:	
1.	Colorado Division of Wildlife <ul style="list-style-type: none"> CO-E Endangered CO-T Threatened CO-SC Special Concern

Each of these factors is rated on a scale of A through D, with A representing an excellent grade and D representing a poor grade. These grades are then averaged to determine an appropriate EO-Rank for the occurrence. If there is insufficient information available to rank an element occurrence, an EO-Rank is not assigned. Possible EO-Ranks and their appropriate definitions are as follows:

- A** Excellent estimated viability.
- B** Good estimated viability.
- C** Fair estimated viability.
- D** Poor estimated viability.
- E** Viability has not been assessed.
- H** Historically known, but not verified for an extended period of time
- X** Extirpated

Potential Conservation Areas

In order to successfully protect populations or occurrences, it is necessary to delineate areas needed for their conservation. These “Potential Conservation Areas” (PCA) focus on capturing the ecological processes that are necessary to support the viable persistence of an element occurrence. A PCA may include a single occurrence of an element or a suite of element occurrences. Not all element occurrences are included in PCA’s. PCA’s are ordinarily drawn for A to C ranked G1 to G3 and S1 or S2 elements only. Other lower ranked element occurrences may fall geographically within the site boundaries, and are thus included, but would not warrant a PCA on their own.

The goal of the process is to identify a land area that can provide the habitat and ecological processes upon which a particular element occurrence or suite of element occurrences depends for its continued existence. The best available knowledge of each species’ life history is used in conjunction with information about topographic, geomorphic, and hydrologic features, vegetative cover, as well as current and potential land uses. CNHP PCA’s are referred to by the BLM as “Areas of Biological Significance”.

In developing PCA boundaries, CNHP biologists consider a number of factors that include, but are not limited to:

- the extent of current and potential habitat for the elements present, considering the ecological processes necessary to maintain or improve existing conditions;
- species movement and migration corridors;
- maintenance of surface water quality within the site and the surrounding watershed;
- maintenance of the hydrologic integrity of the groundwater, e.g., by protecting recharge zones;
- land intended to buffer the site against future changes in the use of surrounding lands;

- exclusion or control of invasive exotic species;
- land necessary for management or monitoring activities.

The proposed boundary does not recommend the exclusion of all activity. It is hypothesized that some activities will prove degrading to the element or the process on which the element depends, while others will not. Specific activities or land use changes proposed within or adjacent to the PCA boundary should be carefully considered and evaluated for their implications to the survival of the elements for which the PCA is primarily defined and the other elements that also fall within the site.

The PCA boundaries presented here are for planning and management purposes. They delineate ecological areas where land-use practices should be carefully planned and managed to ensure compatibility with protection goals for natural heritage elements. Please note that PCA boundaries are based primarily on our understanding of the ecological systems. A thorough analysis of the human context and potential stresses was not conducted. All land within the conservation planning boundary should be considered an integral part of a complex economic, social, and ecological landscape that requires thoughtful land-use planning at all levels.

Off-Site Considerations

It is often the case that all relevant ecological processes cannot be contained within a PCA of reasonable size. For instance, while a PCA for Colorado River cutthroat trout may be drawn to include only a portion of the riparian zone of a river or creek, it should be noted that the ecological functions that determine the viability of the occurrence operate at the watershed scale. Activities throughout the entire watershed can affect water quality and hydrology of the river, which in turn may affect the trout's local habitat and population viability. The boundaries illustrated in this report signify the immediate, and therefore most important, area in need of protection. Continued landscape level planning and conservation efforts are needed. This requires coordination and cooperation with private landowners, neighboring land planners, and state and federal agencies with jurisdictions and interests across the landscape.

Ranking of Potential Conservation Areas

Biological Diversity Rank

CNHP uses element and element occurrence ranks to assess the biological diversity significance of a site. If an element occurrence is unranked due to a lack of information, the element occurrence rank is considered a C rank. Similarly, if an element is a "GU" or "G?" it is treated as a "G4". Based on these ranks, each site is assigned a **Biological Diversity rank (B rank)**:

- B1** Outstanding Significance: the only site known for an element or an excellent occurrence of a G1 species.
- B2** Very High Significance: one of the best examples of a community type, good occurrence of a G1 species, or excellent occurrence of a G2 or G3 species.

- B3** High Significance: excellent example of any community type, good occurrence of a G3 species, or a large concentration of good occurrences of state rare species.
- B4** Moderate or Regional Significance: good example of a community type, excellent or good occurrence of state-rare species.
- B5** General or Statewide Biological diversity Significance: good or marginal occurrence of a community type, S1, or S2 species.

Protection Urgency Ranks

Protection urgency ranks (P-ranks) refer to the time frame in which conservation protection should occur in order to prevent the loss of the element. In most cases, this rank refers to the need for a major change of protective status (e.g., agency special area designations or ownership). The urgency for protection rating reflects the need to take legal, political, or other administrative measures to alleviate potential threats that are related to land ownership or designation. The following codes are used to indicate the urgency to protect the area:

- P1** May be immediately threatened by severely destructive forces, within 1 year of rank date,
- P2** Threat expected within 5 years,
- P3** Definable threat but not in the next 5 years,
- P4** No threat known for foreseeable future,
- P5** Land protection complete, or adequate reasons exists not to protect the site.

A protection action involves increasing the current level of legal protection accorded one or more tracts of a potential conservation area. Protection strategies on public lands may include special designations such as Wilderness, Research Natural Areas (RNA), or Areas of Critical Environmental Concern (ACEC). They may also include activities such as educational or public relations campaigns or collaborative planning efforts with public or private entities to minimize adverse impacts to element occurrences at a site.

Protection in this sense does not include management actions.

Management Urgency Ranks

Management urgency ranks (M-ranks) indicate the time frame in which a change in management of the element or site must occur in order to ensure the element's future existence. Using best scientific estimates, this rank refers to the need for management in contrast to protection (e.g., increased fire frequency, decreased grazing, weed control, etc.). The urgency for management rating focuses on land use management or land stewardship action required to maintain element occurrences in the PCA.

A management action may include biological management (prescribed burning, removal of exotics, mowing, etc.) or people and site management (building barriers, rerouting trails, patrolling for collectors, hunters, or trespassers, etc.). It may also include conducting further research or monitoring. Management action does not include legal,

political, or administrative measures taken to protect a potential conservation area. The following codes are used to indicate the action needed at the area:

- M1** Management action may be required immediately or element occurrences could be lost or irretrievably degraded within one year,
- M2** New management action may be needed within 5 years to prevent the loss of element occurrences,
- M3** New management action may be needed within 5 years to maintain current quality of element occurrences,
- M4** Although the element is not currently threatened, management may be needed in the future to maintain the current quality of element occurrences,
- M5** No serious management needs known or anticipated at the site.

References

- Buckner, D. L. and J. E. Bunin. 1992. Final Report 1990/91 Status Report for *Penstemon harringtonii*. Unpublished report prepared for Colorado Natural Areas Program, Denver, CO by Esco Assoc., Inc., Boulder, CO.
- The Nature Conservancy and The Association for Biological Diversity. 2000. Precious Heritage: The Status of Biodiversity in the United States. Eds: Bruce A. Stien, Lynn S. Kutner, and Jonathan S. Adams. Oxford University Press. 399 pp.
- Wilson, E. O. 1988. Biodiversity. National Academy Press, Washington D.C. 520 pp.

APPENDIX B-1. Proper Functioning Condition forms from 2006 surveys, sorted alphabetically by site code or site name if new to WSI.

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Upper Snare Creek Standard Checklist Proper Functioning Condition

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: B839

UTM Coordinates NAD 83: E277414 N4195270

Elevation: 12,775ft

ID Team Observers: JJones, JDavin

Date: August 16, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Wetland and surrounding uplands supports alpine herbaceous vegetation

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a small seep spilling into a small alpine pond at the upper reaches of Snare Creek, a second order tributary of Cottonwood Creek. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas and ash-flow tuff. Area contains many shallow lakes along rolling alpine meadows, with seeps, depressions, washes, and streams. There is evidence of past mining in the area, but very little recent anthropogenic disturbance. Old road leading up to the area does not appear to be used during the summer season, but may be used during winter months by snowmobiles.

Plants: Vegetation is dominated by mesic herbaceous species with *Caltha leptosepala* being dominant throughout (55-65%). Other common (5-10%) species include *Carex scopulorum*, *Primula parryi*, *Carex nova*, *Rhodiola rhodantha*, and *Podistera eastwoodiae*. Other species present (<5%) include *Carex capillaris*, *Eriophorum altaicum*, *Pedicularis groenlandica*, *Carex nigricans*, *Juncus drummondii*, *Deschampsia caespitosa*, *Polygonum vivipara*, and *Salix petrophila*.

Soils: Soils are shallow and undeveloped consisting of fibric to hemic peats over unconsolidated rock material. Soils are saturated to inundated throughout.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4)
pH = not taken **conductivity =** not taken

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with no disturbances contributing to unacceptable conditions in the area. Hydrology is stable and wetland vegetation is vigorous.



**Upper Snare Creek
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: B840

UTM Coordinates NAD 83: E277537 N4195367

Elevation: 12,774ft

ID Team Observers: JJones, JDavin

Date: August 16, 2006

Yes		N/A	HYDROLOGY
X			1) Riparian-wetland area is saturated at or near the surface or inundated in "relatively frequent" events (1-3 years)
X			2) Fluctuation of water levels is not excessive
X			3) Riparian-wetland area is enlarging or has achieved potential extent
X			4) Upland watershed not contributing to riparian-wetland degradation
X			5) Water quality is sufficient to support riparian-wetland plants
X			6) Natural surface or subsurface flow patterns are not altered by disturbance i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
X			7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes	No	N/A	VEGETATION
X			8) Diverse age-class distribution (recruitment for maintenance/recovery)
X			9) Diverse composition of vegetation (for maintenance/recovery)
X			10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt)
X			12) Riparian-wetland plants exhibit high vigor
X			13) Adequate vegetative cover is present to protect shorelines/soil surface and dissipate energy during high wind and wave events or overland flows
X			14) Frost or abnormal hydrologic heaving is not present
X			15) Favorable microsite condition (i.e., woody debris, water temperature, etc.) is maintained by adjacent site characteristics)

Yes	No	N/A	EROSION/DEPOSITION
X			16) Accumulation of chemicals affecting plant productivity/composition is not apparent
X			17) Saturation of soils (i.e., ponding, flooding frequency and duration) is sufficient to compose and maintain hydric soils
X			18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
X			19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
X			20) Islands and shoreline characteristics (i.e., rocks, course and/or large woody debris) are adequate to dissipate wind and wave event energies

Remarks

General Description: Wetland occurs along and between two small alpine ponds at the upper reaches of Snare Creek, a second order tributary of Cottonwood Creek. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas and ash-flow tuff. Area contains many shallow lakes along rolling alpine meadows, with seeps, depressions, washes, and streams. There is evidence of past mining in the area, but very little recent anthropogenic disturbance. Old road leading up to the area does not appear to be used during the summer season, but may be used during winter months by snowmobiles.

Plants: Vegetation is dominated by mesic herbaceous species throughout with *Carex scopulorum* being dominant (25-35%) in many saturated areas. Common (5-15%) species include *Clathra leptosepala*, *Carex nova*, *Rhodiola rhodantha*, and *Podistera eastwoodiae*. Other species present (<5%) include *Carex capillaris*, *Eriophorum altaicum*, *Pedicularis groenlandica*, *Carex nigricans*, *Juncus drummondii*, *Deschampsia caespitosa*, *Polygonum vivipara*, and *Salix petrophila*.

Soils: Soils are undeveloped and shallow. Soils are mesic to inundated with a strong sulfur smell. Soils consist of fibric peat up to 38cm+ over bedrock.

CNHP Vegetation Classification Type: *Carex scopulorum* – *Caltha leptosepala* Herbaceous Vegetation (G4S4)

pH = 5.88 **conductivity** = .12mS at 12.0 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with no disturbances contributing to unacceptable conditions in the area. Hydrology is stable and wetland vegetation is vigorous.



**Powderhorn Lakes
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Powderhorn Lakes

BLM Code: B858

UTM Coordinates NAD 83: E307631 N4222588

Elevation: 11,835ft

ID Team Observers: JJones, JDavin

Date: September 4, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent – Wetland appears to have been bigger, with dying willow along edges and little mesic understory vegetation.
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs along the southwestern edge of the western Powderhorn Lake as a small snowmelt-fed seep. Small spring feeding site originates in adjacent talus slopes, surfacing near the toeslope to form a small, narrow wetland area concentrated along the lake edge. Site appears to have been more extensive in the past, but is shrinking due to natural drying. Surrounding uplands consist of large talus cirque walls at the end of a large glaciated valley. General geology of the area consists of landslide deposits of the Quaternary Age in the valley floor surrounded by basalt flows and associated tuff, breccias, and conglomerate of the Hinsdale Formation of the Tertiary Age. Site exhibits very little disturbance, talus above wetland is stable.

Plants: Vegetation is dominated an open shrubland of *Salix planifolia* (65-75%) with dry to mesic herbaceous understory species. No understory species are dominant, but *Podistera eastwoodiae*, *Geum rossii*, *Sibbaldia procumbens*, *Deschampsia caespitosa*, *Calamagrostis canadensis*, and *Potentilla diversifolia* are all common (5-10% cover). Species concentrated along small channel include *Cardamine cordifolia*, *Pedicularis groenlandica*, and *Carex aquatilis*.

Soils: Soils consist of dry, hemic organic material over unconsolidated rocks.

CNHP Vegetation Classification Type: *Salix planifolia*/Mesic Forb Shrubland (G4S4), *Cardamine cordifolia* – *Mertensia ciliata* Herbaceous Vegetation (G4S4) (along channel)

pH = 5.64 **conductivity** = 0.0mS at 2.5 degrees Celsius (taken in small snowmelt stream running through site)

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning just below its potential natural community with little disturbance in the area. Vegetation appears to have been more vigorous in the past due to drying, but drying appears to be natural.

Slumgullion Slide Standard Checklist Non-Functional

County: Hinsdale **Quadrangle:** Lake San Cristobal **BLM Code:** B987
UTM Coordinates NAD 83: E302351 N4207640 **Elevation:** 10,715ft
ID Team Observers: JJones, JDavin **Date:** August 18, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
	X		6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
	X		7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
	X		8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
	X		9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
	X		10) Riparian-wetland plants exhibit high vigor
	X		11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
	X		12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
	X		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
	X		14) Point bars are revegetating with riparian-wetland vegetation
	X		15) Lateral stream movement is associated with natural sinuosity
	X		16) System is vertically stable
	X		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a small wash along the middle reaches of the Slumgullion Slide. Soils are mobile and highly erodible supporting little vegetation. General geology of the area consists of Quaternary landslide deposits surrounded by intra-ash-flow quartz latitic lavas. Landslide debris from the western escarpment of Meso Seca is still moving exposing highly mineralized soils with little organic material. Movement and substrate makes it very difficult for vegetation to establish on the slide.

Plants: Vegetation is minimal throughout due to extremely acidic and high erodible soils. *Populus tremuloides* and *Picea engelmannii* are consistent along the slide, but do not form wooded areas, only small patches along more stable soils. *Juniperus communis* is present in low cover throughout. Other species present include *Epilobium angustifolium* and *Arabis* sp.

Soils: Soil texture is highly variable from sands to clays with reddish to yellow coloring.

CNHP Vegetation Classification Type: None

pH = 2.51 conductivity = 3.05mS at 14.8 degrees Celsius (sampled in area of standing water)

Summary Determination

Functional Rating:

Proper Functioning Condition _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

X

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

___ Dewatering

___ Mining activities

___ Watershed condition

___ Dredging activities

___ Road encroachment

___ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Seep indicated by BLM not a functioning wetland. There is no consistent hydrologic regime present and no stable vegetation. Soils are highly erodible with little structure to support wetland vegetation.



Slumgullion Slide Standard Checklist Non-Functional

County: Hinsdale **Quadrangle:** Lake San Cristobal **BLM Code:** B989
UTM Coordinates NAD 83: E301954 N4207477 **Elevation:** 10,460ft
ID Team Observers: JJones, JDavin **Date:** August 18, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
	X		6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
	X		7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
	X		8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
	X		9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
	X		10) Riparian-wetland plants exhibit high vigor
	X		11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
	X		12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
	X		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
	X		14) Point bars are revegetating with riparian-wetland vegetation
	X		15) Lateral stream movement is associated with natural sinuosity
	X		16) System is vertically stable
	X		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a small wash along the middle reaches of the Slumgullion Slide. Soils are mobile and highly erodible supporting little vegetation. General geology of the area consists of Quaternary landslide deposits surrounded by intra-ash-flow quartz latitic lavas. Landslide debris from the western escarpment of Meso Seca is still moving exposing highly mineralized soils with little organic material. Movement and substrate makes it very difficult for vegetation to establish on the slide.

Plants: Vegetation is minimal throughout due to extremely acidic and high erodible soils. *Populus tremuloides* and *Picea engelmannii* are consistent along the slide, but do not form wooded areas, only small patches along more stable soils. *Juniperus communis* is present in low cover throughout. Other species present include *Epilobium angustifolium* and *Arabis* sp.

Soils: Soil texture is highly variable from sands to clays with reddish to yellow coloring.

CNHP Vegetation Classification Type: none

pH = no water **conductivity =** no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____ **X** _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

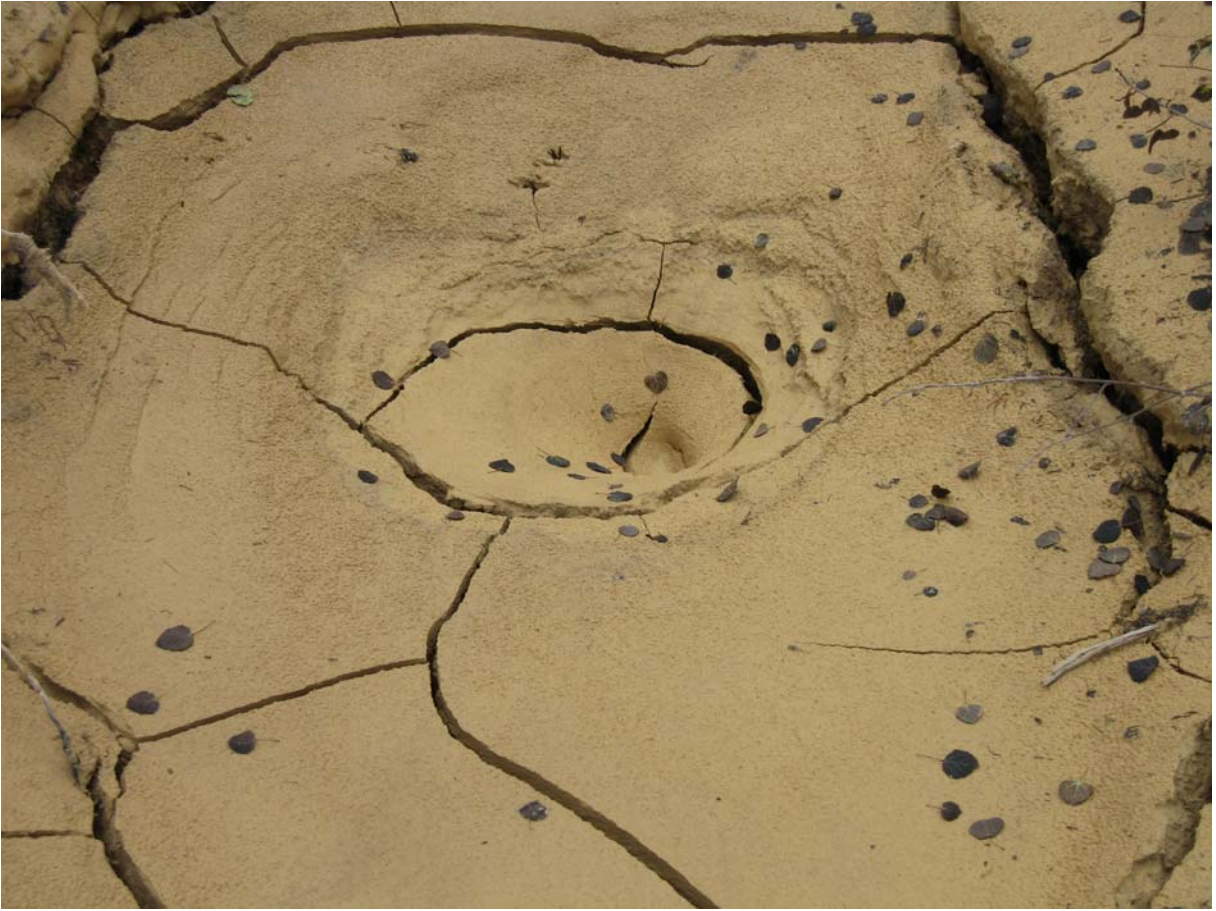
If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Seep indicated by BLM not a functioning wetland. There is no consistent hydrologic regime present and no stable vegetation. Soils are highly erodible with little structure to support wetland vegetation.



**Red Mountain Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Lake San Cristobal

BLM Code: C198

UTM Coordinates NAD 83: E296094 N4206406

Elevation: 11,698ft

ID Team Observers: JJones, JDavin

Date: August 6, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation – Old trail/road across lower reaches of wetland

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a small, perennial, subalpine seep surrounded Picea engelmannii subalpine forest. Wetland is part of a series of seeps surfacing along the eastern slope of Red Mountain, feeding small tributaries that spill into Lake San Cristobal and the Lake Fork of the Gunnison River. Evidence of old mining and homesteading is present throughout. Disturbances include a radio tower in the area, multiple 4X4 roads, old homesteads, and past mining. General geology of the site consists of silicic rocks of the Lake City caldera of the Miocene epoch. Area contains variable craggy slopes and terrain throughout. There is a small dam at lower reaches which no longer holds water. Very little recent disturbance was observed at the site.

Plants: Vegetation is dominated by mesic forbs throughout. Cardamine cordifolia is the most common species at 45-55% cover. Saxifraga odontoloma occurs in high cover along inundated areas and small rivulets at 10-15% cover. Senecio triangularis and Calamagrostis canadensis are common throughout (5-10% cover). Other species present in low cover (<5% cover) include, Mertensia ciliata, Caltha leptosepala, Polygonum viviparum, Luzula parviflora, and Picea engelmannii. Adjacent uplands are dominated by mesic Picea engelmannii forests with mesic forbs and Vaccinium myrtillus in the understory.

Soils: Soils consist of sandy clays up to 23cm (10YR 3/1, 7.5YR 2.5/1) over clay loam (10YR 5/3). All layers contain Fe mottling with fine to moderate sized gravel in lower layers. Soils are saturated throughout.

CNHP Vegetation Classification Type: Cardamine cordifolia – Mertensia ciliata Herbaceous Vegetation (G4S4), Saxifraga odontoloma Herbaceous Vegetation (GUS2) along small rivulets.

pH = 5.58 conductivity = .15mS @ 6.7 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X** _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is functioning at its potential natural community with little disturbance in the immediate area. There are no factors currently limiting the area's potential or causing unacceptable conditions. Off highway vehicle use, old trail/road, and past mining activity in the area may alter site hydrology or alter species composition, but do not appear to be impacting the site at present.



Red Mountain Seeps Standard Checklist Functional – At Risk

County: Hinsdale

Quadrangle: Lake San Cristobal

BLM Code: C369

UTM Coordinates NAD 83: E 296144 N4206697

Elevation: 11,680ft

ID Team Observers: JJones, JDavin

Date: August 6, 2006

Yes	No	N/A	HYDROLOGY
X			1) Riparian-wetland area is saturated at or near the surface or inundated in “relatively frequent” events (1-3 years)
	X		2) Fluctuation of water levels is not excessive – water is currently very low
	X		3) Riparian-wetland area is enlarging or has achieved potential extent – wetland appears to be reduced from former size, wetland vegetation reaches very far above current water line
	X		4) Upland watershed not contributing to riparian-wetland degradation – many tracks around lake from bike traffic
X			5) Water quality is sufficient to support riparian-wetland plants
	X		6) Natural surface or subsurface flow patterns are not altered by disturbance i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
		X	7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes	No	N/A	VEGETATION
X			8) Diverse age-class distribution (recruitment for maintenance/recovery)
X			9) Diverse composition of vegetation (for maintenance/recovery)
X			10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
	X		11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt) – very little wetland vegetation
	X		12) Riparian-wetland plants exhibit high vigor – those plants present are healthy, but sparse
	X		13) Adequate vegetative cover is present to protect shorelines/soil surface and dissipate energy during high wind and wave events or overland flows – wetland vegetation in sparse cover
X			14) Frost or abnormal hydrologic heaving is not present
		X	15) Favorable microsite condition (i.e., woody debris, water temperature, etc.) is maintained by adjacent site characteristics)

Yes	No	N/A	EROSION/DEPOSITION
X			16) Accumulation of chemicals affecting plant productivity/composition is not apparent
X	X		17) Saturation of soils (i.e., ponding, flooding frequency and duration) is sufficient to compose and maintain hydric soils – water very low
X			18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
X			19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive

			erosion or deposition)
X			20) Islands and shoreline characteristics (i.e., rocks, course and/or large woody debris) are adequate to dissipate wind and wave event energies

Remarks

General Description: Wetland occurs as a small pond surrounded by mixed subalpine shrubland and forest. Wetland is part of a series of seeps surfacing along the eastern slope of Red Mountain, feeding small tributaries that spill into Lake San Cristobal and the Lake Fork of the Gunnison River. Evidence of old mining and homesteading is present throughout. Disturbances include a radio tower in the area, multiple 4X4 roads, old homesteads, and past mining. There are multiple tire tracks along the edge of the pond in bare soil. General geology of the site consists of silicic rocks of the Lake City caldera of the Miocene epoch. Area contains variable craggy slopes and terrain throughout.

Plants: Vegetation is not highly variable with only a few wetland species present along banks in sparse cover and at least one meter from water edge. *Carex vesicaria* is the most common wetland species at 15-25% cover. *Beckmannia syzigachne* is common at 5-10% cover. Other species present at the site include *Deschampsia caespitosa*, *Veronica* sp., and *Aster* sp. There are no aquatic species present.

Soils: Soils consist of sandy loam up to 27cm (7.5YR 4/4) over gravel and rock. Iron mottling is present at approximately 15%.

CNHP Vegetation Classification Type: *Carex vesicaria* Herbaceous Vegetation (G4QS1)
pH = 5.86 conductivity = .0 mS @ 14.7 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____
 (adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ **X** _____

Non-Functional _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____ **X** _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes X No X

If yes, what are those factors?

 X Dewatering _____ Mining activities _____ Watershed condition
 _____ Dredging activities _____ Road encroachment _____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) It is not apparent why the site is drying.
Factors within BLM control are recreational uses, specifically, motor vehicle use along bare banks.

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is not functioning at its potential natural community due to impacts from recreational use and drying. Drying does not appear to be from anthropogenic disturbances. Restriction of OHV use in the area may help wetland species become more vigorous and revegetate shores around the pond.



**Red Mountain Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Lake San Cristobal

BLM Code: C371

UTM Coordinates NAD 83: E296025 N4206087

Elevation: 11,600ft

ID Team Observers: JJones, JDavin

Date: August 6, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
	X		12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Plant communities are dominated by herbaceous species

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
		X	14) Point bars are revegetating with riparian-wetland vegetation – Wetland very small, with no obvious channel
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland is a small seep-fed depression along the upper reaches of a predominant draw. Wetland is part of a series of seeps surfacing along the eastern slope of Red Mountain, feeding small tributaries that spill into Lake San Cristobal and the Lake Fork of the Gunnison River. Evidence of old mining and homesteading is present throughout. Disturbances include radio tower in the area, multiple 4X4 roads, old homesteads, and past mining. General geology of the site consists of silicic rocks of the Lake City caldera of the Miocene epoch. Area contains variable craggy slopes and terrain throughout. Site is currently dry and may depend on groundwater and snowmelt as its principal water source. There was very little recent disturbance observed along the immediate slope.

Plants: Vegetation is dominated by mesic herbaceous species with *Carex utriculata* being dominant. Other species include *Senecio triangularis*, *Cardamine cordifolia*, and *Geum macrophyllum*.

Soils: Soils consist of about 40cm+ of sandy clays (10YR 4/2) with approximately 10% mottling. There is moderate organic matter accumulation in the upper 5cm.

CNHP Vegetation Classification Type: *Carex utriculata* Herbaceous Vegetation (G5S4)
pH = no water **conductivity** = no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

_____ Dewatering _____ Mining activities _____ Watershed condition

_____ Dredging activities _____ Road encroachment _____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) The site is functioning at its potential natural community. There are no factors limiting the sites potential or causing unacceptable conditions.

**Devils Lake Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Cannibal Plateau **BLM Code:** C441
UTM Coordinates NAD 83: E306505 N4220550 **Elevation:** 12,130ft
ID Team Observers: JJones, JDavin **Date:** September 5, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs along a series of seeps originating along the western edge of Calf Creek Plateau, near Devil's Lake. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, basalt flows and associated tuff, breccias, and conglomerate of late-volcanic bimodal suite. Wetland consists of a small perennial seep feeding a small sloping fen wetland. Surrounding uplands are dominated by xeric alpine vegetation. There is some mineral deposition evident along the upper reaches of the seep and algal growth in slow-moving water. There is little anthropogenic disturbance in the area.

Plants: Vegetation is composed of mesic herbaceous species and brown mosses. *Carex scopulorum* is the dominant species throughout the small fen with 65-75% cover. Other species in the wetland include *Carex illota* (10-15%), *Caltha leptosepala* (5-10%), *Carex aquatilis* (<5%), and *Polygonum bistortoides* (<5%). Brown mosses comprise approximately 65-75% of the cover. Adjacent uplands consist of *Deschampsia caespitosa* and *Phleum alpinum* meadows with patches of *Salix planifolia* shrublands.

Soils: Soils consist of hemic peats up to 30cm and muck up to 40cm+. Soils are inundated throughout.

CNHP Vegetation Classification Type: *Carex scopulorum* – *Caltha leptosepala* Herbaceous Vegetation (G4S4)

pH = 5.43 **conductivity =** 0.0 at 13.6 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with little anthropogenic disturbances in the area and no disturbances leading to unacceptable conditions.



**Devils Lake Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Cannibal Plateau **BLM Code:** C443A
UTM Coordinates NAD 83: E306551 N4220768 **Elevation:** 12,180ft
ID Team Observers: JJones, JDavin **Date:** September 5, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
		X	15) Lateral stream movement is associated with natural sinuosity – Wetland is a mesic shrubland with no stream channel
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs along a series of seeps originating along the western edge of Calf Creek Plateau, near Devil's Lake. Seeps spanning the western slope of the valley feed an expansive mesic shrubland. Slope is moderate throughout the site with shrubs forming a dense thicket. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, basalt flows and associated tuff, breccias, and conglomerate of late-volcanic bimodal suite. Wetland is stable and healthy with minimal anthropogenic disturbance. Trail from the top of Calf Creek Plateau traverses the slope down to Devil's Lake, but does not appear to be heavily used.

Plants: Vegetation is dominated by a short shrubland of *Salix planifolia* (65-75%) creating a mosaic with small alpine meadow openings and wet meadows. Understory is dominated by *Caltha leptosepala* (35-45%). Common (5-10%) species include *Trollius albiflorus*, *Packera dimorphophylla*, *Carex aquatilis*, *Podistera eastwoodiae*, *Geum rossii*, and *Potentilla diversifolia*. Other species present (<5%) at the site include *Deschampsia caespitosa*, *Rhodiola rhodantha*, *Swertia perennis*, *Pedicularis groenlandica*, and *Phleum alpinum*.

Soils: Soils consist of fibric to hemic peats to 40cm+ over unconsolidated rock material. Soils are mesic to saturated throughout shrub-dominated areas.

CNHP Vegetation Classification Type: *Salix planifolia*/*Caltha leptosepala* Shrubland (G4S4)

pH = 5.23 **conductivity** = 0.0mS at 14 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with little disturbance in the area and no disturbances leading to unacceptable conditions.



**Devils Lake Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Cannibal Plateau **BLM Code:** C443B
UTM Coordinates NAD 83: E306507 N4220696 **Elevation:** 12,145ft
ID Team Observers: JJones, JDavin **Date:** September 5, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs along a series of seeps originating along the western edge of Calf Creek Plateau, near Devil's Lake. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, basalt flows and associated tuff, breccias, and conglomerate of late-volcanic bimodal suite. Wetland consists of multiple seeps feeding small, sloping wetlands and benched fens. Wetland contains extensive flooded terraces and patterning throughout with multiple areas of shallow, open water. Wetland is stable and healthy with no disturbed areas. There was little animal use observed and very minimal anthropogenic disturbance in the area.

Plants: Vegetation is dominated by mesic herbaceous species along inundated terraces and mesic shrubs along topographic rises. Terraces are dominated by the mesic graminoids *Craex aquatilis* (35-45%) and *Eleocharis quinqueflora* (35-45%). Other species common along inundated reaches include *Pedicularis groenlandica* (5-10%), *Caltha leptosepala* (10-15%), *Calamagrostis canadensis* (5-10%) and *Carex illota* (5-10%). *Salix planifolia* is present at 15-25% cover. Other species present in low cover (<5%) include *Packeria dimorphophylla*, *Juncus mertensiana*, *Rhodiola rhodantha*, and *Podistera eastwoodiae*. Brown mosses are found are common (45-55% cover) along inundated areas.

Soils: Soils are moist along sloping areas and inundated along fen benches. Soils consist of fibric peat to 40cm+.

CNHP Vegetation Classification Type: *Eleocharis quinqueflora* Herbaceous Vegetation (G4S3S4), *Carex aquatilis* Herbaceous Vegetation (G5S4)

pH = 6.06 conductivity = 0.0 at 14.8 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering

____ Mining activities

____ Watershed condition

____ Dredging activities

____ Road encroachment

____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with little anthropogenic disturbance in the area an no disturbances leading to unacceptable conditions.



Devils Lake Seeps Standard Checklist Nonfunctional

County: Hinsdale **Quadrangle:** Cannibal Plateau **BLM Code:** C446
UTM Coordinates NAD 83: E306521 N4221154 **Elevation:** 12,280ft
ID Team Observers: JJones, JDavin **Date:** September 5, 2006

Yes	No	N/A	HYDROLOGY
		X	1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
		X	4) Riparian-wetland area is widening or has achieved potential extent
		X	5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
		X	6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
		X	7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
		X	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
		X	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
		X	10) Riparian-wetland plants exhibit high vigor
		X	11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
		X	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
		X	14) Point bars are revegetating with riparian-wetland vegetation
		X	15) Lateral stream movement is associated with natural sinuosity
		X	16) System is vertically stable
		X	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as one of a series of small, alpine washes along the western edge of Calf Creek Plateau. Washes are characterized by strips of vegetation interspersed with bands of talus with little vegetation. Vegetated areas may in wet seasons support more wetland species, but currently only species found were facultative wetland species. Surrounding areas are composed of dry alpine vegetation with extensive rock cover and little soil development. Site exposed to climatic extremes due to elevation and aspect and is likely scoured by westerly winds during winter season. General geology of the area consists of basalt flows and associated tuff, breccias, and conglomerate of the Hinsdale Formation of the Tertiary Age

Plants: Vegetation is concentrated along small wash areas with moderate soil development between talus bands. Vegetation is sparse, with consistent (5-15%) cover of *Deschampsia caespitosa*, *Carex scopulorum*, *Trisetum spicatum*, and *Geum rossii*. Other species found in the area in low cover include *Carex nova*, *Carex chalciolepis*, *Carex egglestonii*, and *Salix reticulata*.

Soils: Soils are moist to dry and very rocky with slight development. Organic content is moderate in upper layers amongst sandy loam.

CNHP Vegetation Classification Type: None

pH = no water **conductivity =** no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____ **X** _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____ **X** _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes **X** No _____

If yes, what are those factors?

X Dewatering _____ Mining activities _____ Watershed condition _____

_____ Dredging activities _____ Road encroachment _____ Land ownership _____

Other (specify e.g., grazing, irrigation, agriculture activities) Dry conditions likely due to long-term drought in Colorado Rockies.

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site indicated by BLM seeps and springs map is not a functioning wetland. The area has few distinctive wetland species, no wetland soils, and likely only short, seasonally wet conditions.



**Devils Lake Seeps
Lentic Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Cannibal Plateau **BLM Code:** C454
UTM Coordinates NAD 83: E306103 N4220515 **Elevation:** 12,070ft
ID Team Observers: JJones, JDavin **Date:** September 5, 2006

Yes	No	N/A	HYDROLOGY
X			1) Riparian-wetland area is saturated at or near the surface or inundated in “relatively frequent” events (1-3 years)
	X		2) Fluctuation of water levels is not excessive – Based on observed vegetation, water levels do fluctuate at the site
	X		3) Riparian-wetland area is enlarging or has achieved potential extent – Water in pond is currently low
X			4) Upland watershed not contributing to riparian-wetland degradation
X			5) Water quality is sufficient to support riparian-wetland plants
X			6) Natural surface or subsurface flow patterns are not altered by disturbance i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
X			7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes	No	N/A	VEGETATION
X			8) Diverse age-class distribution (recruitment for maintenance/recovery)
X			9) Diverse composition of vegetation (for maintenance/recovery)
X			10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt)
X			12) Riparian-wetland plants exhibit high vigor
X			13) Adequate vegetative cover is present to protect shorelines/soil surface and dissipate energy during high wind and wave events or overland flows
X			14) Frost or abnormal hydrologic heaving is not present
X			15) Favorable microsite condition (i.e., woody debris, water temperature, etc.) is maintained by adjacent site characteristics)

Yes	No	N/A	EROSION/DEPOSITION
X			16) Accumulation of chemicals affecting plant productivity/composition is not apparent
X			17) Saturation of soils (i.e., ponding, flooding frequency and duration) is sufficient to compose and maintain hydric soils
X			18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
X			19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
X			20) Islands and shoreline characteristics (i.e., rocks, course and/or large woody debris) are adequate to dissipate wind and wave event energies

Remarks

General Description: Wetland occurs as a small depression pond along the upper reaches of Devil's Creek below Devil's Lake. Predominant hydrology originates from a small inlet along the western side of the pond. Geologic maps do not indicate that the valley was glaciated, but small, pothole wetlands throughout the valley similar to this one may have been left behind by glacial ice movement. General geology of the area consists of basalt flows and associated tuff, breccias, and conglomerate of the Hinsdale Formation of the Tertiary Age. Surrounding uplands consist of rolling hills of alpine vegetation and rocky outcrops. Elk tracks were observed in soft, wet soils along the edge of the pond and a coyote den along the adjacent western hillside. There is little anthropogenic disturbance in the area.

Plants: Wetland vegetation occurs as a small a narrow strip above a dry rock band approximately 5 meters above waters edge. *Calamagrostis canadensis* (25-35%) is the most common species. *Deschampsia caespitosa*, *Carex saxatilis*, and *Packera dimorphophylla* are also found at the site. Surrounding uplands are dominated by *Deschampsia caespitosa*, *Danthonia intermedia*, and *Sibbaldia procumbens*.

Soils: Soils consist of approximately 8cm of sandy clay (10YR 4/2) with high gravel content over unconsolidated igneous rocks.

CNHP Vegetation Classification Type: None

pH = 6.19 conductivity = 0.0 at 19.7 degrees Celsius (water sampled in pond)

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X** _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning near its potential natural community. There are few anthropogenic disturbances and little use in the area. Fluctuations in water level and drying appear to be natural.



**North Fork of Henson Creek
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Wetterhorn Peak

BLM Code: C477, C478, C479

UTM Coordinates NAD 83: E277892 N4209425

Elevation: 11,520ft

ID Team Observers: JJones, JDavin

Date: August 20, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland occurs in the upper subalpine with little source for woody large woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a series of small seep wetlands along the upper reaches of the North Fork of Henson Creek. Seeps are scattered throughout forested areas along the northwestern slope of the main drainage. This small series of seeps occur just below a small bench leading to the alpine headwaters of the drainage. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas. Hydrology is groundwater fed and wetland has not distinct channel. Area is moist to inundated throughout. There are some areas of bare soils near seep origins, bare areas do not appear to be caused by disturbance, but due to slope and natural surface flows. A forest service maintained road leads into the area, but vehicular use has been banned from the immediate area near seeps. Trail along drainage does not appear to be extensively used and there are few current anthropogenic disturbances in the area.

Plants: Vegetation types are variable along the seeps, but are dominated by mesic herbaceous species throughout. *Calamagrostis canadensis* is common forming dense patches along drier areas. *Caltha leptosepala*, *Juncus mertensiana*, and *Carex aquatilis* are also present in moderate cover throughout. Other species present (1-10%) along the wetland include *Salix planifolia*, *Carex canescens*, *Oxypolis fendleri*, *Mimulus guttatus*, *Saxifraga odontoloma*, *Veronica wormskjoldii*, *Deschampsia caespitosa*, and *Carex nova*.

Soils: Soils consist of a histic epipedon of fibric to hemic peats at up to 18cm over sandy clays (2.5Y 3/1).

CNHP Vegetation Classification Type: Variable with small patches of *Calamagrostis canadensis* Herbaceous Vegetation (G4S4), *Caltha leptosepala* Herbaceous Vegetation (G4S4), and *Carex aquatilis* Herbaceous Vegetation (G5S4)

pH = 6.18 conductivity = .05mS at 13.5 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with no disturbances causing unacceptable conditions and few disturbances in the area.



**North Fork of Henson Creek
Standard Checklist
Non-Functional**

County: Hinsdale **Quadrangle:** Wetterhorn Peak **BLM Code:** C481
UTM Coordinates NAD 83: E277913 N4209684 **Elevation:** 11,520FT
ID Team Observers: JJones, JDavin **Date:** August 20, 2006

Yes	No	N/A	HYDROLOGY
		X	1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
		X	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
		X	4) Riparian-wetland area is widening or has achieved potential extent
		X	5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
		X	6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
		X	7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
		X	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
		X	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
		X	10) Riparian-wetland plants exhibit high vigor
		X	11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
		X	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
		X	14) Point bars are revegetating with riparian-wetland vegetation
		X	15) Lateral stream movement is associated with natural sinuosity
		X	16) System is vertically stable
		X	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a small mesic area surrounded by mesic subalpine forest. Site is part of a series of small seep wetlands indicated by BLM along the upper reaches of the North Fork of Henson Creek. Seeps are scattered throughout forested areas along the northwestern slope of the main drainage. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas. Hydrology is groundwater fed and wetland has not distinct channel. Wetland has moist soils with no saturated areas or areas that appear to hold water. A forest service maintained road leads into the area, but vehicular use has been banned from the immediate area near seeps. Trail along drainage does not appear to be extensively used and there are few current anthropogenic disturbances in the area.

Plants: Vegetation is dominated by mesic forb species. Common (15-35%) species include *Ligularia amplexans* and *Mertensia ciliata* with *Picea engelmannii* being dominant as a canopy and subcanopy layer. Other species present (1-10%) at the site include *Mimulus guttatus*, *Stellaria* sp., *Calamagrostis canadensis*, *Epilobium* sp., *Senecio triangularis*, and *Osmorhiza depauperata*.

