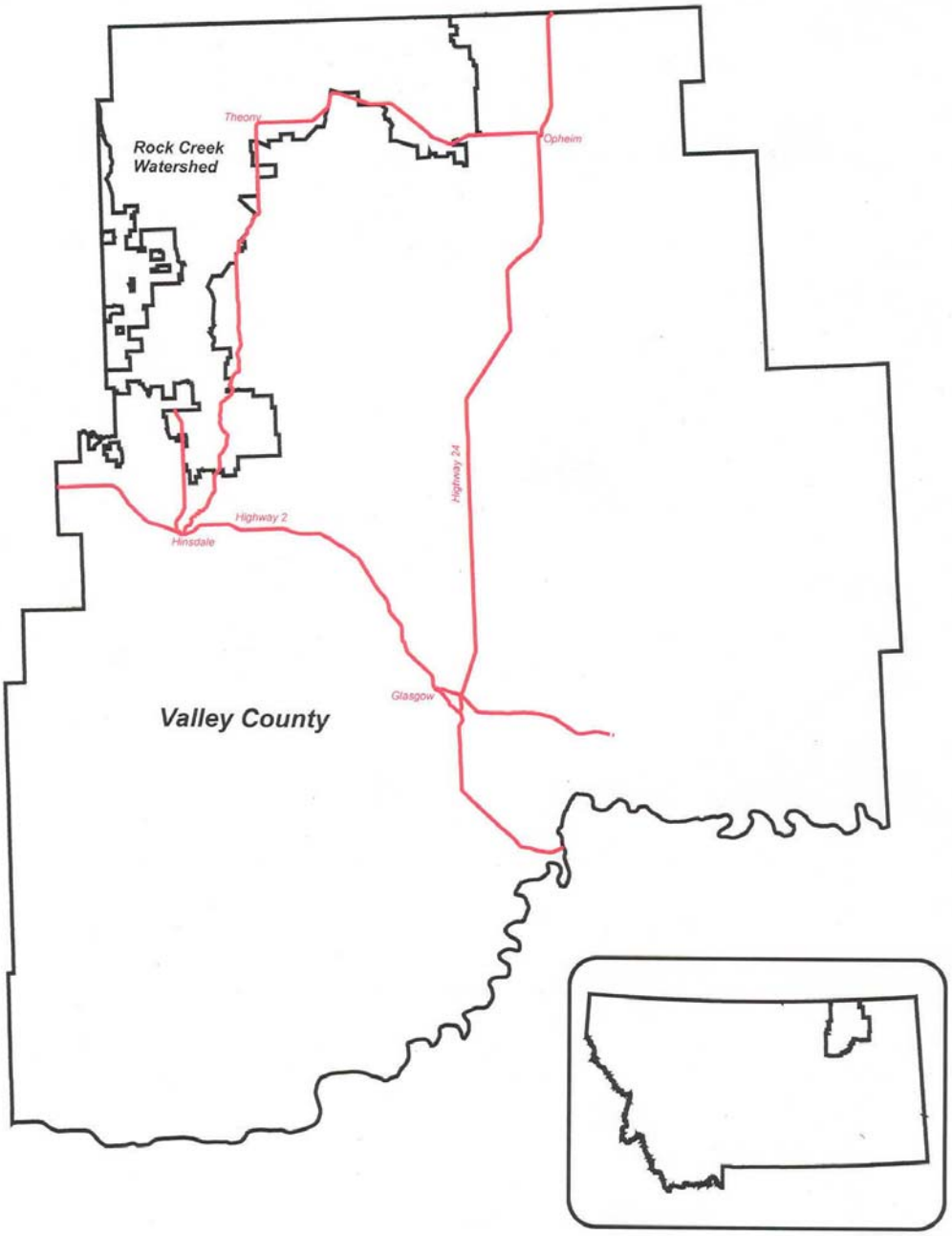
Rock Creek Watershed Report

April 23, 2004

Crow Creek

Location Map



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Executive Summary

This document is an assessment of the rangeland health in the Rock Creek Watershed in North Valley County, Montana. The document also addresses cultural resources in the allotments. This resource was included to determine if there are conflicts or significant resource issues that need to be considered during the development of the recommended actions. The table below summarizes rangeland health assessments and recommended actions by grazing allotment.

