

**Appendix B**

**Southwest Highlands Watershed**

**Monitoring Plan**



# Monitoring Plan for Southwest Highlands Watershed

## Introduction

The purpose of this resource monitoring plan is to measure the effectiveness of management changes, structural projects and vegetative treatments in meeting the goals and objectives developed for the Southwest Highlands Watershed (SWHW). This plan has been designed to measure progress towards site specific objectives developed by an ID team where resource concerns were identified during the Southwest Highlands Watershed Assessment.

This plan will identify when, where and how studies will be conducted, as well as the types of data that will be collected, how the data will be evaluated, and who will participate in the process. All monitoring methodologies are approved BLM monitoring methodologies and are described in various BLM or Interagency Handbooks. This information, including technical references, BLM policy and procedure handbooks, and monitoring guidelines and methodology descriptions are available for review at the Dillon Field Office. Technical references and BLM procedural handbooks are also available on the BLM library website; <http://web.nc.blm.gov/blmlibrary>.

All *existing* monitoring studies that are needed to measure progress towards objectives or Standards will continue to be read on the same time schedule as any identified new studies.

## Site Specific Objectives

Two Key Issues and seven additional Resource Concerns were identified during the Southwest Highlands Watershed Assessment and through public scoping and were analyzed in the Southwest Highlands Watershed Environmental Assessment (EA). Site specific objectives have been developed based on each key issue and resource concern. The goal is to make measurable progress towards site specific objectives to be able to meet all Rangeland Health Standards by 2023.

## Key Issue # 1: Riparian, Wetland, and Aquatic Habitat

### Objectives:

- Increase composition and cover of deep-rooted riparian species along stream channels and spring/wetland areas (reduce bare ground).
- Increase vigor and regeneration of willows.
- Maintain/enhance regeneration of aspen.
- Improve streambank stability and width/depth ratio of streams within the natural range of variability based on Rosgen Stream Types.
- Mitigate excessive head cutting and restore vertical channel stability
- Reduce sediment inputs into streams generated by human activities.
- Maintain/enhance cold-water fisheries habitat in Camp Creek.

Monitoring activities to measure progress towards meeting Riparian, Wetland and Aquatic Habitat objectives:

- Continue monitoring existing riparian studies to measure progress towards objectives.

- Springs that are developed/redeveloped will be photographed before and after development and inspected and photographed periodically after development (every 2-3 years), including prior to the next scheduled assessment.
- Spring developments will be checked at least annually during compliance inspections to verify that maintenance is being completed as agreed to in Cooperative Agreements.
- Dysfunctional spring developments that are removed/cleaned up will be photographed before and after project clean-up.

**Table 1. Site Specific Riparian and Wetland and Aquatic Habitat Monitoring**

Allotment Name and #	Stream and Stream Reach	Objective	Monitoring Methodology
Camp Creek 30308	Camp Creek 551	Improve streambank stability and channel morphology. Increase woody riparian vegetation along the greenline	Multiple Indicator Monitoring
	Camp Crk trib. BHMR-3U Camp Crk trib. BHMR-4 Moffet Gulch 574	Improve streambank stability and channel morphology. Increase woody and herbaceous vegetation along the greenline.	At least one photo point along each reach
	Rochester Creek 567	Reduce sediment into the stream; improve channel morphology.	Compliance monitoring of BMPs and Photo point(s)
	Soap Gulch BHMR-10 Soap Gulch BHMR-11 Soap Gulch trib. BHMR-13	Improve streambank stability and channel morphology. Increase riparian vegetation along the greenline and reduce noxious weeds along riparian zone.	Greenline transect and/or photo point(s)
Devil's Dancehall 20327	Timber Canyon spring 579 Timber Canyon spring 586	Improve streambank stability and channel morphology. Increase riparian vegetation along the greenline.	Photo point(s)
Garrison 20314	Buhrer Gulch 564 (excl) Buhrer Gulch 581	Improve streambank stability and channel morphology, increase riparian vegetation along the greenline	Greenline transect and/or Photo point(s)

**Key Issue #2: Upland and Sagebrush Steppe Habitat**

**Objectives:**

- Increase composition and cover of native perennial cool-season bunchgrasses.
- Restore or maintain grassland and shrubland habitat types affected by conifer expansion.
- Maintain or enhance vegetative composition and availability of bighorn sheep habitat.