Soils: Soils consist of hemic peats up to 30cm over very fine mineral soil (7.5Y 3/3). Mineral soils exhibit some black banding, possibly Mn mottling and <5% Fe mottling.

CNHP Vegetation Classification Type: None

pH = no water **conductivity** = no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____ **X** _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is not a functioning wetland with few wetland obligate species, no consistent hydrologic source, and no evidence of recent or recurring inundation.



**North Fork of Henson Creek
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Wetterhorn Peak **BLM Code:** C488
UTM Coordinates NAD 83: E278231 N4209837 **Elevation:** 11,400ft
ID Team Observers: JJones, JDavin **Date:** August 20, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a small seep surrounded by mesic subalpine forest. Site is part of a series of small seep wetlands along the upper reaches of the North Fork of Henson Creek. Seeps are scattered throughout forested areas along the northwestern slope of the main drainage. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas. Hydrology is groundwater fed with a small distinct channel. Wetland has moist soils throughout with some standing water at lower reaches. A forest service maintained road leads into the area, but vehicular use has been banned from the immediate area near seeps. Trail along drainage does not appear to be extensively used and there are few current anthropogenic disturbances in the area.

Plants: Vegetation is dominated by mesic forbs with *Cardamine cordifolia* (25-35%) being most common. *Picea engelmannii* is present in high cover as a canopy and subcanopy layer (35-45%). Other herbaceous species present (5-10%) include *Oxypolis fendleri*, *Saxifraga odontoloma*, and *Luzula parviflora*. *Ribes montigenum* is common (5-10%) at the site. Brown mosses form a dense layer along inundated areas.

Soils: Soils consist of approximately 10cm of hemic peat over clay (2.5Y 3/1) with some gleying and 5-10% oxidized root channels.

CNHP Vegetation Classification Type: None

pH = 5.98 conductivity = .09mS at 13.5 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with no disturbances causing unacceptable conditions and few disturbances in the area.



**North Fork of Henson Creek
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Wetterhorn Peak **BLM Code:** C489
UTM Coordinates NAD 83: E278278 N4209866 **Elevation:** 11,400ft
ID Team Observers: JJones, JDavin **Date:** August 20, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
		X	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
		X	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a small seep surrounded by mesic subalpine forest. Site is part of a series of small seep wetlands along the upper reaches of the North Fork of Henson Creek. Seeps are scattered throughout forested areas along the northwestern slope of the main drainage. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas. Hydrology is groundwater fed and wetland has not distinct channel. Wetland has moist soils throughout with some standing water at lower reaches. A forest service maintained road leads into the area, but vehicular use has been banned from the immediate area near seeps. Trail along drainage does not appear to be extensively used and there are few current anthropogenic disturbances in the area.

Plants: Vegetation is dominated by mesic forb species with *Senecio triangularis* being most common (65-75%). Other common species (5-15%) include *Oxypolis fendleri*, *Cardamine cordifolia*, *Geranium richardsonii*, and *Mertensia ciliata*. Other species present (<5%) at the site include *Saxifraga odontoloma*, *Arnica parryi*, *Geum macrophyllum*, *Caltha leptosepala*, and *Erigeron* sp. *Picea engelmannii* is present as a canopy layer and in low cover as a subcanopy layer.

Soils: Soils consist of approximately 20cm of hemic peat over silty clay (7.5YR 3/2) over sandy clay (7.5YR4/2) up to 40cm+. Middle layers exhibit Mn mottling, lower layers exhibit 30% Fe mottling.

CNHP Vegetation Classification Type: None

pH = 5.79 conductivity = .08mS at 12.9 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with no disturbances causing unacceptable conditions and few disturbances in the area.



Cooper Lake Standard Checklist Proper Functioning Condition

County: Hinsdale

Quadrangle: Redcloud Peak

BLM Code: C544

UTM Coordinates NAD 83: E284363 N4206114

Elevation: 12,750ft

ID Team Observers: JJones, JDavin

Date: July 29, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Site above treeline, there is no source for coarse, woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Lake is healthy and stable with little riparian vegetation. There is a small wetland situated along a snowmelt fed inlet at the southwestern edge of Cooper Lake. Other shores are steep and rocky. General geology of the site consists of Sunshine Peak tuff as part of the Lake City caldera. Old mining prospects and small mines are present throughout the lower drainage. There are few current anthropogenic disturbances. Cooper Creek trail is not extensively used for recreation and is minimal at many points along the main drainage. Trail from main drainage to lake is difficult and sees little use. There is no evidence of disturbance aside from rock slides and possibly avalanche activity

Plants: Wetland vegetation along this inlet consists of mesic herbaceous vegetation. *Caltha leptosepala* and *Geum rossii* are the dominant (35-45% cover) species. Common species (5-10% cover) include *Deschampsia caespitosa*, *Trifolium parryi*, and *Castilleja* sp. Others species (trace cover) found at the site include *Primula parryi*, *Veronica nutans*, and *Carex nova*.

Soils: Soils consist of up to 15cm of hemic material over rocks. Some sands and sandy loams are present (10YR 4/3). Soils are moist to dry. There are two small streams running through the wetland into the lake.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4)
pH = 5.86 conductivity = .04mS @ 15.4 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with very little anthropogenic disturbance in the area. Small trail leading up to site does not appear heavily used. Natural disturbances may include spring flooding and avalanche activity.



**Cooper Creek
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Redcloud Peak

BLM Code: C545

UTM Coordinates NAD 83: E285017 N4206145

Elevation: 12,245ft

ID Team Observers: JJones, JDavin

Date: July 29, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Site above treeline, there is no source for coarse, woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site is a small spring-fed wetland along the upper reaches of Cooper Creek, a second order tributary of the Lake Fork of the Gunnison River. Spring feeds small wetland and small, perennial stream. Wetland occurs as a small bench just below a large glacial outwash and alluvial fan below Cooper Lake. General geology of the site consists of Sunshine Peak tuff as part of the Lake City caldera. Old mining prospects and small mines are present throughout the drainage. Lower reaches of creek exhibit Aluminum deposits along stream banks from mine tailings. There are few current anthropogenic disturbances. Cooper Creek trail is not extensively used for recreation and is minimal at many points along the main drainage.

Plants: Vegetation is composed of mesic herbaceous species throughout. *Carex aquatilis* and *Caltha leptosepala* are the most common species at 25-35% cover. Other common (10-15% cover) graminoids include *Deschampsia caespitosa* and *Carex illota*. Other species present at the site (1-5% cover) include *Swertia perennis*, *Veronica nutans*, *Carex nigricans*, *Pedicularis groenlandica*, *Packera dimorphophylla*, and *Juncus drummondii*. *Cardamine cordifolia*, *Caltha leptosepala*, and *Mimulus guttatus* dominate inundated areas along the stream banks. *Salix planifolia* is present at lower reaches along the main creek.

Soils: Soils are composed of a small histic epipedon (6-15cm) over clay. Clay is gleyed (Gley Chart 1 6/10Y, 5/10Y) showing perennial hydrology. Soils are mesic to saturated throughout.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4), *Carex aquatilis* Herbaceous Vegetation (G5S4)

pH = 5.05 – 6.19 conductivity = .07mS - .08mS @4.7 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with very little anthropogenic disturbance in the area. Small trail leading up to site does not appear heavily used. Natural disturbances may include spring flooding and avalanche activity.



Cooper Creek Standard Checklist Proper Functioning Condition

County: Hinsdale

Quadrangle: Redcloud Peak

BLM Code: C551

UTM Coordinates NAD 83: E285429 N4205576

Elevation: 11,680ft

ID Team Observers: JJones, JDavin

Date: July 29, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
	X		11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows – Patches of bare peat are present along surface flow areas.
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Site occurs in the upper subalpine with little source for coarse, woody material.

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
	X		16) System is vertically stable – There are a few areas of extensive sloughing and bare peat, cause not evident.
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs along the upper reaches of Cooper Creek, a second order tributary of the Lake Fork of the Gunnison River. Hydrology originates above the main drainage along the southeastern slope. General geology of the site consists of Sunshine Peak tuff as part of the Lake City caldera. Old mining prospects and small mines are present throughout the drainage. Lower reaches of creek exhibit Aluminum deposits along stream banks from mine tailings. There are few current anthropogenic disturbances. Cooper Creek trail is not extensively used for recreation and is minimal at many points along the main drainage. There are multiple areas of open water and some patterning typical of fen type wetlands. There are also multiple patches of bare, open peat, with small headcuts and sloughing along main surface flow areas. It is not apparent if this is from disturbance such as wildlife use, which is evident in the wetland in the form of poggings, tracks, and scat. Sloughing may be due to natural mechanisms such as surface flows or hydrologic heave.

Plants: Vegetation is dominated by mesic herbaceous vegetation. *Carex aquatilis* is the dominant (55-65% cover) species throughout the site. Other common (5-10% cover) mesic graminoids include *Deschampsia caespitosa* and *Calamagrostis canadensis*. Other species present (<5% cover) include *Carex illota*, *Juncus mertensianus*, *Luzula parviflora*, *Carex canescens*, and *Viola macloskeyi*. Sphagnum forms large patches of dense, hummocked carpet at upper reaches with intermittent cover at lower reaches.

Soils: Soils consist of histic epipedon of up to 27cm of fibric to hemic peats over silty clays and gravels. Some areas have strong sulfur smell and red color, indicating iron deposition from groundwater hydrology.

CNHP Vegetation Classification Type: *Carex aquatilis* Herbaceous Vegetation (G5S4)
pH = 4.20 conductivity = .34mS @12.7 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ **X** _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____ **X** _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ **X** _____ No _____

If yes, what are those factors?

_____ Dewatering _____ Mining activities _____ Watershed condition
_____ Dredging activities _____ Road encroachment _____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) It is not apparent why soils are sloughing in some areas, may be natural or may be due to extensive wildlife use.

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is functioning just below its potential natural community due to bare patches and extensive sloughing of peat in some areas. The causes of sloughing are not evident and may be caused by natural actions such as surface flows, wildlife use, or hydrologic heave. There are few anthropogenic disturbances in the area. Past mining in the watershed may impact site hydrology and water quality, but does not appear to be impacting the site at present.



**Upper Snare Creek
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: C558

UTM Coordinates NAD 83: E277749 N4196018

Elevation: 12,705ft

ID Team Observers: JJones, JDavin

Date: August 16, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland and surrounding uplands support alpine herbaceous vegetation

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs around the floodplain of a small alpine lake at the upper reaches of Snare Creek, a second order tributary of Cottonwood Creek. Area contains many shallow lakes along rolling alpine meadows, with seeps, depressions, washes, and streams. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas and ash-flow tuff. There is evidence of past mining in the area, but very little recent anthropogenic disturbance. Old road leading up to the area does not appear to be used during the summer season, but may be used during winter months by snowmobiles.

Plants: Vegetation is dominated by mesic herbaceous species. *Carex nigricans* (25-45%) forms dense patches along with consistent cover of *Juncus drummondii* (5-15%). *Caltha leptosepala* is also common (10-25%) along saturated areas. Other common (5-15%) species include *Carex illota*, *Sibbaldia procumbens*, and *Trifolium parryi*. Other species present (<5%) within the wetland include *Carex vernacula*

Soils: Soils consist of a moderate organic layer of approximately 8cm over sandy clay loam, over bedrock. Soils are moist throughout the area, with inundated patches.

CNHP Vegetation Classification Type: *Carex nigricans* – *Juncus drummondii* Herbaceous Vegetation (GUS2)

pH = not taken **conductivity** = not taken

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with no disturbances contributing to unacceptable conditions in the area. Hydrology is stable and wetland vegetation is vigorous.



Upper Snare Creek Standard Checklist Proper Functioning Condition

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: C559

UTM Coordinates NAD 83: E277997 N4195810

Elevation: 12,655ft

ID Team Observers: JJones, JDavin

Date: August 16, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland and surrounding uplands support alpine herbaceous vegetation

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a narrow alpine drainage with seep and snowmelt-fed hydrology at the upper reaches of Snare Creek, a second order tributary of Cottonwood Creek. Area contains many shallow lakes along rolling alpine meadows, with seeps, depressions, washes, and streams. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas and ash-flow tuff. There is evidence of past mining in the area, but very little recent anthropogenic disturbance. Old road leading up to the area does not appear to be used during the summer season, but may be used during winter months by snowmobiles.

Plants: Vegetation is dominated by mesic herbaceous species that adhere to the narrow stream corridor. Cardamine cordifolia is the most common (35-45%) species along with Caltha leptosepala (15-25%) and Mertensia ciliata (5-10%). Other species present (<5%) along the corridor include Saxifraga odontoloma, Primula parryi, Polygonum bistortoides, Mimulus guttatus, Juncus drummondii, and Carex nigricans.

Soils: Soils consist of a small organic layer, 2cm, over silty clay to approximately 7cm (10YR 4/2), over bedrock. Soils are saturated along stream edge turning mesic to dry.

CNHP Vegetation Classification Type: Cardamine cordifolia – Mertensia ciliata Herbaceous Vegetation (G4S4)

pH = 5.42 conductivity = .11mS at 12.2 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

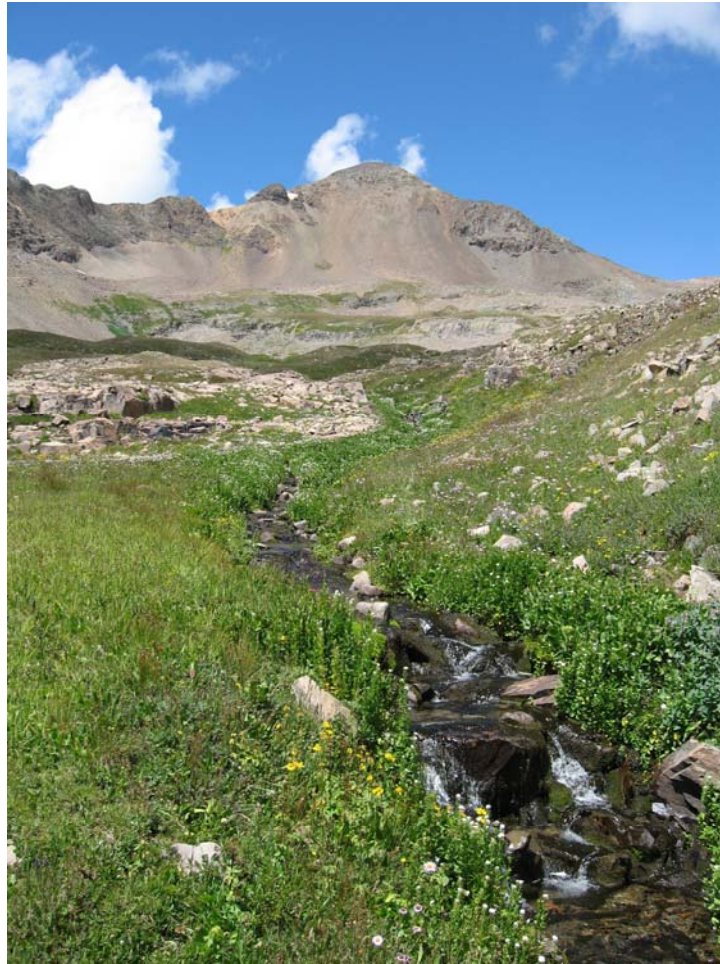
If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with no disturbances contributing to unacceptable conditions in the area. Hydrology is stable and wetland vegetation is vigorous.



Upper Snare Creek Standard Checklist Proper Functioning Condition

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: C560

UTM Coordinates NAD 83: E277958 N4195761

Elevation: 12,600ft

ID Team Observers: JJones, JDavin

Date: August 16, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland and surrounding uplands supports alpine herbaceous vegetation

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs along a small seep and snowmelt-fed drainage and continues down to a wet meadow opening at the upper reaches of Snare Creek, a second order tributary of Cottonwood Creek. Area contains many shallow lakes along rolling alpine meadows, with seeps, depressions, washes, and streams. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas and ash-flow tuff. There is evidence of past mining in the area, but very little recent anthropogenic disturbance. Old road leading up to the area does not appear to be used during the summer season, but may be used during winter months by snowmobiles.

Plants: Vegetation in the wetland is dominated by mesic herbaceous species with *Caltha leptosepala* (25-35%), *Primula parryi* (15-25%), *Cardamine cordifolia* (10-15%), and *Pedicularis groenlandica* (5-10%) being most common. Other species present (<5%) include *Deschampsia caespitosa*, *Rhodiola rhodantha*, and *Carex nova*. Vegetation is concentrated along saturated and inundated soils along small stream corridor and lower floodplain.

Soils: Soils are shallow and undeveloped with approximately 8cm of fibric organic matter over coarse unconsolidated rocky substrate. Soils are mesic to inundated along vegetated edges.

CNHP Vegetation Classification Type: *Primula parryi* Herbaceous Vegetation (GNR/SU)
pH = 5.68 conductivity = .07mS at 18.0 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with no disturbances contributing to unacceptable conditions in the area. Hydrology is stable and wetland vegetation is vigorous.



**Devil's Hole Spring
Lentic Standard Checklist
Functional – At Risk**

County: Hinsdale **Quadrangle:** Mineral Mountain **BLM Code:** C724
UTM Coordinates NAD 83: E324320 N4221224 **Elevation:** 9,760ft
ID Team Observers: JJones, JDavin **Date:** July 10, 2006

Yes	No	N/A	HYDROLOGY
X			1) Riparian-wetland area is saturated at or near the surface or inundated in “relatively frequent” events (1-3 years)
	X		2) Fluctuation of water levels is not excessive – Water is currently very low in pond
X			3) Riparian-wetland area is enlarging or has achieved potential extent
X			4) Upland watershed not contributing to riparian-wetland degradation
	X		5) Water quality is sufficient to support riparian-wetland plants – Very little wetland vegetation present around pond, vegetation at lower reaches drying with few wetland species in understory
	X		6) Natural surface or subsurface flow patterns are not altered by disturbance i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities) – Small pond at upper reaches created by artificial dam
	X		7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway) – Dam is stable, but does not accommodate flows

Yes	No	N/A	VEGETATION
X			8) Diverse age-class distribution (recruitment for maintenance/recovery)
X			9) Diverse composition of vegetation (for maintenance/recovery)
X			10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt)
	X		12) Riparian-wetland plants exhibit high vigor – Wetland plants are not vigorous, majority of plants are weedy/increaser species, tall shrubs are heavily browsed
	X		13) Adequate vegetative cover is present to protect shorelines/soil surface and dissipate energy during high wind and wave events or overland flows – Majority of soils adjacent to water are unvegetated and bare
X			14) Frost or abnormal hydrologic heaving is not present
	X		15) Favorable microsite condition (i.e., woody debris, water temperature, etc.) is maintained by adjacent site characteristics) – There is very little debris along banks

Yes	No	N/A	EROSION/DEPOSITION
X			16) Accumulation of chemicals affecting plant productivity/composition is not apparent
X			17) Saturation of soils (i.e., ponding, flooding frequency and duration) is sufficient to compose and maintain hydric soils
		X	18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation – Not apparent, site

			artificially dammed
X			19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
	X		20) Islands and shoreline characteristics (i.e., rocks, course and/or large woody debris) are adequate to dissipate wind and wave event energies – The is very little debris along banks

Remarks

General Description: Wetland occurs as a small dammed spring for livestock watering. Small pond has been created near the spring. Spring formerly fed narrow band of wetland vegetation below the spring. Tall willows are still present in this area, but are not vigorous and are heavily pruned by livestock. This area supports few wetland species in the understory.

Plants: There are no dominant or common species at the site. Native species found around the pond include *Carex microptera*, *Juncus balticus*, *Deschampsia caespitosa*, and *Alopecurus aequalis*. Aquatic species include *Potamogeton* sp. and *Callitriche verna*. Exotic species include *Taraxacum officinale*, *Hordeum brachyantherum*, *Poa pratensis*, and *Trifolium repens*. Lower band of mesic vegetation below the pond dominated by the tall shrub *Salix geyeriana*. *Salix* are extensively browsed and not vigorous. Understory is composed of mostly upland species containing *Dasiphora fruticosa* ssp. *floribunda*, *Deschampsia caespitosa*, and *Poa pratensis*. Surrounding uplands dominated by *Populus tremuloides* forests with *Juniperus communis* and *Shepherdia canadensis* in the understory and patches of *Artemisia tridentata* with *Dasiphora fruticosa* ssp. *floribunda*.

Soils: Soils consist of sandy clays (10YR 2/1) with very little organic content over unconsolidated rocks. Soils sampled along edge of upper pond.

CNHP Vegetation Classification Type: None

pH = 4.67 conductivity = .0mS at 23.3 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ **X** _____

Non-Functional _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____ **X** _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes No

If yes, what are those factors?

Dewatering Mining activities Watershed condition

Dredging activities Road encroachment Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) Extensive grazing in the area is contributing to unacceptable conditions.

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



**Spring Creek Springs
Lentic Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Mineral Mountain **BLM Code:** C729A
UTM Coordinates NAD 83: E323265 N4217383 **Elevation:** 9,300ft
ID Team Observers: JJones, JDavin **Date:** July 8, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation – pogging observed along banks

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland situated along the northeastern slope of Spring Creek, a second order tributary of Cebolla Creek. Site is a small, seep-fed wetland with perennial hydrology, feeding a narrow band of mesic vegetation below. General geology of the area consists of igneous rocks of the Tertiary Age and glacial debris of the Quaternary Age. Site is close to CR45, but that does not appear to impact the site. Some pogging observed along banks, but it was not apparent if the area is grazed, pogging likely from wildlife.

Plants: Vegetation immediately below seep dominated by the mesic herbaceous species, *Catabrosa aquatic* (35-45%) and *Deschampsia caespitosa* (10-15%), *Eleocharis quinqueflora* is also common with 5-10% cover. Other species present (<5%) just below seep include *Juncus balticus*, *Epilobium ciliatum*, *Alopecurus aequalis*, and *Dodecatheon pulchellum*. Nonnative and increaser species present include *Poa pratensis*, *Trifolium pratense*, and *Achillea millefolium*. Area below seep along steeper gradient is dominated by a mesic, tall shrub community of *Salix geyeriana* and *Calamagrostis canadensis*.

Soils: Soils were surveyed in upper seep area and consist of a histic epipedon of approximately 9cm, over sandy clay loam (10YR 3/1) to approximately 25cm. Loam is about 20% gleyed (gley chart 1, 5/10GY) and contains 10% larger rocks and gravel. Soils are moist to saturated throughout.

CNHP Vegetation Classification Type: None
pH = 6.4 conductivity = .12mS @ 16.2 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



Spring Creek Springs Lentic Standard Checklist Proper Functioning Condition

County: Hinsdale Quadrangle: Mineral Mountain BLM Code: C729B
 UTM Coordinates NAD 83: E323247 N4217361 Elevation: 9,300 ft
 ID Team Observers: JJones, JDavin Date: July 9, 2006

Yes	No	N/A	HYDROLOGY
X			1) Riparian-wetland area is saturated at or near the surface or inundated in "relatively frequent" events (1-3 years)
X			2) Fluctuation of water levels is not excessive
X			3) Riparian-wetland area is enlarging or has achieved potential extent
X			4) Upland watershed not contributing to riparian-wetland degradation
X			5) Water quality is sufficient to support riparian-wetland plants
	X		6) Natural surface or subsurface flow patterns are not altered by disturbance i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities) – Some use by either livestock or wildlife observed along banks
	X		7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway) - Small seep may have been artificially dammed to create the pond for livestock use

Yes	No	N/A	VEGETATION
X			8) Diverse age-class distribution (recruitment for maintenance/recovery)
X			9) Diverse composition of vegetation (for maintenance/recovery)
X			10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt)
X			12) Riparian-wetland plants exhibit high vigor
X			13) Adequate vegetative cover is present to protect shorelines/soil surface and dissipate energy during high wind and wave events or overland flows
X			14) Frost or abnormal hydrologic heaving is not present
X			15) Favorable microsite condition (i.e., woody debris, water temperature, etc.) is maintained by adjacent site characteristics)

Yes	No	N/A	EROSION/DEPOSITION
X			16) Accumulation of chemicals affecting plant productivity/composition is not apparent
X			17) Saturation of soils (i.e., ponding, flooding frequency and duration) is sufficient to compose and maintain hydric soils
X			18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
X			19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
X			20) Islands and shoreline characteristics (i.e., rocks, course and/or large woody debris) are adequate to dissipate wind

Remarks

General Description: Wetland situated along the northeastern slope of Spring Creek, a second order tributary of Cebolla Creek. Wetland forms a small pond which is either artificially or naturally dammed. Water flows out of pond at lower end creating a small seep wetland below the site. General geology of the area consists of igneous rocks of the Tertiary Age and glacial debris of the Quaternary Age. Site is close to CR45, but that does not appear to impact the site. Some poggng observed along banks, but it was not apparent if the area is grazed, poggng likely from wildlife. At least seven large salamanders were observed in the pond and birds were observed nesting in the area. Surrounding uplands are dominated by xeric, rocky shrublands.

Plants: *Carex utriculata* (45-55% cover) and *Carex simulata* (35-45%) dominate pond margins. Other species present (<5%) along pond margins include *Eleocharis quinqueflora*, *Agrostis* sp., *Deschampsia caespitosa*, and *Juncus balticus*. Aquatics/emergents present include *Eleocharis palustris*, *Ranunculus hyperboreus*, and *Lemna minor*. Water spilling out of pond feeds a narrow, mesic strip of *Salix geyeriana* and *Ribes inerme*. Exotic/increaser species observed at the site include *Poa pratensis*, *Trifolium repens*, and *Alopecurus pratensis*.

Soils: Soils consist of a histic epipedon of approximately 7cm of fibric peat over sandy clay loam (2.5Y 5/2) from 7cm to 22cm. Soils below 22cm consist of sandy clay loams/loams (5Y 4/1) with fine to medium gravel, soils at this depth saturated. Soils sampled at pond edge.

CNHP Vegetation Classification Type: *Carex utriculata* Herbaceous Vegetation
pH = 6.16 conductivity = .10mS at 18.5 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X** _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____
 Downward _____
 Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

_____ Dewatering	_____ Mining activities	_____ Watershed condition
_____ Dredging activities	_____ Road encroachment	_____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



Spring Creek Seeps Standard Checklist Functional-At Risk

County: Hinsdale **Quadrangle:** Mineral Mountain **BLM Code:** C731
UTM Coordinates NAD 83: E323870 N4217945 **Elevation:** ft
ID Team Observers: JJones, JDavin **Date:** July 8, 2006

Yes	No	N/A	HYDROLOGY
			1) Floodplain above bankfull is inundated in "relatively frequent" events
		x	2) Where beaver dams are present they are active and stable
x			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	x		4) Riparian-wetland area is widening or has achieved potential extent
	x		5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
x			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
x			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
x			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
x			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
x			10) Riparian-wetland plants exhibit high vigor
x			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
x			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
x			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
		x	14) Point bars are revegetating with riparian-wetland vegetation
		x	15) Lateral stream movement is associated with natural sinuosity
	x		16) System is vertically stable
	x		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a small precipitation and groundwater-fed draw which is wooded along some reaches and open shrubland in others. A few small areas have been dammed, possibly to create watering holes for livestock use. Wetland is part of a series of small draws and seeps feeding into tributaries of and the middle reaches of Spring Creek, a second order tributary of Cebolla Creek. There is evidence of past erosion and head-cutting along adjacent stream, possibly due to livestock use. Use from the current season is evident along banks of small pond, with no extensive disturbance. Other disturbances in the area include roads with moderate recreational use. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, ash-flow tuff of the main volcanic sequence.

Plants: Vegetation varies along the upper draw, pond, and lower draw.

Soils: Soils consist of a very dark organic layer of approximately 5cm over 20cm+ of sandy clay loam (10YR 2/1) over unconsolidated rocky material.

CNHP Vegetation Classification Type: none

pH = 4.52 **conductivity =** 0.0mS at 20.8 degrees Celsius (sampled in small pond)

Summary Determination

Functional Rating:

Proper Functioning Condition _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ x _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____ x _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning near its potential natural community. _____



**Rambouillet Park Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Lake San Cristobal **BLM Code:** C964
UTM Coordinates NAD 83: E302419 N4202293 **Elevation:** 11,460ft
ID Team Observers: JJones, JDavin **Date:** July 17, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Area dominated by herbaceous vegetation

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland consists of multiple active seeps along the western side of Rambouillet Park, an upper subalpine plateau. Area feeds small tributary of the west fork of Cebolla Creek. Wetland species are concentrated below immediate, active seeps and are separated by dry, herbaceous meadow vegetation. General geology of the site consists of igneous rocks of the Tertiary Age. Disturbances are minimal in the area with recreational use being the predominant use. Markers for snowpack measurement span meadows in area. Trails for this may impact hydrology by compacting soils and creating channels for draining.

Plants: Vegetation varies between seeps often with patches of *Salix planifolia* with mesic forb and graminoids. Common (5-15% cover) mesic forbs include *Geum macrophyllum*, *Caltha leptosepala*, *Rhodiola rhodantha*, *Pedicularis groenlandica*, *Cardamine cordifolia*, and *Podistera eastwoodiae*. Common (5-25% cover) mesic graminoids include *Carex aquatilis*, *Carex utriculata*, and *Deschampsia caespitosa*. Many seeps support large patches of brown moss cover near spring origin along inundated soils. Vegetation between seeps is dominated by *Deschampsia caespitosa* herbaceous vegetation.

Soils: Soils consist of 25 to 40cm+ of fibric to hemic organic material over clay (5YR 3/2, 10YR 4/2). Many areas with clay content in lower 20cm. Clays contain up to 10% Fe mottling and fine to medium sized gravel. Soils moisture content is variable throughout.

CNHP Vegetation Classification Type: *Salix planifolia*/mesic forb, *Salix planifolia*/mesic graminoid

pH = 6.58 **conductivity** = 0.02mS at 8.5 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



**Hill Seventyone Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Lake San Cristobal **BLM Code:** C966
UTM Coordinates NAD 83: E301301 N4202957 **Elevation:** 11,400ft
ID Team Observers: JJones, JDavin **Date:** July 17, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent – seep is dispersed and ditched at road crossing
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a small seep wetland surrounded by *Picea engelmannii* forest. Wetland vegetation and soils follow a narrow strip below seep. Majority of area and upper reaches of stream are pristine. Areas near road are disturbed by exotic species invasion and mechanical soil disturbance. General geology of the area consists of landslide debris of the Quaternary Age and igneous rocks of the Tertiary Age.

Plants: Vegetation along saturated soils below seep origin is dominated by mesic forb species. The most common species (10-20% cover) include *Cardamine cordifolia*, *Saxifraga odontoloma*, *Pedicularis groenlandica*, and *Caltha leptosepala*. Other species present (5-10% cover) along the seep include *Carex aquatilis*, *Epilobium hornemannii*, *Calamagrostis canadensis*, *Trifolium parryi*, *Luzula parviflora*, *Rhodiola rhodantha*, *Arnica mollis*, and *Salix planifolia*. Surrounding uplands are dominated by mesic *Picea engelmannii* forests with *Ribes montigenum* and *Mertensia ciliata* in the understory.

Soils: Soils consist of a small organic layer over approximately 15cm of sandy clay loam (5YR 3/2) over clay loam (7.5YR 2.5/1). Soils are not well developed, with only about 20cm+ of developed soils over unconsolidated rock. Soils are inundated below main seep.

CNHP Vegetation Classification Type: *Cardamine cordifolia* Herbaceous Vegetation
pH = 6.13 conductivity = .04mS at 12.2 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X** _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



Hill Seventyone Seeps Standard Checklist Proper Functioning Condition

County: Hinsdale **Quadrangle:** Lake San Cristobal **BLM Code:** C967

UTM Coordinates NAD 83: E301209 N4203157 **Elevation:** 11,285ft

ID Team Observers: JJones, JDavin **Date:** July 17, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a small seep wetland surrounded by *Picea engelmannii* forest. Wetland vegetation and soils follow a narrow strip below seep. Seep runs underground in multiple areas and surfaces at many points throughout the surrounding forested areas. Majority of area and upper reaches of stream are pristine. Areas near road are disturbed by exotic species invasion and mechanical soil disturbance. General geology of the area consists of landslide debris of the Quaternary Age and igneous rocks of the Tertiary Age.

Plants: Small corridor of wetland vegetation is dominated by mesic forbs species. *Oxypolis fendleri* (25-35%), *Epilobium hornemannii* (15-25%), *Saxifraga odontoloma* (15-25%), and *Cardamine cordifolia* (5-10%) are the most common species. Other species present (<5% cover) along the seep include *Mimulus guttatus*, *Arnica mollis*, *Caltha leptosepala*, *Calamagrostis canadensis*, and *Veronica* sp.

Soils: Soils consist of approximately 10cm of hemic peat over unconsolidated rock material. Soils surveyed immediately adjacent to running water, near spring origin.

CNHP Vegetation Classification Type: None

pH = 6.30 **conductivity =** 0.0mS at 8.6 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

___ Dewatering ___ Mining activities ___ Watershed condition

___ Dredging activities ___ Road encroachment ___ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



Hill Seventyone Springs Standard Checklist Functional – At Risk

County: Hinsdale **Quadrangle:** Lake San Cristobal **BLM Code:** C989
UTM Coordinates NAD 83: E301202 N4203124 **Elevation:** 11,285ft
ID Team Observers: JJones, JDavin **Date:** July 17, 2006

Yes	No	N/A	HYDROLOGY
	X		1) Floodplain above bankfull is inundated in “relatively frequent” events – Site drying, possibly due to draining from roadcut
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent – Wetland appears to be reduced from former size, Salix in drying areas
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
	X		10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
	X		16) System is vertically stable – Drainage has extensive headcutting at road crossing
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a small seep wetland surrounded by *Picea engelmannii* forest. Wetland vegetation and soils follow a narrow strip below seep. No surface flows were observed at upper reaches, small channel appears at lower reaches of wetland. Majority of area and upper reaches of stream are pristine. Areas near road are disturbed by exotic species invasion and mechanical soil disturbance. Small stream is channeled and ditched under road. General geology of the area consists of landslide debris of the Quaternary Age and igneous rocks of the Tertiary Age.

Plants: Mesic vegetation concentrated along small area below spring. Upper reaches dominated by mesic forbs, *Oxypolis fendleri*, *Cardamine cordifolia*, *Caltha leptosepala*, and *Arnica*. Common species along middle reaches include *Salix planifolia* (10-15% cover), *Caltha leptosepala* (5-10% cover), and *Calamagrostis canadensis* (5-10% cover). *Salix* appear to be damaged from drying. Reason for drying not apparent, may be due to lowered groundwater levels from recent drought years.

Soils: Soils consist of 1-15 cm of very dark muck (10YR 2/2) over unconsolidated rock. Soils are inundated, with high organic content and little adhesion.

CNHP Vegetation Classification Type: None

pH = 6.32 **conductivity =** .02mS at 9.9 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ **X** _____

Non-Functional _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes No _____

If yes, what are those factors?

Dewatering _____ Mining activities _____ Watershed condition _____

_____ Dredging activities _____ Road encroachment _____ Land ownership _____

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



**Cooper Creek Fen
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Redcloud Peak **BLM Code:** none
UTM Coordinates NAD 83: E285232 N4205639 **Elevation:** 11,695ft
ID Team Observers: JJones, JDavin **Date:** July 29, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland occurs in the upper subalpine with little source for large woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland is situated along the toe of a southeast facing slope at the upper reaches of Cooper Creek. Wetland is a groundwater-fed fen containing two Type E channels. General geology of the site consists of Sunshine Peak tuff as part of the Lake City caldera. Old mining prospects and small mines are present throughout the lower drainage. Lower reaches of creek exhibit Aluminum deposits along stream banks from mine tailings. There are few current anthropogenic disturbances. Cooper Creek trail is not extensively used for recreation and is minimal at many points winding along the main drainage.

Plants: Species composition varies between short shrub and herbaceous species. Herbaceous patches are dominated by *Caltha leptosepala* with *Carex aquatilis* (15-25%). Short shrubs are common along edges and lower reaches with *Salix planifolia* (15-25%) and *Carex aquatilis* being dominant. *Pedicularis groenlandica* is present in high cover (15-25% cover) throughout. Other species present (<5%) at the site include *Rhodiola rhodantha*, *Calamagrostis canadensis*, *Conioselinum scopulorum*, *Polygonum viviparum*, *Swertia perennis*, and *Deschampsia caespitosa*. Wetland also supports extensive cover of brown mosses throughout.

Soils: Soils consist of fibric to hemic peats greater than 40cm in depth and are saturated throughout.

CNHP Vegetation Classification Type: *Salix planifolia* – *Carex aquatilis* Short Shrubland (G5S4), *Caltha leptosepala* Herbaceous Vegetation (G4S4)

pH = 5.14 **conductivity** = .01mS

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community. There is very little evidence of anthropogenic disturbance in the area and no factors currently limiting the areas potential or causing unacceptable conditions.



Cooper Creek Seep Standard Checklist Proper Functioning Condition

County: Hinsdale **Quadrangle:** Redcloud Peak **BLM Code:** none

UTM Coordinates NAD 83: E284937 N4205310 **Elevation:** 11,605ft

ID Team Observers: JJones, JDavin **Date:** July 29, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Predominant woody material from short shrubs

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland is situated along the toe of a southeast facing slope at the upper reaches of Cooper Creek. Wetland is a small sloping, groundwater-fed fen occurring along both sides of main drainage. General geology of the site consists of Sunshine Peak tuff as part of the Lake City caldera. Old mining prospects and small mines are present throughout the lower drainage. Lower reaches of creek exhibit Aluminum deposits along stream banks from mine tailings. There are few current anthropogenic disturbances. Cooper Creek trail is not extensively used for recreation and is minimal at many points along the main drainage.

Plants: Vegetation is mostly dominated by mesic herbaceous species with the short shrub *Salix planifolia* (25-35% cover). *Carex aquatilis* is present in consistent, high cover (35-45% cover) with *Caltha leptosepala* also in high cover (10-15% cover). Common (5-10% cover) species include *Pedicularis groenlandica* and *Carex canescens*. Other species present (<5% cover) in the wetland include *Rhodiola rhodantha*, *Swertia perennis*, *Oxypolis fendleri*, and *Juncus mertensianus*.

Soils: Soils consist of fibric peats up to 40cm in depth. Soils are variable in some areas with mineral deposits in peat layers and inundated throughout.

CNHP Vegetation Classification Type: *Carex aquatilis* Herbaceous Vegetation (G5S4), *Salix planifolia/Caltha leptosepala* Herbaceous Vegetation (G4S4), *Calamagrostis canadensis* – *Carex aquatilis* Herbaceous Vegetation

pH = 5.36 conductivity = .01mS @ 16.1 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community. There are few anthropogenic disturbances in the area and no factors limiting the sites potential or causing unacceptable conditions. Past mining in surrounding watershed may impact site hydrology and water quality, but does not appear to be impacting the site at present.



**Hill Seventyone Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Lake San Cristobal

BLM Code: D110

UTM Coordinate NAD 83: E301211 N4203266

Elevation: 11,320ft

ID Team Observers: JJones, JDavin

Date: July 17, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a small seep wetland surrounded by *Picea engelmannii* forest. Wetland vegetation and soils follow a narrow strip below seep which extends upslope to the east. There are multiple seeps in the area surfacing throughout the forest. Majority of area and upper reaches of stream are pristine. Areas near road are disturbed by exotic species invasion and mechanical soil disturbance. General geology of the area consists of landslide debris of the Quaternary Age and igneous rocks of the Tertiary Age.

Plants: Vegetation along saturated soils below springs is dominated by mesic forb species. *Oxypolis fendleri*, *Cardamine cordifolia*, *Mertensia ciliata*, and *Saxifraga odontoloma* are all common (10-25% cover). Other species present include *Mimulus guttatus*, *Calamagrostis canadensis*, and *Arnica mollis*. Upper reaches at toe of slope are dominated by *Senecio triangularis* and *Mertensia ciliata*. Surrounding forest is dominated by *Picea engelmannii* with a mesic herbaceous understory. Byophyte cover is extensive along perennially inundated areas.

Soils: Soils consist of approximately 15cm of mucky organic matter over unconsolidated rock.

CNHP Vegetation Classification Type: none

pH = 6.46 conductivity = .01mS at 8.3 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



**Upper Cleveland Gulch
Standard Checklist
Functional – At Risk**

County: Hinsdale **Quadrangle:** Handies Peak **BLM Code:** D155, D156, D157

UTM Coordinates NAD 83: E277861 N4202813

Elevation: 12,260ft

ID Team Observers: JJones, JDavin

Date: July 28, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation - Old road and mining may be contributing sediment, toxins, and mineral deposits to the site.

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as part of a series of seeps along the upper reaches of Cleveland Gulch, a first order tributary of the Lake Fork of the Gunnison River. Hydrology appears to be perennial. Area is moist to saturated throughout due to an extensive number of seeps along the toeslope of the basin floor. Anthropogenic disturbances present throughout the drainage include an old road and mining. Recreational use in surrounding drainages is extensive, but does not spill over into Cleveland Gulch. Mining and draining adits present along upper slopes may be contributing aluminum and other types of mineral deposition to the drainage. Seeps situated directly below largest mining operation observed in the gulch and may receive the most input of toxins from this disturbance. This also makes these small wetlands very important in filtering and retaining sediment from tailings. Mineral deposits were observed along the main drainage of the basin floor in the form of a white substance on rocks in the stream bottom. Uplands consist of unstable steep slopes of scree and unconsolidated rocks with little vegetation.

Plants: Vegetation in this area of the gulch consists of mesic herbaceous species dominated by *Caltha leptosepala* (25-55%). Other common (5-15%) species include *Carex nigricans*, *Carex aquatilis*, *Juncus drummondii*, *Primula parryi*, and *Mimulus guttatus*.

Soils: Soils consist of fibric to hemic peats up to 40cm. Soils are moist to inundated with multiple areas of open water.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4), *Carex nigricans* – *Juncus drummondii* Herbaceous Vegetation (GUS2)

pH = 5.24 **conductivity** = .18mS @ 8.9 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering

____ Mining activities

____ Watershed condition

____ Dredging activities

____ Road encroachment

____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is functioning at its potential natural community. Hydrology and water quality may have been altered by mining activity in the drainage. Old roads and mines are evident throughout the drainage. Currently there is little anthropogenic use aside from occasional recreational use, but no established trails lead into the basin.



**Upper Cleveland Gulch
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D160

UTM Coordinates NAD 83: E277852 N4202934

Elevation: 12,314ft

ID Team Observers: JJones, JDavin

Date: July 28, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation – Old road and mining may be contributing sediment, toxins, and mineral deposits to the site

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Site above treeline, there is no source for coarse, woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as part of a series of seeps along the upper reaches of Cleveland Gulch, a first order tributary of the Lake Fork of the Gunnison River. Hydrology appears to be perennial. Area is mesic to saturated throughout due to an extensive number of seeps along the toeslope of the basin floor. Anthropogenic disturbances present throughout the drainage include an old road and mining. Recreational use in surrounding drainages is extensive, but does not spill over into Cleveland Gulch. Mining and draining adits present along upper slopes may be contributing aluminum and other types of mineral deposition to the drainage. Mineral deposits were observed along the main drainage of the basin floor in the form of a white substance on rocks in the stream bottom. Uplands consist of unstable steep slopes of scree and unconsolidated rocks with little vegetation.