Abbreviations: PFC = Proper Functioning Condition, FR =Functioning at Risk, NA = Not Applicable

Allotment # & Name	Are Healthy Rangelands Standards Being Met?				Is livestock grazing a significant factor in allotment not meeting standards?	Narrative Explanation and Recommended Actions
	Upland	Riparian/ Wetland	Water quality	Wildlife/ Bio-diversity		
4000 UPPER CROW CREEK	Yes	Yes Snake R796; PFC Crow R743; PFC E.F. Crow R45; PFC	Yes	Yes	NA	No Change
4002 UPPER BLUFF CREEK	Yes	NA	NA	Yes	NA	Monitor for spurge moving from PV1
4003 UPPER EASTFORK CROW	Yes	Yes E.F. Crow R744; PFC	Yes	Yes	NA	No Change
4004	Yes	NA	NA	Yes	NA	No Change
4005 FLINT RESERVOIR	Yes	NA	NA	Yes	NA	No Change
4006 BLUFF CREEK	Yes	Yes Bluff R601; PFC	Yes	Yes	NA	Spurge Infestation/ continue spraying
4007	Yes	NA	NA	Yes	NA	No Change
4008 WESTFORK BLUFF CR.	Yes	Yes Bluff R32; PFC	Yes	Yes	NA	Add water/cross fence past 2
4009 CHAMBERS CREEK	Yes	Yes Rock R4009; PFC	Yes	Yes	NA	No Change
4010	Yes	Yes McEachran R4010M; PFC Rock R4010R; PFC	Yes	Yes	NA	No Change
4011	Yes	Yes	Yes	Yes	NA	No Change
4012 LOWER TOMATO CREEK	Yes	No Rock R793; PFC Tomato R238; PFC South R781; FR (weeds)	Yes	Yes	No	Leafy spurge infestation/continue spraying

Allotment # & Name	Are Healthy Rangelands Standards Being Met?				Is livestock grazing a significant factor in allotment not meeting standards?	Narrative Explanation and Recommended Actions
	Upland	Riparian/ Wetland	Water quality	Wildlife/ Bio-diversity		
4013 NORTH TOMATO CREEK	Yes	No Tomato R762; FR (soils)	Yes	Yes	No	No Change
4014 NORTHFORK ROCK CREEK	Yes	NA	NA	Yes	NA	No Change
4015 SOUTH CREEK	Yes	Yes Tomato R239 PFC	Yes	Yes	NA	Address scattered crested seeding/return to native
4016 UPPER MORGAN CREEK	Yes	Yes Morgan R234; PFC	Yes	Yes	NA	No Change
4017 MORGAN CREEK	Yes	Yes Morgan R4017; PFC	Yes	Yes	NA	No Change
4018 UPPER SOUTH CREEK	Yes	NA	NA	Yes	NA	No Change
4019 SNAKE CREEK	Yes	Yes Snake R60; PFC Crow R44; PFC	Yes	Yes	NA	Update AMP/continue yearly monitoring of Riparian studies
4021 UPPER LITTLE SNAKE	Yes	NA	NA	Yes	NA	????? AMP
4022 LOWER BLUFF CREEK	Yes	Yes Bluff R131; PFC	Yes	Yes	NA	No Change
4023 CHAMBERS COULEE	Yes	NA	NA	Yes	NA	No Change
4025 SOUTHFORK ROCK CREEK	Yes	Yes South RSFC01; PFC Coal Mine R232; PFC Coal Mine R233; PFC	Yes	Yes	NA	Saline seep fence below Vr117
4026	Yes	NA	NA	Yes	NA	No Change
4027	Yes	NA	NA	Yes	NA	No Change
4028	Yes	NA	NA	Yes	NA	No Change
4029	Yes	NA	NA	Yes	NA	No Change
4031	Yes	NA	NA	Yes	NA	No Change
4032 LOWER SNAKE CREEK	Yes	No Snake R474; FR Snake R475; PFC Snake R607; FR	Yes	Yes	No	Historical Livestock impacts/trend up/continue monitoring
4033	Yes	NA	NA	Yes	NA	No Change
4034	Yes	Yes Frenchman R312; PFC	Yes	Yes	NA	No Change