Monitoring activities to measure progress towards meeting upland habitat and associated species objectives:

- Continue monitoring existing upland studies to measure progress towards objectives.
- Non-commercial mechanical/prescribed fire treatments:
  - Gather fuels and vegetation transect data on up to five representative sites. Photographic documentation should include pre and post-treatment photos from a designated point to verify ocular estimates. If prescribed burns are conducted after May 15, complete migratory bird surveys prior to burning activities.
  - During prescribed burn treatments, fire behavior, fire weather, and smoke dispersion will be observed and documented throughout the ignition portion of each burn to make sure that these elements are within the prescription defined in the burn plan.
  - Directly after prescribed fire treatments, retake photographs at established points and/or retake measurements along each pre-treatment transect to determine if treatment objectives have been attained.
  - One to four years after treatment: Re-measure transects and photo points to show vegetative response to the treatment and progress towards meeting objectives. Changes in use by big game, specifically elk, within the treatment areas will be measured by conducting pellet group transects prior to treatment and then, at least annually (on a priority basis), for up to five years following treatment.

**Table 2. Site Specific Upland and Sagebrush Steppe Habitat Monitoring**

Allotment Name	Objective	Monitoring Methodologies
Camp Creek Garrison McCartney Mtn South	<p>Maintain or increase composition and cover of cool-season perennial bunchgrasses</p> <p>Increase composition and cover of cool season perennial bunchgrasses</p> <p>Reduce 60% or more of conifers less than 30 feet tall that have recently expanded into previously open sagebrush-dominated communities</p>	<p>Continue Daubenmire or Quadrat Frequency transects and/or Photo points</p> <p>Daubenmire or Quadrat Frequency transects and/or photo points</p> <p>See paragraph above Table 2.</p>

**Resource Concern #1 Special Status Species Habitat**

**Objectives:**

- Maintain existing sagebrush habitat so that 70% or more of big sagebrush communities provide vegetative composition and structure for sagebrush obligate species.
- Maintain sage grouse nesting/early brood rearing canopy cover of 15-25% sagebrush.
- Maintain an average of 6 to 7 inches herbaceous understory within site potential within sage grouse nesting/early brood rearing habitat.
- Maintain or increase composition of highly nutritious forbs (e.g. composites and legumes) in sage grouse nesting/early brood rearing habitat.
- Maintain or enhance habitat for sensitive plant species and provide ample opportunity for reproduction and seedling establishment.

Monitoring Activities to measure progress towards meeting Fish, Wildlife and Special Status Species Habitat objectives:

**Table 3. Site Specific Monitoring for Sagebrush Obligate Species Habitat**

Allotment Name	Objective	Monitoring Methodologies
Camp Creek, Garrison and McCartney Mountain South	<p>-Maintain 15 – 25% sagebrush cover in nesting/early brood rearing and winter habitat</p> <p>-Maintain an average of 6-7 inch residual understory within site potential on the majority of the area.</p>	<p>Line-point Intercept to measure canopy cover of sagebrush, and herbaceous and forb understory.</p> <p>-Forage utilization and herbaceous understory cover will be measured annually within time constraints of staff.</p>

Related objectives and monitoring activities to measure progress towards fish, wildlife and special status species habitat are included above under Key Issues for Riparian, Wetland, and Aquatic Health, Upland Health and Sagebrush Steppe Habitat, and Forest and Woodland Habitat.

Additional monitoring activities specific to fish, wildlife and special status species habitat include:

- Document and establish baseline inventory for any new “unmapped” populations of sensitive plants that are found.
- The inventory should include the number of individual plants, a description of the habitat (e.g., associated species, soils, aspect and elevation) and an assessment of any existing and potential threats to the population.
- Coordinate with MTFWP and USFS biologists to continue delineating seasonal habitat for sage grouse.

- Coordinate with MTFWP and Montana Audubon to continue sage grouse lek counts.
- Continue habitat monitoring on Camp Creek every 5-10 years to include temperature data and habitat surveys using the DEQ protocol for monitoring.

### **Resource Concern #2: Noxious and Invasive Species**

#### **Objectives:**

- Reduce the composition of noxious and invasive vegetative species within the watershed.
- Mitigate the spread of noxious and invasive plants into, within, or from the watershed.

Monitoring activities to measure progress towards meeting noxious and invasive species objectives are included in above under Riparian, Wetland, and Aquatic Habitat and Upland and Sagebrush Steppe Habitat.

Any aerial weed treatment areas will be monitored or evaluated for site specific objectives through photo points, ocular observation, and/or vegetative transects. Site specific objectives for aerial treatment will be to reduce composition of spotted knapweed with negligible reduction of non-target species.