Plants: Large area near spring dominated by *Carex nigricans* and *Deschampsia caespitosa* at upper reaches of site. Saturated areas are dominated by large patches of mosses, liverworts, and open water. Vegetation varies extensively throughout the upper reaches of the drainage along seeps with patches dominated by mesic forbs, mesic graminoids, and mixed mesic herbaceous vegetation.

Soils: Soils consist of approximately 15cm of fibric peat over unconsolidated rock. Soils are moist to inundated throughout.

CNHP Vegetation Classification Type: *Carex nigricans* – *Juncus drummondii* Herbaceous Vegetation (GUS2)

pH = 5.84 **conductivity** = .084mS @ 10.6 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is functioning at its potential natural community. Hydrology and water quality may have been altered by mining activity in the drainage. Old roads and mines are evident throughout the drainage. Currently there is little anthropogenic use aside from occasional recreational use, but no established trails lead into the basin.



**Upper Cleveland Gulch
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D162

UTM Coordinates NAD 83: E 277973 N4202970

Elevation: 12,280ft

ID Team Observers: JJones, JDavin

Date: July 28, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation – Old mining, road, and other disturbances may be impacting hydrology and sediment deposition

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
	X		12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Site above treeline, there is no source for coarse, woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as part of a series of seeps along the upper reaches of Cleveland Gulch, a first order tributary of the Lake Fork of the Gunnison River. Hydrology appears to be perennial. Area is mesic to saturated throughout due to an extensive number of seeps along the toeslope of the basin floor. Anthropogenic disturbances present throughout the drainage include an old road and mining. Recreational use in surrounding drainages is extensive, but does not spill over into Cleveland Gulch. Mining and draining adits present along upper slopes may be contributing aluminum and other types of mineral deposition to the drainage. Mineral deposits were observed along the main drainage of the basin floor in the form of a white substance on rocks in the stream bottom. Uplands consist of unstable steep slopes of scree and unconsolidated rocks with little vegetation.

Plants: Wetland vegetation consists of mesic herbaceous species. Dominant species (25-35%) include *Caltha leptosepala*, *Cardamine cordifolia*, and *Carex aquatilis*. Common species (10-15%) include *Carex illota* and *Carex nigricans*. *Eriophorum altaicum* is also present in moderate cover at the site, is an uncommon species, occurring locally in the San Juan and Elk Mountains of Colorado. Approximately 500+ individuals of *Eriophorum altaicum* were found near spring along saturated soils. Species found in low cover at the site include *Pedicularis groenlandica*, *Juncus tracyi*, *Rhodiola rhodantha*, and *Luzula comosa*.

Soils: Soils consist of fibric to hemic peat over unconsolidated rock. Soils inundated throughout.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4)
pH = 4.95 conductivity = .27mS @ 20.4 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is functioning at its potential natural community. Hydrology and water quality may have been altered by mining activity in the drainage. Old roads and mines are evident throughout the drainage. Currently there is little anthropogenic use aside from occasional recreational use, but no established trails lead into the basin.



**Upper Cleveland Gulch
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D165

UTM Coordinates NAD 83: E278101 N4202927

Elevation: 12,240ft

ID Team Observers: JJones, JDavin

Date: July 28, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation – Old road and mining may be contributing sediment, toxins, and mineral deposits to the site

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
	X		12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Site above treeline, there is no source for coarse, woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Small, spring seep wetland dominated by mesic herbaceous vegetation. Wetland is a sloping fen with some patterning, open water, and floating mat peat. Wetland occurs as part of a series of seeps along the upper reaches of Cleveland Gulch, a first order tributary of the Lake Fork of the Gunnison River. Area is mesic to saturated throughout due to an extensive number of seeps along the toeslope of the basin floor. This wetland is fed by multiple seeps. Some sloughing and a few small channels flow out of the fen to the main drainage. These channels do not appear to be the result of disturbance. Anthropogenic disturbances present throughout the drainage include an old road and mining. Recreational use in surrounding drainages is extensive, but does not spill over into Cleveland Gulch. Mining and draining adits present along upper slopes may be contributing aluminum and other types of mineral deposition to the drainage. Mineral deposits were observed along the main drainage of the basin floor in the form of a white substance on rocks in the stream bottom. Uplands consist of unstable steep slopes of scree and unconsolidated rocks with little vegetation.

Plants: *Carex aquatilis* (45-55%) is dominant with *Caltha leptosepala* and *Pedicularis groenlandica* both in high cover (15-25%). Other species present (1-5%) include *Carex nova*, *Rhodiola rhodantha*, *Deschampsia caespitosa*, *Carex canescens*, and *Juncus castaneus*. Multiple areas of open water and floating mat peat developing along edges of open water. Patches of mineral soil within the fen are dominated by *Sibbaldia procumbens*, *Podistra eastwoodiae*, *Geum macrophyllum*, and *Packeria dimorphophylla*.

Soils: Soils consist of fibric to hemic peats up to 40cm. Site inundated throughout with standing and open water pools.

CNHP Vegetation Classification Type: *Carex aquatilis* Herbaceous Vegetation (G5S4)
pH = 5.68 conductivity = .10mS @ 19.2 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

Dewatering Mining activities Watershed condition
 Dredging activities Road encroachment Land ownership
Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is functioning at its potential natural community. Hydrology and water quality may have been altered by mining activity in the drainage. Old roads and mines are evident throughout the drainage. Currently there is little anthropogenic use aside from occasional recreational use, but no established trails lead into the basin.



**Upper Cleveland Gulch
Standard Checklist
Functional – At Risk**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D170

UTM Coordinates NAD 83: E278278 N4202797

Elevation: 12,130ft

ID Team Observers: JJones, JDavin

Date: July 28, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation - Old road and mining may be contributing sediment, toxins, and mineral deposits to the site

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Site above treeline, there is no source for coarse, woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as part of a series of seeps along the upper reaches of Cleveland Gulch, a first order tributary of the Lake Fork of the Gunnison River. Seeps create a small area of fen wetland along creek edge where drainage main drainage becomes more prominent and sloped. Area is mesic to saturated throughout due to multiple seeps along the southern toeslope saturating flat stretches beside creek. Anthropogenic disturbances present throughout the drainage include an old road and mining. Recreational use in surrounding drainages is extensive, but does not spill over into Cleveland Gulch. Mining and draining adits present along upper slopes may be contributing aluminum and other types of mineral deposition to the drainage. Mineral deposits were observed along the main drainage of the basin floor in the form of a white substance on rocks in the stream bottom. Wildlife use is evident in the area in the form of poggings and scat. Uplands consist of unstable steep slopes of scree and unconsolidated rocks with little vegetation.

Plants: Saturated areas in this small fen wetland consist of mesic herbaceous vegetation dominated by *Carex aquatilis* (45-55%). Common (5-15%) species include *Carex canesens* and *Caltha leptosepala*. Other species present at the site in low cover (<5%) include *Carex nigricans*, *Polygonum bistortoides*, *Veronica nutans*, *Pedicularis groenlandica*, and *Viola macloskeyi*. *Eriophorum altaicum* is present in two patches of 250 and 500+ individuals. Moss cover is moderate at the site.

Soils: Soils are composed of fibric peat to 15cm over hemic peat to 40cm+. Soils are inundated throughout with standing water on surface.

CNHP Vegetation Classification Type: *Carex aquatilis* Herbaceous Vegetation (G5S4)
pH = 5.72 conductivity = .06mS @ 22.9 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ X _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____ X _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes ___ X ___ No _____

If yes, what are those factors?

___ Dewatering ___ X ___ Mining activities ___ Watershed condition
___ Dredging activities ___ Road encroachment ___ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) Mining activities are not current, but may still be impacting wetlands and species in the area.

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is functioning below its potential natural community due to impacts from mining along the upper slopes of the drainage. Water quality has obviously been altered as evident in photo. Old roads and mines are evident throughout the drainage. Currently there is little anthropogenic use aside from occasional recreational use, but no established trails lead into the basin.



**Powderhorn Lakes
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Powderhorn Lakes **BLM Code:** D220
UTM Coordinates NAD 83: E308089 N4223216 **Elevation:** 11,800ft
ID Team Observers: JJones, JDavin **Date:** September 5, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Seep originates approximately 500 meters west of the easternmost Powderhorn Lake. Adjacent uplands consist of xeric upper subalpine meadow vegetation with open cover of *Picea engelmannii*. Surrounding uplands consist of large talus cirque walls at the end of a large glaciated valley. General geology of the area consists of landslide deposits of the Quaternary Age in the valley floor surrounded by basalt flows and associated tuff, breccias, and conglomerate of the Hinsdale Formation of the Tertiary Age. Site exhibits very little disturbance, talus above site is stable. Hydrology filters through talus slopes from snow patches along upper slopes of moraine resurfacing in multiple springs at upper reaches of seep. Seep varies along corridor from moderate to gentle gradient with majority of wetland contained along a narrow stream course, opening into a small fen wetland at its junction with Powderhorn Lake.

Plants: Vegetation varies along the narrow drainage from herbaceous to short shrub dominated areas. Most common species include *Caltha leptosepala* (15-25%), *Salix planifolia* (35-45%), *Calamagrostis canadensis* (15-25%), and *Caradmine cordifolia* (5-10%). Other species present (<5%) along the seep include *Deschampsia caespitosa*, *Juncus drummondii*, *Epilobium hornemannii*, and *Carex nova*. Uplands are dominated by sparse *Picea engelmannii* with *Vaccinium caespitosum* and *Danthonia intermedia* in the understory.

Soils: Soils consist of approximately 8cm of hemic organic matter over unconsolidated rock. Soils are dry to mesic along edges and only saturated immediately adjacent to seep.

CNHP Vegetation Classification Type: Variable

pH = 5.75 conductivity = 0.0mS at 5.1 degrees Celsius (sampled in seep, no water in pit)

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering

____ Mining activities

____ Watershed condition

____ Dredging activities

____ Road encroachment

____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with little anthropogenic disturbance and no disturbances leading to unacceptable conditions.



**American Basin
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D260

UTM Coordinates NAD 83: E278866 N4199478

Elevation: 11,920ft

ID Team Observers: JJones, JDavin

Date: July 27, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs in a large, open, glaciated valley at the headwaters of the Lake Fork of the Gunnison River. Wetland is a part of a series of seeps along the eastern slope of the drainage in American Basin. Area is mesic to saturated throughout due to an extensive number of seeps along the both slopes of the drainage. Anthropogenic disturbances are minimal. Trail to Handies Peak present uphill of the site and road to trailhead below seeps. The trail sees moderate use during the summer hiking season, but this use does not appear to impact seep wetlands or main drainage except in a few small areas near parking and dispersed camp sites. Old mining and draining adits concentrated along the western side of creek and do not appear to influence seep. Surrounding uplands are pristine aside from mining with few weedy species or disturbances. Uplands are dominated by mesic to dry alpine meadows with patches *Salix planifolia* and *Salix brachycarpa* and large expanses of alpine vegetation including *Geum rossii*. Although point identified by BLM is near creek, hydrology originates along Handies Peak trail, below a large talus slope.

Plants: Vegetation varies along hydrologic and slope gradient. Vegetation is dominated by the mesic forb *Caltha leptosepala* (35-45%) along lower reaches and the mesic shrub *Salix planifolia* along upper reaches. Other common (5-15%) species include *Rhodiola rhodantha*, *Pedicularis groenlandica*, *Primula parryi*, *Polygonum viviparins*, *Arnica parryi*, and *Veronica nutans*. *Taraxacum officinale* was observed, but is not present in high cover.

Soils: Soils consist of approximately 15cm of silt, 10YR 4/3, with high organic content of fibric to hemic peat material over unconsolidated rock and bedrock. Soils are mesic to inundated with a small gravel component.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4), *Salix planifolia*/Mesic Forbs (G4S3), and *Cardamine cordifolia*-*Mertensia ciliata* Herbaceous Vegetation (G4S4)

pH = 5.98 conductivity = .21mS @ 9.5 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

Dewatering Mining activities Watershed condition
 Dredging activities Road encroachment Land ownership
Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community. Disturbances in the area include recreational use and past mining which do currently not appear to impact the wetland.

**American Basin
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D261

UTM Coordinates NAD 83: E278800 N4199564

Elevation: 11,750ft

ID Team Observers: JJones, JDavin

Date: July 27, 2006

Yes	No	N/A	HYDROLOGY
		X	1) Floodplain above bankfull is inundated in “relatively frequent” events – This small seep wetland does have a developed floodplain
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland occurs above treeline, woody material provided by short shrub species only

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs in a large, open, glaciated valley at the headwaters of the Lake Fork of the Gunnison River. Wetland is a part of a series of seeps along the eastern slope of the drainage in American Basin. Area is mesic to saturated throughout due to an extensive number of seeps along the both slopes of the drainage. Anthropogenic disturbances are minimal. Trail to Handies Peak present uphill of the site and road to trailhead below seeps. The trail sees moderate use during the summer hiking season, but this use does not appear to impact seep wetlands or main drainage except in a few small areas near parking and dispersed camp sites. Old mining and draining adits concentrated along the western side of creek and do not appear to influence seep. Surrounding uplands are pristine aside from mining with few weedy species or disturbances. Uplands are dominated by mesic to dry alpine meadows with patches *Salix planifolia* and *Salix brachycarpa* and large expanses of alpine vegetation including *Geum rossii*.

Plants: Site is dominated by mesic forb species with *Senecio triangularis*, *Delphinium barbeyi*, *Caltha leptosepala*, and *Mertensia ciliata* being most common. Other forbs present include *Saxifraga odontoloma*, *Pedicularis groenlandica*, *Polygonum viviparins*, *Oxypolis fendleri*, and *Aconitum columbianum*. Mesic graminoid species present include *Deschampsia caespitosa*, *Carex albonigra*, and *Juncus sp.* Moss cover is extensive along inundated areas just below spring.

Soils: Sols consist of approximately 13cm of silt, 10YR 4/3 with 5% organic content over unconsolidated rock and bedrock. Soils are mesic, no water in soil pit.

CNHP Vegetation Classification Type: Upper reaches, *Cardamine cordifolia*/*Senecio triangularis* Herbaceous Vegetation (G4S4)

pH = 5.82 conductivity = .19mS @ 8.3 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, he improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community. Disturbances in the area include recreational use and past mining which do currently not appear to impact the wetland.



**American Basin
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D263

UTM Coordinates NAD 83: E278802 N4199662

Elevation: 11,766ft

ID Team Observers: JJones, JDavin

Date: July 27, 2006

Yes	No	N/A	HYDROLOGY
		X	1) Floodplain above bankfull is inundated in “relatively frequent” events – This small seep wetland does have a developed floodplain
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland occurs in the upper subalpine with only source of woody material provided by short shrub species

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs in a large, open, glaciated valley at the headwaters of the Lake Fork of the Gunnison River. Wetland is a part of a series of seeps along the eastern slope of the drainage in American Basin. Area is mesic to saturated throughout due to an extensive number of seeps along the both slopes of the drainage. Anthropogenic disturbances are minimal. Trail to Handies Peak present uphill of the site and road to trailhead below seeps. The trail sees moderate use during the summer hiking season, but this use does not appear to impact seep wetlands or main drainage except in a few small areas near parking and dispersed camp sites. Old mining and draining adits concentrated along the western side of creek and do not appear to influence seep. Surrounding uplands are pristine aside from mining with few weedy species or disturbances. Uplands are dominated by mesic to dry alpine meadows with patches *Salix planifolia* and *Salix brachycarpa* and large expanses of alpine vegetation including *Geum rossii*.

Plants: Seep wetland is dominated by *Salix planifolia* short shrubs with extensive cover of bryophytes along inundated areas. The forbs *Caltha leptosepala* and *Pedicularis groenlandica* are present at 5-10 percent cover. Other common (<5%) forbs include *Trollius albifloris*, *Swertia perennis*, *Primula parryi*, *Polygonum vivipara*, *Senecio triangularis*, and *Cardamine cordifolia*. Graminoid species common at the seep include *Carex albonigra*, *Deschampsia caespitosa*, and *Juncus tracyi*.

Soils: Soils composed of approximately 20cm of peat over silt with high organic content, 10YR 4/3, over unconsolidated rock and bedrock.

CNHP Vegetation Classification Type: Patches of *Salix planifolia*/*Caltha leptosepala* Shrubland (G4S4)

pH = 5.48 conductivity = .02mS @ 8.1 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X** _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community. Disturbances in the area include recreational use and past mining which do currently not appear to impact the wetland.



**American Basin
Standard Checklist
Functional – At Risk**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D264

UTM Coordinates NAD 83: E278695 N4199968

Elevation: 11,560ft

ID Team Observers: JJones, JDavin

Date: July 28, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation – Hydrology originates from draining adit

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events – Lower reaches support dense vegetation, upper reaches are bare in many areas with only moss cover
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland supports only herbaceous vegetation with little source of woody or course materials

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs in a large, open, glaciated valley at the headwaters of the Lake Fork of the Gunnison River. Wetland is a part of a series of seeps along the toeslope of the drainage in American Basin. Area is mesic to saturated throughout due to an extensive number of seeps along the both slopes of the drainage. Anthropogenic disturbances are minimal. Trail to Handies Peak is present along the eastern slope of the drainage and road to trailhead present at lower reaches. The trail sees moderate use during the summer hiking season, but this use does not appear to impact seep wetlands or main drainage except in a few small areas near parking and dispersed camp sites. Hydrology originates in old mine shaft. Area just below mine may be contaminated with minerals draining from the adit. Evidence of reclamation work is present in the form of dozing and large areas of bare soil. Although site is impacted by mining, wetland below site is functioning with stable areas of wetland vegetation and wetland soils. Surrounding uplands are pristine aside from mining with few weedy species or disturbances. Uplands are dominated by mesic to dry alpine meadows with patches *Salix planifolia* and *Salix brachycarpa* and large expanses of alpine vegetation including *Geum rossii*.

Plants: Mesic vegetation creates a narrow band along small, sinuous stream corridor. Vegetation at upper reaches just below adit composed of bryophyte species with little vascular vegetation. Lower reaches support moderate area of peat soils and vigorous wetland species. The most common (15-25%) species along lower reaches is *Carex nova*. *Eriophorum altaicum* is also present in moderate cover with some 500+ individuals covering a 40 X 15 meter area. Other species (1-10%) include *Calamagrostis canadensis*, *Juncus castaneus*, *Juncus tracyi*, *Deschampsia caespitosa*, and *Cardamine cordifolia*.

Soils: Did not dig soil pit due to proximity to contaminated soils and draining adit, soils are inundated throughout and likely composed of peat.

CNHP Vegetation Classification Type: none
pH = 6.3 conductivity = .21mS @ 11 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ X _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

Dewatering Mining activities Watershed condition
 Dredging activities Road encroachment Land ownership
Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning below its potential natural community due to mining and reclamation activities adjacent to the site. Vegetation appears to be healthy and vigorous, but disturbance has likely altered hydrology and water quality in the wetland. Other disturbances in the area include recreational uses which do not appear to currently impact the site.



**Cinnamon Pass Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D324

UTM Coordinates NAD 83: E278074 N4202242

Elevation: 12,380ft

ID Team Observers: JJones, JDavin

Date: July 28, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
	X		12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Site above treeline, there is no source for coarse, woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs in a small depression fed by two seeps. Wetland is located along the northern slope of a small, first order tributary of the Lake Fork of the Gunnison River near Cinnamon Pass. Moderate sized fen wetland has formed in the small depression around a moderate sized area of open water where water from the seeps gathers and then drains to the southeast. Anthropogenic disturbances are currently few, but evidence of past use is present including a road and mining in surrounding drainages. Other disturbances include Cinnamon Pass road, sheep grazing, and some recreational use. Surrounding uplands consist of alpine herbaceous vegetation on rocky, undeveloped soils.

Plants: Wetland is dominated by mesic herbaceous vegetation. *Carex aquatilis* is the dominant (45-55%) species throughout the site. Codominant (15-25%) species include *Caltha leptosepala* and *Carex utriculata*. Mesic graminoids present (5-10%) in the wetland include *Carex canescens*, *Deschampsia caespitosa*, *Juncus parryi*, *Carex illota*, and *Eleocharis quinqueflora*. Mesic forbs include *Pedicularis groenlandica*, *Primula parryi*, *Chondrophylla aquatica*, *Podistera eastwoodiae*, and *Polygonum bistortoides*. Unique species include *Eriophorum altaicum* and *Carex microglochin*.

Soils: Soils consist of fibric peat to 15 cm, hemic peat up to 40 cm. Soils are inundated to saturated throughout most of the wetland.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4), *Carex aquatilis* Herbaceous Vegetation (G5S4), *Carex utriculata* Herbaceous Vegetation (G5S4)

pH = 6.21 conductivity = .18mS @ 12.6 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community. Despite old roads and past mining use in the area, there are currently few disturbances in the area and none that appear to impact the wetland or create unacceptable conditions.



**Cinnamon Pass Seeps
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D328

UTM Coordinates NAD 83: E277668 N4201890

Elevation: 12,460ft

ID Team Observers: JJones, JDavin

Date: July 28, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
	X		12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Site above treeline, there is no source for coarse, woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a series of seeps along northern slope of an upper tributary of the Lake Fork of the Gunnison River near Cinnamon Pass. Seep is small and appears to be perennial supporting obligate wetland species and hydric soils. Seep originates at the toe of a large bedrock outcrop creating a small channel of hydric soils and mesic vegetation. Multiple seeps originate in the area and converge downhill. Stream bed is rocky with extensive moss cover.

Plants: Vegetation is dominated by mesic herbaceous and shrubby species. *Caltha leptosepala* (35-45%) is the dominant forb species with *Primula parryi*, *Oxypolis fendleri*, and *Podistera eastwoodiae* also being common (10-15%). Mesic graminoids present (1-5%) include *Carex nova*, *Carex vernacular*, *Juncus tracyi*.

Soils: Soils consist of a 12cm histic epipedon over rock. Rocky substrates are blue to black with some black oxidation along root channels.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4)
pH = 6.06 conductivity = .14mS @13.7 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

___ Dewatering ___ Mining activities ___ Watershed condition

___ Dredging activities ___ Road encroachment ___ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community. Despite old roads and past mining use in the area, there are currently few disturbances in the area and none that appear to impact the wetland or create unacceptable conditions.



Cinnamon Pass Seeps Standard Checklist Proper Functioning Condition

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D337

UTM Coordinates NAD 83: E277863 N4201882

Elevation: 12,460ft

ID Team Observers: JJones, JDavin

Date: July 28, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
	X		12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Site above treeline, there is no source for coarse, woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as part of a series of seeps along northern slope of an upper tributary of the Lake Fork of the Gunnison River near Cinnamon Pass. Seep is small and appears to be perennial supporting obligate wetland species and hydric soils. Seep originates at the toe of a large bedrock outcrop creating a small channel of hydric soils and mesic vegetation. Seep feeds downhill into small depression wetland of hydric, organic soils.

Plants: Wetland is dominated by mesic herbaceous vegetation. *Caltha leptosepala* and *Juncus mertensianus* are common (25-35%). *Eriophorum altaicum* is present and forms a large patch in lower depression. Other species present (5-15%) at the seep include *Primula parryi*, *Carex nova*, *Saxifraga odontoloma*, *Carex vernacular*, *Epilobium* sp., *Veronica nutans*, *Carex illota*, and *Deschampsia caespitosa*.

Soils: Soils consist of a 17cm histic epipedon over rock. Rock is a brittle blue colored substrate, in course to medium sized pieces.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation
pH = 6.04 conductivity = .06mS @ 10.1 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

___ Dewatering ___ Mining activities ___ Watershed condition

___ Dredging activities ___ Road encroachment ___ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community. Despite old roads and past mining use in the area, there are currently few disturbances in the area and none that appear to impact the wetland or create unacceptable conditions.



**American Flats
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D451

UTM Coordinates NAD 83: E273432 N4207591

Elevation: 12,360ft

ID Team Observers: JJones, JDavin, SNeid

Date: August 18, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland occurs along alpine reaches of the drainage with no source for woody material

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a small apparently perennial drainage along the upper reaches of American Flats. Drainage appears to be fed by multiple seeps and snowmelt that converge to form a distinct drainage. American Flats and its multiple seeps and small drainages form the headwaters of Henson Creek, a third order tributary of the Lake Fork of the Gunnison River. The area consists of rolling alpine hills, small snowmelt and groundwater-fed draws, and mesic snowmelt areas. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, ash-flow tuff of the main volcanic sequence and intra-ash flow andesitic lavas. The surrounding basin shows extensive past mining and mining exploration, which is more prevalent along the southern reaches, Palmetto Gulch area, not along American Flats. Main disturbances in the area include old road which traverses the upper reaches of the flats, recreational use, sheep grazing, past mining exploration, mining activity along southern, upper reaches, and adjacent road. Local disturbances do not appear to be greatly impacting the area, the main impacts observed include grazed vegetation, some trampling, erosion along wash areas and road grades. Natural disturbances include possible avalanche activity, extreme alpine environment, and wildlife use.

Plants: The majority of the area is dominated by xeric alpine vegetation with patches of mesic vegetation in late snowmelt, mesic contours, seep areas, and along small drainages. Vegetation adjacent to drainage is dominated by mesic forbs with *Caltha leptosepala* (35-45%) being most common. Other common (5-15%) forbs species include *Podistera eastwoodiae*, *Cardamine cordifolia*, and *Saxifraga odontoloma*. Common (5-10%) mesic graminoids include *Deschampsia caespitosa*, *Juncus drummondii*, *Carex scopulorum*, and *Carex vernacula*. Other species found in low cover (<5%) include *Veronica wormskjoldii*, *Mimulus guttatus*, and *Primula parryi*. Mesic vegetation is concentrated along small seep drainage grading into mesic to xeric alpine vegetation.

Soils: Soils are saturated to inundated along immediate stream corridor and undeveloped, only about 17cm in depth where sampled. Soils consist of approximately 5cm of organic material over sandy clay (10YR 4/2) up to 13 cm, over clay (10YR5/2) up to 17 cm, over bedrock and unconsolidated rock material.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4)
pH = 5.23 conductivity = .08mS at 9.3 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with few disturbances in the area and no disturbances causing unacceptable conditions.



**American Flats
Standard Checklist
Non-Functional**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D489

UTM Coordinates NAD 83: E273336 N4207050

Elevation: 12,580ft

ID Team Observers: JJones, JDavin, SNeid

Date: August 19, 2006

Yes	No	N/A	HYDROLOGY
	X		1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
	X		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X	X		8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
		X	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
		X	11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
	X		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
	X		14) Point bars are revegetating with riparian-wetland vegetation
	X		15) Lateral stream movement is associated with natural sinuosity
	X		16) System is vertically stable
	X		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as an open, alpine meadow along the upper reaches of American Flats. Meadow is dry and does not currently exhibit wetland indicative features. American Flats and its multiple seeps and small drainages form the headwaters of Henson Creek, a third order tributary of the Lake Fork of the Gunnison River. The area consists of rolling alpine hills, small snowmelt and groundwater-fed draws, and mesic snowmelt areas. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, ash-flow tuff of the main volcanic sequence and intra-ash flow andesitic lavas. The surrounding basin shows extensive past mining and mining exploration, which is more prevalent along the southern reaches, Palmetto Gulch area, not along American Flats. Main disturbances in the area include old road which traverses the upper reaches of the flats, recreational use, sheep grazing, past mining exploration, mining activity along southern, upper reaches, and adjacent road. Local disturbances do not appear to be greatly impacting the area, the main impacts observed include grazed vegetation, some trampling, erosion along wash areas and road grades. Natural disturbances include possible avalanche activity, extreme alpine environment, and wildlife use.

Plants: The majority of the area is dominated by xeric alpine vegetation with patches of mesic vegetation in late snowmelt, mesic contours, seep areas, and along small drainages. Vegetation at the site is dominated by dry to mesic alpine vegetation with a few facultative wetland species. *Carex nigricans* is the most common species (45-55%) forming dense patches throughout the area. Other common species include *Deschampsia caespitosa* (15-25%), *Sibbaldia procumbens* (10-15%), and *Trifolium parryi* (15-25%). Other species found at the site (<1-5%) include *Phleum alpinum*, *Podistera eastwoodiae*, *Caltha leptosepala*, *Packeria dimorphophylla*, *Carex egglestonii*, *Veronica wormskjoldii*, and *Potentilla diversifolia*.

Soils: Soils consist of silty clay (10YR 4/3) with high organic content up to 6cm, over silt (10YR 4/3) with high organic content up to 26cm, over unconsolidated rock material. Oxidation is evident in all layers indicating some period of inundation during the year. Soils are currently dry.

CNHP Vegetation Classification Type: *Carex nigricans* Herbaceous Vegetation (G4)
pH = no water **conductivity** = no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____ X _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site indicated by the BLM seeps and springs map is not a functioning wetland. Area does not exhibit signs of consistent hydrology, supports few wetland indicator species, or soils indicative of wetland hydrology. Site occurs on a small bench and may hold water in wet years and during spring snowmelt.



**Sawmill Park
Standard Checklist
Functional – At Risk**

County: Hinsdale **Quadrangle:** Lake San Cristobal **BLM Code:** D508
UTM Coordinates NAD 83: E300485 N4203862 **Elevation:** 10,640ft
ID Team Observers: JJones, JDavin **Date:** July 17, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events – Site not currently inundated
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation – Road does not appear to be affecting the site

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs at the southern end of a moderate forest opening named Sawmill Park along the upper reaches of a small tributary of Lake San Cristobal. General geology of the area consists of glacial drift and landslide deposits of the Quaternary Age. Site supports wetland vegetation along southern reaches, but appears to be drying, with dry species encroaching south. It is not apparent why the area is drying. Disturbances in the area include recreational uses and adjacent road.

Plants: Lower reaches of meadow opening are dry with *Dasiphora fruticosa* ssp. *floribunda* dominated vegetation and dry to mesic herbaceous species. South, from the road, meadow becomes more mesic with *Carex utriculata* and *Carex aquatilis* dominated vegetation. *Salix planifolia* is present in this area, but is stunted apparently due to drying. Southern reaches of meadow are dominated by a tall shrub community of *Salix monticola* which forms a dense thicket. The understory in this area is dominated by *Carex disperma* with low cover of *Calamagrostis canadensis* and *Cardamine cordifolia*.

Soils: Soils consist of 40cm+ of organic material over clay at lower reaches. Upper reaches consist of approximately 18cm of organic material, dry muck, over clay (7.5 YR 2.5/1) with <5% Mn mottling.

CNHP Vegetation Classification Type: *Carex utriculata*/*Carex aquatilis* Herbaceous Vegetation, *Salix monticola*/mesic graminoid Tall Shrubland

pH = no water **conductivity** = no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ **X** _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes No _____

If yes, what are those factors?

Dewatering _____ Mining activities _____ Watershed condition

_____ Dredging activities _____ Road encroachment _____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



**Schafer Gulch
Standard Checklist
Proper Functioning Condition**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D612

UTM Coordinates NAD 83: E275039 N4205091

Elevation: 12,035ft

ID Team Observers: JJones, JDavin, SNeid

Date: August 20, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) - Wetland and surrounding uplands support alpine vegetation with no woody material source

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a small floodplain, wet meadow along the western edge of a small, alpine lake. Wetland contains multiple areas of shallow, open water, rivulets, and hummocked patches. Lake is situated at the headwaters of a western tributary of Schafer Gulch, a second order tributary of Henson Creek. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas. Disturbances in the drainage include past mining and old roads along upper slopes. There do not appear to be many recent anthropogenic disturbances within the drainage. OHV were heard along the upper saddle between the drainage and Redcloud Gulch, apparently along old road grade. Sheep were observed grazing in the area. Site appears to be stable and healthy with some drying along the upper, western edge.

Plants: Vegetation is dominated by mesic herbaceous species. *Carex aquatilis* (10-15%), *Caltha leptosepala* (35-45%), and *Carex illota* (25-35%) are the most common species throughout. *Deschampsia caespitosa*, *Juncus drummondii*, and *Calamagrostis canadensis* are also common (5-15%). Other species present (<5%) in the wetland include *Packera dimorphophylla*, *Veronica nutans*, *Rhodiola rhodantha*, *Eriophorum altaicum*, *Pedicularis groenlandica*, *Phleum alpinum*, and *Craex egglestonii*.

Soils: Soils consist of fibric to mucky peats to 40cm+. Soils are moist to inundated throughout the site. Drier areas support a histic epipedon of 20cm+ over clay and sandy clay (10YR 4/1).

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4)
pH = 5.30 conductivity = 0.0mS at 11.8 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

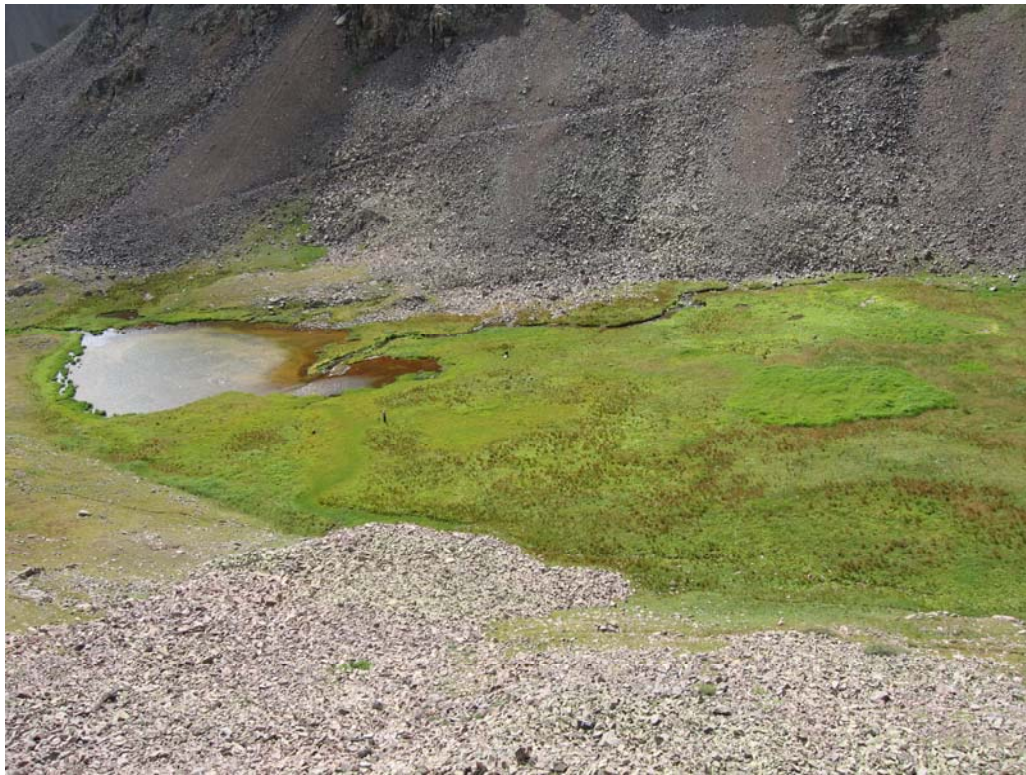
Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with few current disturbances in the drainage. Drying appears to be natural and not from disturbance. Disturbances in the area including sheep grazing and recreational uses do not appear to be affecting the wetland.



**American Flats
Standard Checklist
Non-Functional**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D614

UTM Coordinates NAD 83: E273836 N4207324

Elevation: 12,325ft

ID Team Observers: JJones, JDavin, SNeid

Date: August 19, 2006

Yes	No	N/A	HYDROLOGY
	X		1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
	X		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X	X		8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
		X	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
		X	11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
	X		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
	X		14) Point bars are revegetating with riparian-wetland vegetation
	X		15) Lateral stream movement is associated with natural sinuosity
	X		16) System is vertically stable
	X		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a mesic late snowmelt area along the middle reaches of the American Flats. Site appears to have formerly supported a small wetland as evidenced by hummocked areas throughout, dry channel, and relic wetland indicator species, but is currently dry with no consistent hydrology. American Flats and its multiple seeps and small drainages form the headwaters of Henson Creek, a third order tributary of the Lake Fork of the Gunnison River. The area consists of rolling alpine hills, small snowmelt and groundwater-fed draws, and mesic snowmelt areas. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, ash-flow tuff of the main volcanic sequence and intra-ash flow andesitic lavas. The surrounding basin shows extensive past mining and mining exploration, which is more prevalent along the southern reaches, Palmetto Gulch area, not along American Flats. Main disturbances in the area include old road which traverses the upper reaches of the flats, recreational use, sheep grazing, past mining exploration, mining activity along southern, upper reaches, and adjacent road. Local disturbances do not appear to be greatly impacting the area, the main impacts observed include grazed vegetation, some trampling, erosion along wash areas and road grades. Natural disturbances include possible avalanche activity, extreme alpine environment, and wildlife use.

Plants: The majority of the area is dominated by xeric alpine vegetation with patches of mesic vegetation in late snowmelt, mesic contours, seep areas, and along small drainages. Vegetation in this area is dominated by xeric to mesic alpine vegetation with patches of *Carex nigricans* (25-35%), *Sibbaldia procumbens* (15-25%), and *Juncus drummondii* (15-25%). Other common (5-10%) species include *Trifolium parryi*, *Deschampsia caespitosa*, and *Podistera eastwoodiae*. Other species present (1-5%) at the site include *Caltha leptosepala*, *Packeria dimorphophylla*, *Geum rossii*, *Antennaria media*, and *Veronica worms kjoldii*

Soils: Soils consist of 20cm+ of organic material over silty clay (10YR 5/3) up to 25cm over rock. Soils are dry throughout.

CNHP Vegetation Classification Type: *Carex nigricans* – *Juncus drummondii* Herbaceous Vegetation (GUS2)

pH = no water **conductivity** = no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

X

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site indicated by the BLM seeps and springs map is not a functioning wetland. Area does not exhibit signs of consistent hydrology, supports few wetland indicator species, or soils indicative of wetland hydrology. Site appears to have formerly supported a small wetland as evidenced by hummocked areas throughout, dry channel, and relic wetland indicator species, but is currently dry with no consistent hydrology.



**American Flats
Standard Checklist
Non-Functional**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D615

UTM Coordinates NAD 83: E274254 N4206947

Elevation: 12,320ft

ID Team Observers: JJones, JDavin, SNeid

Date: August 19, 2006

Yes	No	N/A	HYDROLOGY
	X		1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
	X		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
	X		6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
	X		7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
	X		8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
		X	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
	X		10) Riparian-wetland plants exhibit high vigor
		X	11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
	X		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
	X		14) Point bars are revegetating with riparian-wetland vegetation
	X		15) Lateral stream movement is associated with natural sinuosity
	X		16) System is vertically stable
	X		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a mesic late snowmelt area along the middle reaches of the American Flats. Site is currently dry and supports very few wetland species and no other wetland indicative features. American Flats and its multiple seeps and small drainages form the headwaters of Henson Creek, a third order tributary of the Lake Fork of the Gunnison River. The area consists of rolling alpine hills, small snowmelt and groundwater-fed draws, and mesic snowmelt areas. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, ash-flow tuff of the main volcanic sequence and intra-ash flow andesitic lavas. The surrounding basin shows extensive past mining and mining exploration, which is more prevalent along the southern reaches, Palmetto Gulch area, not along American Flats. Main disturbances in the area include an old road which traverses the upper reaches of the flats, recreational use, sheep grazing, past mining exploration, mining activity along southern, upper reaches, and adjacent road. Local disturbances do not appear to be greatly impacting the area, the main impacts observed include grazed vegetation, some trampling, erosion along wash areas, and road grades. Natural disturbances include possible avalanche activity, extreme alpine environment, and wildlife use.

Plants: The majority of the area is dominated by xeric alpine vegetation with patches of mesic vegetation in late snowmelt, mesic contours, seep areas, and along small drainages.

Soils: Soils consist of over 30cm of silty clay (10YR 3/4) with fine to very fine gravel. The upper 10cm contains moderate amounts of organic material. Soils are currently dry throughout the area.

CNHP Vegetation Classification Type: None

pH = no water **conductivity =** no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____ **X** _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site indicated by the BLM seeps and springs map is not a functioning wetland. Area does not exhibit signs of consistent hydrology, supports few wetland indicator species, and no soils indicative of wetland hydrology. Site occurs in a small contour and may hold water in wet years and during spring snowmelt.



**American Flats
Standard Checklist
Non-Functional**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: D616

UTM Coordinates NAD 83: E274103 N4206807

Elevation: 12,340ft

ID Team Observers: JJones, JDavin, SNeid

Date: August 19, 2006

Yes	No	N/A	HYDROLOGY
	X		1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
	X		3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
	X		6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
	X		7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
	X		8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
		X	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
	X		10) Riparian-wetland plants exhibit high vigor
		X	11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
	X		13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
	X		14) Point bars are revegetating with riparian-wetland vegetation
	X		15) Lateral stream movement is associated with natural sinuosity
	X		16) System is vertically stable
	X		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a mesic late snowmelt area along the middle reaches of the American Flats. Site is currently dry and supports very few wetland species and no other wetland indicative features. American Flats and its multiple seeps and small drainages form the headwaters of Henson Creek, a third order tributary of the Lake Fork of the Gunnison River. The area consists of rolling alpine hills, small snowmelt and groundwater-fed draws, and mesic snowmelt areas. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, ash-flow tuff of the main volcanic sequence and intra-ash flow andesitic lavas. The surrounding basin shows extensive past mining and mining exploration, which is more prevalent along the southern reaches, Palmetto Gulch area, not along American Flats. Main disturbances in the area include an old road which traverses the upper reaches of the flats, recreational use, sheep grazing, past mining exploration, mining activity along southern, upper reaches, and adjacent road. Local disturbances do not appear to be greatly impacting the area, the main impacts observed include grazed vegetation, some trampling, erosion along wash areas, and road grades. Natural disturbances include possible avalanche activity, extreme alpine environment, and wildlife use.

Plants: The majority of the area is dominated by xeric alpine vegetation with patches of mesic vegetation in late snowmelt, mesic contours, seep areas, and along small drainages.

Soils:

CNHP Vegetation Classification Type: None

pH = no water **conductivity =** no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____ **X** _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site indicated by the BLM seeps and springs map is not a functioning wetland. Area does not exhibit signs of consistent hydrology, supports few wetland indicator species, and no soils indicative of wetland hydrology.