Allotment # & Name	Are Healthy Rangelands Standards Being Met?				Is livestock grazing a significant factor in allotment not meeting standards?	Narrative Explanation and Recommended Actions
	Upland	Riparian/ Wetland	Water quality	Wildlife/ Bio-diversity		
4035 LITTLE NAKE CREEK	Yes	NA	NA	Yes	NA	No Change
4036	Yes	NA	NA	Yes	NA	No Change
4037	Yes	NA	NA	Yes	NA	No Change
4038	Yes	Yes Snake R600; PFC	NA	Yes	NA	No Change
4044	Yes	NA	NA	Yes	NA	No Change
4047 UPPER WESTFORK CACHE	Yes	NA	NA	Yes	NA	No Change
4049	Yes	NA	NA	Yes	NA	No Change
4051	Yes	NA	NA	Yes	NA	No Change
4052	Yes	No Little Snake R266; PFC Snake R732; PFC Rock R712; FR	Yes	Yes	Yes	Monitor Rock Riparian / Spurge Infestation/ continue spraying Off creek water construction.
4062	Yes	NA	NA	Yes	NA	Spurge Infestation/ continue spraying
4063	Yes	NA	NA	Yes	NA	No Change
4064	Yes	NA	NA	Yes	NA	No Change
4065	Yes	NA	NA	Yes	NA	No Change
4066 CACHE CREEK	Yes	NA	NA	Yes	NA	No Change
4067	Yes	Yes Papoose R269; PFC	Yes	Yes	NA	Spurge Infestation/ continue spraying
4068	Yes	NA	NA	Yes	NA	Spurge Infestation/ continue spraying
4070	Yes	NA	NA	Yes	NA	No Change
4073	Yes	NA	NA	Yes	NA	No Change
4075	Yes	NA	NA	Yes	NA	Spurge Infestation/ continue spraying
4076	Yes	NA	NA	Yes	NA	No Change
4077	Yes	NA	NA	Yes	NA	No Change
4080 HALL COULEE	Yes	NA	NA	Yes	NA	Term permit adjustments\by pasture
4083	Yes	Yes	Yes	Yes	NA	Spurge Infestation/ continue spraying
4097 EASTFORK CACHE CREEK	Yes	NA	NA	Yes	NA	No Change
4126 DRY WEST	Yes	NA	NA	Yes		
4656 WEST ROANWOOD COULEE	Yes	NA	NA	Yes	NA	No Change
4657ROCK CREEK DIVIDE	Yes	NA	NA	Yes	NA	No Change
4700 UPPER MCEACHRAN	Yes	Yes Rock R235; PFC Horse R759; PFC	Yes	Yes	NA	Combine AMP 4700 with 4703