### **Resource Concern #3: Wilderness**

#### **Objectives:**

- Analyze the impacts of BLM actions in the Block Mountain Unit (LWC)

Planned monitoring will consist of compliance checks and continuation of existing monitoring.

### **Resource Concern #4: Recreation and Travel Management**

#### **Objectives:**

- Effectively implement the Dillon RMP Travel Management Plan
- Revise motorized route designations as necessary to correct mapping errors and improve route designations
- Reduce unauthorized (non-designated route travel) motor vehicle use which occurs most frequently during the hunting season.
- Maintain motorized wheeled vehicle access to those areas where it already exists, and improve access to public land where appropriate and where opportunities are currently limited.
- Reduce resource impacts caused by recreationists, including spread of noxious weeds.

The goals for both Travel Management and OHV Use and Transportation in the Approved Dillon Resource Management Plan for Recreation collectively say; “to manage roads and trails and manage motorized travel to provide for public access or administrative needs, while maintaining or protecting resource values in conjunction with other federal agencies, state and local governments, and private landowners.”

Monitoring will consist of compliance checks to determine if closed roads show signs of use, as well as the enforcement of the travel management plan, specifically during the big game hunting season.

#### **Resource Concern #5: Socioeconomics**

##### **Objectives:**

- Continue to contribute to the local economy by providing an opportunity for sustainable uses on public land including livestock grazing and recreational activities.

Trends in socioeconomics will not be monitored by the local BLM office.

#### **Resource Concern #6: Cultural and Paleontological Resources**

##### **Objectives:**

- Preserve and protect significant cultural and paleontological resources and ensure that they are available for appropriate uses by present and future generations.
- Reduce imminent threats from natural or human-caused deterioration, or potential conflict with other resource uses.
- Ensure that all authorizations for land and resource use avoid inadvertent damage to federal and nonfederal cultural resource in compliance with Section 106 of the National Historic Preservation Act and the Paleontological Resources Preservation Act.

Monitoring activities to measure progress towards meeting cultural and paleontological resource objectives include:

Cultural Resources: Visit a minimum of 10 previously recorded cultural resource properties that are listed on the National Register of Historic Places or determined eligible for listing, on an annual basis, to update the site form to current professional standards and to assess the current condition and trend of significant resource values.

Paleontological Resources: Of the five major geographic paleontological areas in the field office, visit one of the geographic areas on an annual basis to identify if any adverse impacts are occurring.

#### **Resource Concern #7: Visual Resources**

##### **Objectives:**

- Manage the SW Highlands Watershed as not to detract from the existing landscape and other objectives stipulated under VRM Class III and Class IV guidelines, as applicable.

Monitoring activities to measure progress towards meeting visual resource objectives include: Reviewing proposed activities for consistency, and encouraging field staff to look around when they are in the area and report unauthorized activities that may be impacting visual resources.

## **Types of Data Collected**

The established permanent vegetative and physical trend transects in the SW Highlands Watershed were read and data was updated during 2012. The date when these studies were initially established and read is considered baseline data. However, in order to adequately measure progress towards site specific objectives, additional studies will be established (in areas where data has not been gathered and is needed) during 2014 or 2015 and baseline data will be gathered on the newly established studies. Baseline data is considered the starting point from which to measure progress towards meeting objectives or effectiveness of management changes implemented beginning in 2015 (on the new studies only). Data from existing studies will be compared and evaluated from the time they were established and data was initially collected.

Key areas are defined as relatively small areas that reflect or have the capability to reflect the effectiveness of management of the resources of a larger area. Depending on management objectives, a key area may be a representative sample of a large stratum, pasture, allotment, or a particular management area. Key areas or monitoring sites should represent the high variability of riparian, upland and forest habitat types, patterns of use, and conditions of forest, rangeland or riparian health. Over the next several years the following data will be collected (See Table 4).

- Actual livestock and wildlife use. Actual use is the grazing use of an area by all classes of forage consumers. This information is necessary to provide a correlation between utilization and trend data. Considered alone, actual use data are essentially meaningless. However, when considered in conjunction with climate and utilization data, this data is necessary to interpret trend data accurately.
- Annual compliance, including utilization of upland forage, browse levels on willows and aspen, measurement of sedge stubble heights and/or measurement of stream bank alteration. This monitoring will occur primarily at established key areas, but may occur in other areas as well. Annual compliance monitoring will be done on a prioritized basis with I category allotments being the highest priority, followed by M, and then C category allotments. In areas where competition for resources may occur between livestock and big game, pre-livestock data may also be collected. This annual data will be used to help determine pasture moves, accurately interpret trend data, and serve as an early indicator on whether implemented changes are effective. If annual monitoring reveals resource degradation or ineffective management changes (as determined by BLM specialists), trend studies may be read at any time prior to the next scheduled assessment (2023), and adjustments in management analyzed in the interim.
- Local precipitation and temperature. This data is necessary to interpret trend data accurately.
- Long term trend. Trend data will be used to measure progress towards meeting objectives as described above.