**Spring Creek Seeps
Lentic Standard Checklist
Functioning Condition**

County: Hinsdale **Quadrangle:** Mineral Mountain **BLM Code:** F049

UTM Coordinates NAD 83: E324030 N4217340 **Elevation:** 9,560ft

ID Team Observers: JJones, JDavin **Date:** July 8, 2006

Yes	No	N/A	HYDROLOGY
X			1) Riparian-wetland area is saturated at or near the surface or inundated in "relatively frequent" events (1-3 years)
X			2) Fluctuation of water levels is not excessive
X			3) Riparian-wetland area is enlarging or has achieved potential extent
X			4) Upland watershed not contributing to riparian-wetland degradation
X			5) Water quality is sufficient to support riparian-wetland plants
X			6) Natural surface or subsurface flow patterns are not altered by disturbance i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
X			7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes	No	N/A	VEGETATION
X			8) Diverse age-class distribution (recruitment for maintenance/recovery)
X			9) Diverse composition of vegetation (for maintenance/recovery)
X			10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt)
X			12) Riparian-wetland plants exhibit high vigor
X			13) Adequate vegetative cover is present to protect shorelines/soil surface and dissipate energy during high wind and wave events or overland flows
X			14) Frost or abnormal hydrologic heaving is not present
X			15) Favorable microsite condition (i.e., woody debris, water temperature, etc.) is maintained by adjacent site characteristics)

Yes	No	N/A	EROSION/DEPOSITION
X			16) Accumulation of chemicals affecting plant productivity/composition is not apparent
X			17) Saturation of soils (i.e., ponding, flooding frequency and duration) is sufficient to compose and maintain hydric soils
X			18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
X			19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
X			20) Islands and shoreline characteristics (i.e., rocks, course and/or large woody debris) are adequate to dissipate wind and wave event energies

Remarks

General Description: Wetland occurs in a small pond surrounded by montane/subalpine forests. Wetland is fed by groundwater originating just south, above the wetland spilling into a small depression.

Plants: Vegetation is dominated (85-95%) by *Carex utriculata* along pond edges and shallow reaches. Open water supports moderate (15-25%) cover of *Lemna minor*. Other species present (1-10%) along edges and seep include *Luzula parviflora*, *Cardamine cordifolia*, *Veronica americana*, *Carex bella*, and *Juncus balticus*. *Taraxacum officinale* and *Trifolium repens* are present along drying edges, but not in high cover.

Soils: Soils consist of a dark layer of organic material up to approximately 15cm over sandy loam (2.5Y 4/2), over very rocky soils. Surrounding upland soils are very rocky.

CNHP Vegetation Classification Type: *Carex utriculata* Herbaceous Vegetation (G5S4)
pH = 6.08 conductivity = .07mS at 14.6 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ **X**
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community. The immediate area has few disturbances or conditions creating unacceptable conditions. Livestock use in the area is not extensive and does not appear to affect the wetland.



Spring Creek Seeps Standard Checklist Functional-At Risk

County: Hinsdale **Quadrangle:** Mineral Mountain **BLM Code:** F052
UTM Coordinates NAD 83: E324118 N4217975 **Elevation:** 9,480ft
ID Team Observers: JJones, JDavin **Date:** July 8, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
	X		15) Lateral stream movement is associated with natural sinuosity – Small seep area may have been artificially dammed creating a small pond wetland
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a small precipitation and groundwater-fed draw that has been dammed to form a small, open water pond. Wetland is part of a series of small draws and seeps feeding into tributaries of and the middle reaches of Spring Creek, a second order tributary of Cebolla Creek. Dam may have been created to form a watering hole for livestock use. There is evidence of past erosion and head-cutting along adjacent stream, possibly due to livestock use. Use from the current season is evident along banks of small pond, with no extensive disturbance. Other disturbances in the area include roads with moderate recreational use. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, ash-flow tuff of the main volcanic sequence.

Plants: species list and percent cover of dominant plants, aquatic plants or animals present,
Soils:

CNHP Vegetation Classification Type: none

pH = 4.53 **conductivity =** 0.0mS at 18.7 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ x _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____ x _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

__x__ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) _____



**Powderhorn Lakes Trail
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Powderhorn Lakes **BLM Code:** F073
UTM Coordinates NAD 83: E309266 N4224360 **Elevation:** 11,550ft
ID Team Observers: JJones, JDavin **Date:** September 4, 2006

Yes	No	N/A	HYDROLOGY
X			1) Riparian-wetland area is saturated at or near the surface or inundated in "relatively frequent" events (1-3 years)
X			2) Fluctuation of water levels is not excessive
X			3) Riparian-wetland area is enlarging or has achieved potential extent
X			4) Upland watershed not contributing to riparian-wetland degradation
X			5) Water quality is sufficient to support riparian-wetland plants
X			6) Natural surface or subsurface flow patterns are not altered by disturbance i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
X			7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes	No	N/A	VEGETATION
X			8) Diverse age-class distribution (recruitment for maintenance/recovery)
X			9) Diverse composition of vegetation (for maintenance/recovery)
X			10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt)
X			12) Riparian-wetland plants exhibit high vigor
X			13) Adequate vegetative cover is present to protect shorelines/soil surface and dissipate energy during high wind and wave events or overland flows
X			14) Frost or abnormal hydrologic heaving is not present
X			15) Favorable microsite condition (i.e., woody debris, water temperature, etc.) is maintained by adjacent site characteristics)

Yes	No	N/A	EROSION/DEPOSITION
X			16) Accumulation of chemicals affecting plant productivity/composition is not apparent
X			17) Saturation of soils (i.e., ponding, flooding frequency and duration) is sufficient to compose and maintain hydric soils
X			18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
X			19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
X			20) Islands and shoreline characteristics (i.e., rocks, course and/or large woody debris) are adequate to dissipate wind and wave event energies

Remarks

General Description: Wetland occurs as a small open basin, lentic wetland along the Powderhorn Lakes Trail. Pond does not appear to fluctuate extensively and site supports a wide band of mesic vegetation around the pond edge. General geology of the area consists of landslide deposits of the Quaternary Age in the valley floor surrounded by basalt flows and associated tuff, breccias, and conglomerate of the Hinsdale Formation of the Tertiary Age. Adjacent trail crosses dispersed spillway from pond, but does not appear to affect hydrology. Hydrology and vegetation are stable. Trail may act as a corridor for exotic species invasion to the site.

Plants: Vegetation consists of a moderate band of shrubs and mesic graminoids along the edge of small, lentic wetland. Mesic graminoids dominate the immediate pond edge with shrub dominated areas dominating drier areas up from the pond. *Salix planifolia* is the dominant shrub at 65-75% cover. *Carex aquatilis* is the dominant understory species with 15-25% cover. Other common (5-10% cover) species include *Calamagrostis canadensis*, *Senecio triangularis*, *Caltha leptosepala*, and *Petasites sagittatus*. Small area along southern side of pond is dominated by *Carex saxatilis* with *Carex aquatilis*, *Calamagrostis canadensis*, and *Salix planifolia*. *Callitriche verna* is present in moderate cover in pond.

Soils: Soils were sampled along northeastern edge of pond. Soils consist of fibric to hemic peat accumulations greater than 40cm. Soils moist at surface, water at 20cm.

CNHP Vegetation Classification Type: *Salix planifolia*/*Carex aquatilis* Shrubland (G5S4), *Carex saxatilis* Herbaceous Vegetation (G3S2)

pH = 5.36 **conductivity** = 0.0 at 15.9 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering

____ Mining activities

____ Watershed condition

____ Dredging activities

____ Road encroachment

____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with no disturbances leading to unacceptable conditions. Adjacent trail does not appear to currently affect hydrology or species composition at the site.



Hidden Lakes Fen Standard Checklist Proper Functioning Condition

County: Hinsdale **Quadrangle:** Powderhorn Lakes **BLM Code:** none
UTM Coordinates NAD 83: E309092 N4223242 **Elevation:** 11,580ft
ID Team Observers: JJones, JDavin **Date:** September 5, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
		X	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy – Site is a wet meadow wetland
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs along a small seasonally saturated bench below Powderhorn Lakes, beside Hidden Lakes. Hidden Lakes consist of multiple old beaver dammed ponds along the West Fork of Powderhorn Creek, below the outlets of Powderhorn Lakes. General geology of the area consists of landslide deposits of the Quaternary Age in the valley floor surrounded by basalt flows and associated tuff, breccias, and conglomerate of the Hinsdale Formation of the Tertiary Age. Hydrology appears to originate from the northwestern edge of the meadow. Wetland is likely seasonally inundated supporting obligate to facultative wetland vegetation throughout. Old beaver dams along main drainage are vegetated and helping to flood the adjacent meadow wetland.

Plants: Vegetation is dominated by mesic graminoid and forb species throughout. *Carex aquatilis* and *Caltha leptosepala* are the most common (25-35% cover) species throughout the site. Northeastern side of meadow supports a *Carex illota* (35% cover in this area) dominated community. Other graminoids present (5-15% cover) include *Deschampsia caespitosa*, *Craex praegracilis* and *Carex saxatilis*. Forbs present (5-15% cover) include *Podistera eastwoodiae*, *Rhodiola rhodantha*, *Gentianopsis thermalis*, and *Polemonium caeruleum*.

Soils: Soil consists of fibric peat to 25cm and hemic peat to 40cm+. Surface of wetland was dry during survey, water at approximately 30cm in soil pit.

CNHP Vegetation Classification Type: *Caltha leptosepala* Herbaceous Vegetation (G4S4), *Carex illota* Herbaceous Vegetation (G3S3)

pH = 5.39 conductivity = 0.03mS at 12.4 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering

____ Mining activities

____ Watershed condition

____ Dredging activities

____ Road encroachment

____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning just below its potential natural community. The predominant disturbance in the area is the adjacent Powderhorn Lakes trail, which surrounds three sides of the wetland. There were no immediate impacts observed by the proximity of the trail, but the adjacent trail may act as a corridor for exotic species and may confine the wetland or increase drying if used by hikers.



**Engineer Pass – Mine Shaft Seep
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Handies Peak **BLM Code:** none
UTM Coordinates NAD 83: E273220 N4206225 **Elevation:** 12,630ft
ID Team Observers: JJones, JDavin, SNeid **Date:** August 19, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
		X	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy – Site is a small seep wetland with no true channel formation
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
		X	16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a small seep wetland along the upper reaches of the American Flats. Wetland surrounds an open, flooded mine shaft. American Flats and its multiple seeps and small drainages form the headwaters of Henson Creek, a third order tributary of the Lake Fork of the Gunnison River. The area consists of rolling alpine hills, small snowmelt and groundwater-fed draws, and mesic snowmelt areas. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, ash-flow tuff of the main volcanic sequence and intra-ash flow andesitic lavas. The surrounding basin shows extensive past mining and mining exploration, which is more prevalent along the southern reaches, Palmetto Gulch area, not along American Flats. Main disturbances in the area include old road which traverses the upper reaches of the flats, recreational use, sheep grazing, past mining exploration, mining activity along southern, upper reaches, and adjacent road. Local disturbances do not appear to be greatly impacting the area, the main impacts observed include grazed vegetation, some trampling, erosion along wash areas and road grades. Natural disturbances include possible avalanche activity, extreme alpine environment, and wildlife use.

Plants: The majority of the area is dominated by xeric alpine vegetation with patches of mesic vegetation in late snowmelt, mesic contours, seep areas, and along small drainages. Vegetation in the wetland is dominated by herbaceous species with *Carex scopulorum* (45-55%) and *Caltha leptosepala* (15-25%) being most common. Other common (5-10%) species include *Calamagrostis canadensis*, *Carex illota*, and *Carex egglestonii*. Other species present (1-5%) in the wetland include *Carex nigricans*, *Podistera eastwoodiae*, *Deschampsia caespitosa*, *Phleum alpinum*, and *Juncus balticus*. Vegetation appears to be healthy and vigorous with few disturbances.

Soils: Soils consist of silty clay (10YR 4/1) with high organic content up to 5cm over sandy clay and clay (10YR 4/2) up to 25cm, over clay (10YR 4/2) with fine to medium gravel up to 40cm+. Soils are inundated throughout and saturated along edges.

CNHP Vegetation Classification Type: *Carex scopulorum* – *Caltha leptosepala* Herbaceous Vegetation (G4S4)

pH = 5.35 conductivity = 0.0mS at 10.7 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning below its potential natural community due to impacts from mine shaft in the center of the wetland. Other disturbances in area do not appear to be impacting the site or influencing hydrology or species composition.



**Palmetto Gulch
Standard Checklist
Functional – At Risk**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: None

UTM Coordinates NAD 83: E273861 N4206023

Elevation: 12,320ft

ID Team Observers: JJones, JDavin

Date: September 10, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation – Wetland located just below draining adit, white precipitates present along streambed

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Site occurs in the alpine with few woody material sources

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs along the upper reaches of Palmetto Gulch, a first order tributary of Henson Creek, near Engineer Pass. Wetland occurs along a small stream corridor just below a draining adit as a small wet meadow opening. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas. Anthropogenic disturbances in the area are evident throughout including mining, roads, and sheep grazing. These disturbances may impact hydrology, vegetation, and water quality. There are white mineral deposits along the streambed indicating contamination from the draining mine into surrounding waterways. Area has been buffered just below the adit with silt fencing and hay rolls to protect adjacent stream. There is evidence of sheep grazing from the current summer season throughout the area.

Plants: Vegetation is dominated by a short shrubland of *Salix planifolia* (35-45%) with mesic graminoids. Shrubs are stunted which may be due to high mineral content of hydrology, saturation cycles, alpine elevation. Understory is dominated by a mix of mesic herbaceous species including *Carex aquatilis*, *Carex scopulorum*, *Podistera eastwoodiae*, and *Calamagrostis canadensis* all in low to moderate cover (5-15%). Other species present (<5%) include *Rhodiola rhodantha*, *Juncus drummondii*, and *Deschampsia caespitosa*. Surrounding uplands are dominated by xeric to mesic alpine meadow vegetation.

Soils: Soils consist of approximately 6 cm of fibric peat over 40cm+ of hemic peat. There is extensive mineral deposition throughout all peat layers. Soils along stream banks are undeveloped and rocky.

CNHP Vegetation Classification Type: *Salix planifolia*/*Carex scopulorum* (G4S4)

pH = 6.26(shallow surface water in fen), 5.70(adjacent stream)

conductivity = .06mS at 11.5 degrees Celsius (surface water), .65mS at 9.0 degrees Celsius (stream)

Summary Determination

Functional Rating:

Proper Functioning Condition _____

(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ X _____

Non-Functional _____

Unknown _____

***Trend for Functional At Risk:**

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

Dewatering Mining activities Watershed condition
 Dredging activities Road encroachment Land ownership
Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is functioning below its potential natural community due to impacts from adjacent mining activities including draining adit, adjacent road, and reclamation efforts. These activities have likely diminished water quality and altered the hydrologic regime. Wetland is functioning despite these impacts.



**Palmetto Gulch Mine Wash
Standard Checklist
Functional – At Risk**

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: None

UTM Coordinates NAD 83: E273521 N4205784

Elevation: 12,600 ft

ID Team Observers: JJones, JDavin

Date: September 10, 2006

Yes	No	N/A	HYDROLOGY
	X		1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
	X		4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
	X		10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs along the upper reaches of Palmetto Gulch, a first order tributary of Henson Creek, near Engineer Pass. Wetland occurs just below the Hough Mine at the headwaters of Palmetto Gulch. Wetland is fed by snowmelt from upper slopes funneling down through a small wash. Wash contains multiple mining claims, but there is no extensive mining uphill of the site. Draw is currently dry with mesic vegetation still present along old channel. Site appears to be seasonally saturated from snowmelt. Anthropogenic disturbances in the area are evident throughout including mining, roads, and sheep grazing. There is evidence of sheep grazing from the summer current season throughout the area. These disturbances may impact hydrology, vegetation, and water quality. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas.

Plants: Vegetation along small draw is dominated by mesic herbaceous species and some upland species. Common species include *Carex nigricans*, *Carex scopulorum*, *Geum rossii*, *Sibbaldia procumbens*, *Podistera eastwoodiae*, *Phleum alpinum*, *Juncus drummondii*, and *Luzula spicata*. Adjacent uplands are dominated by *Geum rossii* dry, alpine meadows.

Soils: Soils consist of approximately 10cm of hemic organic material over unconsolidated rocks, with 5% gravel and sand component.

CNHP Vegetation Classification Type: *Carex nigricans* Herbaceous Vegetation (G4)
pH = no water **conductivity** = no water

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ **X** _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes X No _____

If yes, what are those factors?

 X Dewatering _____ Mining activities _____ Watershed condition

_____ Dredging activities _____ Road encroachment _____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) Drying may be due to drought conditions of recent years, it is not apparent why site is drying.

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Site is functioning below its potential natural community due to anthropogenic disturbances in the including past mining, sheep grazing, and recreational use. Drying in the area appears to be natural and not caused by disturbance. Natural disturbances in the area include avalanche activity and spring flooding.



**Schafer Gulch
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Handies Peak **BLM Code:** None
UTM Coordinates NAD 83: E275330 N4205232 **Elevation:** 12,000ft
ID Team Observers: JJones, JDavin, SNeid **Date:** August 20, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in “relatively frequent” events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland and surrounding uplands support alpine vegetation with no woody material source

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Wetland occurs as a snowmelt and spring-fed fen along the middle reaches of alpine basin. Wetland contains terraces and patterning and multiple areas of shallow, open water, rivulets, and hummocked patches. Wetland is situated at the headwaters of a western tributary of Schafer Gulch, a second order tributary of Henson Creek. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas. Disturbances in the drainage include past mining and old roads along upper slopes. There do not appear to be many recent anthropogenic disturbances within the drainage. OHV were heard along the upper saddle between drainage and Redcloud Gulch, apparently along old road grade. Sheep were observed grazing in the area. Site appears to be stable and healthy with some drying along the upper, western edge.

Plants: Vegetation is dominated by mesic graminoids with patches of short shrubs along edges and hummocked areas. Herbaceous component is dominated (25-75%) by *Eleocharis quinqueflora* along upper reaches and *Carex aquatilis* at lower reaches. Other common (10-20%) species include *Calamagrostis canadensis*, *Carex canescens*, *Pedicularis groenlandica*, and *Salix planifolia*. Other species present (<5%) at the site include *Eriophorum angustifolium*, *Juncus mertensianus*, *Carex nova*, *Deschampsia caespitosa*, and *Carex illota*. Brown mosses are also common along inundated areas.

Soils: Soils consist of fibric to hemic peat to 40cm+. Soils are saturated to inundated throughout the site.

CNHP Vegetation Classification Type: *Carex aquatilis* Herbaceous Vegetation (G5S4), *Eleocharis quinqueflora* Herbaceous Vegetation (G4S3S4)
pH = 4.75 conductivity = .89mS at 11.8 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition
____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with few current disturbances in the drainage. Disturbances in the area including sheep grazing and recreational uses do not appear to be affecting the wetland.



**Powderhorn Trail Fen
Standard Checklist
Proper Functioning Condition**

County: Hinsdale **Quadrangle:** Powderhorn Lakes **BLM Code:** none
UTM Coordinates NAD 83: E309083 N4224954 **Elevation:** 11,600ft
ID Team Observers: JJones, JDavin **Date:** September 4, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
X			5) Upland watershed is not contributing to riparian-wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
X			11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows
X			12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery)

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
X			14) Point bars are revegetating with riparian-wetland vegetation
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
X			17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks

General Description: Site occurs as a small, gently sloping fen wetland surrounded by subalpine forest. Wetland is visible from trail which crosses just above spring origin. Trail does not appear to impact hydrology or species composition in the wetland. Site is saturated to inundated throughout with many small rivulets. General geology of the area consists of landslide deposits of the Quaternary Age along the main drainage surrounded by basalt flows and associated tuff, breccias, and conglomerate of the Hinsdale Formation of the Tertiary Age.

Plants: Majority of site is dominated by *Carex aquatilis* (65-75% cover). *Caltha leptosepala* and *Salix planifolia* are codominant (15-25% cover) throughout. Other forb species present (<5% cover) include *Rhodiola rhodantha*, *Senecio triangularis*, *Cardamine cordifolia*, and *Saxifraga odontoloma*. Other graminoid species present (<5% cover) include *Luzula parviflora* and *Deschampsia caespitosa*. Wetland supports extensive moss cover (35-45%). Lower reaches of site have moderate cover of *Picea engelmannii* encroaching on wetland. Surrounding uplands are dominated by *Picea engelmannii* with *Vaccinium myrtillus* understory.

Soils: Soils consist of fibric to hemic peats greater than 40cm in depth. Soils are inundated throughout most of the wetland with standing water at the surface.

CNHP Vegetation Classification Type: *Carex aquatilis* Herbaceous Vegetation (G5S4)
pH = 5.76 conductivity = .05mS at 12.7 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____ X _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____

If yes, what are those factors?

____ Dewatering ____ Mining activities ____ Watershed condition

____ Dredging activities ____ Road encroachment ____ Land ownership

Other (specify e.g., grazing, irrigation, agriculture activities) _____

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning at its potential natural community with few disturbances contributing to unacceptable conditions. Powderhorn Lakes trail crosses near the origin of the seep, but does not appear to be affecting hydrology at the site.



Upper Palmetto Gulch Standard Checklist Functional - At Risk

County: Hinsdale

Quadrangle: Handies Peak

BLM Code: None

UTM Coordinates NAD 83: E273380 N4205811

Elevation: 12,580ft

ID Team Observers: JJones, JDavin

Date: September 10, 2006

Yes	No	N/A	HYDROLOGY
X			1) Floodplain above bankfull is inundated in "relatively frequent" events
		X	2) Where beaver dams are present they are active and stable
X			3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
X			4) Riparian-wetland area is widening or has achieved potential extent
	X		5) Upland watershed is not contributing to riparian-wetland degradation – Extensive mining in surrounding watershed may be contributing to wetland degradation

Yes	No	N/A	VEGETATION
X			6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
X			7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)
X			8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
X			9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events
X			10) Riparian-wetland plants exhibit high vigor
	X		11) Adequate vegetative cover is present to protect banks and dissipate energy during high flows – Lower reaches along stream course with extensive bare soil and wasting along banks
		X	12) Plant communities are an adequate source of coarse and/or large woody material for maintenance/recovery) – Wetland occurs in an alpine environment

Yes	No	N/A	EROSION/DEPOSITION
X			13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy
	X		14) Point bars are revegetating with riparian-wetland vegetation – Many bare areas below seep origin along channel
X			15) Lateral stream movement is associated with natural sinuosity
X			16) System is vertically stable
	X		17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition) – Some areas exhibit extensive erosion

Remarks

General Description: Site occurs along the upper reaches of Palmetto Gulch, a first order tributary of Henson Creek, near Engineer Pass. Wetland occurs just below the Hough Mine at the headwaters of Palmetto Gulch. Wetland is fed by snowmelt and multiple adjacent seeps. There are open areas of spring-fed wet meadow at upper reaches which narrow into defined channel at lower reaches. Anthropogenic disturbances in the area are evident throughout including mining, roads, and sheep grazing. These disturbances may impact hydrology, vegetation, and water quality. Channeled areas exhibit wasting and large unvegetated patches along multiple banks. Erosion may be attributed to sheep grazing in the area or could be from intense spring surface flows. General geology of the area consists of igneous rocks of the Tertiary Age, specifically, intra-ash flow andesitic lavas.

Plants: Vegetation is dominated by mesic herbaceous species. *Primula parryi* (25-75% cover) forms dense patches along upper reaches of open wet meadow. Other common species in this area include *Caltha leptosepala* (10-15%), *Carex aquatilis* (5-10%), and *Carex scopulorum* (5-10%). *Saxifraga odontoloma*, *Deschampsia caespitosa*, and *Cardamine cordifolia* are also present (<5%). Lower reaches along small drainage support similar species all in moderate cover including *Podistera eastwoodiae*, *Carex nigricans*, *Juncus drummondii*, *Carex vernacular*, and *Carex nova*. This section supports high cover (25-35%) of brown mosses along inundated areas.

Soils: Soils are shallow and not well-developed. Soils consist of an organic horizon of approximately 4cm of fibric material over sandy clay loams (10YR 4/2) to approximately 22cm in depth. Loam contains 10% Fe mottling and 5% gravel. Soils are mesic to inundated below the main seep.

CNHP Vegetation Classification Type: *Primula parryi* Herbaceous Vegetation (GNR/SU)
pH = 5.19 conductivity = .81mS at 8.9 degrees Celsius

Summary Determination

Functional Rating:

Proper Functioning Condition _____
(adequate veg., landform, or debris is present to dissipate energies, filter sediment, improve groundwater recharge, develop root masses to stabilize shoreline, restrict percolation, provide wildlife and fish habitat, support biodiversity)

Functional-At Risk * _____ **X** _____

Non-Functional _____

Unknown _____

*Trend for Functional At Risk:

Upward _____

Downward _____

Not Apparent _____ **X** _____

Are factors contributing to unacceptable conditions outside BLM's control or management?

Yes _____ No _____ **X** _____

If yes, what are those factors?

Dewatering Mining activities Watershed condition
 Dredging activities Road encroachment Land ownership
Other (specify e.g., grazing, irrigation, agriculture activities) Erosion may be due to past use or current grazing regime. It is not apparent exactly what disturbances are causing unacceptable conditions and area may need to be monitored to fully understand the cause for bare areas and erosion.

Potential (ecological status that can be attained without above limiting factors or without limiting factors what is the ultimate goal for assessment area) Wetland is functioning below its potential natural community due to disturbances in the area. Evidence of disturbance can be seen along banks of channel in the form of soil wasting and bare areas. Vegetation appears to be vigorous and hydrology intact despite disturbed soils.



APPENDIX B-2. Proper Functioning Condition forms from 2007 surveys, sorted alphabetically by site code or site name if new to WSI.

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Lentic Checklist			
Name of Riparian-Wetland Area		Gnome Mine Wetland-N	
Date:	10/4/2007	Segment/Reach ID	2199-N
ID Team Observers:		Malone	

Potential:

Site is a wetland at the base of an abandoned mine dump. Site is not at potential. Mining activities have degraded the upland watershed and altered surface groundwater flow pattern. Excess sediment from the mine dump is carried into the wetland with precipitation and snowmelt.

Yes No N/A	HYDROLOGICAL
Yes	1) Riparian-wetland area is saturated at or near the surface or inundated in “relatively frequent” events
Yes	2) Fluctuation of water levels is not excessive
Yes	3) Riparian-wetland area is enlarging or has achieved potential extent
No	4) Upland watershed is not contributing to riparian-wetland degradation
Yes	5) Water quality is sufficient to support riparian-wetland plants
No	6) Natural surface or subsurface flow patterns are not altered by disturbance (i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
N/A	7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes No N/A	VEGETATION
Yes	8) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	9) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery) [species present]
Yes	10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt) [community types present]
Yes	12) Riparian-wetland plants exhibit high vigor
Yes	13) Adequate riparian-wetland vegetative cover present to protect shoreline/soil surface and dissipate energy during high wind and wave events or overland flows [enough]

Yes	14) Frost or abnormal hydrologic heaving is not present
No	15) Favorable microsite condition (i.e., woody material, water temperature, etc.) is maintained by adjacent site characteristics

Yes No N/A	EROSION DEPOSITION
Yes	16) Accumulation of chemicals affecting plant productivity/composition is not apparent
Yes	17) Saturation of soils (i.e., ponding, flooding frequency, and duration) is sufficient to compose and maintain hydric soils
Yes	18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
No	19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
Yes	20) Islands and shoreline characteristics (i.e., rocks, coarse and/or large woody material) are adequate to dissipate wind and wave event energies

Remarks:

The wetland is located on the north side and at the base of the Gnome Abandoned Mine. The mine is located at the base of steep east-facing slopes adjacent to Lake Fork Creek. Groundwater discharge from the steep east-facing slopes behind the mine and runoff from the dump supplies the water that sustains hydric soils and wetland vegetation. Hydric soils support a mosaic of plant communities that are characterized by a *Caltha leptosepala* plant community and sedge and rush communities.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown <p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input checked="" type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the Yes/No: No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Reach/Segment

2199-N

Name of Riparian-Wetland

Gnome Mine Wetland-N

Additional Observations:

Plants Observed at this Site

Birds Observed at this Site (if noted)

Scientific name

Calamagrostis canadensis

Caltha leptosepala

Carex microptera

Epilobium hornemannii

Eriophorum altaicum

Juncus longistylis

Juncus mertensianus

Salix planifolia

Common name

Canada Reedgrass

Marsh Marigold

Small-winged Sedge

x

Altai cottongrass

Longstyle Rush

Subalpine rush

Planeleaf Willow



Lentic Checklist			
Name of Riparian-Wetland Area		Gnome Mine Wetland-S	
Date:	10/4/2007	Segment/Reach ID	2199-S
ID Team Observers:		Malone	

Potential:

Two wetlands have developed at the base of an abandoned mine site, one on the south and the other on the north side of the mine dump. This assessment regards the wetland to the south of the dump. The wetland is not at potential.

Mining activities have altered upland habitat and changed surface groundwater flow patterns. Wetland vegetation appears to be drying

Yes No N/A	HYDROLOGICAL
Yes	1) Riparian-wetland area is saturated at or near the surface or inundated in “relatively frequent” events
Yes	2) Fluctuation of water levels is not excessive
No	3) Riparian-wetland area is enlarging or has achieved potential extent
No	4) Upland watershed is not contributing to riparian-wetland degradation
Yes	5) Water quality is sufficient to support riparian-wetland plants
No	6) Natural surface or subsurface flow patterns are not altered by disturbance (i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
N/A	7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes No N/A	VEGETATION
Yes	8) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	9) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery) [species present]
Yes	10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt) [community types present]
No	12) Riparian-wetland plants exhibit high vigor
Yes	13) Adequate riparian-wetland vegetative cover present to protect shoreline/soil surface and dissipate energy during high wind and wave events or overland flows [enough]

Yes	14) Frost or abnormal hydrologic heaving is not present
Yes	15) Favorable microsite condition (i.e., woody material, water temperature, etc.) is maintained by adjacent site characteristics

Yes No N/A	EROSION DEPOSITION
Yes	16) Accumulation of chemicals affecting plant productivity/composition is not apparent
Yes	17) Saturation of soils (i.e., ponding, flooding frequency, and duration) is sufficient to compose and maintain hydric soils
Yes	18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
Yes	19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
N/A	20) Islands and shoreline characteristics (i.e., rocks, coarse and/or large woody material) are adequate to dissipate wind and wave event energies

Remarks:

This wetland is located below and to the south of the abandoned Gnome Mine. The mine dump is located at the base of a steep east-facing slope adjacent to Lake Fork Creek. Upland mine activities have altered precipitation infiltration, runoff and erosion. Surface flow patterns are altered by trails through the site and by the adjacent abandoned mine dump.

Surface groundwater discharge and precipitation runoff from the mine dump supply water to this wetland. Vegetation in the south wetland is characterized by a mosaic of *Caltha leptosepala* and *Cardamine cordifolia*- *Mertensia ciliata*-*Senecio triangularis* plant communities. Vegetative cover is high and species composition indicates maintenance of sufficient soil moisture to maintain wetland vegetation. However, wetland vegetation on the periphery appears to be drying and upland vegetation appears to be increasing.

SUMMARY DETERMINATION

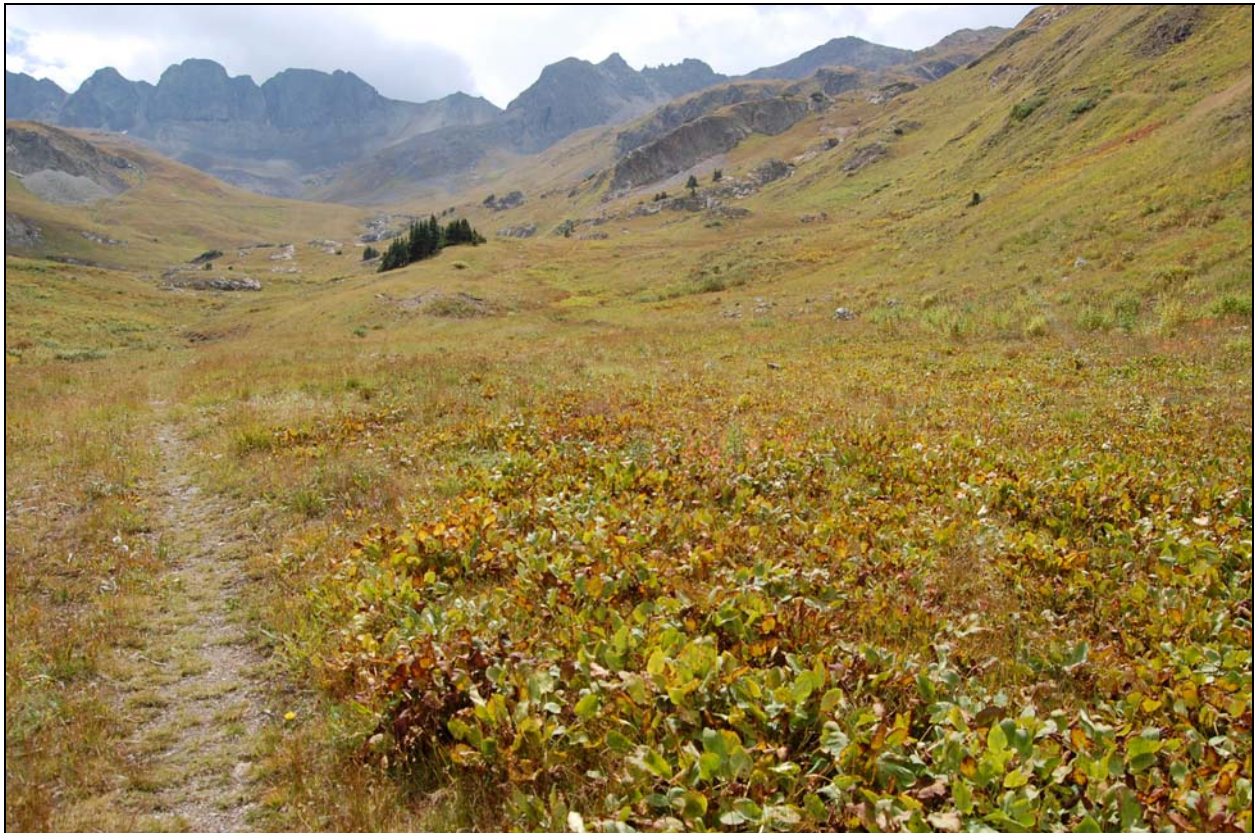
<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown <p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input checked="" type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the Yes/No: No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

Plants Observed at this Site

Birds Observed at this Site (if noted)

<u>Scientific name</u>	<u>Common name</u>
<i>Agrostis gigantea</i> *	Redtop
<i>Poa pratense</i> *	Kentucky Bluegrass
<i>Taraxacum officinale</i>	Dandelion
<i>Achillea millefolium</i> var. <i>lanulosa</i>	Western Yarrow
<i>Calamagrostis canadensis</i>	Canada Reedgrass
<i>Caltha leptosepala</i>	Marsh Marigold
<i>Cardamine cordifolia</i>	Bittercress
<i>Carex ebenea</i>	Ebony Sedge
<i>Carex microptera</i>	Small-winged Sedge
<i>Castilleja occidentalis</i>	Western Yellow Paintbrush
<i>Castilleja rhexifolia</i>	Rosy paintbrush
<i>Delphinium barbeyi</i>	Subalpine Larkspur
<i>Epilobium hornemannii</i>	x
<i>Geum macrophyllum</i>	Largeleaf Avens
<i>Hymenoxys hoopseii</i>	Orange Sneezeweed
<i>Juncus drummondii</i>	Drummond's Rush
<i>Mertensia ciliata</i>	Mountain Bluebells
<i>Potentilla diversifolia</i>	Blueleaf cinquefoil
<i>Primula parryi</i>	Parry's Primrose
<i>Senecio triangularis</i>	Triangularleaf Senecio
<i>Veratrum californicum</i>	False Hellebore



Lotic Checklist

Name of Riparian-Wetland Area:	Deadman Gulch		
Date:	8/10/2007	Segment/Reach ID:	Add1
ID Team Observers:	Malone		

Potential:

Site is a draining adit and stream that drains the Golden Wonder mine (F-276). Adit drainage and stream coalesce 8m below the adit on a dirt road. Although riparian vegetation has begun to establish adjacent to the stream the site remains below potential.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
No	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
No	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
No	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
No	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
No	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Mine adit drainage and the seep/stream from the Golden Wonder mine coalesce on a dirt mine-access road. Stream continues to flow SW down a steep ravine to the bottom of Deadman Gulch where it goes into a culvert, under the highway and eventually to Lake Fork stream.

Riparian habitat is characterized by a Populus tremuloides- Alnus incana forest.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

GPS location: 0299068 E/4208518 N

elevation: 9,360'

Site Dimensions: Channel 0.2-0.3m wide; riparian 0.5-1m/bank

CNHP plant association(s): Populus tremuloides-Alnus incana Forest

Tree 30 %: Populus tremuloides

Shrub 20 %: Alnus incana, Salix drummondiana, Rubus idaeus, Ribes inerme.

Herbaceous 20%: Epilobium hornemannii, Equisetum arvense, Heracleum spondylium.

Weed cover: 5-10%: Bromus inermis, Carduus acanthoides, Taraxacum officinal, Poa pratensis.

Soil Characteristics:

Munsell: 2.5Y, 7/6

soil moisture: saturated

organic content: very low

texture: coarse sand to fine gravel

odor: chemical

peat formation: none

Water Quality Characteristics:

pH: stream 3.63; adit 7.8

mS: stream 802; adit 991

Co: stream 13.2: 6.8

Plants Observed at this Site

<u>Scientific name</u>	<u>Common name</u>
<i>Agropyron cristatum</i>	Crested Wheatgrass
<i>Agrostis gigantea</i> *	Redtop
<i>Bromus inermis</i> *	Smooth Brome
<i>Carduus acanthoides</i> *	Plumeless Thistle
<i>Poa pratense</i> *	Kentucky Bluegrass
<i>Taraxacum officinale</i>	Dandelion
<i>Achillea millefolium</i> var. <i>lanulosa</i>	Western Yarrow
<i>Alnus incana</i> ssp. <i>tenuifolia</i>	Thin-leaf Alder
<i>Bromus ciliatus</i>	Fringed Brome
<i>Chamerion angustifolium</i>	Fireweed
<i>Epilobium hornemannii</i>	x
<i>Heracleum spondylium</i> var. <i>lanatum</i>	Cow Parsnip
<i>Sambucus racemosa</i> var. <i>microbotrys</i>	Red Elderberry
<i>Senecio eremophilus</i>	Cut-leaved Groundsel

Birds Observed at this Site (if noted)

<u>Scientific name</u>	<u>Common name</u>
<i>Junco hyemalis</i>	Dark-eyed Junco
<i>Spizella passerina</i>	Chipping Sparrow
<i>Poecile atricapillus</i>	Black-capped Chickadee
<i>Archilochus alexandri</i>	Black-chinned Hummingbird
<i>Selasphorus platycercus</i>	Broad-tailed
<i>Nucifraga columbiana</i>	Clark's Nutcracker
<i>Regulus satrapa</i>	Golden-crowned Kinglet
<i>Catharus guttatus</i>	Hermit Thrush
<i>Buteo jamaicensis</i>	Red-tailed Hawk
<i>Poecile gambeli</i>	Mountain Chickadee
<i>Cyanocitta stelleri</i>	Steller's Jay
<i>Sitta canadensis</i>	Red-breasted Nuthatch
<i>Colaptes auratus</i>	Northern Flicker
<i>Myadestes townsendi</i>	Townsend's Solitaire
<i>Tachycineta thalassina</i>	Violet-green Swallow



Lotic Checklist

Name of Riparian-Wetland Area:	Deadman Gulch		
Date:	8/26/2007	Segment/Reach ID:	Add2
ID Team Observers:	Malone		

Potential:

Site is a dump and an abandoned mine with a draining adit. Drainage results in standing water that creates soil conditions to sustain some hydric vegetation on a mesic to xeric upland habitat. Songbirds, including red-breasted and white-breasted nuthatches and mountain chickadees, were observed drinking adit drainage water.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
N/A	4) Riparian-wetland area is widening or has achieved potential extent
N/A	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
N/A	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
N/A	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
N/A	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
N/A	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

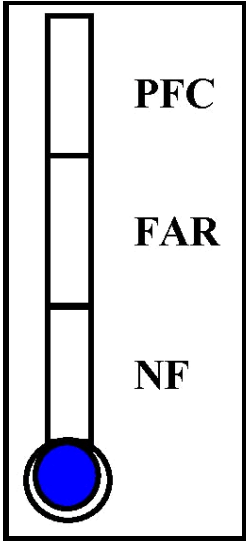
Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: An abandoned mine site with draining adit is located on a steep West-facing slope. Hillslope habitat is characterized by *Pseudotsuga menziesii* with an understory characterized by *Juniperus communis*, *Paxistima myrsinites* and *Ribes cereum* and with *Populus tremuloides* in ravines. Water from the adit drains onto a dirt access road and provides the potential for development of hydric vegetation.

Riparian habitat is absent although, due to water supplied by a draining adit, hydric vegetation is growing on the dirt road where adit-drainage water is standing.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input checked="" type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

GPS location: 0299262 E/4208423 N

elevation: 9,960'

Site Dimensions: dump 40m wide x 50m downhill

CNHP plant association(s): NA

Tree Dump <5% including *Pseudotsuga menziesii*, *Populus tremuloides*, and *Populus angustifolia*.

Shrub Dump <5% including saplings of *P. menziesii*, *P. tremuloides*, and *P. angustifolia* and *Salix* spp. including *S. monticola*.

Herbaceous Dump<5% including *Aster foliaceus*, *Senecio eremophilus* and *Fragaria virginiana*.

Weed cover: <5% including *Rumex crispus* and *Poa pratensis*.

Soil Characteristics: Dump
Characteristics:

Munsell: 5Y,8/8

soil moisture: moist to saturated with standing water

organic content: none

texture: waste rock and fines

any):

odor: sulfur

peat formation: none

Water Quality

pH: 6.84

mS: 657

Co: 15.3

Water Quality Notes (if



Lotic Checklist

Name of Riparian-Wetland Area:	Alpine Gulch		
Date:	8/13/2007	Segment/Reach ID:	Add3
ID Team Observers:	Malone		

Potential:

Site is a mine dump and is not at potential. Precipitation runoff from dump likely impacts the stream that flows through Alpine Gulch.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
N/A	4) Riparian-wetland area is widening or has achieved potential extent
N/A	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
N/A	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
N/A	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
N/A	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
N/A	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

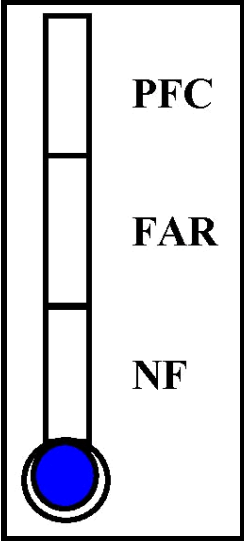
Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Site is a mine dump located adjacent to and above (west) of the Alpine Gulch recreational trail. Alpine Gulch stream is 20m to the east and downhill of the dump.

Riparian habitat is absent.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Reach/Segment Add3 Name of Riparian-Wetland

Alpine Gulch

Additional Observations:

GPS location: 0292540 E/4208925N

elevation:

Site Dimensions: Dump 25m N-S x 20m E-W

CNHP plant association(s): NA

Tree NA

Shrub NA

Herbaceous NA

Weed cover: NA

Soil Characteristics: Dump
Characteristics:

Munsell: 2.5YR,7/4

soil moisture: dry

organic content: none

texture: waste rock

any):

odor: chemical

peat formation: none

Water Quality

pH: NA

mS: NA

Co: NA

Water Quality Notes (if

Lentic Checklist			
Name of Riparian-Wetland Area		Henson Creek	
Date:	8/21/2007	Segment/Reach ID	Add4
ID Team Observers:		Malone	

Potential:

Site is at potential. Site is a sedge wetland that has developed from a seep that daylights from the base of a mine dump.