Allotment # & Name	Are Healthy Rangelands Standards Being Met?				Is livestock grazing a significant factor in allotment not meeting standards?	Narrative Explanation and Recommended Actions
	Upland	Riparian/ Wetland	Water quality	Wildlife/ Bio-diversity		
4701 DAVIDSON COULEE	Yes	Yes Bluff R4701; PFC	Yes	Yes	NA	No Change
4702 MCEACHRAN CREEK	Yes	Yes McEachran R732; PFC	Yes	Yes	NA	No Change
4703 UPPER ROCK COULEE	Yes	Yes Rock R121; PFC	Yes	Yes	NA	Combine AMP 4700 with 4703
4704	Yes	Yes Horse R307: PFC	Yes	Yes	NA	Spurge Infestation/ continue spraying
4707 EASTFORK CROW CREEK	Yes	Yes Crow RCRC05; PFC Crow R07; PFC Crow R100; photo	Yes	Yes	NA	Update plan –add additional stock waters
4708 ITCHPAIR CREEK	Yes	Yes Rock R97; PFC Crow R95; PFC Bluff R96; PFC	Yes	Yes	NA	Monitor Nesting cover ???
4709	Yes	Yes Rock R92A; PFC	Yes	Yes	NA	No Change
4710	Yes	Yes Rock R92B; PFC	Yes	Yes	NA	No Change
4713 LOWER CROW CREEK	Yes	Yes Crow R7; PFC	Yes	Yes	NA	Redo riparian studies crow ceek riparian Spurge Infestation/ continue spraying
4714 ROCK CREEK	Yes	Yes Rock R4714; PFC	Yes	Yes	NA	Spurge Infestation/ continue spraying
4715 EAST ROCK CREEK	Yes	No Rock R48; FR	Yes	Yes	Yes	Recalculate Aums on CRP. Continue monitoring riparian.
4716 JONES COULEE	Yes	Yes Rock R237; PFC	NA	Yes	NA	Combine AMP with Deep Creek AMP
4719	Yes	Yes Rock R4719; PFC	Yes	Yes	NA	Spurge Infestation/ continue spraying
4720 OREGON RESERVOIR	Yes	NA	NA	Yes	NA	Spurge Infestation/ continue spraying
4721 CLARA RESERVOIR	Yes	NA	NA	Yes	NA	Spurge Infestation/ continue spraying
4723 LITTLE PAPOOSE CREEK	Yes ??	Yes Rock R500; PFC	Yes	Yes	NA	Leafy spurge spreading from the creek to uplands/more chemical and biological control
4724 LOWER ROCK CREEK	Yes	No Rock R4724; FR (spurge)	NA	Yes	No	Spurge Infestation/ Bio control

Allotment # & Name	Are Healthy Rangelands Standards Being Met?				Is livestock grazing a significant factor in allotment not meeting standards?	Narrative Explanation and Recommended Actions
	Upland	Riparian/ Wetland	Water quality	Wildlife/ Bio-diversity		
4727	Yes	Yes Rock R4727; PFC	Yes	Yes	NA	Spurge Infestation/ bio control
4728 LIME CREEK	Yes	NA		Yes	NA	Spurge Infestation/ continue spraying
4729 WEST ROCK CREEK	Yes	Yes Rock R37	Yes	Yes	NA	Spurge Infestation/ Bio control
4730 THOENY	Yes	NA	NA	Yes	NA	No Change

The issue of scale must be kept in mind in evaluating each standard. It is recognized that isolated sites within a landscape may not be meeting the standards; however, broader areas must be in proper functioning condition. No single indicator provides sufficient information to determine rangeland health. They are used in combination to provide information necessary to determine rangeland health.

All the allotments in the watershed met the upland standard but a significant risk is present on the areas that have leafy spurge infestations. This weed can expand at explosive rates and dominate not only the riparian sites but also the overflow and upland sites. The following allotments are at high risk: 4723 Little Papoose, 4062, 4067, 4729 West Rock Creek, 4724 Lower Rock Creek, 4728 Lime Creek. The combination of chemical, biological, and sheep treatments have been successful in limiting the spread of weeds.

Fields of crested wheatgrass are present on some allotments but not on a scale or dominance watershed wide as to put individual allotments in a position to not meet the standards. The crested wheatgrass stands was established in 1930's by the federal government to prevent erosion on abandoned farm lands and vary in condition from good to poor . Some of these lands may provide an opportunity for a return to native vegetation specifically silver sage brush habitat types.

Allotments not meeting the Riparian Standard areas are as follows: Lower Tomato Creek 4012, Tomato Creek 4013, Lower Snake Creek 4032, #4052, East Rock Creek 4715, and Lower Rock Creek 4724. Current livestock grazing is a contributing factor for allotments not meeting the riparian standard in allotments #4052 and East Rock Creek 4715.

The Lower Snake Creek Allotment #4032 is managed under a grazing management plan and trend seems to be upward on the creek pastures. Historically livestock had heavily impacted this stream. Rock Creek in allotment 4052 is not meeting standards but offsite water is proposed to reduce livestock impacts along this section of Rock creek as the other riparian zones in this allotment are in Proper Functioning Conditioning. Livestock trailing along Rock Creek in the East Rock Creek allotment #4715 has caused this riparian zone to be in the Functioning At Risk Category with an upward trend. Continued monitoring is the preferred recommendation for all these allotments.