Trend refers to the direction of change and indicates whether the forest, rangeland, riparian area or other resource is being maintained or is moving toward or away from the

desired plant community or other specific management objectives. Trend studies are important in the long term for determining the effectiveness of management actions in meeting or moving towards management objectives.

Trend data will be collected again in 2022 or 2023, unless specified otherwise for specific objectives. The SW Highlands Watershed will be re-assessed or evaluated during 2023. In this process, all monitoring data will be summarized, analyzed, interpreted, and evaluated to measure progress toward meeting objectives. Trend data gathered in 2022 will be compared to baseline (established in 2014 or 2015) and existing trend data gathered or updated in 2012. The measured change in the data will be used to measure progress toward meeting objectives, thereby evaluating management and making informed decisions regarding subsequent management (continuation or change). This is called adaptive management. For example, if monitoring data shows that progress is being made toward established objectives, current management will be continued or modified slightly as warranted, according to the data. However, if data shows a downward trend (change away from objectives) or does not show any progress toward meeting objectives by 2022, and it is determined that current livestock management is a significant factor in precluding progress toward meeting objectives, then management will be adjusted by implementing an alternate system, changing the season of use and/or reducing authorized AUMs. The level of adjustment will be determined by the degree of divergence from the objectives.

Monitoring methodology descriptions are available for review at the Dillon Field Office. Technical references and BLM procedural handbooks are also available on the BLM library website; <http://web.nc.blm.gov/blmlibrary>.

**Table 4. Planned Resource Monitoring Activities**

Type	Method	Responsibility	Frequency
Actual Use	Actual Use Reports submitted by permittees Wildlife observations Wildlife population monitoring in cooperation with the MFWP Recreation user days	Range, Wildlife and Recreation Staff	Annually
Compliance/ Utilization	Utilization – Grazed/Ungrazed Method or Key Forage Plant Method	Range, Wildlife or Fisheries Biologists, Hydrologist	Annually on a prioritized basis
	Stubble height – Stubble Height Method		
	Bank alteration – Stream bank Alteration Methodology as defined by Idaho State Office BLM, 2000		
	Browse use – Extensive Browse Method		
Climate	Precipitation data available from National Oceanic and Atmospheric Administration and other sources	Available from external sources	Annually
Habitat Characterization	Inventory for leks and seasonal habitats Sagebrush canopy and herbaceous understory measurements along established transects in sage grouse, elk calving and mule deer winter habitats	Wildlife Staff, MFWP, NWF	Annually on a prioritized basis

Type	Method	Responsibility	Frequency
Population(s)	Sage Grouse – male lek attendance Big game as needed	MFWP and BLM Biologists will coordinate and assist, where applicable	Annually
Trend (also see Table 3)	<p><b>Biotic</b></p> Quadrat Frequency Daubenmire Line Intercept Cover Board Woody Species Regeneration Greenline Multiple Indicator Monitoring (MIM) Macroplots/Belt Transects Photopoints Fire Regime Condition Class (FRCC) LANDFIRE (as applicable)	Range, Wildlife or Fisheries Biologists, Hydrologists, Foresters, Fuels Specialists	Any new trend monitoring studies will be established during 2013. Trend data (new and existing studies) will be gathered again in 2022 or 2023.
	<p><b>Physical</b></p> Cumulative width/depth ratio		
Watershed Evaluation	Analysis, Interpretation, Evaluation and Recommendations	ID team	FY2023

**Budget Requirements**

This monitoring plan was prepared with the assumption that funding will remain at or near existing levels for the foreseeable future. In this light, it is anticipated that the bulk of the monitoring workload will have to be borne by the existing range, wildlife, fisheries, forestry, fuels, hydrology, recreation, wilderness and cultural resource specialists along with a minimum of six seasonal employees each field season for the duration of this plan.

Litigation workload associated with Watershed Assessments also directly effects how much monitoring the existing staff is able to complete.