Yes No N/A	HYDROLOGICAL
Yes	1) Riparian-wetland area is saturated at or near the surface or inundated in “relatively frequent” events
Yes	2) Fluctuation of water levels is not excessive
Yes	3) Riparian-wetland area is enlarging or has achieved potential extent
No	4) Upland watershed is not contributing to riparian-wetland degradation
Yes	5) Water quality is sufficient to support riparian-wetland plants
No	6) Natural surface or subsurface flow patterns are not altered by disturbance (i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
N/A	7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes No N/A	VEGETATION
Yes	8) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	9) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery) [species present]
N/A	10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt) [community types present]
Yes	12) Riparian-wetland plants exhibit high vigor
Yes	13) Adequate riparian-wetland vegetative cover present to protect shoreline/soil surface and dissipate energy during high wind and wave events or overland flows [enough]

Yes	14) Frost or abnormal hydrologic heaving is not present
Yes	15) Favorable microsite condition (i.e., woody material, water temperature, etc.) is maintained by adjacent site characteristics

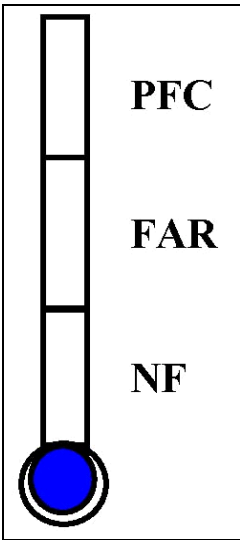
Yes No N/A	EROSION DEPOSITION
Yes	16) Accumulation of chemicals affecting plant productivity/composition is not apparent
Yes	17) Saturation of soils (i.e., ponding, flooding frequency, and duration) is sufficient to compose and maintain hydric soils
Yes	18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
Yes	19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
Yes	20) Islands and shoreline characteristics (i.e., rocks, coarse and/or large woody material) are adequate to dissipate wind and wave event energies

Remarks:

General description: Site is an abandoned mine and dump and wetland located on a north-facing slope about 40m uphill and west of MD60. A seep/spring daylights at the base of the dump, becomes a small stream that flows downhill about 32m to where a small wetland develops where the hillslope gradient decreases.

Wetland is characterized by Carex utriculata Herbaceous Vegetation with a narrow border of shrubs dominated by Alnus incana.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown <p>Trend for Functional - At Risk:</p> <input checked="" type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the Yes/No: No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

GPS location: wetland 0293429 E/4210437 N; Dump 0293413 E/4210417 N

elevation: wetland:

Site Dimensions: 10m N-s x 15m E-w

CNHP plant association(s): Carex utriculata Herb Veg

Tree 0%

Shrub 20%: Alnus incana(>80%), Lonicera involucrata and Cornus stolonifera.

Herbaceous 90%: Carex utriculata (90%), Equisetum arvense, Cardamine cordifolia.

Weed cover: <5%: Taraxacum officinale.

Soil Characteristics:

Munsell: Soil: Munsell = 7.5YR, 2.5/1;

soil moisture: saturated at surface with standing water

organic content: high organic content with high root mass

texture: fine silt

odor: anaerobic

peat formation: none

Water Quality Characteristics:

pH: 6.86

mS: 161

Co: 14.8

Water Quality Notes (if any):

Plants Observed at this Site

Birds Observed at this Site (if noted)

Scientific name

Taraxacum officinale

Actaea rubra

Alnus incana ssp. tenuifolia

Bryophyta

Cardamine cordifolia

Cornus stolonifera

Equisetum arvense

Galium aparine

Geum macrophyllum

Lonicera involucrata

Ribes inerme

Ribes montigenum

Rubus ideaus

Common name

Dandelion

Baneberry

Thin-leaf Alder

Mosses

Bittercress

Red-Osier Dogwood

Horsetail

Cleavers

Largeleaf Avens

Twinberry Honeysuckle

Mountain Gooseberry

Red-fruited Gooseberry

Red Raspberry



Lotic Checklist

Name of Riparian-Wetland Area:	Owl Gulch		
Date:	8/23/2007	Segment/Reach ID:	Add5
ID Team Observers:	Malone		

Potential:

Site is likely a perennial spring and is at potential.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

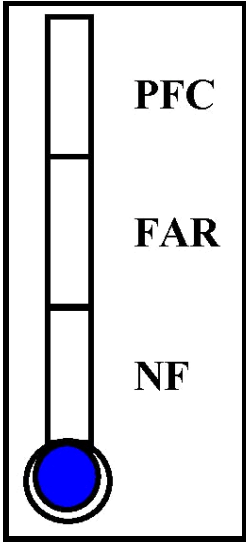
Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Spring daylighted from a rocky outcrop on a moderate gradient east-facing slope near the top of the ridge above Owl Gulch. The small stream flows east for 25m before disappearing into the forest. Surrounding upland habitat is in good condition and dominated by a conifer forest dominated by *Pseudotsuga menziesii*, *Abies lasiocarpa* and *Picea engelmannii*. Vegetation at the spring is dominated by shrubs, especially *Ribes* spp., with an herbaceous layer dominated by mosses. Wildlife use at the spring is moderate as evidenced by tracks and scat.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

GPS location: 0288991 E/4210687 N

elevation: 9,584'

Site Dimensions: 2m wide x 25m downhill

CNHP plant association(s): Abies lasiocarpa-Picea engelmannii/Ribes spp. Forest

Tree 30%: Picea engelmannii, Abies lasiocarpa, Pseudotsuga menziesii

Shrub 30%: Ribes coloradense, Ribes inerme, Acer glabrum

Herbaceous 80%: moss (90%), Thalictrum fendleri,

Weed cover: none observed

Soil Characteristics:
Characteristics:

Munsell: 5YR, 3/2

soil moisture: saturated

organic content: high

texture: fine silt

any):

odor: normal

peat formation: none

Plants Observed at this Site

Scientific name

- Abies lasiocarpa*
- Acer glabrum*
- Geranium richardsonii*
- Picea engelmannii*
- Populus tremuloides*
- Pseudotsuga menziesii*
- Ribes coloradense*
- Ribes inerme*
- Saxifraga odontoloma*
- Thalictrum fendleri*

Common name

- Subalpine Fir
- Rocky Mountain Maple
- Richardson's geranium
- Engelmann Spruce
- Aspen
- Douglas-fir
- Colorado currant
- Mountain Gooseberry
- Brook Saxifrage
- Fendler Meadowrue

Water Quality

pH: 7.20

mS: 265

Co: 10.0

Water Quality Notes (if



Lotic Checklist

Name of Riparian-Wetland Area:	Cinnamon Pass		
Date:	9/3/2007	Segment/Reach ID:	Add6
ID Team Observers:	Malone		

Potential:

Site is a seep that daylights at the base of a talus slope and snowfield and is at potential.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

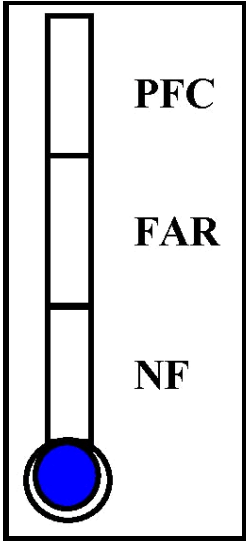
Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Seep daylight at the base of a steep north-facing talus slope in an alpine meadow. Throughout this basin the area of transition from steep gradient talus slopes to lesser gradient turf meadows are areas of high soil moisture and surface groundwater discharge that create seeps and springs.

Seep flows result in high soil moisture that sustains a slope wetland with vegetation characterized by a *Caltha leptosepala* plant community. The seep becomes a small stream that flows northward for about 250m to a larger wetland also characterized by *Caltha leptosepala* Herbaceous Vegetation and then onto join the main channel of the stream that drains this sub-watershed.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

GPS location: 0277182 E/4201397 N

elevation: 12,445'

Site Dimensions: wetland 18m wide (N-S) x 15m downhill (E-W)

CNHP plant association(s): Caltha leptosepala Herb Veg

Tree 0%

Shrub 0%

Herbaceous 90%: Caltha leptosepala, Cardamine cordifolia, Saxifraga oregana

Weed cover: none observed

Soil Characteristics:
Characteristics:

Munsell: 10YR,4/3

soil moisture: saturated

organic content: high org and high root masses

texture: fine silt

any):

odor: normal

peat formation: none

Plants Observed at this Site

Scientific name

Bryophyta
Caltha leptosepala
Cardamine cordifolia
Deschampsia caespitosa

Common name

Mosses
Marsh Marigold
Bittercress
Tufted Hairgrass

Juncus drummondii
Primula parryi
Saxifraga oregana
Sedum rodanthum

Drummond's Rush
Parry's Primrose
Bog Saxifrage
Queen's Crown



Lotic Checklist

Name of Riparian-Wetland Area:	Cinnamon Pass		
Date:	9/3/2007	Segment/Reach ID:	Add7
ID Team Observers:	Malone		

Potential:

Site is a seep that creates a slope wetland and is at potential.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
	14) Point bars are revegetating with riparian-wetland vegetation
	15) Lateral stream movement is associated with natural sinuosity
	16) System is vertically stable (not downcutting)
	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

A seep daylight at the base of a steep northeast-facing talus slope in an alpine meadow. Throughout this basin the area of transition from steep gradient talus slopes to lesser gradient turf meadows are areas of high soil moisture and surface groundwater discharge that create seeps and springs.

Seep flows result in high soil moisture that sustains a slope wetland with vegetation characterized by a *Caltha leptosepala* plant community. Habitat is in good condition and supports abundant wildlife including mule deer, elk and songbirds including American pipits and horned larks.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

GPS location: 0277500 E/4201127 N

elevation: 12,312'

Site Dimensions: 2-3 m wide (E-W) x 50m downhill (N-S)

CNHP plant association(s): Caltha leptosepala Herb Veg

Tree 0%

Shrub 0%

Herbaceous 90%: Caltha leptosepala, Cardamine cordifolia, Primula parryi

Weed cover: none observed

**Soil Characteristics:
Characteristics:**

Munsell: 10YR, 4/3

soil moisture: saturated

organic content: high org and high root masses

texture: fine silt

odor: normal

peat formation: none

Water Quality

pH: 7.17

mS: 292

Co: 8.9

Water Quality Notes (if any):

Plants Observed at this Site

Scientific name

Bryophyta

Caltha leptosepala

Cardamine cordifolia

Deschampsia caespitosa

Common name

Mosses

Marsh Marigold

Bittercress

Tufted Hairgrass

Juncus drummondii

Primula parryi

Saxifraga oregana

Sedum rodanthum

Drummond's Rush

Parry's Primrose

Bog Saxifrage

Queen's Crown



Lotic Checklist

Name of Riparian-Wetland Area:	Boulder Gulch		
Date:	9/5/2007	Segment/Reach ID:	Add8
ID Team Observers:	Malone		

Potential:

Site is a seep in an alpine meadow and is at potential.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

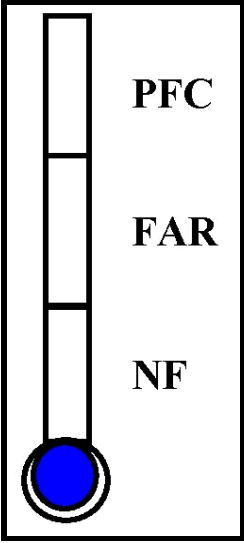
Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Seep daylight on a southeast-facing slope in an alpine meadow ecosystem. Seep is 50m northwest of seep D462. Vegetation is characterized by an unclassified community of plants that tolerate long-term soil saturation dominated by *Caltha leptosepala*, *Carex chalciolepis*, *Saxifraga oregana* and *Mimulus tilingii*.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

Plants Observed at this Site

Scientific name*Bryophyta**Caltha leptosepala**Carex chalciolepis**Deschampsia caespitosa**Epilobium alpinum**Juncus drummondii**Mimulus tilingii**Salix planifolia**Saxifraga odontoloma**Saxifraga oregana**Senecio triangularis***Common name**

Mosses

Marsh Marigold

Fishscale sedge

Tufted Hairgrass

Pimpernel willowherb

Drummond's Rush

Subalpine

Planeleaf Willow

Brook Saxifrage

Bog Saxifrage

Triangularleaf Senecio



Lotic Checklist

Name of Riparian-Wetland Area:	Cinnamon Pass		
Date:	9/7/2007	Segment/Reach ID:	Add9
ID Team Observers:	Malone		

Potential:

Site is not at potential. A roadcut interrupts surface groundwater flow and results in a seep that discharges onto the roadcut. The roadcut alters groundwater flow and vegetation patterns and eliminates native habitat.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
No	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
No	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
No	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
No	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Surface groundwater daylights due to a roadcut forming a seep that flows down the side of road for 65m where flows are diverted into a culvert, under the road and are discharged downslope into a meadow. Upland habitat above the seep is characterized by a mosaic of mesic alpine meadows indicating the presence of somewhat high surface groundwater flow. The roadcut interrupts surface groundwater resulting in this seep. Sediment from the roadcut and road-based pollutants are carried into the seep flow with precipitation and snowmelt and then into the receiving meadow.

The seep supports hydrophylic vegetation along the roadside ditch. However, because the roadside plant community undergoes ongoing disturbance a natural community of plants has not developed and the plant association is unclassified.

Wildlife use is low as indicated by a dearth of tracks or scat.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> <u>No</u></p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Reach/Segment Add9 Name of Riparian-Wetland Cinnamon Pass

Additional Observations:

GPS location: 0277485 E/4201545 N

elevation: 11,934'

Site Dimensions: 2m wide x 65m downhill (E)

CNHP plant association(s): Unclassified association.

Tree 0%

Shrub 0%

Herbaceous 70%: *Deschampsia caespitosa*, *Mimulus guttatus*, *Epilobium hornemannii*

Weed cover: none observed

Soil Characteristics:
Characteristics:

Munsell:

soil moisture:

organic content:

texture:

odor:

peat formation:

Water Quality

pH: 8.12

mS: 247

Co: 13.9

Water Quality Notes (if any):

Lentic Checklist			
Name of Riparian-Wetland Area		Waterdog Lake	
Date:	8/8/2007	Segment/Reach ID	add10
ID Team Observers:		Malone	

Potential:

Site is not at potential. Recreational trampling impacts 10-15% of riparian vegetation. A recreational trail and road alter surface flow to the lake and surface groundwater flow from the lake. Heavy browse may impact plant vigor.

Yes No N/A	HYDROLOGICAL
Yes	1) Riparian-wetland area is saturated at or near the surface or inundated in “relatively frequent” events
Yes	2) Fluctuation of water levels is not excessive
Yes	3) Riparian-wetland area is enlarging or has achieved potential extent
Yes	4) Upland watershed is not contributing to riparian-wetland degradation
Yes	5) Water quality is sufficient to support riparian-wetland plants
No	6) Natural surface or subsurface flow patterns are not altered by disturbance (i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
Yes	7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes No N/A	VEGETATION
Yes	8) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	9) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery) [species present]
Yes	10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt) [community types present]
No	12) Riparian-wetland plants exhibit high vigor
Yes	13) Adequate riparian-wetland vegetative cover present to protect shoreline/soil surface and dissipate energy during high wind and wave events or overland flows [enough]

Yes	14) Frost or abnormal hydrologic heaving is not present
Yes	15) Favorable microsite condition (i.e., woody material, water temperature, etc.) is maintained by adjacent site characteristics

Yes No N/A	EROSION DEPOSITION
Yes	16) Accumulation of chemicals affecting plant productivity/composition is not apparent
Yes	17) Saturation of soils (i.e., ponding, flooding frequency, and duration) is sufficient to compose and maintain hydric soils
Yes	18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
Yes	19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
Yes	20) Islands and shoreline characteristics (i.e., rocks, coarse and/or large woody material) are adequate to dissipate wind and wave event energies

Remarks:

General Description: A subalpine eutrophic lake with a 2-8m wide sedge-rush wetland on the west, north and south banks and a steep talus slope on the east bank with a <1m wide riparian zone. Uplands are dominated by a mosaic of aspen-spruce-subalpine fir forest and open herbaceous meadows.

Riparian habitat is characterized on the west and north banks by a mosaic of *Carex utriculata* and *Eleocharis palustris* Herbaceous Vegetation, and on the south and east bank by an unclassified mixture of forbs and graminoids. A narrow band of shrubs dominated by willows borders the outer edge of the herbaceous vegetation and trees including *Populus tremuloides* and *Picea engelmannii* overhang the shrubs on the north and west bank.

The lake discharges water downslope to the south through a culvert and then onto a slope, down and across the road and into a willow carr. Slope vegetation here is characterized by *Cardamine cordifolia*-*Mertensia ciliata*-*Senecio triangularis* Herbaceous Vegetation.

SUMMARY DETERMINATION

Proper Functioning Condition

Functional - At Risk

Nonfunctional

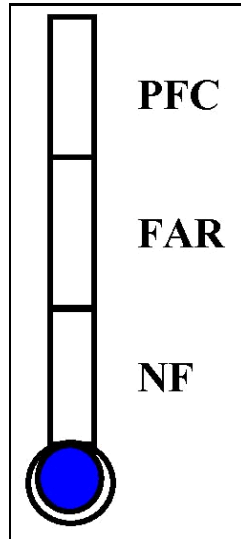
Unknown

Trend for Functional - At Risk:

Upward

Downward

Not Apparent



Are factors contributing to unacceptable conditions outside the

Yes/No: No

If yes, what are those factors?

Flow Regulations

Mining Activities

Upstream Chan Conditions

Channelization

Road Encroachment

Oil Field Water Discharge

Augmented Flows

Other (specify)

Additional Observations:

GPS location: 0301275 E/4212687 N

elevation: 11,115'

CNHP plant association(s): Carex utriculata Herb Veg + Eleocharus palustris Herb Veg

Tree 10% :Populus tremuloides, Picea engelmannii

Shrub 10%: Alnus incana, Salix monticola, S.planifolia and S. geyeriana

Herbaceous 80% on W bank, 20% on E bank, 50% on N & S: Carex utriculata, C. scopulorum, Eleocharis palustris, Juncus arcticus

Weed cover: 5-10%: Carduus acanthoides, Trifolium repens

Soil Characteristics:

Munsell: 5YR, 3/2; saturated at surface; high organic content and root masses; anaerobic;

soil moisture: Saturated with standing water

organic content: high org & high root masses

texture: fine silt

odor: anaerobic

peat formation: none

Water Quality Characteristics:

pH: 9.38

mS: 40

Co: 20.6

Water Quality Notes (if any):

Plants Observed at this Site

Scientific name

Common name

<i>Agrostis gigantea</i> *	Redtop
<i>Carduus acanthoides</i> *	Plumeless Thistle
<i>Trifolium repens</i>	White Dutch Clover
<i>Achillea millefolium</i>	Western Yarrow
<i>Aconitum columbianum</i>	Monkshood
<i>Alnus incana ssp. tenuifolia</i>	Thin-leaf Alder
<i>Cardamine cordifolia</i>	Bittercress
<i>Carex ebenea</i>	Ebony Sedge
<i>Carex microptera</i>	Small-winged Sedge
<i>Carex scopulorum</i>	Mountain Sedge
<i>Carex utriculata</i>	Beaked Sedge
<i>Chamerion angustifolium</i>	Fireweed
<i>Cirsium coloradense</i>	Elk thistle
<i>Conoselinium scopulorum</i>	Hemlock Parsley
<i>Deschampsia caespitosa</i>	Tufted Hairgrass
<i>Eleocharis palustris</i>	Common Spikesedge
<i>Epilobium hornemannii</i>	x
<i>Geranium richardsonii</i>	Richardson's geranium
<i>Geum macrophyllum</i>	Largeleaf Avens
<i>Juncus arcticus (balticus)</i>	Baltic Rush
<i>Lonicera involucrata</i>	Twinberry Honeysuckle
<i>Mimulus guttatus</i>	Monkeyflower
<i>Oxyria digyna</i>	Alpine sorrel
<i>Oxypolis fendleri</i>	Cowbane
<i>Phleum commutatum</i>	Alpine Timothy
<i>Picea engelmannii</i>	Engelmann Spruce
<i>Populus tremuloides</i>	Aspen
<i>Potamogeton spp.</i>	Pondweed
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil
<i>Ribes coloradense</i>	Colorado currant
<i>Ribes montigenum</i>	Red-fruited Gooseberry
<i>Salix geyeriana</i>	Geyer Willow
<i>Salix monticola</i>	Mountain Willow
<i>Salix planifolia</i>	Planeleaf Willow
<i>Senecio atratus</i>	Blacktip Senecio
<i>Senecio triangularis</i>	Triangularleaf Senecio
<i>Veronica wormskjoldii</i>	Alpine Speedwell



Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek/Chicago Tunnel		
Date:	9/1/2007	Segment/Reach ID:	AM-2157
ID Team Observers:	Malone		

Potential:

Site is a beaver pond. Site is not at potential due to recreational vegetation trampling with associated wildlife disturbance which degrades ecosystem sustainability.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
Yes	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
Yes	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Site is a large beaver pond with numerous smaller ponds above and below a large central pond where the lodge is located. The beaver pond complex is located in the bottom of an east-west trending valley. Henson Creek drains the valley and flows on the northern edge of the complex is not the main water supply for the ponds and is not dammed. The stream that drains Schaefer Gulch, a north-south trending valley, flows on the south side of the valley and is the main source of water for the ponds. Several abandoned mines, mine dumps and at least one draining tunnel (Chicago tunnel) are located in Schaefer Gulch.

Beaver activity has created a wide open water-willow carr-wet meadow habitat mosaic. Dams are stable and well maintained. Recent beaver activity is evident and one adult and two young were observed in the main pond. Wildlife is abundant; brook trout and fry were numerous, mule deer tracks and scat were abundant and muskrat were commonly observed. Notably, no waterfowl were observed.

Riparian habitat is characterized by a habitat mosaic; spruce dominate on the south bank, and on the north, east and west bank a mosaic of willow carrs, herbaceous vegetation and open water characterize the beaver pond-dam complex. Herbaceous vegetation is characterized by patches of what appears to be almost pure stands of *Carex utriculata*, *C. aquatilis* or *Calamagrostis canadensis* although within each patch a variety of other graminoids and forbs are present as well. Similarly willow shrublands are dominated by patches of what appears to be almost pure stands of the two different shrubland types, *S. monticola/C. utriculata* and *S. monticola/C. aquatilis*, although a variety of other willow, forb and graminoid species are also present but with lower abundance.

Recreational trampling of wetland and bank vegetation and associated wildlife disturbance degrades potential and threatens the sustainability of this site. Some dams are failing due to human trampling impacts and where trampling has destroyed bank vegetation excessive erosion is occurring.

SUMMARY DETERMINATION

Proper Functioning Condition

Functional - At Risk

Nonfunctional

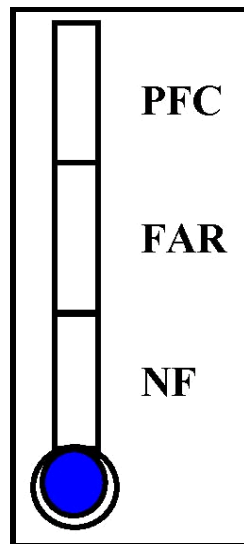
Unknown

Trend for Functional - At Risk:

Upward

Downward

Not Apparent



Are factors contributing to unacceptable conditions outside the control of the manager?

Yes/No: No

If yes, what are those factors?

Flow Regulations

Mining Activities

Upstream Chan Conditions

Channelization

Road Encroachment

Oil Field Water Discharge

Augmented Flows

Other (specify)

Additional Observations:

GPS location: NE corner 0276874 E/4205989 N; SW corner 0276841 E/4205930 N

elevation:

Site Dimensions: 75m wide (N to S) x 100m long (E to W)

CNHP plant association(s): South shore *Abies lasiocarpa*-*Picea engelmannii*/*Mertensia ciliata* Forest (*P. engelmannii* only); N,E &W *Salix monticola*/*Carex aquatilis* Shrubland + *S. monticola* *C. utriculata* Shrubland + *Carex aquatilis* Herb Veg + *C. utriculata* Herb Veg + *Calamagrostis can*

Tree 15% (south shore only: Engelmann spruce

Shrub 30%: *S. monticola*, *S. planifolia*, *S. Drummondii*

Herbaceous 80%: S shore *Cardamine cordifolia*, *Mertensia ciliata*, *Senecio triangularis*; N,W, E shore *C. aquatilis*, *C. utriculata*, *Calamagrostis canadensis*, *C. microptera*

Weed cover: 5-10%: *Agrostis gigantea*, *Carduus acanthoides*

Soil Characteristics:

Munsell: 10YR, 3/3

soil moisture: saturated

organic content: high org and high root masses

texture: fine silt

odor: organic

peat formation: no peat - too young for peat formation

Water Quality Characteristics:

pH: pond 6.86; stream 8.05

mS: pond 226; stream 166

Co: pond 14.4; stream 12.9

Water Quality Notes (if any):



Lotic Checklist

Name of Riparian-Wetland Area:	Cooper Creek		
Date:	9/8/2007	Segment/Reach ID:	AM-2222
ID Team Observers:	Malone		

Potential:

Site is not at potential. Site is an abandoned mine dump and draining adit. Mine dump waste rock is directly adjacent to Cooper Creek. Precipitation and snowmelt runoff from the dump very likely impact Cooper Creek with excess sediment. Additionally, adit drainage flows into a gully and stream that drains into Cooper Creek. Vegetation is insufficient to stabilize the channel. Thus the adit channel is eroding and carries excess sediment into the creek.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
No	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
No	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
No	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
No	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
No	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
No	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

A draining adit (collapsed shaft) and mine dump are located on a very steep southeast facing slope directly above and adjacent to Cooper Creek. Drainage from the shaft flows southeast 40m to Cooper Creek. Adit flows support riparian vegetation including willows, sedges, rushes and forbs. Vegetative cover is sparse. The plant community is characterized by disturbance and is unclassified.

Note: a white-colored precipitate covers the substrate in Cooper Creek.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:**GPS location:** 0283747 E/ 4204176 N**elevation:** 11,340'**Site Dimensions:** adit channel 2m wide x 40m downhill**CNHP plant association(s):** Unclassified disturbance-induced community**Tree** 0%**Shrub** 5%: *Salix monticola*, *S. planifolia*, *S. drummondiana***Herbaceous** 60%: moss (50%), *Juncus drummondii*, *Epilobium hornemannii***Weed cover:** none observed**Soil Characteristics:**
Characteristics:**Munsell:** adit 10YR, 8/6
4.86**soil moisture:** saturated**organic content:** none**texture:** waste rock**odor:** chemical**peat formation:** none

Plants Observed at this Site

Scientific name*Achillea millefolium* var.
*lanulosa**Bryophyta**Carex microptera**Epilobium hornemannii**Juncus drummondii**Mimulus guttatus**Platanthera huronensis**Salix drummondiana**Salix monticola**Salix planifolia**Senecio atratus***Common name**

Western Yarrow

Mosses

Small-winged Sedge

x

Drummond's Rush

Monkeyflower

Green Bog Orchid

Drummond's Willow

Mountain Willow

Planeleaf Willow

Blacktip Senecio

Water Quality**pH:** adit 7.51; stream**mS:** adit 122; stream 212**Co:** adit 8.8; stream 12.8**Water Quality Notes (if any):**
very high filamentous algae

Lotic Checklist

Name of Riparian-Wetland Area:	Boulder Gulch		
Date:	9/1/2007	Segment/Reach ID:	AM- 2229
ID Team Observers:	Malone		

Potential:

Site is a mine dump and adit located in Boulder Gulch. The base of the dump is in the riparian zone, directly adjacent to riparian vegetation and 5m from the stream that drains Boulder Gulch. Mine dump is not at potential and runoff from the dump may impact the stream. However, riparian habitat is at potential and likely mitigates mine dump impacts.

Assessment refers to riparian habitat at base of the dump.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
Yes	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

A mine dump and shaft (Morrow Tunnel) are located on a steep southwest-facing slope. The base of the dump borders on riparian vegetation and the floodplain of the stream that drains Boulder Gulch. Riparian vegetation along the stream is in good condition; cover is high, diversity is appropriately high, all age-classes are well represented and vigor is good. Riparian zone vegetated width is appropriate to the landscape and likely mitigates any mine dump impacts.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Lotic Checklist

Name of Riparian-Wetland Area:	Cooper Creek		
Date:	9/8/2007	Segment/Reach ID:	AM-2233
ID Team Observers:	Malone		

Potential:

Site is a mine dump and is not at potential. Precipitation runoff from the dump likely impacts Cooper Creek.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
N/A	4) Riparian-wetland area is widening or has achieved potential extent
N/A	5) Upland watershed is not contributing to riparian-wetland degradation

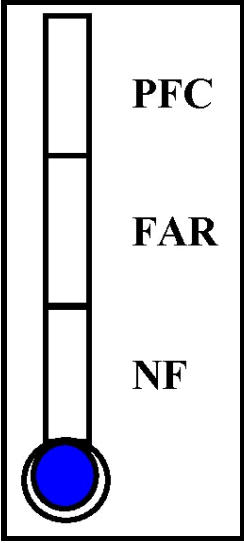
Yes No N/A	VEGETATION
N/A	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
N/A	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
N/A	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
N/A	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Dump is located on a steep southeast facing slope. Upland habitat is characterized by a mosaic of *Picea engelmanni*-*Abies lasiocarpa* forest and mesic-xeric graminoid/forb open meadows. Riparian habitat is absent. Precipitation and snowmelt runoff from the dump likely impacts Cooper Creek. Wildlife use, especially elk, is very high.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

GPS location: 0283496 E/4204002 N

elevation: 11,456'

Site Dimensions: dump 20m wide x 40m downhill

CNHP plant association(s): NA

Tree NA

Shrub NA

Herbaceous NA

Weed cover: NA

Soil Characteristics:
Characteristics:

Munsell: 10YR,7/2 (dump)

soil moisture: dry

organic content: none

texture: waste rock

odor: chemical

peat formation: none

Plants Observed at this Site

Scientific name

Abies lasiocarpa

Juniperus communis var.
depressa

Picea engelmannii

Potentilla diversifolia

Potentilla fruticosa

Common name

Subalpine Fir

Common juniper

Engelmann Spruce

Blueleaf cinquefoil

Shrubby Cinquefoil

Water Quality

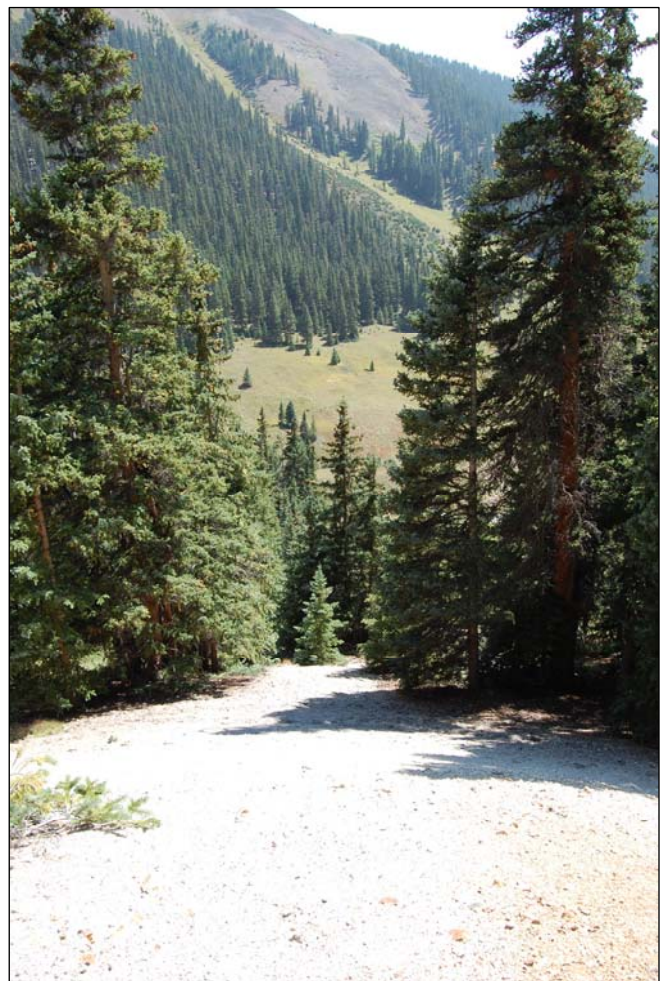
pH:

mS:

Co:

Water Quality Notes (if any):

NA



Lotic Checklist

Name of Riparian-Wetland Area:		Alpine Gulch	
Date:	8/13/2007	Segment/Reach ID:	AM-2235
ID Team Observers:		Malone	

Potential:

Site is a slope wetland that has been created by stream overbanking and by surface groundwater discharge. Site is not at potential due to mining impacts and to a recreational trail that runs through the slope wetland.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: A mine adit and dump are located adjacent to a high gradient stream that flows east to Alpine Gulch. Stream gradient decreases above and west of a recreational trail. Decreased gradient results in overbanking flows and groundwater discharge which has created a wide slope wetland. Above and below the trail vegetative characteristics including cover, richness and structure indicate functional wetland habitat. However, the trail interrupts surface groundwater flow and trampling degrades vegetation on 1 to 2 m on each side of the trail. Although the stream briefly flows through mining waste rock and a strong sulfur odor emits from the nearby adit riparian vegetation appears to have restored and is sustainable.

Riparian habitat is characterized by an *Alnus incana*-*Salix drummondina* shrubland.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p>
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)

Additional Observations:

GPS location: 0292489 E/4208750 N

elevation: 9,458'

Site Dimensions: 20m N-S x 40m E-W

CNHP plant association(s): Alnus incana-Salix drummondiana Shrubland

Tree 10%: Picea pungens, Populus tremuloides

Shrub 40%: Alnus incana, Lonicera involucrata, Salix drummondiana.

Herbaceous 30%: Thalictrum fendleri, Heracleum sphondylium, Aconitum columbianum, Equisetum arvense.

Weed cover: <5% including Taraxacum officinale.

Soil Characteristics:

Characteristics:

Munsell: 10 YR, 3/2

soil moisture: moist to saturated

organic content: high

texture: silt to fine silt

odor: organic

peat formation: none

Plants Observed at this Site

Scientific name

Taraxacum officinale
Achillea millefolium var.
lanulosa
Aconitum columbianum
Actaea rubra
Alnus incana ssp. *tenuifolia*
Bromus ciliatus
Cardamine cordifolia
Chamerion angustifolium
Conoselinium scopulorum
Epilobium saximontanum

Equisetum arvense
Gentiana prostrata
Geum macrophyllum
Heracleum sphondylium var.
lanatum
Lonicera involucrata
Ribes inerme
Salix boothii
Salix drummondiana
Salix monticola
Sambucus racemosa var.
microbotrys
Saxifraga odontoloma
Thalictrum fendleri

Common name

Dandelion
 Western Yarrow

 Monkshood
 Baneberry
 Thin-leaf Alder
 Fringed Brome
 Bittercress
 Fireweed
 Hemlock Parsley
 Rocky Mountain
 willowherb
 Horsetail
 Alpine moss gentian
 Largeleaf Avens
 Cow Parsnip

 Twinberry Honeysuckle
 Mountain Gooseberry
 Booth's Willow
 Drummond's Willow
 Mountain Willow
 Red Elderberry

 Brook Saxifrage
 Fendler Meadowrue

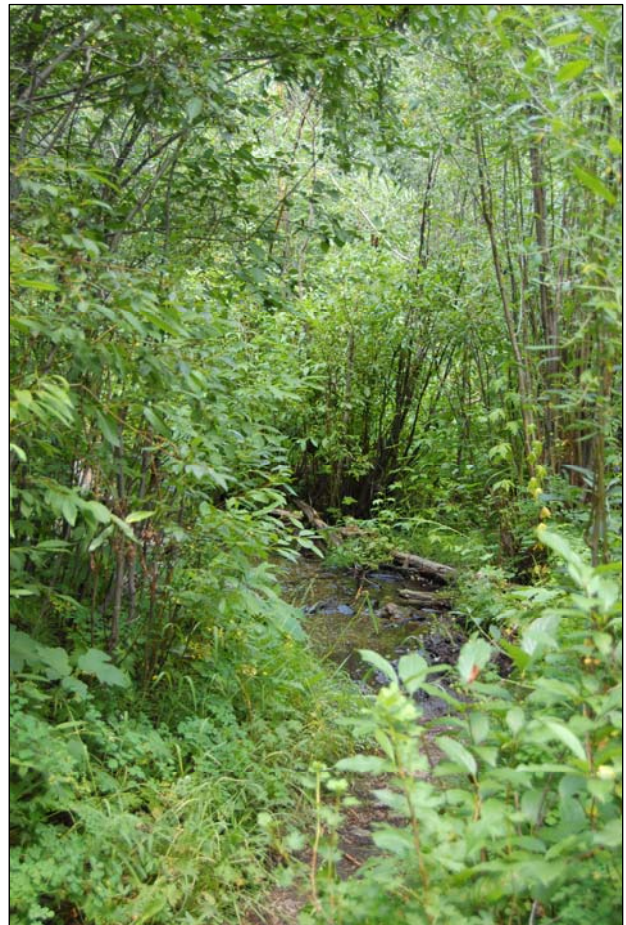
Water Quality

pH: 7.97

mS: 140

Co: 10.1

Water Quality Notes (if any):



Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek		
Date:	8/24/2007	Segment/Reach ID:	AM-2252
ID Team Observers:	Malone		

Potential:

Site is an abandoned mine dump, pit, and adit. Site is not at potential. Precipitation runoff from the mine dump likely impacts Henson Creek.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
N/A	4) Riparian-wetland area is widening or has achieved potential extent
N/A	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
N/A	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
N/A	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
N/A	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
N/A	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Site is a mine dump and adit located on a steep north-facing slope 20m uphill and southwest of MD-57. Upland habitat surrounding the mine dump is characterized by *Picea engelmannii* with the shrub layer dominated by *Paxistima myrsinites* and *Ribes coloradense* and the herbaceous layer by *Arctostaphylos uva-ursi*, *Vaccinium myrtillus* and *Geranium richardsonii* and with *Populus tremuloides* communities dominating in moister ravines.

Riparian habitat is absent. Vegetative cover on the mine dump totals <5%.

Tree cover (dump): <5% including *Pinus contorta* and *Picea engelmannii*.
 Shrub cover(dump):<5% including *Juniperus communis* and *Ribes coloradense*.
 Herbaceous cover(dump):<5% including *Bromus ciliatus*.
 Weed cover(dump):none observed.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> <u>No</u></p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Reach/Segment AM-2252 Name of Riparian-Wetland

Henson Creek

Additional Observations:

GPS location: 0288737 E/4210775 N

elevation: 9,541'

Site Dimensions: 8m wide x 15m downhill

CNHP plant association(s): NA

Tree NA

Shrub NA

Herbaceous NA

Weed cover: NA

Soil Characteristics: Dump

Munsell: 10YR, 7/6

soil moisture: dry

organic content: none

texture: waste rock

odor: chemical

peat formation: none

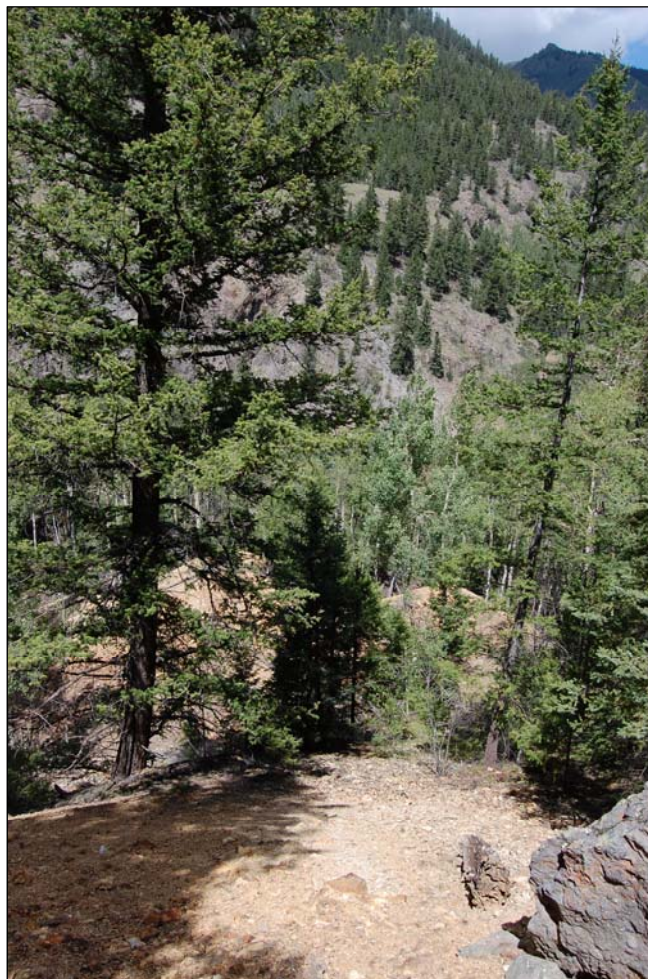
Water Quality Characteristics:

pH: NA

mS: NA

Co: NA

Water Quality Notes (if any):



Lotic Checklist

Name of Riparian-Wetland Area:	Deadman Gulch		
Date:	8/11/2007	Segment/Reach ID:	AM-2303
ID Team Observers:	Malone		

Potential:

Site is a mine dump. Precipitation runoff drains onto dirt road and eventually into Deadman Gulch. Runoff from dump and surrounding hillslopes is high as indicated by *Populus angustifolia* growing in ditches below the dump site. Polluted runoff may impact stream water quality.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
N/A	4) Riparian-wetland area is widening or has achieved potential extent
N/A	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
N/A	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
N/A	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
N/A	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
N/A	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Mine dump is located on a steep SW-facing hillslope. Upland habitat is characterized by an open forest dominated by *Pinus ponderosa* and *Pseudotsuga menziesii* with *Populus tremuloides*, *P.Angustifolia* and *Alnus incana* in wetter gullies and ravines.

Riparian habitat is absent.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Reach/Segment AM-2303 Name of Riparian-Wetland

Deadman Gulch

Additional Observations:

GPS location: 0298725 E/4208514 N

elevation: 9,040'

Site Dimensions: 15m wide x 16m downslope

CNHP plant association(s): NA

Tree NA

Shrub NA

Herbaceous NA

Weed cover: NA

Soil Characteristics:

Munsell: dump 10YR, 7/6

soil moisture: dry

organic content: none

texture: waste rock and fines

odor: chemical/sulfur

peat formation: none

Water Quality Characteristics:

pH: NA

mS: NA

Co: NA

Water Quality Notes (if any):



Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek		
Date:	8/24/2007	Segment/Reach ID:	AM-2316
ID Team Observers:	Malone		

Potential:

Site is a mine dump. Site is not at potential.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
N/A	4) Riparian-wetland area is widening or has achieved potential extent
N/A	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
N/A	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
N/A	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
N/A	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
N/A	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Site is a mine dump located on an east-facing slope. Hillslope vegetation is characterized by *Pseudotsuga menziesii* with the shrub layer dominated by *Symphoricarpos oreophilus*, *Juniperus communis* and *Amelanchier alnifolia* and the herbaceous layer by *Carex pensylvanica*, *Mahonia repens*, *Heterotheca villosa*, *Artemisia frigida* and with *Populus tremuloides* communities in moister ravines.