The Lower Tomato Creek #4012, Lower Rock Creek #4724 and Tomato Creek #4013 allotments did not meet Riparian standards but it was not livestock caused. Leafy spurge infestations and the associated chemical control has impacted the riparian zone in 4012 and 4724. The Tomato Creek allotment 4013 did not meet standards due to salty soils.

Before any of the above recommendations could be implemented on these site-specific areas further environmental analysis will be completed. Implementation is contingent upon staffing to complete the analysis and adequate construction funding.

Based on my review of the Assessment Team's recommendation and other relevant data and information, I have determined that the allotments in the Rock Creek Watershed meet the Standards for Rangeland Health and Guidelines for Grazing Management for BLM lands in Montana except allotments; Lower Tomato Creek # 4012, Tomato Creek #4013, Lower Snake Creek #4032, #4052, East Rock Creek #4715, and Lower Rock Creek #4724. as noted above in the Executive Summary table.

The people involved in the above assessments were David Waller, Wildlife Management Biologist, John Carlson, Wildlife Management Biologist, Stephen Klessens, Rangeland Management Specialist, Jennie Jennings, Hydrologist, Beth Klempel, Natural Resource Specialist, and John Fahlgren, Assistant Field Manager. Detailed data for each allotment is available at the Glasgow Field Station upon request.

Authorized Officer Determination:

SIGNATURE:_____

DATE:_____

TITLE:_____
Field Manager

Rock Creek Complex Watershed Report

Introduction

This document is an assessment of the public lands in the Rock Creek watershed area, and the effect of livestock grazing on current rangeland health. Current conformance with the grazing management decisions set forth in the Judith – Valley- Phillips Resource Management Plan (Land Use Plan) and the Lewistown District standard for Rangeland Health is documented.

Cultural resources are also addressed. These resources were included to determine if there are conflicts or significant resource issues that need to be considered during the development of the recommended actions.

The watershed area includes all of the public lands within the Rock Creek watershed. The watershed area boundary (see Map 1) follows allotment boundaries, including grazing allotments that are partially within the watershed. There are 177,116 acres of public lands and 76,942 acres of private and state land in the grazing allotments. This report addresses only BLM administered public lands within the watershed. There are 32,431 animal-unit months (AUMs) of livestock forage allocated on public lands and approximately 14,601AUMs on other lands.

BLM has worked cooperatively with individual permitees in the watershed for many years to develop Allotment Management Plans (AMPs) to improve range condition and grazing management. The land use plan established that decisions be implemented on a watershed basis, a broader ecosystem is considered, and more consistent management is applied. It is BLM's intent to implement watershed management cooperatively. Our policy is to grant grazing permittees who agree to monitor riparian and other objectives more autonomy in management.

This report documents conditions and contains recommendations and objectives that will guide future decisions in the watershed. The focus of the recommendations is grazing management. Once this report is final there will be changes made, where warranted, in grazing management according to the decisions made in the Judith – Valley – Phillips Resource Management Plan and the Lewistown District Standards for Rangeland Health. After consultation and coordination with the permittees and other interested parties, the site specific decisions concerning terms and conditions for each allotment will be provided prior to issuance of new grazing permits. As with all similar BLM decisions, affected parties will have an opportunity to appeal these decisions. Environmental analysis will be completed prior to any surface disturbing activity, in accordance

with the National Environmental Policy Act.
This document will address 4 steps;

1) Issues and Key Questions, this section lists the relevant decisions from the RMP and the applicable Standard, and key questions that relate to the issue,

2) Characterization/Current Conditions, this section describes the current conditions at the time of the assessment,

3) Reference Conditions, this section describes the condition that existed when the land was surveyed in the late 1800s and early 1900s, and

4) Analysis and Recommendations, this section will explain the standard, describe the procedure to determine the standard, list the findings and give recommendations. Each step will be addressed in these 4 standards, upland health, riparian/wetland, water quality and wildlife habitat/biodiversity. Standards are statements of physical and biological conditions or degree of function required for healthy sustainable rangelands.

Healthy rangeland standard # 4, Air Quality, meets the Montana State standard and is not addressed in this document.