Riparian habitat is absent at this site. Mine dump has a total vegetative cover of <10%.

Tree cover(dump): <5% including *Pseudotsuga menziesii*.

Shrub cover(dump): <5% including *Rosa woodsii* and *Juniperus communis*

Herbaceous cover(dump): <5% including *Mahonia repens*, and *Apocynum androsaemifolium*.

Weed cover(dump): none observed.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Reach/Segment

AM-2316

Name of Riparian-Wetland

Henson Creek

Additional Observations:

GPS location: 0288852 E/4210998 N

elevation: 9,444'

Site Dimensions:

CNHP plant association(s): NA

Tree NA

Shrub NA

Herbaceous NA

Weed cover: NA

Soil Characteristics: Dump

Munsell: 10YR, 6/6

soil moisture: dry

organic content: none

texture: waste rock

odor: chemical

peat formation: none

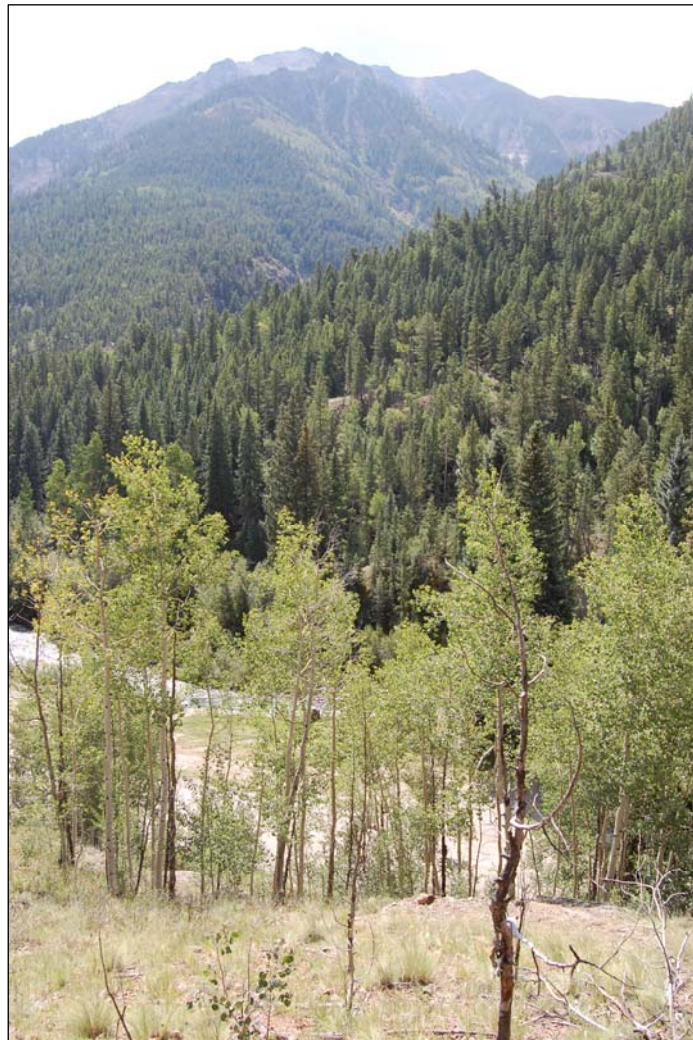
Water Quality Characteristics:

pH: NA

mS: NA

Co: NA

Water Quality Notes (if any):



Lotic Checklist

Name of Riparian-Wetland Area:	Gladiator Mine		
Date:	8/13/2007	Segment/Reach ID:	AM-2404
ID Team Observers:	Malone		

Potential:

Site is not at potential. Impacts of mining persist and negatively impact riparian and stream habitat.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
No	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
No	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
No	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

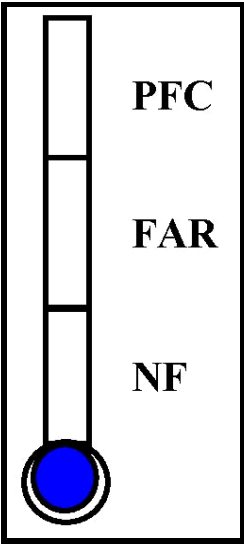
Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Mine dump is located on a steep South-facing hillslope and goes for 50m downhill to the bottom of a ravine to where a stream flows in an easterly direction. Precipitation runoff from the dump flows directly into the stream and waste rock is carried into the riparian zone. Adjacent uplands are severely degraded by historic mining activities and current development and recreational activities. South-facing hillslope habitat is characterized by an open *Pseudotsuga menziesii* forest with understory that includes shrubs such as *Ribes cereum*, *Shepherdia canadensis* and *Arctostaphylos uva-ursi*, and numerous grasses including *Hesperostipa comata* and *Elymus longifolius*.

Riparian habitat is recovering from mining-related activities but the dump inhibits complete recovery. The riparian zone is confined by a narrow ravine and is characterized by a *Populus tremuloides*-*Alnus incana* woodland. Herbaceous cover is dominated by mosses which provide essential stream bank stability.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: ___ No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input checked="" type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Additional Observations:

GPS location: 0297992 E/4206784 N (upper W corner)

elevation: 9,727'

Site Dimensions: Channel 0.5m wide; riparian 0.5m/bank; dump 70m wide x 50m downhill

CNHP plant association(s): Populus tremuloides-Alnus incana Woodland

Tree 25 %: Populus tremuloides, Picea engelmannii, Abies lasiocarpa.

Shrub 10 %: Alnus incana, Ribes montigenum, Rubus idaeus, Salix drummondiana.

Herbaceous 30 %: mosses (75%), Cardamine cordifolia, Pyrola asarifolia, Orthilia secunda, Heracleum spondylium, Equisetum arvense.

Weed cover: none observed.

Soil Characteristics:

Munsell: 2.5YR, 3/2

soil moisture: saturated

organic content: high

texture: fine silt

odor: organic

peat formation: none

Water Quality Characteristics:

pH: 7.83

mS: 129

Co: 10.8

Water Quality Notes (if any):

Plants Observed at this Site

<u>Scientific name</u>	<u>Common name</u>		
<i>Abies lasiocarpa</i>	Subalpine Fir	<i>Picea engelmannii</i>	Engelmann Spruce
<i>Alnus incana ssp. tenuifolia</i>	Thin-leaf Alder	<i>Populus tremuloides</i>	Aspen
<i>Bryophyta</i>	Mosses	<i>Pyrola rotundifolia ssp. asarifolia</i>	Pink Pyrola
<i>Cardamine cordifolia</i>	Bittercress	<i>Ribes inerme</i>	Mountain Gooseberry
<i>Equisetum arvense</i>	Horsetail	<i>Ribes montigenum</i>	Red-fruited Gooseberry
<i>Heracleum spondylium var. lanatum</i>	Cow Parsnip	<i>Rubus idaeus</i>	Red Raspberry
<i>Orthilia secunda</i>	One-sided Wintergreen	<i>Salix drummondiana</i>	Drummond's Willow



Lotic Checklist

Name of Riparian-Wetland Area:	Alpine Gulch		
Date:	8/15/2007	Segment/Reach ID:	B-806
ID Team Observers:	Malone		

Potential:

Site is at potential and sustainable.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

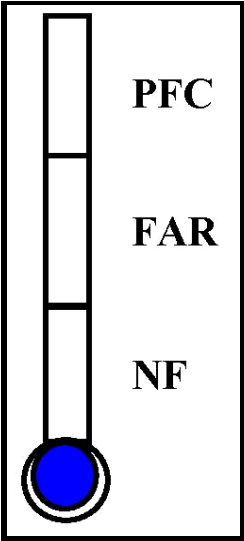
Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Two springs daylight at the base of steep rocky outcrops and talus slopes in an alpine turf meadow. The two springs coalesce in 20m to form a 2nd order permanent stream. Plant species composition indicates the maintenance of high soil moisture. Riparian vegetative characteristics including cover, richness and structure indicate high quality, sustainable habitat. Upland habitat is in excellent condition and characterized by a complex mosaic of wet meadows, alpine turf, gopher gardens, fellfields and talus and scree slopes.

Riparian vegetation is characterized by a community of *Caltha leptosepala* Herbaceous Vegetation.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:**GPS location:** 0288334 E/4205538 N**elevation:** 12,300'**Site Dimensions:** channel 0.7m wide x 20m downhill; riparian vegetated zone 9m wide x 20m downhill**CNHP plant association(s):** Caltha leptosepala Herb Veg**Tree** 0%**Shrub** 15%: Salix nivalis, S. arctica**Herbaceous** 90-95%: Caltha leptosepala, Carex scopulorum, Juncus drummondiana, Sibbaldia procumbens, Pedicularis groenlandica, Swertia perrenis, Arnica mollis.**Weed cover:** none observed.**Soil Characteristics:****Munsell:** 10YR, 3/3**soil moisture:** saturated**organic content:** very high**texture:** fine silt**odor:** organic**peat formation:** no peat

Plants Observed at this Site

<u>Scientific name</u>	<u>Common name</u>
<i>Achillea millefolium</i> var. lanulosa	Western Yarrow
<i>Arnica mollis</i>	Subalpine Arnica
<i>Bistorta bistortoides</i>	American bistort
<i>Bistorta vivipara</i>	Alpine bistort
<i>Caltha leptosepala</i>	Marsh Marigold
<i>Carex ebenea</i>	Ebony Sedge
<i>Carex geyeri</i>	Elk Sedge
<i>Carex scopulorum</i>	Mountain Sedge
<i>Deschampsia caespitosa</i>	Tufted Hairgrass
<i>Erigeron peregrinus</i>	Subalpine Daisy
<i>Gentiana prostrata</i>	Alpine moss gentian
<i>Juncus drummondii</i>	Drummond's Rush
<i>Juncus mertensianus</i>	Subalpine rush
<i>Pedicularis groenlandica</i>	Elephantella
<i>Phleum commutatum</i>	Alpine Timothy
<i>Potentilla diversifolia</i>	Blueleaf cinquefoil
<i>Salix arctica</i>	Arctic willow
<i>Salix nivalis</i>	Snow willow
<i>Sedum rodanthum</i>	Queen's Crown
<i>Sibbaldia procumbens</i>	Sibbaldia
<i>Trifolium parryi</i>	Parry's clover
<i>Veronica wormskjoldii</i>	Alpine Speedwell

Water Quality Characteristics:**pH:** 4.99**mS:** 136**Co:** 10.2**Water Quality Notes (if any):**

Birds Observed at this Site (if noted)

<u>Scientific name</u>	<u>Common name</u>
<i>Anthus rubescens</i>	American Pipit
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow
<i>Lagopus leucura</i>	White-tailed Ptarmigan



Lotic Checklist

Name of Riparian-Wetland Area:	Alpine Gulch		
Date:	8/13/2007	Segment/Reach ID:	C-122
ID Team Observers:	Malone		

Potential:

Site is not at potential. A high-use recreational trail runs through the slope wetland that was created by the seep and a mine dump alters water quality. Both the trail and the dump prevent the site from reaching potential. Additionally, non-native plant species including plumeless thistle (*Carduus acanthoides*) and white dutch clover (*Trifolium repens*) occur on 5-10% of the site

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
No	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
No	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: A seep daylight at the top of a natural slump, about 10m upslope and west of the Alpine Gulch trail. The seep flows 10m down a steep east-facing slope to a lower gradient area adjacent to the trail. The seep then flows N down the trail for 5m, crosses the trail and flows around and through a mine dump and then again flows steeply downslope to join Alpine Gulch stream.

The site is located in a Wilderness Study Area. Overall, the ecosystem is restoring although, throughout this sub-watershed, historic mining impacts continue to impact upland, riparian and stream habitat.

The riparian plant community is an unclassified herbaceous vegetation association that is characterized by a diverse mix of hydrophyllic forbs and graminoids.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Additional Observations:**GPS location:** 0292585 E/4209294 N**elevation:** 9,397'**Site Dimensions:** 9m N-S x 22m downslope E-W**CNHP plant association(s):** Unclassified herbaceous vegetation**Tree** 10%: *Picea engelmannii*, *Populus tremuloides*, *Abies lasiocarpa*.**Shrub** 10%: *Cornus stolonifera*, *Ribes inerme*, *Rosa woodsii*, *Lonicera involucrata*, *Salix boothii*, *S. Drummondiana*.**Herbaceous** 60%: *Carex aquatilis*, *Juncus arcticus*, *J. saximontanus*, *Epilobium hornemanni*, *Veronica americana*, *Conioselinum scopulorum*.**Weed cover:** 5-10%: *Trifolium repens*, *Carduus acanthoides*.**Soil Characteristics:
Characteristics:****Munsell:** 10 YR, 3/4**soil moisture:** saturated**organic content:** low**texture:** silt to fine sand**odor:** organic**peat formation:** nonestream
suddenly
adjacent**Water Quality****pH:** 8.60**mS:** 430**Co:** 11.0**Water Quality Notes (if any):**

A very heavy growth of filamentous algae that covers 90% of the channel to a depth of 2-5cm appears as the stream flows to the stream.

Plants Observed at this Site

Scientific name*Agrostis gigantea**
*Carduus acanthoides**
Trifolium repens
Abies lasiocarpa
Achillea millefolium var.
lanulosa
Alnus incana ssp. *tenuifolia*
Carex aquatilis
Carex aurea
Cirsium parryi
Conoselinum scopulorum
Cornus stolonifera
Epilobium hornemanni
Galium aparine
Gentiana prostrata
Geranium richardsonii
Juncus mertensianus
Juncus saximontanus
Lonicera involucrata
Picea engelmannii
Platanthera huronensis
Populus tremuloides
Ribes inerme
Rosa woodsii
Rubus ideaus
Salix boothii
Salix drummondiana
*Veronica americana*Common nameRedtop
Plumeless Thistle
White Dutch Clover
Subalpine Fir
Western Yarrow

Thin-leaf Alder
Water Sedge
Golden sedge
Parry's Thistle
Hemlock Parsley
Red-Osier Dogwood
x
Cleavers
Alpine moss gentian
Richardson's geranium
Subalpine rush
Rocky Mountain rush
Twinberry Honeysuckle
Engelmann Spruce
Green Bog Orchid
Aspen
Mountain Gooseberry
Wood's Rose
Red Raspberry
Booth's Willow
Drummond's Willow
American Brooklime

Lotic Checklist

Name of Riparian-Wetland Area:	Horse Park		
Date:	8/9/2007	Segment/Reach ID:	C-410
ID Team Observers:	Malone		

Potential:

Site potential may be negatively impacted by excessively high browse which may be diminishing plant vigor.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
No	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
No	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Spring flows SW through open mesic meadows and aspen groves. A narrow willow carr has formed at the top of the seep. Mosses and herbaceous vegetation fill the channel indicating low flows. Riparian width is narrow at <0.5m/bank. Small areas of lateral erosion are present over the length of the channel.

Riparian habitat is narrow and characterized by Salix monticola/Mesic forb shrubland with in-channel vegetation characterized by an unclassified plant association that is dominated by Mimulus guttatus, Epilobium hornemanii and mosses. Willow are mostly older age classes and recruitment is low. Browse is heavy on the few younger willow present as indicated by a clubbed growth form: 25-50% of available 2nd year and older stems are browsed. Where willow are present banks are stable whereas where willow are absent some instability and excessive lateral erosion is occurring.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> <u>No</u></p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input checked="" type="checkbox"/> Not Apparent		

Additional Observations:

GPS location: 0301120 E/4211798 N

elevation: 10,872'

Site Dimensions: Channel 1m wide; riparian 0.5m/bank

CNHP plant association(s): Salix monticola/Mesic forb shrubland + unclassified association in-channel of Mimulus guttatus, Epilobium hornemannii and mosses

Tree 10%: Populus tremuloides, Picea engelmannii.

Shrub 15%: Salix monticola, S. planifolia, Potentilla fruticosa.

Herbaceous 40%: Mimulus guttatus, Cardamine cordifolia, Epilobium hornemannii, Achillea millefolium

Weed cover: <5%: Taraxacum officinale, Agrostis gigantea

Soil Characteristics:

Munsell: 7.5YR, 3/3

soil moisture: moist

organic content: organic with high root masses

texture: silt

odor: organic

peat formation: none

Water Quality Characteristics:

pH: 7.80

mS: 56

Co: 10.8

Water Quality Notes (if any):

Plants Observed at this Site

Scientific name

*Agrostis gigantea**
Taraxacum officinale
Achillea millefolium var.
lanulosa
Bistorta vivipara
Cardamine cordifolia
Carex geyeri
Carex scopulorum
Chamerion angustifolium
Epilobium hornemannii
Lonicera involucrata

Lonicera tatarica

Mertensia ciliata
Mimulus guttatus
Picea engelmannii
Potentilla diversifolia
Potentilla fruticosa
Ribes inerme

Salix monticola
Salix planifolia
Vicia americana

Common name

Redtop
 Dandelion
 Western Yarrow

 Alpine bistort
 Bittercress
 Elk Sedge
 Mountain Sedge
 Fireweed
 x
 Twinberry
 Honeysuckle
 Tatarian
 Honeysuckle
 Mountain Bluebells
 Monkeyflower
 Engelmann Spruce
 Blueleaf cinquefoil
 Shrubby Cinquefoil
 Mountain
 Gooseberry
 Mountain Willow
 Planeleaf Willow
 American Vetch

Birds Observed at this Site (if noted)

Scientific name

Junco hyemalis
Corvus corax
Poecile atricapillus
Dendragapus obscurus
Sphyrapicus nuchalis
Pinicola enucleator
Perisoreus canadensis

Common name

Dark-eyed Junco
 Common Raven
 Black-capped Chickadee
 Blue Grouse
 Red-naped Sapsucker
 Pine Grosbeak
 Gray Jay



Lotic Checklist

Name of Riparian-Wetland Area:	Horse Park		
Date:	8/9/2007	Segment/Reach ID:	C-409
ID Team Observers:	Malone		

Potential:

Site is not at potential. A dirt road interrupts surface ground water flow. Ground water discharges onto the road, flows down the side of the road and into an aspen grove. Consequently the extent of the slope wetland that is created by the seep is reduced by the roadcut.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Seep daylight in gently sloping terrain in an aspen grove and flows southwest for about 12m before being diverted by a roadcut. The seep supports riparian/wetland vegetation on 1-2m on each side of the channel.

Riparian habitat is characterized by a Populus tremuloides/Tall forb woodland. Uplands are characterized by a mosaic of aspen groves interspersed with open, mesic to dry, meadows dominated by mountain lupine, fescue spp. and brome spp.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input checked="" type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input checked="" type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:**GPS location:** 0300868 E/4211898 N**elevation:** 10,760'**Site Dimensions:** 3m N-S x 18m E-W**CNHP plant association(s):** Populus tremuloides/Tall forb woodland**Tree** 20%: Populus tremuloides(80%),Picea engelmannii**Shrub** 30%: Salix planifolia, Ribes inerme, Potentilla fruticosa.**Herbaceous** 50%: Cardamine cordifolia, Mimulus guttatus, Aconitum columbianum**Weed cover:** <5%:Trifolium repens, Taraxacum officinale, Dactylis glomerata.**Soil Characteristics:****Munsell:** 7.5YR,3/2**soil moisture:** moist**organic content:** high**texture:** silt**odor:** organic**peat formation:** none

Plants Observed at this Site

Scientific name*Dactylis glomerata**Taraxacum officinale**Trifolium repens**Achillea millefolium* var.
*lanulosa**Aconitum columbianum**Bistorta vivipara**Bromus ciliatus**Bryophyta**Cardamine cordifolia**Chamerion angustifolium**Conoselinium scopulorum**Epilobium hornemannii**Geranium richardsonii**Luzula parviflora**Mertensia ciliata**Mimulus guttatus**Parnassia fimbriata**Picea engelmannii**Populus tremuloides**Potentilla fruticosa**Ribes coloradense**Salix planifolia**Swertia perennis**Veronica americana*Common name

Orchard Grass

Dandelion

White Dutch Clover

Western Yarrow

Monkshood

Alpine bistort

Fringed Brome

Mosses

Bittercress

Fireweed

Hemlock Parsley

x

Richardson's

geranium

Woodrush

Mountain Bluebells

Monkeyflower

Fringed Grass-of-

Parnassus

Engelmann Spruce

Aspen

Shrubby Cinquefoil

Colorado currant

Planeleaf Willow

Star Gentian

American Brooklime

Water Quality Characteristics:**pH:** 7.04**mS:** 101**Co:** 8.9**Water Quality Notes (if any):**

Birds Observed at this Site (if noted)

Scientific name*Selasphorus platycercus**Junco hyemalis**Sialia currucoides**Contopus sordidulus*Common name

Broad-tailed

Dark-eyed Junco

Mountain Bluebird

Western Wood-pewee



Lotic Checklist

Name of Riparian-Wetland Area:	Horse Park		
Date:	8/9/2007	Segment/Reach ID:	C-420
ID Team Observers:	Malone		

Potential:

Site is not at potential. A recreational trail dissects the slope wetland, interrupting surface groundwater flow and resulting in vegetation trampling. Thus above the trail the slope wetland is at potential but below the trail site potential is not achieved.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: Seep/spring daylight on a west-facing hillslope that is dominated by a mixed forest of *Populus tremuloides* and *Picea engelmannii*. The seep becomes a small stream that flows west for 50m before disappearing into an aspen grove. The seep creates a small slope wetland that is about 3-5m wide and 50m long. A recreational trail crosses the slope wetland 25m below the point of origin interrupting surface ground water flow and creating some erosion and trampled vegetation.

Riparian habitat is characterized by a mosaic *Abies lasiocarpa*-*Picea engelmannii*-*Mertensia ciliata* forest and *Caradamine cordifolia*-*Mertensia ciliata*-*Senecio triangularis* herbaceous vegetation.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown	<p>PFC FAR NF</p>	<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p>
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input checked="" type="checkbox"/> Other (specify)

Additional Observations:

GPS location: Top 0301065 E/4211086 N; bottom 0300968 E/4211053 N
elevation:

Site Dimensions: Channel 0.5m; riparian 1.5m/bank x 50m E-W

CNHP plant association(s): Abies lasiocarpa-Picea engelmannii-/Mertensia ciliata Forest + Cardamine cordifolia-Mertensia ciliata-Senecio triangularis Herbaceous Vegetation.

Tree 30%: Picea engelmannii, Populus tremuloides.

Shrub 10%: Salix monticola, Lonicera involucrata, Ribes inerme.

Herbaceous 40%: Senecio triangularis, Cardamine cordifolia, Mertensia ciliata, Epilobium hornemannii, Aconitum columbianum.

Weed cover: none observed.

Soil Characteristics:

Munsell: 5YR, 3/2

soil moisture: moist

organic content: high

texture: silt

odor: organic

peat formation: none

Water Quality Characteristics:

pH: 7.51

mS: 83

Co: 9.1

Water Quality Notes (if any):

Plants Observed at this Site

Scientific name
Aconitum columbianum
 Bryophyta
Cardamine cordifolia
Epilobium hornemannii
Equisetum arvense
Geranium richardsonii
Luzula parviflora
Mertensia ciliata
Mimulus guttatus
Oxyopsis fendleri
Populus tremuloides
Saxifraga odontoloma
Senecio triangularis
 Triangularleaf Senecio
Veronica americana
 Brooklime

Common name
 Monkshood
 Mosses
 Bittercress
 x
 Horsetail
 Richardson's geranium
 Woodrush
 Mountain Bluebells

 Cowbane
 Aspen

 American

Birds Observed at this Site (if noted)

Scientific name
Poecile atricapillus
Junco hyemalis
Poecile gambeli
Regulus satrapa

Common name
 Black-capped Chickadee
 Dark-eyed Junco
 Mountain Chickadee
 Golden-crowned Kinglet



Lentic Checklist			
Name of Riparian-Wetland Area		Golden Fleece Mine Dump	
Date:	9/21/2007	Segment/Reach ID	C-432
ID Team Observers:		Malone	

Potential:

Site is not at potential. Mining impacts in combination with road and development impacts prevent the development of a sustainable wetland system.

Yes No N/A	HYDROLOGICAL
Yes	1) Riparian-wetland area is saturated at or near the surface or inundated in “relatively frequent” events
Yes	2) Fluctuation of water levels is not excessive
No	3) Riparian-wetland area is enlarging or has achieved potential extent
No	4) Upland watershed is not contributing to riparian-wetland degradation
Yes	5) Water quality is sufficient to support riparian-wetland plants
No	6) Natural surface or subsurface flow patterns are not altered by disturbance (i.e., hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities)
N/A	7) Structure accommodates safe passage of flows (e.g., no headcut affecting dam or spillway)

Yes No N/A	VEGETATION
Yes	8) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
No	9) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery) [species present]
Yes	10) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	11) Vegetation is comprised of those plants or plant communities that have root masses capable of withstanding wind events, wave flow events, or overland flows (e.g., storm events, snowmelt) [community types present]
Yes	12) Riparian-wetland plants exhibit high vigor
N/A	13) Adequate riparian-wetland vegetative cover present to protect shoreline/soil surface and dissipate energy during high wind and wave events or overland flows [enough]

Yes	14) Frost or abnormal hydrologic heaving is not present
No	15) Favorable microsite condition (i.e., woody material, water temperature, etc.) is maintained by adjacent site characteristics

Yes No N/A	EROSION DEPOSITION
No	16) Accumulation of chemicals affecting plant productivity/composition is not apparent
Yes	17) Saturation of soils (i.e., ponding, flooding frequency, and duration) is sufficient to compose and maintain hydric soils
Yes	18) Underlying geologic structure/soil material/permafrost is capable of restricting water percolation
No	19) Riparian-wetland is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)
N/A	20) Islands and shoreline characteristics (i.e., rocks, coarse and/or large woody material) are adequate to dissipate wind and wave event energies

Remarks:

General Description: A wetland occurs at the base of a draining mine dump which provides the water and defines the western perimeter of the wetland. Precipitation runoff carries sediment from the dump into the wetland. The east edge is delimited by a paved road which divides the wetland from Lake San Cristobal. A culvert drains water from the wetland into Lake San Cristobal.

Wetland habitat is characterized by a mosaic of Carex aquatilis and Juncus arcticus Herbaceous Vegetation.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown <p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the Yes/No: Yes</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input checked="" type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input checked="" type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

GPS location: 0298615 E/4206448 N (NW end); 0298620 E/4206410 N (SE end)
elevation: 9,039

Site Dimensions: 30m long x 5m wide

CNHP plant association(s): Carex Aquatilis Herb Veg + Juncus Arcticus Herb Veg

Tree 5%: Picea pungens, Populus angustifolia

Shrub 1%: saplings, Ribes inerme

Herbaceous 50%: Juncus arcticus, Carex aquatilis

Weed cover: 10%: Agrostis gigantea

Soil Characteristics:

Munsell: upper 2 cm = 2.5Y,7/6, below 2cm = 2.5Y,

soil moisture: saturated with standing water

organic content: low

texture: silt

odor: sulfur

peat formation: none

Water Quality Characteristics:

pH: 7.50

mS: 2636

Co: 17.8

Water Quality Notes (if any):

Plants Observed at this Site

Scientific name

*Agrostis gigantea**
Carex aquatilis
Juncus arcticus (balticus)
Picea pungens
Populus angustifolia
Ribes inerme
Rubus ideaus

Common name

Redtop
 Water Sedge
 Baltic Rush
 Blue Spruce
 Narrowleaf Cottonwood
 Mountain Gooseberry
 Red Raspberry

Birds Observed at this Site (if noted)

Scientific name

Poecile gambeli
Sitta canadensis
Tachycineta thalassina
Sitta carolinensis

Common name

Mountain Chickadee
 Red-breasted Nuthatch
 Violet-green Swallow
 White-breasted Nuthatch



Lotic Checklist

Name of Riparian-Wetland Area:	Boulder Gulch		
Date:	9/5/2007	Segment/Reach ID:	C-525
ID Team Observers:	Malone		

Potential:

Site is located in an alpine turf meadow and is at potential.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

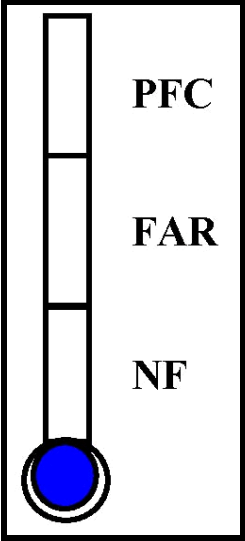
Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Spring daylight in an alpine turf meadow community on a north-facing slope and flows southeast for 175m where it coalesces with the main channel. Upland and riparian habitat are in excellent condition; vegetation cover is high, plant diversity is appropriately high, and vigor is also high in the alpine meadow and turf communities adjacent to the stream. However, in nearby willow communities elk browse is moderate to high and likely impacts plant vigor.

Stream bank communities are dominated by *Saxifraga odontoloma* and a thick cover of mosses. Riparian communities, just a few decimeters away from the banks, are dominated by *Caltha leptosepala*, *Juncus drummondii* and *Deschampsia caespitosa*.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p>
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)

Additional Observations:**GPS location:** 0279301 E/4207557 N**elevation:** 12,171'**Site Dimensions:** channel 1m wide x 125m long ; riparian zone 0.5m/bank**CNHP plant association(s):** Saxifraga odontoloma herb veg (streambanks) + Caltha leptosepala herb veg**Tree** 0%**Shrub** 0%**Herbaceous** 90%: Caltha leptosepala, Saxifraga odontoloma, Juncus drummondii,**Weed cover:** none observed**Soil Characteristics:****Munsell:** 5YR,3/3**soil moisture:** moist**organic content:** high org and high root mass**texture:** fine silt**odor:** normal**peat formation:** none**Water Quality Characteristics:****pH:** 8.59**mS:** 74**Co:** 9.9**Water Quality Notes (if any):**

Plants Observed at this Site

Scientific name*Bistorta bistortoides**Bryophyta**Caltha leptosepala**Cardamine cordifolia**Deschampsia caespitosa**Epilobium alpinum**Geum rossii***Common name**

American bistort

Mosses

Marsh Marigold

Bittercress

Tufted Hairgrass

Pimpernel willowherb

Alpine Avens

*Juncus drummondii**Oreoxis alpina**Phleum commutatum**Saxifraga odontoloma**Saxifraga oregana**Sedum rodanthum**Vaccinium caespitosum*

Drummond's Rush

Alpine parsley

Alpine Timothy

Brook Saxifrage

Bog Saxifrage

Queen's Crown

Dwarf Blueberry



Lotic Checklist

Name of Riparian-Wetland Area:	Cooper Creek		
Date:	9/8/2007	Segment/Reach ID:	C-553
ID Team Observers:	Malone		

Potential:

Site is at potential.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

A spring daylight at the base of a rocky outcrop on a steep southeast-facing talus slope. Riparian vegetation at the origin of the seep is sparse with <5% cover. However, by 130m downslope where the seep/stream crosses a trail, riparian zone width has increased to 2m/bank with 90% cover. Vegetation is dominated by herbaceous vegetation (90% cover) characterized by Cardamine cordifolia-Mertensia ciliata-Senecio triangularis Herbaceous vegetation with islands of willow (15% cover) characterized by Salix planifolia/Mesic forb Shrublands.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p>
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input checked="" type="checkbox"/> Not Apparent		<p>Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)

Additional Observations:**GPS location:** 0283399 E/4203686 N**elevation:** 11,466'**Site Dimensions:** channel 1-2m; riparian 1-2m/bank**CNHP plant association(s):** Cardamine cordifolia-Mertensia ciliata-Senecio triangularis Herb Veg + Salix

planifolia/Mesic forb Shrublands.

Tree 0%**Shrub** 15%: Salix planifolia, S. drummondiana, Ribes montigenum**Herbaceous** 90%: Senecio triangularis, Mertensia ciliata, Senecio dimorphophyllis**Weed cover:** 5%: Taraxacum officinale**Soil Characteristics:****Munsell:** talus, scree and cobbles**soil moisture:** NA**organic content:** NA**texture:** NA**odor:** NA**peat formation:** NA

Plants Observed at this Site

Scientific name*Taraxacum officinale**Achillea millefolium* var.*lanulosa**Carex ebenea**Carex microptera**Carex scopulorum**Conoselinium scopulorum**Delphinium barbeyi**Deschampsia caespitosa**Epilobium hornemannii**Geranium richardsonii**Juncus drummondii**Lonicera involucrata**Mimulus guttatus**Oxyria digyna**Phleum commutatum**Potentilla diversifolia**Ribes montigenum**Salix drummondiana**Salix planifolia**Senecio atratus**Senecio crassulus**Senecio dimorphophyllus**Senecio triangularis**Sibbaldia procumbens***Common name**

Dandelion

Western Yarrow

Ebony Sedge

Small-winged Sedge

Mountain Sedge

Hemlock Parsley

Subalpine Larkspur

Tufted Hairgrass

x

Richardson's geranium

Drummond's Rush

Twinberry Honeysuckle

Monkeyflower

Alpine sorrel

Alpine Timothy

Blueleaf cinquefoil

Red-fruited Gooseberry

Drummond's Willow

Planeleaf Willow

Blacktip Senecio

Thickbract Senecio

Different groundsel

Triangularleaf Senecio

Sibbaldia

Water Quality Characteristics:**pH:** 7.96**mS:** 71**Co:** 9.0**Water Quality Notes (if any):**

Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek		
Date:	8/25/2007	Segment/Reach ID:	C-568
ID Team Observers:	Malone		

Potential:

Site is a perennial spring that is not at potential due to road impacts. Engineer Pass road disrupts surface ground water flow, channelizing spring flow into a roadside ditch thereby reducing potential wetland area.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
No	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Spring daylight at the base of a south-facing low-gradient slope from under a boulder 5m to the south of Engineer Pass road. Spring discharge flows northward for 5m where it encounters the road and is channeled into a roadside ditch from where it flows east for 380m whereupon flow is channeled into a culvert, under the road and into Henson Creek.

The meadow above the spring is dominated by mesic forbs, grasses and shrubs. Adjacent upland vegetation is dominated by Populus tremuloides. Discharge from the spring and slope discharge supports wetland vegetation along the roadside for 250m. Wetland vegetation is characterized by a mosaic of forb-, sedge- and rush-dominated habitat patches.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input checked="" type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u>Yes</u></p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input checked="" type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:**GPS location:** 0284330 E/4209576 N**elevation:** 9,684'**Site Dimensions:** 1m wide x 380m to culvert**CNHP plant association(s):** Unclassified forb + unclassified sedge + Schoenoplectus pungens herbaceous

vegetation + Juncus balticus herbaceous vegetation.

Tree 5%: Populus tremuloides**Shrub** 10%: Ribes inerme, Rosa woodsii, Salix drummondiana**Herbaceous** 85%: Juncus arcticus, Schoenoplectus pungens, Carex utriculata, C. lanuginosa**Weed cover:** 5-10%: Carduus acanthoides**Soil Characteristics:****Munsell:** 10YR,4/6**soil moisture:** saturated**organic content:** medium**texture:** silt**odor:** normal**peat formation:** none

Plants Observed at this Site

Scientific name

Agropyron cristatum
*Agrostis gigantea**
*Carduus acanthoides**
Phleum pratense
*Poa pratense**
Rumex crispus
Trifolium repens
Achillea millefolium var.
lanulosa
Artemisia dracuncululus
Aster foliaceus
Bromus ciliatus
Campanula rotundifolia
Carex lanuginosa
Carex microptera
Carex utriculata
Epilobium hornemannii
Equisetum arvense
Festuca thurberi
Hydrophyllum capitatum
Juncus arcticus (balticus)
Juncus saximontanus
Populus tremuloides
Potentilla gracilis var.
Ribes inerme
Rosa woodsii
Salix drummondiana
Salix monticola
Schoenoplectus pungens
Senecio eremophilus
Thalictrum fendleri
Urtica gracilis

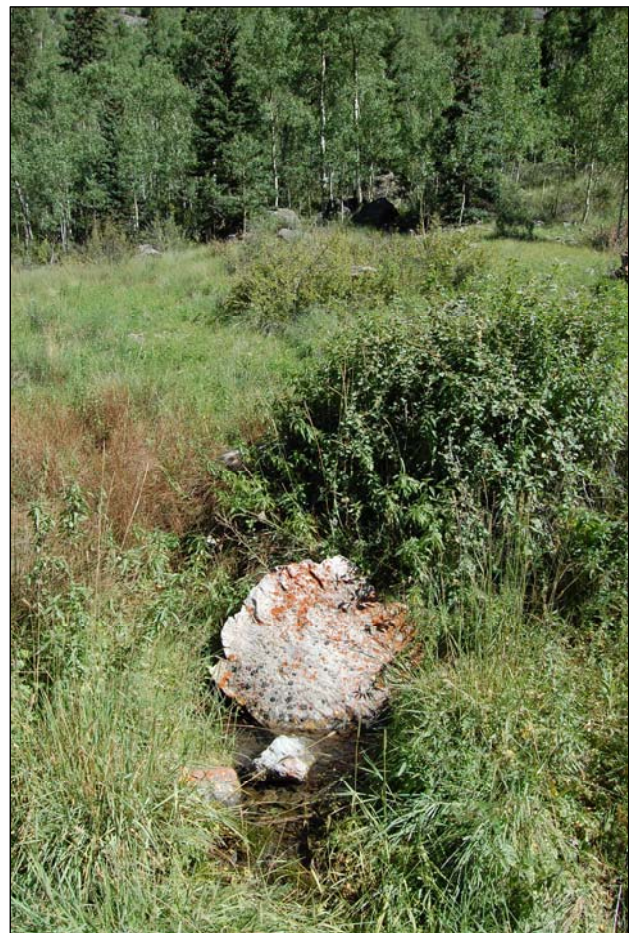
Common name

Crested Wheatgrass
 Redtop
 Plumeless Thistle
 Common Timothy
 Kentucky Bluegrass
 Curly Dock
 White Dutch Clover
 Western Yarrow

 Wild Tarragon
 Leafy Aster
 Fringed Brome
 Harebell
 Woolly Sedge
 Small-winged Sedge
 Beaked Sedge
 x
 Horsetail
 Thurber Fescue
 Ball-head Waterleaf
 Baltic Rush
 Rocky Mountain rush
 Aspen
 Showy Cinquefoil
 Mountain Gooseberry
 Wood's Rose
 Drummond's Willow
 Mountain Willow
 Common threesquare
 Cut-leaved Groundsel
 Fendler Meadowrue
 Nettle

Water Quality Characteristics:**pH:** 7.95**mS:** 300**Co:** 3.2**Water Quality Notes (if any):**

high filamentous algae



Lotic Checklist

Name of Riparian-Wetland Area:	American Basin		
Date:	9/7/2007	Segment/Reach ID:	C-945
ID Team Observers:	Malone		

Potential:

Site is approaching potential. A mine access road previously went through this wet meadow but has been removed. The road now ends at the trailhead parking lot. Meadow habitat is restoring but has not completely recovered. Upland mine impacts likely impact the site.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

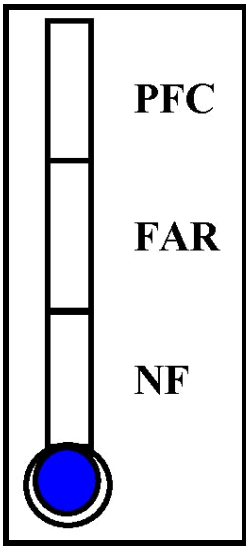
Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

At least 4 seeps daylight at the base of a low-gradient north-facing slope. The seeps flow northeast toward Lake Fork Creek, coalescing at varying distances downslope and discharging into a meadow that lies in the Lake Fork Creek floodplain before reaching the stream. Soil moisture is high and supports a plant community characterized by a mosaic of herbaceous (*Caltha leptosepala*) and shrub (*Salix planifolia*) plant communities.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input checked="" type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Additional Observations:**GPS location:** 0278708 E/4199830 N**elevation:** 11,934'**Site Dimensions:** 20m E-W x 35m downhill N-S**CNHP plant association(s):** Caltha leptosepala Herb Veg + Salix planifolia/Caltha leptosepala Shrubland**Tree** 0%**Shrub** 15%: Salix planifolia, S. glauca**Herbaceous** 90%: C. leptosepala, Primula parryi, Juncus mertensianus**Weed cover:** none observed**Soil Characteristics:****Munsell:** 5YR,3/2**soil moisture:** saturated**organic content:** high org & high root masses**texture:** fine silt**odor:** normal**peat formation:** none**Water Quality Characteristics:****pH:** 6.39**mS:** 36**Co:** 10.8**Water Quality Notes (if any):**

Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek		
Date:	8/22/2007	Segment/Reach ID:	C-946
ID Team Observers:	Malone		

Potential:

Site is not at potential. Vegetation trampling and cutting at the spring degrades site sustainability.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
No	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
No	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Spring daylight at the base of a willow and flows SW down a gentle slope toward Henson Creek. Where the gradient flattens, about 10m downstream of the source, the channel widens and a small willow carr (20mx20m) has developed. Vegetation is characterized by a Salix monticola/Mesic forb shrubland with Salix drummondii also common throughout the stand.

A high-use undeveloped campground is located directly north of the spring on a flat open meadow. A stone footpath leads to the spring. Vegetation has been trampled at the spring and the roots of the willow from where the spring discharges have been cut away. A plastic liner has been installed just below the discharge point. The pipe that is pictured in the BLM inventory photo has been removed.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p>
<p>Trend for Functional - At Risk:</p>		<p>Yes/No: <u> </u> No</p>
<input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)

Additional Observations:**GPS location:** 0288975 E/4210975 N**elevation:** 9,366'**Site Dimensions:** 0.7m wide x 10m**CNHP plant association(s):** Salix monticola/Mesic forb shrubland**Tree** 15%: Populus tremuloides**Shrub** 30%: Salix monticola, S. drummondiana, Rosa woodsii.**Herbaceous** 20%: Epilobium hornemanii, Veronica americana, Juncus arcticus**Weed cover:** <5%: Trifolium repens, Carduus acanthoides**Soil Characteristics:****Munsell:** 7.5YR,3/2**soil moisture:** moist to saturated**organic content:** medium**texture:** fine silt**odor:** normal**peat formation:** none

Plants Observed at this Site

Scientific name*Carduus acanthoides***Trifolium repens**Achillea millefolium* var.
*lanulosa**Bromus ciliatus**Chamerion angustifolium**Epilobium hornemanii**Geranium richardsonii**Juncus arcticus* (*balticus*)*Lonicera involucrata**Luzula parviflora**Maianthemum stellatum**Populus tremuloides**Ribes inerme**Rosa woodsii**Salix drummondiana**Salix monticola**Thalictrum fendleri**Urtica gracilis**Veronica americana***Common name**

Plumeless Thistle

White Dutch Clover

Western Yarrow

Fringed Brome

Fireweed

x

Richardson's geranium

Baltic Rush

Twinberry Honeysuckle

Woodrush

Star Solomonplume

Aspen

Mountain Gooseberry

Wood's Rose

Drummond's Willow

Mountain Willow

Fendler Meadowrue

Nettle

American Brooklime

Water Quality Characteristics:**pH:** 7.22**mS:** 320**Co:** 10.0**Water Quality Notes (if any):**

Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek		
Date:	8/22/2007	Segment/Reach ID:	C-947
ID Team Observers:	Malone		

Potential:

Site is not at potential. Numerous seeps create a slope wetland. Engineer Pass road interrupts surface groundwater flow from the wetland and diverts flow into a culvert thereby decreasing the potential size of the wetland.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

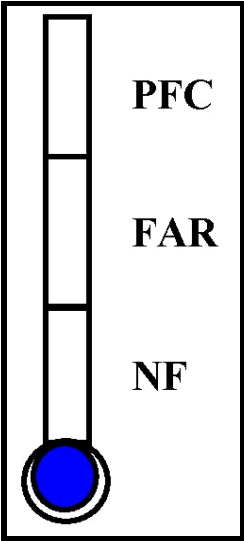
Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Numerous springs daylight from the base of a rocky outcrop. Spring water flows downhill and west 10-12m where it flows into a ditch at the side of side of Engineer Pass road and then into a culvert which carries spring flows into Henson Creek.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p> <p>Yes/No: <u>Yes</u></p>
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input checked="" type="checkbox"/> Not Apparent		<p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input checked="" type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)

Additional Observations:**GPS location:** 0287994 E/4210806 N**elevation:** 9,460'**Site Dimensions:** 10m wide x 15m downhill**CNHP plant association(s):** Alnus incana/Mesic forb shrubland**Tree** 0%**Shrub** 60%: Alnus incana, Salix drummondiana, Cornus stolonifera**Herbaceous** 30%: moss (70%), Cardamine cordifolia, Mimulus guttatus, Mertensia ciliata**Weed cover:** <5%: Taraxacum officinale,**Soil Characteristics:****Munsell:** 7.5YR,3/3**soil moisture:** moist to saturated**organic content:** high**texture:** fine silt**odor:** normal**peat formation:** none

Plants Observed at this Site

Scientific name*Taraxacum officinale**Achillea millefolium* var.
*lanulosa**Alnus incana* ssp. *tenuifolia**Cardamine cordifolia**Chamerion angustifolium**Cirsium parryi**Cornus stolonifera**Epilobium hornemannii**Geranium richardsonii**Heracleum spondylium* var.
*lanatum**Juncus ensifolius**Lonicera involucrata**Mertensia ciliata**Mimulus guttatus**Oxyria digyna**Ribes inerme**Salix drummondiana**Urtica gracilis***Common name**

Dandelion

Western Yarrow

Thin-leaf Alder

Bittercress

Fireweed

Parry's Thistle

Red-Osier Dogwood

x

Richardson's geranium

Cow Parsnip

Swordleaf Rush

Twinberry Honeysuckle

Mountain Bluebells

Monkeyflower

Alpine sorrel

Mountain Gooseberry

Drummond's Willow

Nettle

Water Quality Characteristics:**pH:** 7.61**mS:** 187**Co:** 6.1**Water Quality Notes (if any):**

Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek		
Date:	8/22/2007	Segment/Reach ID:	C-954
ID Team Observers:	Malone		

Potential:

Site is not at potential. Only a small damp spot on the road indicates the presence of a seep.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
No	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
No	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
No	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
No	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
No	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

A seep emerges out of fractured rock on the side of a roadcut that is used to access a historic site and an undeveloped campground. Only a small damp spot on the road indicates the presence of the seep. Riparian habitat is no longer present. Only a few hydrophyllic shrubs and forbs are present to indicate the presence of higher soil moisture. The willows that previously grew at the seep have been cut back to accommodate the road cut and are now dead.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:

GPS location: 0288975 E/4210975 N

elevation: 9,366'

Site Dimensions: 0x0

CNHP plant association(s): NA

Tree 10%: Populus tremuloides, Picea pungens

Shrub 5%: Ribes inerme, Lonicera involucrata

Herbaceous 10%: Thalictrum fendleri, Epilobium hornemanni, Maianthemum stellatum

Weed cover: <5%: Trifolium repens

Soil Characteristics:

Munsell: 7.5YR,3/1

soil moisture: moist

organic content: medium

texture: fine silt

odor: normal

peat formation: none

Water Quality Characteristics:

pH:

mS:

Co:

Water Quality Notes (if any):

unable to collect

Plants Observed at this Site

Scientific name

Achillea millefolium var.
lanulosa

Carex microptera
Chamerion angustifolium

Epilobium hornemanni
Fragaria virginiana

Common name

Western Yarrow

Small-winged Sedge
Fireweed

x
Wild Strawberry

Lonicera involucrata
Maianthemum stellatum
Picea pungens
Populus tremuloides
Ribes inerme
Thalictrum fendleri

Twinberry Honeysuckle
Star Solomonplume
Blue Spruce
Aspen
Mountain Gooseberry
Fendler Meadowrue



Lotic Checklist

Name of Riparian-Wetland Area:	American Basin		
Date:	9/7/2007	Segment/Reach ID:	D-259
ID Team Observers:	Malone		

Potential:

Site is not at potential due to bandit/social trails that have resulted in wetland vegetation trampling and degradation.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

A spring daylight on a west-facing slope about 20m from the southeast end of a trailhead parking lot. The stream flows northwest 34m where it coalesces with Lake Fork creek. This spring is within the streams floodplain.

Across extensive areas in this basin on low-gradient, westfacing slopes the plant community is dominated by Heartleaf bittercress-Tall fingered bluebells-Arrowleaf ragwort herbaceous vegetation. These low-gradient slopes lie at the base of very steep-gradient talus and rock slopes and are a major groundwater discharge area with numerous springs and seeps occurring across the base of the valley. This spring is part of that system.

This spring, in combination with adjacent high surface groundwater discharge, supports a dense cover of riparian herbaceous vegetation that is dominated by a few forbs, especially Cardamine cordifolia, Senecio triangularis and Delphinium barbeyi, with a thick cover of moss below.

The wetland system is threatened by recreational bandit/social trails which have resulted in vegetation trampling.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Additional Observations:**GPS location:** 0278808 E/4199874 N**elevation:** 11,934'**Site Dimensions:** channel 0.5m; riparian 3m/bank**CNHP plant association(s):** Cardamine cordifolia-Mertensia ciliata- Senecio triangularis Herb Veg**Tree** 0%**Shrub** 10%: Salix planifolia**Herbaceous** 90%: C. cordifolia, M.ciliata, S. triangularis, Delphinium barbeyi, Saxifraga odontoloma**Weed cover:** none observed**Soil Characteristics:****Munsell:** 5YR, 3/2**soil moisture:** saturated with free water**organic content:** high org & high root masses**texture:** fine silt**odor:** normal**peat formation:** none;soil is underlain by river rock.**Water Quality Characteristics:****pH:** 6.96**mS:** 306**Co:** 6.3**Water Quality Notes (if any):**

Plants Observed at this Site

Scientific name

Bryophyta
Caltha leptosepala
Cardamine cordifolia
Conoselinium scopulorum
Delphinium barbeyi
Deschampsia caespitosa
Epilobium hornemannii
Juncus drummondii
Mertensia ciliata
Mimulus guttatus

Common name

Mosses
 Marsh Marigold
 Bittercress
 Hemlock Parsley
 Subalpine Larkspur
 Tufted Hairgrass
 x
 Drummond's Rush
 Mountain Bluebells
 Monkeyflower

Oxypolis fendleri
Potentilla diversifolia
Primula parryi
Salix glauca
Salix planifolia
Saxifraga odontoloma
Sedum rodanthum
Senecio crassulus
Veronica wormskjoldii

Cowbane
 Blueleaf cinquefoil
 Parry's Primrose
 Gray Willow
 Planeleaf Willow
 Brook Saxifrage
 Queen's Crown
 Thickbract Senecio
 Alpine Speedwell



Lotic Checklist

Name of Riparian-Wetland Area:	Cinnamon Pass		
Date:	9/3/2007	Segment/Reach ID:	D-330
ID Team Observers:	Malone		

Potential:

Site is a seep in the alpine tundra that is at potential.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Spring daylight at the base of a rock outcrop in an alpine meadow at the base of steep northeast-facing talus slopes. Vegetative cover in the channel is high and dominated by mosses and *Mimulus tilingii*. Riparian vegetation is characterized by a narrow, 1-2m wide, community of *Deschampsia caespitosa* Herbaceous Vegetation. Other forbs and graminoids are also abundant including *Juncus drummondii*, *Phleum commutatum*, *Saxifraga oregana* and *Sibbaldia procumbens*.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:**GPS location:** 0277344 E/4201089 N**elevation:** 12,355'**Site Dimensions:** 1-2m wide x13m downhill (NE)**CNHP plant association(s):** In-channel Mimulus tilingii-Moss Herb Veg; Riparian Deschampsia caespitosa Herb**Tree** 0%**Shrub** 0%**Herbaceous** 80%: Mimulus tilingii, mosses, Deschampsia caespitosa, Juncus**Weed cover:** none observed**Soil Characteristics:****Munsell:** 10YR, 4/3**soil moisture:** moist to saturated**organic content:** high org and root masses**texture:** fine silt**odor:** normal**peat formation:** none**Water Quality Characteristics:****pH:** 6.92**mS:** 211**Co:** 4.2**Water Quality Notes (if any):**

Plants Observed at this Site

Scientific name*Bryophyta**Deschampsia caespitosa**Juncus drummondii**Mimulus tilingii**Phleum commutatum***Common name**

Mosses

Tufted Hairgrass

Drummond's Rush

Subalpine

Alpine Timothy

*Saxifraga oregana**Senecio dimorphophyllus**Sibbaldia procumbens**Trifolium dasyphyllum**Veronica wormskjoldii*

Bog Saxifrage

Different groundsel

Sibbaldia

Alpine Clover

Alpine Speedwell



Lotic Checklist

Name of Riparian-Wetland Area:	Cinnamon Pass		
Date:	9/3/2007	Segment/Reach ID:	D-333
ID Team Observers:	Malone		

Potential:

Site is a seep in the alpine tundra and is at potential.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Spring daylights from the base of a boulder in low gradient, east-facing alpine meadow and flows east creating a slope wetland. The riparian plant community is characterized by *Caltha leptosepala* Herbaceous Vegetation.

Throughout this basin surface groundwater flow is high, soil moisture is high and numerous seeps and springs daylight where slope gradients change from higher to lesser gradient slopes. Thus throughout this basin below steep talus slopes upland vegetation is characterized by a rich mosaic of hydric and mesic plant communities. Wildlife including elk, mule deer and songbirds such as white-crowned sparrows and American pipits are abundant.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p>
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent	<p>Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)	

Additional Observations:**GPS location:** 0277625 E/4201254 N**elevation:** 12,233'**Site Dimensions:** 4m wide x 20m downhill (E)**CNHP plant association(s):** Caltha leptosepala Herb Veg**Tree** 0%**Shrub** 0%**Herbaceous** 85%: Caltha leptosepala, Cardamine cordifolia, Mimulus tilingii,**Weed cover:** none observed**Soil Characteristics:****Munsell:** 10YR, 4/3**soil moisture:** saturated**organic content:** high org and high root masses**texture:** fine silt**odor:** normal**peat formation:** none

Plants Observed at this Site

Scientific name*Bryophyta**Caltha leptosepala**Cardamine cordifolia**Deschampsia caespitosa**Epilobium alpinum***Common name**

Mosses

Marsh Marigold

Bittercress

Tufted Hairgrass

Pimpernel willowherb

Water Quality Characteristics:**pH:** 7.15**mS:** 311**Co:** 3.6**Water Quality Notes (if any):**

Birds Observed at this Site (if noted)

*Erigeron coulteri**Juncus drummondii**Mimulus tilingii**Phleum commutatum**Primula parryi**Sibbaldia procumbens*

Coulter's Daisy

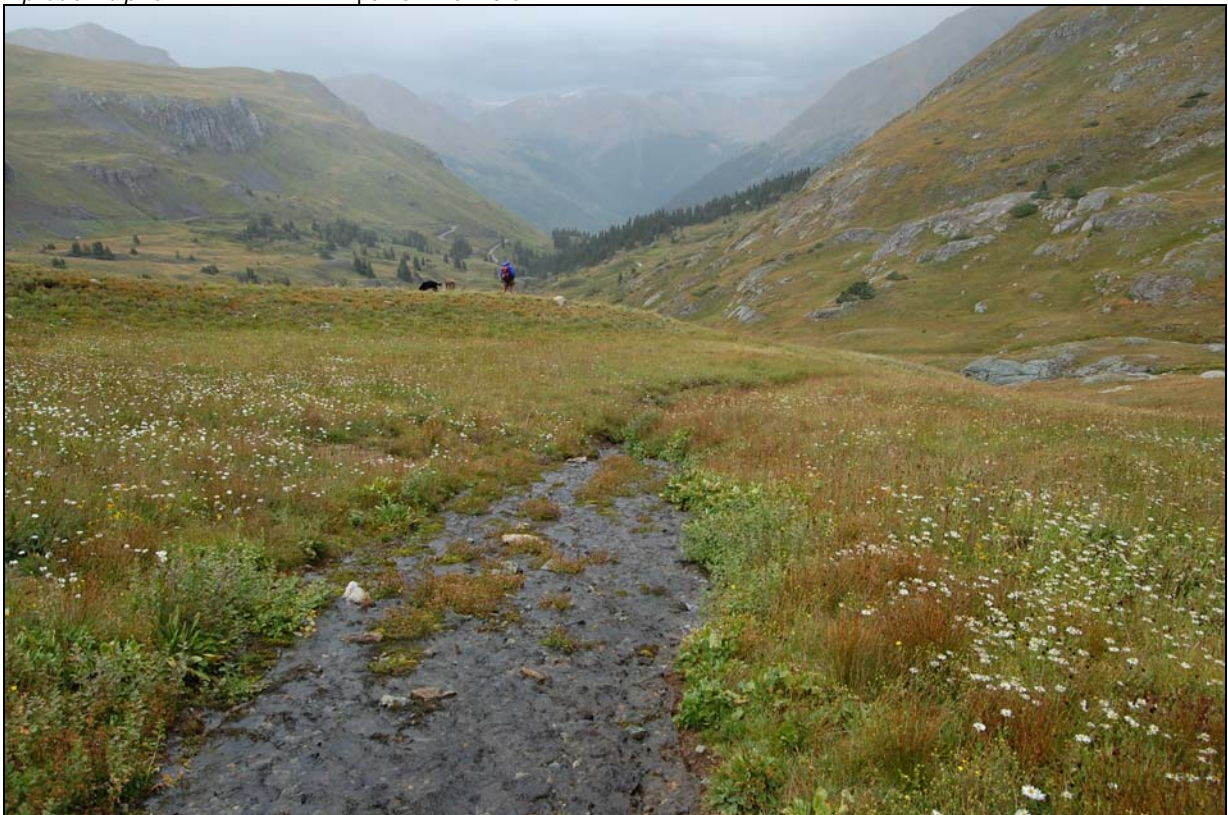
Drummond's Rush

Subalpine

Alpine Timothy

Parry's Primrose

Sibbaldia



Lotic Checklist

Name of Riparian-Wetland Area:	Cinnamon Pass		
Date:	9/7/2007	Segment/Reach ID:	D-334
ID Team Observers:	Malone		

Potential:

Site is a spring that daylight on a steep southeast-facing slope below Engineer Pass road. The spring has created a slope wetland. The site is not at potential due to road impacts including especially road-cut sourced sediment that is carried into the wetland with precipitation and is smothering wetland vegetation.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Seep discharges from the base of a steep southeast-facing slope below Engineer Pass road and onto a low-gradient bench where a slope wetland has developed. Excessive sediment from the roadcut is carried into the wetland with precipitation and snowmelt.

Riaprian vegetation is characterized by a mosaic of plant communities including *Caltha leptosepala* and *Carex aquatilis* Herbaceous Vegetation and *Salix planifolia*/*C. leptosepala* Shrubland. Numerous forb and graminod species that tolerate saturated soils are also present including *Eriophorum altaicum*, *Primula parryi* and *Saxifraga oregana*.

Wildlife use is moderate as indicated by tracks, browse and scat. Songbird species were typical of high alpine ecosystems and included an abundance of white-crowned sparrows and American pipits. Notably, an American Peregrine Falcon and six Swainson's hawks were hunting in the area.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p>
<p>Trend for Functional - At Risk:</p>		<p>Yes/No: <u>Yes</u></p>
<input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>If yes, what are those factors?</p>
		<input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input checked="" type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)

Additional Observations:**GPS location:** 0277538 E/4201543 N**elevation:** 11,934'**Site Dimensions:** 24 m E-W x 29m N-S**CNHP plant association(s):** Caltha leptosepala Herb Veg + Salix planifolia/ Caltha leptosepala Shrubland + Carex

aquatilis Herb Veg

Tree 0%**Shrub** 20%: Salix planifolia**Herbaceous** 80%: Caltha leptosepala, Eriophorum altaicum, Carex aquatilis,**Weed cover:** none observed**Soil Characteristics:****Munsell:** upper 5cm 5YR,3/1; below 5cm 10YR 4/2**soil moisture:** saturated with standing water**organic content:** upper 5cm high org; below 5cm low org with high root mass**texture:** upper 5cm silt; below 5cm silt and sand**odor:** normal**peat formation:** none**Water Quality Characteristics:****pH:** 8.77**mS:** 218**Co:** 17.3**Water Quality Notes (if any):**

Plants Observed at this Site

Scientific name

Caltha leptosepala
Carex aquatilis
Carex chalciolepis
Carex nova
Deschampsia caespitosa
Epilobium alpinum
Eriophorum altaicum
Geum rossii
Sibbaldia procumbens

Common name

Marsh Marigold
 Water Sedge
 Fishscale sedge
 Carex nova
 Tufted Hairgrass
 Pimpernel willowherb
 Altai cottongrass
 Alpine Avens
 Sibbaldia

Birds Observed at this Site (if noted)

Juncus drummondii
Juncus mertensianus
Oreoxis alpina
Potentilla diversifolia
Primula parryi
Salix planifolia
Saxifraga oregana
Sedum rodanthum
Senecio dimorphophyllus

Drummond's Rush
 Subalpine rush
 Alpine parsley
 Blueleaf cinquefoil
 Parry's Primrose
 Planeleaf Willow
 Bog Saxifrage
 Queen's Crown
 Different groundsel



Lotic Checklist

Name of Riparian-Wetland Area:	Palmetto Gulch		
Date:	9/2/2007	Segment/Reach ID:	D-454
ID Team Observers:	Malone		

Potential:

Site is not at potential. Domestic sheep grazing has altered plant community composition, reduced vegetative cover and disturbed soil.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
No	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
No	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Seep daylight in alpine tundra on a steep northeast-facing slope. Above ground flow begins 90m below point of origin; many of these high altitude seeps are ephemeral, especially those connected with spring snowmelt and especially since this is a shallow groundwater system.

Domestic sheep grazing is heavy and has altered vegetative cover by trampling and selective grazing.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown	<p>PFC FAR NF</p>	<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Reach/Segment D-454 Name of Riparian-Wetland Palmetto Gulch

Additional Observations:

GPS location: 0273971 E/4206346 N

elevation: 12,255'

Site Dimensions: 1m wide x 150m downhill

CNHP plant association(s): Caltha leptosepala Herbaceous Vegetation

Tree 0%

Shrub 0%

Herbaceous 60 -70%: Caltha leptosepala, Cardamine cordifolia, Mimulus tilingii

Weed cover: none observed

Soil Characteristics:
Characteristics:

Munsell: 7.5YR,4/3

soil moisture: saturated

organic content: high org and high root masses

texture: fine silt

any):

odor: normal

channel

peat formation: none

Plants Observed at this Site

<u>Scientific name</u>	<u>Common name</u>		
<i>Bistorta bistortoides</i>	American bistort	<i>Oxyria digyna</i>	Alpine sorrel
<i>Bryophyta</i>	Mosses	<i>Phleum commutatum</i>	Alpine Timothy
<i>Caltha leptosepala</i>	Marsh Marigold	<i>Potentilla diversifolia</i>	Blueleaf cinquefoil
<i>Cardamine cordifolia</i>	Bittercress	<i>Pteridium aquilinum subsp.</i>	Western Braken
<i>Carex chalciolepis</i>	Fishscale sedge	Fern	
<i>Deschampsia caespitosa</i>	Tufted Hairgrass	<i>Ianuginosum</i>	
<i>Epilobium alpinum</i>	Pimpernel	<i>Saxifraga odontoloma</i>	Brook Saxifrage
willowherb		<i>Sedum rodanthum</i>	Queen's Crown
<i>Geum rossii</i>	Alpine Avens	<i>Senecio dimorphophyllus</i>	Different groundsel
<i>Juncus drummondii</i>	Drummond's Rush	<i>Sibbaldia procumbens</i>	Sibbaldia
<i>Mimulus gutattus</i>	Monkeyflower	<i>Veronica wormskjoldii</i>	Alpine Speedwell



Lotic Checklist

Name of Riparian-Wetland Area:	Boulder Gulch		
Date:	9/5/2007	Segment/Reach ID:	D-462
ID Team Observers:	Malone		

Potential:

Site is a seep in the alpine and is at potential.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

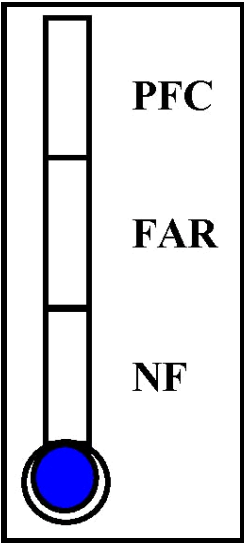
Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Seep daylight at the base of a southeast-facing slope in an alpine turf meadow. Surface groundwater is high across the length of this slope as indicated by hydrophyllic vegetation, saturated soils and the occurrence of numerous seeps. This seep flows south for 125m where it coalesces with the main channel. Upland habitat is in excellent condition and is characterized by a mosaic of alpine meadows, turfs, fellfields, gopher gardens and snowbed communities. Riparian habitat is in good condition and sustainable; vegetation cover is dense, diversity is appropriately high and plant vigor is high.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Reach/Segment D-462 Name of Riparian-Wetland Boulder Gulch

Additional Observations:

GPS location: 0279287 E/4207844 N

elevation: 12,256'

Site Dimensions: channel 2-3m; riparian zone 0.5-1m/bank

CNHP plant association(s): Caltha leptosepala herbaceous vegetation

Herbaceous 90%: Caltha leptosepala, Caradamine cordifolia, Saxifraga odontoloma, mosses

Weed cover: none observed

Soil Characteristics:
Characteristics:

Munsell: 5YR, 3/2

soil moisture: saturated

organic content: high org and high root masses

texture: fine silt

odor: normal

peat formation: none

Plants Observed at this Site

Scientific name

Bryophyta
Caltha leptosepala
Cardamine cordifolia
Carex chalciolepis
Carex scopulorum
Deschampsia caespitosa
Epilobium alpinum
willowherb
Geum rossii
Juncus drummondii

Common name

Mosses
Marsh Marigold
Bittercress
Fishscale sedge
Mountain Sedge
Tufted Hairgrass
Pimpernel

Alpine Avens
Drummond's Rush

Water Quality

pH: 8.00

mS: 98

Co: 2.8

Water Quality Notes (if

Mimulus guttatus Monkeyflower
Pedicularis groenlandica Elephantella
Phleum commutatum Alpine Timothy
Primula parryi Parry's Primrose
Saxifraga odontoloma Brook Saxifrage
Saxifraga oregana Bog Saxifrage
Senecio triangularis Triangularleaf
Senecio
Veronica wormskjoldii Alpine Speedwell



Lotic Checklist

Name of Riparian-Wetland Area:	Boulder Gulch		
Date:	9/5/2007	Segment/Reach ID:	D-467
ID Team Observers:	Malone		

Potential:

Site is a spring in the alpine and is at potential.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
Yes	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Spring daylight at the base of a northeast facing slope in an alpine turf meadow, flows 10m east to where flows coalesce with the main channel. Upland and riparian habitat are in good condition and sustainable. Riparian plant community is characterized by the classification Cardamine cordifolia-Mertensia ciliata-Senecio triangularis herbaceous vegetation but only C. cordifolia is present. The plant community is rich in other forb, sedge and rush species. Wildlife use is moderate here but in nearby willow carrs elk use is very high. Observations of the elk herd and browse indicate that this area provides important summer and autumn elk habitat.

SUMMARY DETERMINATION

<input checked="" type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Reach/Segment D-467 Name of Riparian-Wetland Boulder Gulch

Additional Observations:

GPS location: 0279512 E/4207270 N

elevation: 12,104'

Site Dimensions: channel 1-2m wide x 10m downhill; riparian 1-2m/bank.

CNHP plant association(s): Cardamine cordifolia- Mertensia ciliatata-Senecio triangularis herbaceous vegetation

Tree 0%

Shrub 0%

Herbaceous 85%: Cardamine cordifolia, Epilobium hornemanii, Mimulus tilingii, Juncus drummondii

Weed cover: none observed

Soil Characteristics:
Characteristics:

Munsell: 5YR, 3/2

soil moisture: saturated

organic content: high org and high root masses

texture: fine silt

odor: normal

peat formation: none

Water Quality

pH: 7.00

mS: 94

Co: 4.7

Water Quality Notes (if

Plants Observed at this Site

Scientific name

Bistorta bistortoides
Cardamine cordifolia
Carex chalciolepis
Deschampsia caespitosa
Epilobium hornemannii
Geum rossii

Common name

American bistort
Bittercress
Fishscale sedge
Tufted Hairgrass
x
Alpine Avens

Juncus drummondii
Mimulus guttatus
Oreoxis alpina
Phleum commutatum
Potentilla diversifolia
Sedum rodanthum
Vaccinium caespitosum

Drummond's Rush
Monkeyflower
Alpine parsley
Alpine Timothy
Blueleaf cinquefoil
Queen's Crown
Dwarf Blueberry



Lotic Checklist

Name of Riparian-Wetland Area:	Deadman Gulch		
Date:	8/10/2007	Segment/Reach ID:	F-276
ID Team Observers:	Malone		

Potential:

Site is not at potential. Poor water quality prevents development of riparian vegetation. A severe lack of riparian vegetation results in channel instability, torrential flows and excessive erosion and sedimentation.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
No	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
No	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
No	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
No	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
No	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
No	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
No	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
No	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: A seep daylight at the base of a mine dump. Seep flow rapidly creates a stream that flows SW down a steep gradient ravine. Riparian vegetation is mostly absent. Torrential flows are evident and likely due to a lack of vegetation and simplified channel structure that is essential to energy dissipation.

Riparian vegetation is absent. Upland habitat is characterized by a forest dominated by *Populus tremuloides* and *Pseudotsuga menziesii* with an understory dominated by *Juniperus communis*, *Shepherdia canadensis*, *Ribes inermis* and *Paxistima myrsinites*.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p>
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent	<p>Yes/No: <u> </u> No</p>	<p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)

Reach/Segment F-276 Name of Riparian-Wetland Deadman Gulch

Additional Observations:

GPS location: Seep origin (bottom of dump) 0299484 E/4208639 N

elevation: 10,080'

Site Dimensions: Channel 0.3-0.5m wide; riparian 0/bank

CNHP plant association(s): Absent

Tree 0%

Shrub 0%

Herbaceous 0%

Weed cover: 0%

Soil Characteristics:
Characteristics:

Munsell: 10YR,7/6

soil moisture: saturated

organic content: very low

texture: waste rock

any):

odor: chemical

peat formation: none

Plants Observed at this Site

Water Quality

pH: 2.76

mS: 2020

Co: 15.7

Water Quality Notes (if

Birds Observed at this Site (if noted)

Scientific name

Junco hyemalis
Catharus guttatus
Cyanocitta stelleri

Common name

Dark-eyed Junco
Hermit Thrush
Steller's Jay

Lotic Checklist

Name of Riparian-Wetland Area:	Roy Pray Mine Wetland		
Date:	9/2/2007	Segment/Reach ID:	MD-11
ID Team Observers:	Malone		

Potential:

Site is not at potential. The site is a wetland that has developed at the base of a mine dump. Mine remediation efforts were taking place at the time of this assessment.

However, sediment barriers installed to mitigate sedimentation were ineffective and a retention pond below the mine dump was leaking. Additionally domestic sheep grazing is high and likely impacts vigor of wetland vegetation.

Wetland potential is degraded by ineffective mitigation strategies and by excessively high levels of grazing: stubble height of palatable grasses and forbs is <10% of potential height and vigor is impacted.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

An alpine wetland meadow has developed at the base of a mine dump. Water supply to the wetland comes from numerous sources including; groundwater discharge; a stream that flows north on the eastern border of the meadow; adit drainage that flows north and coalesces with the eastern stream; a stream to the south of the adit that coalesces with adit drainage and then flows 50m downslope to the east stream and then to the wetland; and retention pond leakage to the wetland.

Wetland vegetation is characterized by a mosaic of plant communities including *Caltha leptosepala* and *Carex scopulorum*-*Caltha leptosepala* Herbaceous Vegetation and *Salix planifolia*/mesic forb shrubland

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown <p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input checked="" type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Reach/Segment

MD-11

Name of Riparian-Wetland

Roy Pray Mine Wetland

Additional Observations:

Plants Observed at this Site

Birds Observed at this Site (if noted)

Scientific name

Bistorta vivipara
Bryophyta
Caltha leptosepala
Cardamine cordifolia
Carex chalciolepis
Carex microptera
Carex scopulorum
Deschampsia caespitosa
Eleocharis palustris
Epilobium hornemannii
Geum rossii
Juncus drummondii
Oreoxis alpina
Phleum commutatum
Potentilla diversifolia
Saxifraga oregana
Sedum rodanthum
Swertia perennis

Common name

Alpine bistort
Mosses
Marsh Marigold
Bittercress
Fishscale sedge
Small-winged Sedge
Mountain Sedge
Tufted Hairgrass
Common Spikesedge
x
Alpine Avens
Drummond's Rush
Alpine parsley
Alpine Timothy
Blueleaf cinquefoil
Bog Saxifrage
Queen's Crown
Star Gentian



Lotic Checklist

Name of Riparian-Wetland Area:	Palmetto Gulch wetland		
Date:	9/2/2007	Segment/Reach ID:	MD-13
ID Team Observers:	Malone		

Potential:

Site is not at potential.

Wetlands are degraded by waste rock from the dump which is carried downslope with precipitation and is smothering wetland vegetation. Domestic sheep grazing is heavy. Browse on willows is moderate to high, 25-50% of 2nd year and older stems are browsed, and likely impacts vigor.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Two wetlands have developed on alluvial fans at the base of a mine dump. The wetlands receive water from surface groundwater discharge and from a stream that has its origins in a basin to the southwest near the Hough Mine; the stream flows northeast from seeps below the Hough Mine, into a culvert, under Engineer Pass road to these dumps and wetlands. This stream eventually coalesces with the Palmetto Gulch stream which coalesces with Henson Creek.

Wetland habitat is characterized by a mosaic of various plant communities including sedge, forb and willow communities. Browse on willows is high and impacts vigor. Vegetation is also impacted by waste rock which is readily carried down from the dump with precipitation and deposited in the wetland.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager?</p>
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent	<p>Yes/No: <u> </u> No</p>	<p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)

Reach/Segment

MD-13

Name of Riparian-Wetland

Palmetto Gulch wetland

Additional Observations:

Plants Observed at this Site

Birds Observed at this Site (if noted)

Scientific name

Common name

Caltha leptosepala

Marsh Marigold

Cardamine cordifolia

Bittercress

Carex aquatilis

Water Sedge

Carex microptera

Small-winged Sedge

Carex utriculata

Beaked Sedge

Deschampsia caespitosa

Tufted Hairgrass

Juncus ensifolius

Swordleaf Rush

Luzula parviflora

Woodrush

Primula parryi

Parry's Primrose

Salix planifolia

Planeleaf Willow

Saxifraga oregana

Bog Saxifrage

Sedum rodanthum

Queen's Crown

Senecio triangularis

Triangularleaf Senecio

Swertia perennis

Star Gentian

Lotic Checklist

Name of Riparian-Wetland Area:	Bluebird Mine		
Date:	9/6/2007	Segment/Reach ID:	MD-24
ID Team Observers:	Malone		

Potential:

Site is not at potential. Site is an abandoned mine dump with a draining adit that is located in an avalanche chute slope wetland. Vegetation has not been restored on the dump and water quality from the adit is impaired. Mine dump waste rock is carried downslope with snow and precipitation and degrades downslope vegetation.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
Yes	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

An abandoned mine dump and draining adit is located on a very steep north-facing slope in the midst of an avalanche chute. . Surrounding upland vegetation is characterized by a mosaic of spruce-fir forests, avalanche chutes and talus slopes. The chute is a characteristic avalanche chute slope wetland. Soil moisture in the avalanche chute is very high and supports a diverse willow shrubland.

Wildlife use is high; numerous mule deer were observed, elk tracks and scat are common, numerous songbirds were observed including Western Tanager, white-crowned sparrows and Golden-crowned kinglets and a Cooper's Hawk was hunting on the slope.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown Trend for Functional - At Risk: <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Additional Observations:**GPS location:****elevation:****Site Dimensions:** dump 15m wide x 35m downhill; avalanche chute 65m wide**CNHP plant association(s):** Salix monticola/mesic forb shrubland**Tree** 5%: Picea engelmannii, Abies lasiocarpa**Shrub** 40-50%: Salix monticola, S. Boothii, S. Bebbiana, S. drummondiana**Herbaceous** 70-80%: Sambucus racemosa, Heracleum spondylium, Aconitum**Weed cover:** none observed**Soil Characteristics:**
Characteristics:**Munsell:** riparian 2.5Y, 3/2; dump 2.5Y, 8/6 & 8/2**soil moisture:** dump dry; riparian moist to saturated**organic content:** dump none; riparian moderate**texture:** "dump waste rock; riparian talus, scree, silt to fine sand"**odor:** dump strong sulfur smell; riparian normal**peat formation:** none**Water Quality****pH:** 3.23**mS:** 1371**Co:** 14.6**Water Quality Notes (if**

Plants Observed at this Site

Scientific name

Abies lasiocarpa
 Aconitum columbianum
 Angelica grayi
 Aquilegia coerulea
 Carex ebenea
 Carex microptera
 Carex misandra
 Castilleja miniata
 Heracleum spondylium var.
 lanatum
 Juncus drummondii
 Lonicera involucrata
 Mertensia ciliata
 Oxyria digyna
 Picea engelmannii
 Pteridium aquilinum subsp.
 lanuginosum
 Ribes montigenum
 Rubus ideaus
 Salix bebbiana
 Salix boothii
 Salix drummondiana
 Salix monticola
 Sambucus racemosa var.
 Sedum rodanthum
 Senecio atratus
 Senecio bigelovii
 Sibbaldia procumbens
 Thalictrum fendleri
 Vaccinium scoparium

Common name

Subalpine Fir
 Monkshood
 Gray's Angelica
 Colorado blue columbine
 Ebony Sedge
 Small-winged Sedge
 Man-hater sedge
 Scarlet Paintbrush
 Cow Parsnip
 Drummond's Rush
 Twinberry Honeysuckle
 Mountain Bluebells
 Alpine sorrel
 Engelmann Spruce
 Western Braken Fern
 Red-fruited Gooseberry
 Red Raspberry
 Bebb's Willow
 Booth's Willow
 Drummond's Willow
 Mountain Willow
 Red Elderberry
 Queen's Crown
 Blacktip Senecio
 Bigelow's Groundsel
 Sibbaldia
 Fendler Meadowrue
 Broom Huckleberry



Lotic Checklist

Name of Riparian-Wetland Area:	North Fork Henson Ck		
Date:	8/26/2007	Segment/Reach ID:	MD-48
ID Team Observers:	Malone		

Potential:

Site is not at potential. Site is a mine dump with a draining adit that interrupts surface groundwater flow with the resulting development of a wetland. Site potential is degraded by weed inundation, by recreational impacts and possibly by water quality.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
Yes	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Site is a mine dump and draining adit that are located at the base of an south-facing slope on a shallow gradient open meadow. Surface groundwater discharges across the entire meadow creating a large mesic to wet meadow. The mine adit interrupts surface groundwater flow resulting in groundwater daylighting to create a small stream and wetland. The stream flows south towards Henson Creek for 30m before dissapearing. Recreational impacts are high with Engineer Pass road on the southern edge of the meadow and North Henson Creek road on the western edge of the site.

Riparian and wetland vegetation is characterized by a habitat mosaic of herbaceous vegetation including communiities of *Carex utriculata*, *Juncus balticus* and *Veronica anagallis-aquatica* (?). Other species of sedges and rushes and numerous forb species are also present. A few scattered willows occur within the wetland and cottonwood and blue spruce occur at the periphery of the wetland. Noxious weeds including plumeless thistle inundate the entire site and degrade wetland function.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input checked="" type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input checked="" type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Additional Observations:

GPS location: 0283560 E/4209368 N(adit)

elevation: 9,727'

Site Dimensions: 2-6m wide x 30m downhill

CNHP plant association(s): Juncus balticus herb veg + Carex utriculata herb veg + Veronica anagallis-aquatica

(?) herb veg.

Tree 5%: Populus angustifolia, Picea pungens

Shrub 5%: Salix drummondiana, S. monticola, Potentilla fruticosa

Herbaceous 85%: Carex utriculata, Juncus balticus, Veronica spp., Epilobium

Weed cover: >10%: Carduus acanthoides

Soil Characteristics:

Characteristics:

Munsell: 10 YR, 2/1

soil moisture: saturated

organic content: very high

texture: silt

any):

odor: anaerobic

peat formation: none

Water Quality

pH: 7.69

mS: 1377

Co: 13.2

Water Quality Notes (if

Plants Observed at this Site

Birds Observed at this Site (if noted)

<u>Scientific name</u>	<u>Common name</u>
<i>Agrostis gigantea</i> *	Redtop
<i>Carduus acanthoides</i> *	Plumeless Thistle
<i>Rumex crispus</i>	Curly Dock
<i>Trifolium repens</i>	White Dutch Clover
<i>Achillea millefolium</i> var. <i>lanulosa</i>	Western Yarrow
<i>Carex microptera</i>	Small-winged Sedge
<i>Carex utriculata</i>	Beaked Sedge
<i>Cirsium parryi</i>	Parry's Thistle
<i>Epilobium hornemannii</i>	x
<i>Juncus arcticus</i> (<i>balticus</i>)	Baltic Rush
<i>Juncus ensifolius</i>	Swordleaf Rush
<i>Picea pungens</i>	Blue Spruce
<i>Populus angustifolia</i>	Narrowleaf Cottonwood
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil
<i>Ribes inerme</i>	Mountain Gooseberry
<i>Salix drummondiana</i>	Drummond's Willow
<i>Salix monticola</i>	Mountain Willow
<i>Senecio atratus</i>	Blacktip Senecio
<i>Urtica gracilis</i>	Nettle
<i>Veronica americana</i>	American Brooklime
<i>Veronica anagallis-aquatica</i>	Water speedwell

Lotic Checklist

Name of Riparian-Wetland Area:	Owl Gulch		
Date:	8/23/2007	Segment/Reach ID:	MD-56
ID Team Observers:	Malone		

Potential:

Site is a mine dump and an adit. Precipitation runoff from the dump likely impacts the stream that drains Owl Gulch.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
N/A	4) Riparian-wetland area is widening or has achieved potential extent
N/A	5) Upland watershed is not contributing to riparian-wetland degradation

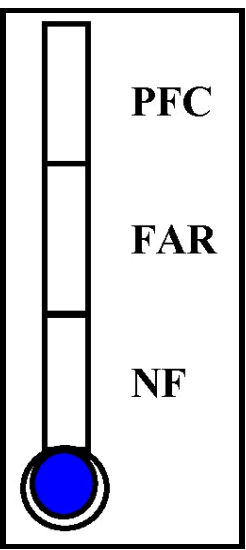
Yes No N/A	VEGETATION
N/A	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
N/A	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
N/A	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
N/A	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

Site is a mine dump and adit on a very steep east-facing slope. Upland vegetation is dominated by *Picea engelmannii*-*Abies lasiocarpa* forest with *Populus tremuloides* dominating in moister ravines. Runoff from the dump drains directly into the stream that drains Owl Gulch. Riparian vegetation along that stream is characterized by a dense willow carr dominated by *Salix drummondiana*. Wildlife use is very high; three large bull elk were observed directly across the drainage, numerous mule deer were observed and scat from weasels and coyotes was common. A northern goshawk was also twice observed near this site.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		

Additional Observations:

GPS location: 0288543 E/4209077 N,11 (top of dump).

elevation: ~9,340'

Site Dimensions: "dump 10m wide x 100m downhill: stream channel 2-3m, riparian 4-5m/bank."

CNHP plant association(s): Salix drummondiana/Mesic forb shrubland

Tree 0%

Shrub riparian 80%: Salix drummondiana (80%), S.planifolia, Lonicera involucrata, Ribes

montigenum

Herbaceous riparian 40%: Mertensia ciliata, Senecio triangularis, Heracleum spondylium

Weed cover: riparian: none observed.

Soil Characteristics:

Characteristics:

Munsell: dump 10YR, 7/4: riparian 10YR,8/1

soil moisture: dump dry: riparian saturated

organic content: dump none: riparian low

texture: dump waste rock: riparian cobble to sand

odor: dump sulfur: riparian normal

peat formation: dump none: riparian none

Water Quality

pH: 7.84

mS: 183

Co: 10.6

Water Quality Notes (if stream



Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek		
Date:	8/24/2007	Segment/Reach ID:	MD-57
ID Team Observers:	Malone		

Potential:

Site is a mine dump with a draining adit and abandoned cabin. Site is not at potential. Precipitation runoff from dump likely impacts the riparian zone at the base of the dump and Henson Creek.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
N/A	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
N/A	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
N/A	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
N/A	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
N/A	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: A mine dump is located on a steep north-facing slope. An abandoned cabin is located at the top of the dump and a draining adit is located 50m south of the cabin. The adit is draining into a ditch that runs north toward the cabin and dump.

Riparian habitat is absent at the mine site but does occur at the bottom of the dump as a result of overbanking flows from Henson Creek and from groundwater discharge from the base of the slope. Ditch vegetation is similar to adjacent upland vegetation. Upland habitat is dominated by *Picea engelmannii* with the shrub layer dominated by *Paxistima myrsinites* and *Ribes coloradense* and the herbaceous layer by *Arctostaphylos uva-ursi*, *Vaccinium myrtillus* and *Geranium richardsonii* and with *Populus tremuloides* communities dominating in moister ravines. Hillslope tree cover is 30%, shrub cover 20% and herbaceous cover 70%.

Riparian habitat at the base of the dump adjacent to Henson Creek is characterized by a *Picea pungens/Alnus incana* Woodland.

Tree cover (drainage ditch): 10% including *Populus tremuloides* and *Picea engelmannii*.

Shrub cover(drainage ditch): 20% including *Ribes coloradense*

Herbaceous cover(drainage ditch): 10% including *Senecio* spp., *Geranium richardsonii* and *Bromus ciliatus*.

Weed cover(drainage ditch): none observed.