UPLANDS
Step One: Issues and Key Questions

Upland Health

RMP Decisions:

a) "The overall vegetative objective is to improve or maintain the ecological status of BLM land to achieve a plant community of good or excellent ecological condition on 80% of BLM land within 15 years of implementation of activity plans." Objectives must be biologically and economically feasible and can be lower than good or excellent condition if needed for specific wildlife habitat.

b) "The BLM will maintain and/or improve soil productivity by increasing vegetation cover and reducing erosion."

Lewistown Standard #1:

"Uplands are in proper functioning condition"

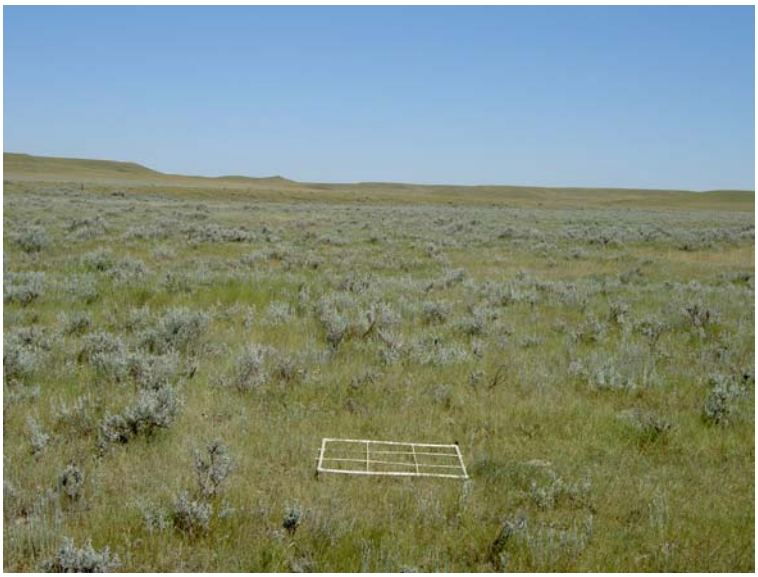
Key Questions:

Clubmoss: Clubmoss infestations have reduced vegetative production far below potential. Do we mechanically treat to increase production and advance seral stage from fair to good to meet 80% good land use plan objective? What are the tradeoffs in wildlife habitat values?

Noxious weeds: What type of program is needed to ensure that leafy spurge does not expand and to prevent other noxious weeds from become a problem?

Upland Photographs

Proper Functioning Short\mid Grass Vegetation Type



Proper Functioning Silver Sagebrush Vegetation Type

Step Two: Characterization/ Current Conditions

Upland Health

Soils

The array and landscape pattern of soils and vegetation in the watershed area is mainly a function of climate, geology, and time. Our monitoring studies have shown that current grazing management has a relatively minor influence.

Soils in most of the area are derived from a mixture of glacial till and Bearpaw shale. The most prominent soils are silty or silty clapan ecological sites. Western wheatgrass is the dominant species with, blue grama, green needlegrass, needle-and-thread, prairie junegrass, and sandberg bluegrass as the major vascular plants on this site. The next most abundant sites are dense clay and clay pan ecological sites which are influenced by soil chemistry and compaction layers. The vegetation on these sites is dominated by western wheatgrass green needle grass and silver sage brush. These sites are mostly in mid seral stage with very limited potential to advance in succession without mechanical treatment.

The Bearpaw shale soils are dominated by prairie sandreed, little bluestem, western wheatgrass and silver sagebrush. These soils are clayey, shallow clay and coarse clay ecological sites, which are moderately productive and will advance in succession much more rapidly than most sites in the area. For the most part these sites are in a high seral stage already. These sites are also the most potentially erosive sites and where noxious weeds are most likely to spread. The Rock Creek canyon portion of the watershed has sandstone derived soils dominated by juniper with an understory of grasses including; little blustem, prairie sandreed, western wheatgrass, needle-and-thread and prairie junegrass.

Riparian soils and overflow ecological sites next to the streams are classified as ustic torrifluvents in the Valley County soil survey. These soils respond readily to grazing management change.

Vegetation

The vegetation data shows that 96 % of the surveyed area is dominated by native vegetation; 85 % grass, 12% shrubs; while 4 % is dominated by the introduced species, crested wheatgrass.

Vegetation type and seral status of the Rock Creek Watershed are located on Maps 3 and 4 (pages 36-37).

Clubmoss

Clubmoss covers many of the soils in this area and severely limits vegetative productivity and potential to advance in seral status. Fire or mechanical treatment of clubmoss significantly increases productivity and speeds succession upward. Two chiseling projects have been completed in this watershed, totaling approximately 1700 acres. The chiseling project in the Davidson Coulee allotment #4701was completed in 3 stages over several years; totaling 1200 acres. The second project took place in 1985 in the Upper McCreachran allotment #4700 totaling 500 acres. Both projects were considered successful as forage production doubled in the treated area as compared to the untreated area.

Noxious Weed Infestations

Leafy Spurge infestations exist in several drainages in the Rock Creek Watershed. These drainages include Cashe Creek, Papoose Creek, Crow Creek, Bluff Creek, Snake Creek, Lime Creek, South Creek, McEachran Creek and Rock Creek. In 1999, knapweed was found along the Fossum Road, we continue to monitor the area for any new infestations. This is the only known knapweed in the watershed.

Since 1984, the BLM has been involved in cooperative control efforts with the Valley County Weed District and the Cooperative State Grazing Districts. The goal of this agreement has been to control and prevent noxious weed expansion in the Rock Creek Weed Management Area using Integrated Pest Management (IPM).

The Rock Creek Weed Management Area involves a variety of management tools including: air and ground herbicide treatments, biological control and sheep grazing. Leafy spurge infestations have been controlled to the drainages bottoms using annual aerial and ground herbicide treatments in the Rock Creek Watershed. Our goal with aerial application is to keep the infestations contained and control this aggressive weed from spreading outward to non-infested land. The aerial weed boundary perimeter is partially located in the Rock Creek Watershed. In 2002 the aerial weed boundary perimeter was moved inward due to the excellent control over the past 3 years (See Aerial Weed Boundaries Map.6, p. 49). The county weed district continues to monitor the original weed boundary and ground spray the necessary areas. In 2003, 152 aerial acres were treated in the Rock Creek Watershed. The majority of the treated acres are located west of Willow Creek were the perimeter boundary changed (See Aerial and Ground Treatments Map 5, P.48).

The greater part of the ground herbicide treatments have occurred on private land rather than public land which is where infestations are located (See Map 5, p. 48). Many of these infestations are small in size and manageable therefore, eradication is the goal. In 2003, the county weed district treated 76 acres on private, 14 acres on federal and 7.5 acres on state land within the Rock Creek Watershed.

Numerous biological control (Apthona lacertosa and nigriscutis flea beetles) releases have taken place in this watershed since early 1990's. Some of these releases have been successful in reducing or stabilizing the leafy spurge expansion. However, in some areas the more aggressive spurge is out competing the native vegetation and creeping out of the drainages onto the uplands. Limited manpower and funding has made it unfeasible to treat all areas with herbicide via air or ground, therefore biological control has been determined to be the best approach. Another disadvantage of herbicide treatment is the loss of woody vegetation in these sensitive areas. Sheep grazing has been another control method used in this watershed. Only one permittee has used this method but it has been very successful in decreasing the spurge population on private and public land along Rock Creek.

With the given resources, funds and staff we will continue to fight the war on weeds. We are currently using all management tools to prevent the

expansion of leafy spurge in the Rock Creek Watershed.

Livestock Grazing

There are 40 individual ranches that have grazing permits in the watershed. BLM lands provide about 70% of the summer forage in the allotments.

About 70% of the federal land in the watershed is managed under 26 allotment management plans (AMPs) which entail rest rotation or deferred rotation grazing as shown in Table 1. Twenty three allotments (25% of the BLM acres) are identified in the land use plan as potential AMPs. The remaining allotments (5% of the BLM acres) are in small allotments that are identified as non-AMPs in the land use plan.

Step Three: Reference Conditions

Uplands

The following are excerpts from the original land survey notes, from surveys that were done between 1891 and 1919. These notes give an indication of conditions during the open range and early homestead days.