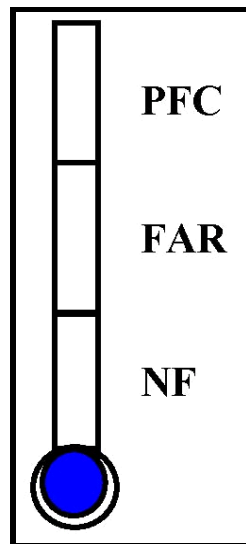
Dump Vegetation: 5% total including *Ribes montigenum*, *Populus tremuloides*, *Picea engelmannii*, *Senecio eremophilus* and *Carex pensylvanica*.

SUMMARY DETERMINATION

- Proper Functioning Condition
- Functional - At Risk
- Nonfunctional
- Unknown

Trend for Functional - At Risk:

- Upward
- Downward
- Not Apparent



Are factors contributing to unacceptable conditions outside the control of the manager?

Yes/No: No

If yes, what are those factors?

- Flow Regulations
- Mining Activities
- Upstream Chan Conditions
- Channelization
- Road Encroachment
- Oil Field Water Discharge
- Augmented Flows
- Other (specify)

Reach/Segment MD-57 Name of Riparian-Wetland Henson Creek

Additional Observations:

GPS location: adit 0288781 E/ 4210841 N, 9,442; top of dump 0288804 E/ 4210866 N
elevation: 9,397'

Site Dimensions: adit ditch 1m wide x 20m long; dump 10m wide x 20m downslope to riparian zone; riparian zone vegetated width 12m

CNHP plant association(s): Picea pungens/Alnus incana

Tree 20%: Picea pungens, Populus angustifolia

Shrub 20%: Alnus incana, Salix drummondii, Ribes inerme

Herbaceous 40%: Equisetum arvense, Bromus ciliata, Cardamine cordifolia, Aster foliaceus

Weed cover: 10%: Carduus acanthoides

Soil Characteristics:
Characteristics:

Munsell: adit 2.5YR,3/2; dump 10YR, 7/6; riparian 7.27

soil moisture: adit saturated with standing water; dump dry; riparian moist to saturated

organic content: adit high; dump dry; riparian high

texture: adit fine silt; dump waste rock; riparian fine silt
any):

odor: adit organic; dump chemical; riparian organic

peat formation: none

Plants Observed at this Site

Birds Observed at this Site (if noted)

Scientific name

Alnus incana ssp. tenuifolia
Aster foliaceus
Bromus ciliatus
Bryophyta
Cardamine cordifolia
Geum macrophyllum
Mertensia ciliata
Picea pungens
Platanthera huronensis
Populus angustifolia
Ribes inerme
Salix drummondiana

Common name

Thin-leaf Alder
Leafy Aster
Fringed Brome
Mosses
Bittercress
Largeleaf Avens
Mountain Bluebells
Blue Spruce
Green Bog Orchid
Narrowleaf Cottonwood
Mountain Gooseberry
Drummond's Willow

Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek		
Date:	8/24/2007	Segment/Reach ID:	MD58
ID Team Observers:	Malone		

Potential:

Site is a mine dump with two draining adits. Site is not at potential. Precipitation runoff from the mine dump likely impacts Henson Creek.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
N/A	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
N/A	4) Riparian-wetland area is widening or has achieved potential extent
N/A	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
N/A	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
N/A	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
N/A	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
N/A	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
N/A	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
N/A	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
N/A	15) Lateral stream movement is associated with natural sinuosity
N/A	16) System is vertically stable (not downcutting)
N/A	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

General Description: A mine dump and two adits are located on a steep north-facing slope, uphill and 50m southwest of MD 57.

Riparian habitat is absent. Upland habitat surrounding the mine dump is characterized by *Picea engelmannii* with the shrub layer dominated by *Paxistima myrsinites* and *Ribes coloradense* and the herbaceous layer by *Arctostaphylos uva-ursi*, *Vaccinium myrtillus* and *Geranium richardsonii* and with *Populus tremuloides* communities dominating in moister ravines.

Hillslope tree cover is 30%, shrub cover 20% and herbaceous cover 70%. Dump site has <10% total vegetative cover.

Tree cover (dump):<10% including *Populus tremuloides* and *Picea engelmannii*.

Shrub (dump):<10% including *Ribes coloradense*

Herbaceous cover(dump):<10% including *Carex pensylvanica*, *Bromus ciliata* and *Heterotheca villosa*

Weed cover(dump): none observed.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input type="checkbox"/> Functional - At Risk <input checked="" type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown <p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Lotic Checklist

Name of Riparian-Wetland Area:	Henson Creek		
Date:	8/21/2007	Segment/Reach ID:	MD60
ID Team Observers:	Malone		

Potential:

Site is not at potential. Site is a mine dump with an adit that is located 50m downstream of the dump and with a shaft at the top of the dump. Adit drainage flows directly into Henson Creek. Precipitation runoff from the dump very likely impacts Henson Creek with excess sedimentation. Riparian habitat at the base of the dump has been degraded by mining activities.

Yes No N/A	HYDROLOGICAL
Yes	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
No	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
No	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
Yes	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
Yes	10) Riparian-wetland plants exhibit high vigor
No	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
Yes	14) Point bars are revegetating with riparian-wetland vegetation
No	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
No	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

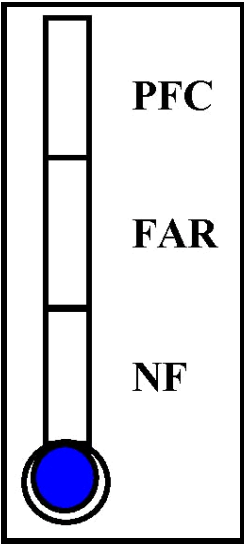
Remarks:

General description: A mine dump, tunnel and adit are located on a steep north-facing slope and directly adjacent to riparian habitat on the left bank of Henson Creek. Adit drainage is discharged directly into Henson Creek via a pipe and by seepage. Riparian habitat at the base of the dump has not recovered from mining activities and likely continues to be impacted by dump-related degradation. Precipitation carries sediment-laden runoff from the dump into Henson Creek.

Riparian habitat at the base of the dump is sustained by overbanking flows from Henson Creek and by groundwater discharge from the base of the slope. Riparian habitat is characterized by an *Alnus incana*/Equisetum arvense Shrubland. Vegetated riparian width on the right bank (mine location) = 2m; potential width = 10m.

Soil: 90% of the riparian zone is unconsolidated cobbles with some sand and fines from the dump embedding the cobbles. Only a very narrow zone, 1-2m wide, has any soil development.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u> </u> No</p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
<p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input checked="" type="checkbox"/> Not Apparent		

Reach/Segment

MD60

Name of Riparian-Wetland

Henson Creek

Additional Observations:

Plants Observed at this Site

Birds Observed at this Site (if noted)

Scientific name

*Agrostis gigantea**
*Carduus acanthoides**
*Phalaris arundinaceae**
Taraxacum officinale
Alnus incana ssp. *tenuifolia*
Bromus ciliatus
Bryophyta
Cardamine cordifolia
Epilobium hornemannii
Equisetum arvense
Heterotheca villosa
Mimulus guttatus
Picea pungens
Populus angustifolia
Ribes inerme
Rubus ideaus
Salix drummondiana
Senecio eremophilus
Urtica gracilis

Common name

Redtop
Plumeless Thistle
Reed Canarygrass
Dandelion
Thin-leaf Alder
Fringed Brome
Mosses
Bittercress
x
Horsetail
Woolly Golden Aster
Monkeyflower
Blue Spruce
Narrowleaf Cottonwood
Mountain Gooseberry
Red Raspberry
Drummond's Willow
Cut-leaved Groundsel
Nettle



Lotic Checklist

Name of Riparian-Wetland Area:	North Fork Henson Ck.		
Date:	8/27/2007	Segment/Reach ID:	vulcan1
ID Team Observers:	Malone		

Potential:

Site is not at potential. Site is an abandoned mill and tailings with a draining adit and retention pond. This part of the assessment (vulcan1) addresses adit drainage. Adit drainage creates a stream that flows steeply downhill and discharges into a willow carr located on the floodplain of North Fork creek. Vegetative vigor is low for vegetaton associated with drainage and indicates that water quality may inhibit vegetative restoration and diminish site potential.

Yes No N/A	HYDROLOGICAL
N/A	1) Floodplain above bankfull is inundated in "relatively frequent" events
N/A	2) Where beaver dams are present are they active and stable
Yes	3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region)
Yes	4) Riparian-wetland area is widening or has achieved potential extent
No	5) Upland watershed is not contributing to riparian-wetland degradation

Yes No N/A	VEGETATION
No	6) Diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)
Yes	7) Diverse composition of riparian-wetland vegetation (for maintenance/recovery) (species present)
Yes	8) Species present indicate maintenance of riparian-wetland soil moisture characteristics
N/A	9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events (community types present)
No	10) Riparian-wetland plants exhibit high vigor
N/A	11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows (enough)
Yes	12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

Yes No N/A	EROSION DEPOSITION
Yes	13) Floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) adequate to dissipate energy
N/A	14) Point bars are revegetating with riparian-wetland vegetation
Yes	15) Lateral stream movement is associated with natural sinuosity
Yes	16) System is vertically stable (not downcutting)
Yes	17) Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Remarks:

The Vulcan mill site is located on a steep northeast-facing slope. Groundwater discharge from the base of the slope into North Henson Creek is high. Upland vegetation is dominated by *Picea engelmannii*-*Abies lasiocarpa* Forest. Habitat at the base of the mill site is dominated by a mosaic of willow carrs and wet meadows.

An adit is located above the mill site. Adit drainage flows north, steeply downhill and discharges into riparian willow carr habitat on the right bank of North Fork creek. Adit drainage does not flow into retention pond. A strong sulfur odor emanates from the adit. Vegetation vigor is low and may be impacted by water quality. Vegetation along the drainage is dominated by an overstory of *Picea engelmannii* with an herbaceous cover dominated by a lush growth of mosses with a few forb species, especially *Parnassia fimbriata*; although trees and shrubs are present they are in poor condition.

The retention pond is located below and to the northwest of the mill site. Retention pond assessment is found in data file vulcan2.

SUMMARY DETERMINATION

<input type="checkbox"/> Proper Functioning Condition <input checked="" type="checkbox"/> Functional - At Risk <input type="checkbox"/> Nonfunctional <input type="checkbox"/> Unknown <p>Trend for Functional - At Risk:</p> <input type="checkbox"/> Upward <input type="checkbox"/> Downward <input type="checkbox"/> Not Apparent		<p>Are factors contributing to unacceptable conditions outside the control of the manager? Yes/No: <u>Yes</u></p> <p>If yes, what are those factors?</p> <input type="checkbox"/> Flow Regulations <input checked="" type="checkbox"/> Mining Activities <input type="checkbox"/> Upstream Chan Conditions <input type="checkbox"/> Channelization <input type="checkbox"/> Road Encroachment <input type="checkbox"/> Oil Field Water Discharge <input type="checkbox"/> Augmented Flows <input type="checkbox"/> Other (specify)
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Reach/Segment

vulcan1

Name of Riparian-Wetland

North Fork Henson Ck.

Additional Observations:

Plants Observed at this Site

Birds Observed at this Site (if noted)

Scientific name

Common name

Bromus ciliatus

Fringed Brome

Carex utriculata

Beaked Sedge

Epilobium hornemannii

x

Equisetum arvense

Horsetail

Fragaria virginiana

Wild Strawberry

Juncus arcticus (balticus)

Baltic Rush

Juncus ensifolius

Swordleaf Rush

Lonicera involucrata

Twinberry Honeysuckle

Parnassia fimbriata

Fringed Grass-of-Parnassus

Pedicularis groenlandica

Elephantella

Picea engelmannii

Engelmann Spruce

Platanthera huronensis

Green Bog Orchid

Populus tremuloides

Aspen

Salix drummondiana

Drummond's Willow

Salix monticola

Mountain Willow

Senecio atratus

Blacktip Senecio

Shepherdia canadensis

Buffaloberry

Vaccinium scoparium

Broom Huckleberry



APPENDIX C. Potential Conservation Areas in Hinsdale County that include seeps, springs, and fens surveyed in 2006-2007.

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Henson Creek

Biodiversity Rank - B3: High Biodiversity Significance

Protection Urgency Rank - P3: Definable Threat/Opportunity but not within 5 Years

Management Urgency Rank - M3: Needed within 5 Years to Maintain Quality

U.S.G.S. 7.5-minute quadrangles: Lake City, Uncompahgre Peak

Size: 2,014 acres (815 ha)

Elevation: 8,680 - 9,600 ft. (2,646 - 2,926 m)

General Description: The site is situated along middle and lower reaches of Henson Creek, a third order tributary of the Lake Fork of the Gunnison River. The wetland communities form a narrow riparian zone confined to a few meters along stream banks by the road and steep adjacent slopes. General geology of the drainage and surrounding uplands consists of igneous rocks of the Tertiary Age, specifically, ash-flow tuff of the main volcanic sequence and intra-ash flow andesitic lavas (Steven 1974, Tweto 1979). The site occurs in an active area of the mineral belt and upstream reaches of the drainage have been mined extensively. The BLM manages the largest portion of the Henson Creek watershed and is actively working toward reclamation of abandoned mines in the area. Two dams associated with mining operations along the drainage have been breached and no longer impact hydrology. Soils consist of alluviums of silt and clay over sandy clay loams. Stream bottoms consist of small to medium cobbles with intermittent boulders. Vegetation forms a dense layer of tall shrubs along narrow riparian areas and patches of open floodplain. Shrub layer is dominated by thinleaf alder (*Alnus incana*) and Drummond's willow (*Salix drummondiana*). Other tall shrubs interspersed throughout include greenleaf willow (*Salix lucida* ssp. *caudata*) and narrowleaf willow (*Salix exigua*). Narrowleaf cottonwood (*Populus angustifolia*) and blue spruce (*Picea pungens*) form a consistent canopy layer along upper reaches of the drainage above the Henson Mine. Canopy cover is intermittent along lower reaches. Understory cover is sparse in most areas including low cover of short shrubs and mesic herbaceous species. Short shrubs include whitestem gooseberry (*Ribes inerme*) and Wood's rose (*Rosa woodsii*). California nettle (*Urtica dioica* ssp. *gracilis*), bluejoint (*Calamagrostis canadensis*), tall fringed bluebells (*Mertensia ciliata*), common cowparsnip (*Heracleum maximum*), and field horsetail (*Equisetum arvense*) are consistent in low cover throughout riparian reaches. Surrounding uplands are dominated by mixed forests and woodlands of Engelmann spruce (*Picea engelmannii*), blue spruce (*Picea pungens*), quaking aspen (*Populus tremuloides*), and Douglas-fir (*Pseudotsuga menziesii*). Disturbances in the drainage include past mining activity, adjacent road, development on private property, and recreational uses including OHV use, fishing, camping, hiking, and biking. Although there is extensive anthropogenic disturbance in the watershed, riparian vegetation is vigorous. Exotic species found in disturbed areas include Kentucky bluegrass (*Poa*

pratensis), common dandelion (*Taraxacum officinale*), and Canada thistle (*Cirsium arvense*).

Key Environmental Factors: Key environmental factors influencing species composition of the wetlands are montane elevation, seasonal flooding, free-flowing hydrology, and moderate gradient.

Climate Description: Climate and weather tend to follow typical patterns of the San Juan Mountains of Colorado being generally xeric throughout the year with warm spring weather causing snowmelt flooding, wet summers, and a late summer "monsoon" season.

Land Use History: Watershed contains multiple town sites from past mining activity including Capitol City and Henson, both founded during the mining booms of the late 1800's as well as many old homesites from past settlers. The road along Henson Creek has been used and maintained since this time.

Biodiversity Significance Rank Comments (B3): This site is drawn for an excellent (A-ranked) occurrence of the globally vulnerable (G3/S3) thinleaf alder - Drummond's willow tall shrubland (*Alnus incana* - *Salix drummondiana* shrubland) and a good (B-ranked) occurrence of the globally vulnerable (G3/S3) narrowleaf cottonwood - blue spruce / thinleaf alder riparian woodland (*Populus angustifolia* - *Picea pungens* / *Alnus incana* woodland).

Natural Heritage element occurrences at the Henson Creek PCA.

Major Group	State Scientific Name	State Common Name	Global Rank	State Rank	Federal Status	State Status	Fed Sens	EO Rank	Last Obs Date
Natural Communities	<i>Alnus incana</i> - <i>Salix drummondiana</i> Shrubland	Montane Riparian Shrubland	G3	S3				A	2006-09-11
Natural Communities	<i>Populus angustifolia</i> - <i>Picea pungens</i> / <i>Alnus incana</i> Woodland	Montane Riparian Forests	G3	S3				B	2006-09-11

** The records above are sorted in the following order 1) Major Group 2) Global Rank and 3) Scientific name.

Boundary Justification: Boundaries are drawn to include portions of surrounding areas important to the maintenance of site hydrology. Boundaries roughly follow contours of surrounding uplands and a buffer of approximately 1,000 feet based on an analysis of the Bibliography of Impacts to Wetlands (Keate 2004). Watershed encompasses approximately 5,000 acres on BLM, USFS, and private property and four potential conservation areas identified by the Colorado Natural Heritage Program. Boundaries should account for natural hydrologic processes important to

the maintenance of the element such as seasonal flooding, groundwater recharge, surface flows, and sediment deposition. However, the boundary does not include entire watershed or all ecological processes necessary to the maintenance of the site and activities within the watershed such as deforestation, improper livestock grazing and recreational use, development, or water diversion could be detrimental to the site.

Protection Urgency Rank Comments (P3): The site is protected generally by the BLM, Gunnison District. Threats include an adjacent road, recreational use, mining in the drainage, grazing, and private development.

Management Urgency Rank Comments (M3): The occurrences appears to be stable, but may need future management if recreational or private property use changes or increases.

Land Use Comments: Predominant land use is recreation. Other land uses include grazing along upper reaches and various private uses including development throughout the drainage.

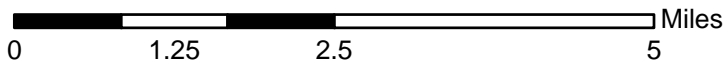
Natural Hazard Comments: Natural hazards present in the drainage include avalanche danger, spring flooding, and falling rocks.


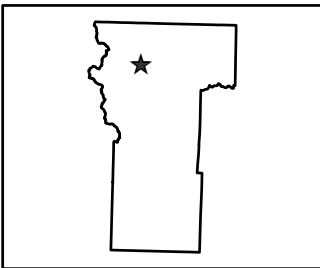
Exotic Species Comments: Exotic species are common along the drainage due to extensive use and an adjacent road. Exotics do not dominate or create large monocultures in any areas. Kentucky bluegrass (*Poa pratensis*), common dandelion (*Taraxacum officinale*), and Canada thistle (*Cirsium arvense*) were observed at the site in disturbed areas.

Off-Site Considerations: Off-site considerations include mining, roadway use and maintenance, and grazing.

Version Author: Jones, J.R.

Version Date: 10/15/2006



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Henson Creek Potential Conservation Area, B3: High Biodiversity Significance

Lake Fork of the Gunnison River

Biodiversity Rank - B3: High Biodiversity Significance

Protection Urgency Rank - P3: Definable Threat/Opportunity but not within 5 Years

Management Urgency Rank - M3: Needed within 5 Years to Maintain Quality

U.S.G.S. 7.5-minute quadrangles: Alpine Plateau, Lake City, Lake San Cristobal

Size: 6,470 acres (2,618 ha)

Elevation: 7,950 - 9,220 ft. (2,423 - 2,810 m)

General Description: The Lake Fork of the Gunnison River is a third order, Type C tributary of the Gunnison River. The river is dammed above the site by the Slumgullion Slide, creating the second largest natural lake in Colorado, Lake San Cristobal. The river flows free of extensive man-made obstructions from the outlet of the lake to Blue Mesa Reservoir. The site encompasses over 20 miles of the river corridor. General geology of the drainage is composed of landslide deposits, older gravels, and alluviums of the Quaternary Age and ash-flow tuff of main volcanic sequence of the Tertiary Age (Steven 1974). Watershed is mainly comprised of igneous rocks of the Tertiary Age, specifically ash-flow tuff of main volcanic sequence and pre-ash-flow andesitic lavas, breccias, tuff, and conglomerates (Tweto 1979). The basin forms a wide, open valley, with the Lake Fork as a narrow, riparian corridor. Soils are undeveloped with medium to large gravels, deposits of sands and silts interspersed with small to large cobbles. Riparian vegetation spans a narrow, riparian area of over 20 miles of the middle reaches of the Lake Fork. Being this extensive, vegetation is variable throughout, with areas of dense canopy, sparse canopy, tall shrublands, and mesic herbaceous vegetation. Canopy species cover is variable with blue spruce (*Picea pungens*) being consistent throughout in moderate to low cover and narrowleaf cottonwood (*Populus angustifolia*) being absent in some reaches and dense in other areas. Thinleaf alder (*Alnus incana*) is consistent in low to moderate cover along the entire reach. Other tall shrubs include Drummond's willow (*Salix drummondiana*), narrowleaf willow (*Salix exigua*), park willow (*Salix monticola*), and Bebb's willow (*Salix bebbiana*). Along a few areas, tall shrubs form dense, open shrublands. Short shrubs include American red raspberry (*Rubus idaeus*), skunkbush sumac (*Rhus trilobata*), and Wood's rose (*Rosa woodsii*). Mesic graminoids include bluejoint (*Calamagrostis canadensis*) and water sedge (*Carex aquatilis*). Mesic forbs present include starry false lily of the valley (*Maianthemum stellatum*) and field horsetail (*Equisetum arvense*). Some areas of the drainage are heavily impacted by disturbance and support high cover of exotic species including common dandelion (*Taraxacum officinale*), common plantain (*Plantago major*), white clover (*Trifolium repens*), Kentucky bluegrass (*Poa pratensis*), and smooth brome (*Bromus inermis*). Exotic species are concentrated in heavily disturbed areas near town, private property, and high use public lands. Surrounding uplands are dominated by ponderosa pine (*Pinus ponderosa*) woodlands with patches of xeric

shrubland grassland communities. Surrounding land uses are also highly variable including private property with residential development, hay fields and grazing, and ponds for fishing and public reaches with access for fishing and camping. Main disturbances include grazing, hydrologic alterations, exotic species invasion, road proximity, and recreational use.

Key Environmental Factors: Key environmental factors influencing species composition of the wetland are montane elevation, low gradient, seasonal flooding, and floodplain development.

Climate Description: Climate and weather tend to follow typical patterns of the San Juan Mountains of Colorado being generally xeric throughout the year with warm spring weather causing snowmelt flooding, wet summers, and a late summer "monsoon" season.

Biodiversity Significance Rank Comments (B3): This site is drawn for a good (B-ranked) occurrence of the globally vulnerable (G3/S3) narrowleaf cottonwood - blue spruce / thinleaf alder (*Populus angustifolia* - *Picea pungens* / *Alnus incana*) woodland.

Natural Heritage element occurrences at the Lake Fork of the Gunnison River PCA.

Major Group	State Scientific Name	State Common Name	Global Rank	State Rank	Federal Status	State Status	Fed Sens	EO Rank	Last Obs Date
Natural Communities	<i>Populus angustifolia</i> - <i>Picea pungens</i> / <i>Alnus incana</i> Woodland	Montane Riparian Forests	G3	S3				B	1993-06-29

** The records above are sorted in the following order 1) Major Group 2) Global Rank and 3) Scientific name.

Boundary Justification: Boundaries are drawn to include portions of surrounding areas important to the maintenance of site hydrology and approximately 1,000 feet of buffered uplands roughly following contours based on an analysis of the Bibliography of Impacts to Wetlands (Keate, 2004). This should account for natural hydrologic processes important to the maintenance of the element such as seasonal flooding, groundwater recharge, surface flows, and sediment deposition. Boundaries also include small tributaries, floodplain and overflow channels. However, the boundary does not include all hydrological processes necessary to the maintenance of site hydrology and upstream activities such as deforestation, improper livestock grazing, development, or water diversion could be detrimental to the site.

Protection Urgency Rank Comments (P3): Predominant land uses are highly variable including private property with residential development, hay fields and grazing, and ponds for fishing and public reaches with access for fishing and

camping. Protection varies throughout the site.

Management Urgency Rank Comments (M3): River system is viable throughout, but impacted by anthropogenic disturbances. Exotic species control and limiting use along corridor could help native species recover in weedy, disturbed areas.

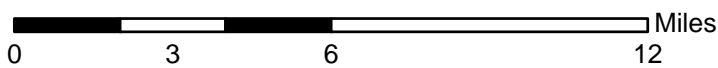
Land Use Comments: Land use varies along the corridor from public access to developed and private access.


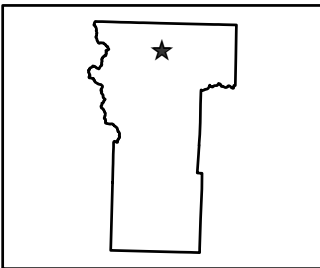
Exotic Species Comments: Exotics are common in many areas and include common dandelion (*Taraxacum officinale*), common plantain (*Plantago major*), white clover (*Trifolium repens*), Kentucky bluegrass (*Poa pratensis*), and smooth brome (*Bromus inermis*). These species are concentrated along disturbed and accessible reaches.

Off-Site Considerations: Off-site considerations include road proximity and maintenance, development, and weedy species introductions from use of surrounding uplands.

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Version Date: 10/15/2006



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Lake Fork of the Gunnison River Potential Conservation Area, B3: High Biodiversity Significance

American Flats

Biodiversity Rank - B4: Moderate Biodiversity Significance

Protection Urgency Rank - P4: No Threat or Special Opportunity

Management Urgency Rank - M4: Not Needed Now; No Current Threats; May Need in Future

U.S.G.S. 7.5-minute quadrangles: Handies Peak

Size: 743 acres (301 ha)

Elevation: 12,000 - 13,000 ft. (3,658 - 3,962 m)

General Description: The site is situated along open, rolling, alpine reaches of the American Flats just northeast of Engineer Pass. The area is part of a large alpine expanse within the western slope of the volcanic San Juan Mountains. It contains multiple springs forming the headwaters of Henson Creek. General geology consists of intermediate lavas and pyroclastic rocks of the Oligocene epoch (Steven 1974, Tweto 1979). The wetland occurrence is spread out over a large, variable sloping area as small patches in late snow melt areas, small swales and mesic contours. Soils are dry to mesic in most areas with variable organic content. Dominant vegetation is composed of xeric alpine meadow species, with Ross' avens (*Geum rossii*), creeping sibbaldia (*Sibbaldia procumbens*), Parry's clover (*Trifolium parryi*), and tufted hairgrass (*Deschampsia caespitosa*) being common. There are multiple seeps with perennial hydrology and hydric soils. Black alpine sedge (*Carex nigricans*) and Drummond's rush (*Juncus drummondii*) form small-patch communities along mesic contours, depressions, and late snow melt areas, throughout a predominantly xeric alpine meadow habitat. In multiple areas, black alpine sedge occurs as a near monoculture with small patches of Drummond's rush. In other areas, Drummond's rush has consistent cover with black alpine sedge occurring in low cover as a consistent component. Other graminoids common along mesic areas include tufted hairgrass, alpine timothy (*Phleum alpinum*), and native sedge (*Carex vernacula*). Forb species found in mesic areas include white marsh marigold (*Caltha leptosepala*), American alpine speedwell (*Veronica wormskjoldii*), and Eastwood's podistera (*Podistera eastwoodiae*). Upland species found in mesic areas include Ross' avens, Parry's clover, and creeping sibbaldia. No exotic species were observed in the area. Anthropogenic disturbances include sheep grazing and recreational use. The Alpine Loop Road runs adjacent to the site bringing extensive recreation to the area. Old roads and mining use are evident along the flats, but no recent vehicular use was observed off of maintained roads. Natural disturbances include extreme alpine environment and wildlife use.

Key Environmental Factors: Key environmental factors influencing species composition of the wetland are groundwater hydrology, alpine elevation, exposed, open aspects, and low gradient.

Climate Description: Climate and weather tend to follow typical patterns of the San Juan Mountains of Colorado being generally xeric throughout the year with warm spring weather causing snowmelt flooding, wet summers, and a late summer "monsoon" season.

Biodiversity Significance Rank Comments (B4): This site is drawn for an excellent (A-ranked) occurrence of the globally unranked (GU/S2) black alpine sedge - Drummond's rush (*Carex nigricans* - *Juncus drummondii*) alpine herbaceous wetland community.

Natural Heritage element occurrences at the American Flats PCA.

Major Group	State Scientific Name	State Common Name	Global Rank	State Rank	Federal Status	State Status	Fed Sens	EO Rank	Last Obs Date
Natural Communities	<i>Carex nigricans</i> - <i>Juncus drummondii</i> Herbaceous Vegetation	Alpine Wetlands	GU	S2				A	2006-08-19

** The records above are sorted in the following order 1) Major Group 2) Global Rank and 3) Scientific name.

Boundary Justification: Boundaries are drawn to include portions of surrounding areas important to the maintenance of site hydrology and 1,000 ft of buffered uplands based on an analysis of the Bibliography of Impacts to Wetlands (Keate 2004). This should account for natural ecological processes important to the maintenance of the element such as seasonal flooding, groundwater recharge, surface flows, and sediment deposition. However, the boundary does not include all ecological processes necessary to the maintenance of the site and activities such as mining, improper livestock grazing, recreational use, or water diversion could be detrimental to the site.

Protection Urgency Rank Comments (P4): The site is protected generally by the BLM, but no specific protection strategies are in place. Predominant land use is for recreation and some late summer sheep grazing.

Management Urgency Rank Comments (M4): There is currently no management needed. Future management may be needed if grazing or recreational uses increase or change.

Land Use Comments: Predominant land uses include recreation and sheep grazing.

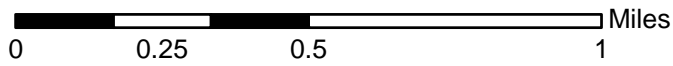
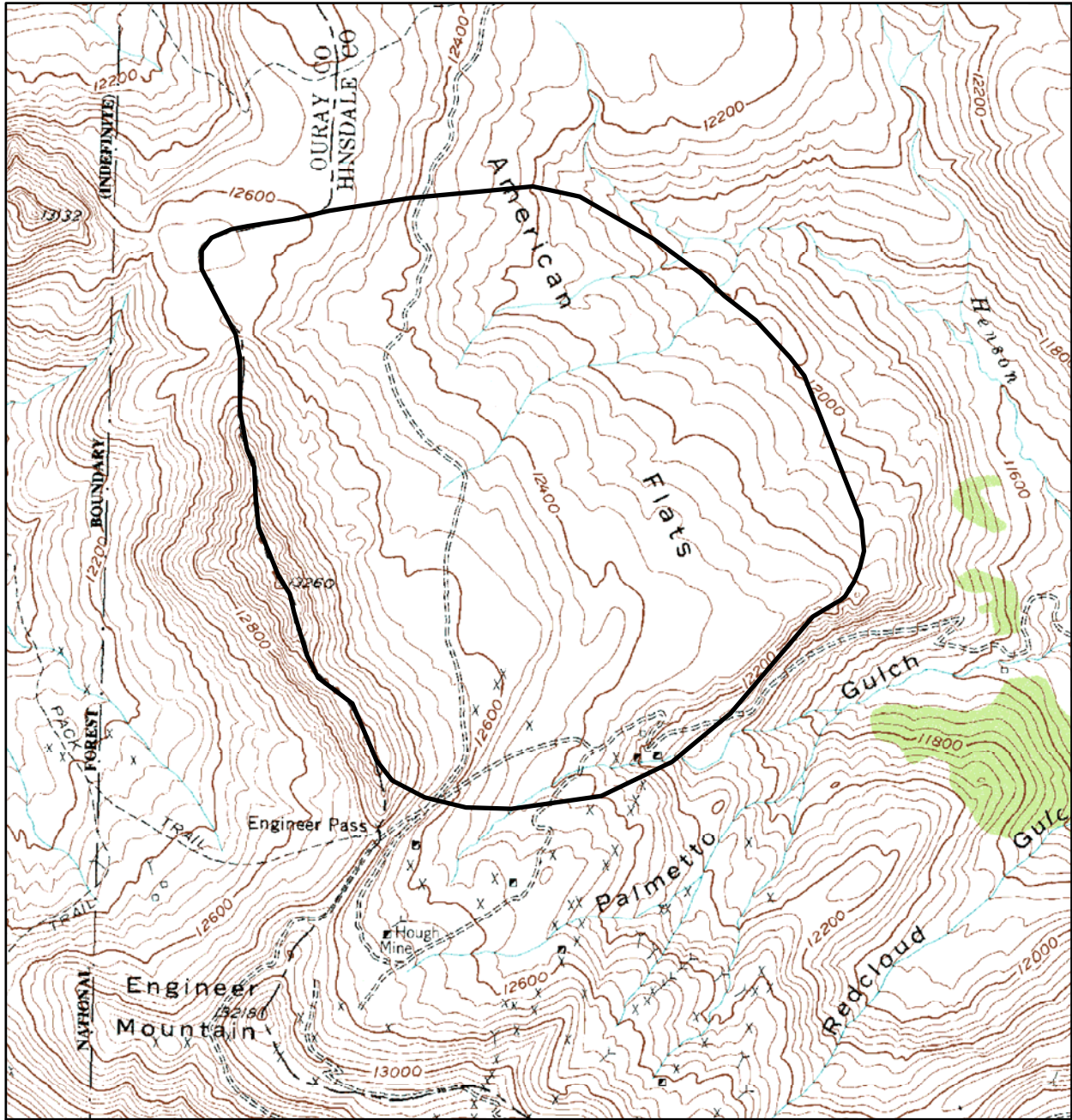
Natural Hazard Comments: Natural hazards include avalanches from steep western slopes and quickly changing weather.


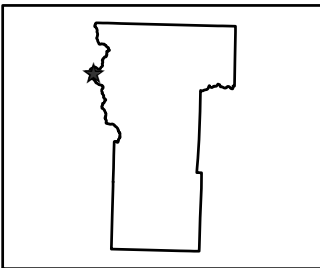
Exotic Species Comments: No exotics were observed. Road may act as a conduit for

exotic species.

Version Author: Jones, J.R.

Version Date: 10/15/2006



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Cleveland Gulch

Biodiversity Rank - B4: Moderate Biodiversity Significance

Protection Urgency Rank - P4: No Threat or Special Opportunity

Management Urgency Rank - M4: Not Needed Now; No Current Threats; May Need in Future

U.S.G.S. 7.5-minute quadrangles: Handies Peak

Size: 467 acres (189 ha)

Elevation: 12,200 - 12,280 ft. (3,719 - 3,743 m)

General Description: The community occurrence is situated along the basin floor at the upper reaches of a large, open valley at the headwaters of Cleveland Gulch, a first order tributary of the Lake Fork of the Gunnison River. Surrounding mountains formed during the volcanic sequences of the western San Juans creating steep, scree slopes. The wetland occurs along multiple seeps of similar contours at the base of surrounding scree fields. Seeps flood to the gently sloping basin floor, creating a complex of wetlands with mesic soils to shallow, open water pools. Soils vary from shallow histic epipedons over unconsolidated rock to histosols. Wetland occurs along multiple seeps of perennial hydrology interspersed with seasonally saturated topographic rises. Black alpine sedge (*Carex nigricans*) and Drummond's rush (*Juncus drummondii*) occur as small-patch communities in some areas and as minimal components of the larger wetland complex in other areas. Black alpine sedge forms near monocultures in multiple areas and is a consistent component throughout the upper reaches of the basin. Drummond's rush cover is patchy, but it is a consistent component throughout the wetland complex. Other graminoids common within the wetland include tufted hairgrass (*Deschampsia caespitosa*), sheep sedge (*Carex illota*), Tracy's rush (*Juncus tracyi*), and alpine timothy (*Phleum alpinum*). Water sedge (*Carex aquatilis*) is common in saturated areas and Altai cottongrass (*Eriophorum altaicum* var. *neogaeum*) is present at low cover. Common mesic forbs include white marsh marigold (*Caltha leptosepala*), American alpine speedwell (*Veronica wormskjoldii*), splitleaf groundsel (*Packera dimorphophylla*), and Parry's clover (*Trifolium parryi*). Drier species found along rises include Ross' avens (*Geum rossii*), pussytoes (*Antennaria* sp.), and creeping sibbaldia (*Sibbaldia procumbens*). No exotic species were observed. Surrounding uplands support very little vegetation and are dominated by unconsolidated rocks, with little soil development. Disturbances in the drainage are from past mining, with an old road grade still evident along side slopes and extensive mining along upper slopes. A stream running out of the upper basin shows evidence of aluminum precipitation along the stream bottom. These deposits are likely from draining from old mine sites upstream.

Key Environmental Factors: Key environmental factors influencing species composition of the wetland are alpine elevation, low gradient, and perennial groundwater discharge.

Climate Description: Climate and weather tend to follow typical patterns of the San Juan Mountains of Colorado being generally xeric throughout the year with warm spring weather causing snowmelt flooding, wet summers, and a late summer "monsoon" season.

Biodiversity Significance Rank Comments (B4): This site is drawn for an excellent (A-ranked) occurrence of the globally vulnerable (G4?T3T4/S3) Altai cottongrass (*Eriophorum altaicum* var. *neogaeum*) and a good (B-ranked) occurrence of the globally unranked (GU/S2) black alpine sedge - Drummond's rush (*Carex nigricans* - *Juncus drummondii*) alpine herbaceous wetland community.

Natural Heritage element occurrences at the Cleveland Gulch PCA.

Major Group	State Scientific Name	State Common Name	Global Rank	State Rank	Federal Status	State Status	Fed Sens	EO Rank	Last Obs Date
Natural Communities	<i>Carex nigricans</i> - <i>Juncus drummondii</i> Herbaceous Vegetation	Alpine Wetlands	GU	S2				B	2006-07-28
Vascular Plants	<i>Eriophorum altaicum</i> var. <i>neogaeum</i>	Altai cottongrass	G4?T3T4	S3			USFS	A	2006-07-28

** The records above are sorted in the following order 1) Major Group 2) Global Rank and 3) Scientific name.

Boundary Justification: Boundaries are drawn to include portions of surrounding areas important to the maintenance of site hydrology and 1,000 ft of buffered uplands based on an analysis of the Bibliography of Impacts to wetlands (Keate 2004). This should account for natural hydrologic processes important to the maintenance of the elements such as seasonal flooding, groundwater recharge, surface flows, and sediment deposition. However, the boundary does not include all hydrological processes necessary to the maintenance of site hydrology and upstream activities such as mining, improper recreational use, development, or water diversion could be detrimental to the site.

Protection Urgency Rank Comments (P4): There are no immediate threats. Predominant land uses include mining and minimal recreational uses.

Management Urgency Rank Comments (M4): Future management may be needed if tailings from surrounding mines add additional precipitates to the site.

Land Use Comments: Predominant land use is recreation. There are multiple mining sites along adjacent uplands, however none appear active.

Natural Hazard Comments: Natural hazards in the drainage include avalanches

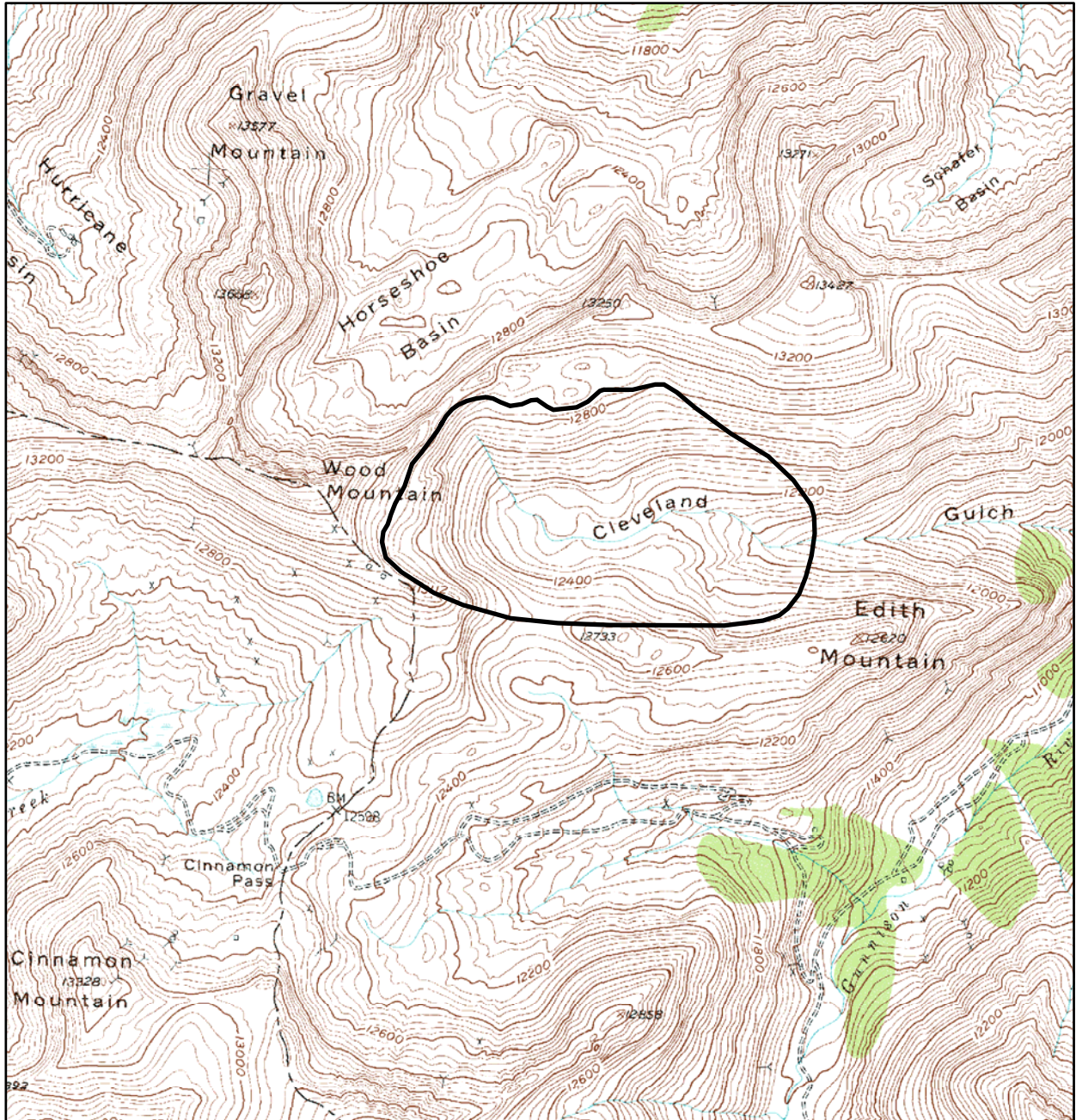
and falling rock.


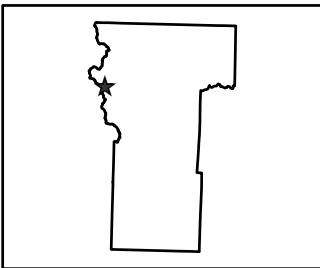
Exotic Species Comments: No exotics were observed.

Off-Site Considerations: Past mining in the drainage is the principal off-site concern.

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Version Date: 10/15/2006



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Cleveland Gulch Potential Conservation Area, B4: Moderate Biodiversity Significance