Livestock grazing had replaced buffalo grazing beginning in 1886. From this time till 1907 the watershed area was in the N-N range. The winter of 1906-07 ended the large cattle outfits and ushered in the era of the homesteader and smaller ranches. (Glasgow Jubilee Committee, 1962). Open range continued until 1934 with the passage of the Taylor Grazing Act. Grazing pressure peaked in the 1920's and 30's with ranchers and homesteaders competing for grass.

As with previous watershed assessments, the original land survey notes and maps were reviewed to find information on 1890's through 1915 conditions in the Rock Creek watershed. The 1890s surveyors would often make comments about riparian vegetation where survey lines crossed creeks and for each township a short narrative describing topography, soil, vegetation, water, and human settlement was included. The 1911-1915 notes are less descriptive but do have summary narratives as well.

The descriptions of upland grass conditions were generally favorable in the late 90's and less favorable by the early 1900s. Another repeated bit of information is *"there is no timber."*

The following excepts illustrate these findings.

"This line passes over rolling and in some cases very rough and broken land with soil mostly sandy loam and clay which produces an abundant growth of grass. There is no timber along the line.") 1896 Line between T 34N and 35N Range 35 East.

"Rough and broken land with soil sandy loam or clay gumbo and adobe generally of poor quality. There is no timber or water." Oct 14,1896; 9th Survey Parallel T34N, R37E.

The northwest portion of the watershed (Snake, Bluff, Crow Creeks) was not yet homesteaded in 1915, while the remainder had just been homesteaded, including the establishment of the town

of Tango in Section 25 of T36N R39E *" Tango Post Office, consisting of post office, saloon, school house and hotel is found in Section 25".*

Step Four: Analysis and Recommendations

Uplands Standard

The upland standard is: "Uplands are in proper functioning condition."
This means that soils are stable and provide safe release of water appropriate to the soil type, climate, and landform. The amount and distribution of ground cover (i.e. litter, live and standing dead vegetation, microbiotic crusts, and rock/gravel) for identified ecological sites or soil-plant associations are appropriate for soil stability.

The upland standard Proper Functioning Condition (PFC) is not the same as the objectives in the JVP-RMP, (i.e. 80% good and excellent ecological condition, or less if not feasible or for specific wildlife habitat).

Procedure to determine conformance with standard

Review of early historical records indicates very similar vegetation conditions today.

The uplands were assessed on an allotment basis using a form developed by the Glasgow Field Office assessment team. The 70 allotments were divided into high and low priority based on acres of public land, resource values and previous planning. Each allotment was visited in the field. The high priority allotments were visited at least once by the team to assess the standards, while an individual usually assessed the low priority allotments and a call was made on whether the standard was being met.

If there was a question on the standards call the team would assess the allotment. The team used field write-ups and existing long term upland studies to determine if the entire watershed was meeting the upland standard when evaluating the watershed as a whole.

Existing trend studies on AMP allotments were conducted and evaluated to help determine trend and overall health. The information gathered during the AMP evaluation process, especially the long-term trend data was also considered when assessing whether the upland standard had been met.

The entire watershed, on an allotment basis had been mapped for ecological range condition in 1978 and 1979. Individual allotments were re-evaluated for ecological condition during field assessments (See Table 2).

Weed infestations are a threat to the uplands at this time. The helicopter inventory and spraying combined with regular field checks have been successful in limiting the spread of leafy spurge and other noxious weeds.

As the team conducted the allotment assessments, they evaluated the potential and necessity of meeting the JVP-RMP objective of 80% excellent and good ecological status, focusing on the habitat of grassland birds.

Findings

The assessment team has found that currently the uplands in the Rock Creek Watershed meet the Lewistown Standard #1.

The uplands are in proper functioning condition. This does not mean that all the individual allotment objectives that were designated in the RMP and individual plans have been met for the uplands.

Specific ecological sites within an allotment may not meet the upland standard. However, the range of seral stages (ecological conditions) within the watershed is within the range of natural variation for the short grass prairie ecosystem.

The studies that were completed showed a stable ecological state for the sites evaluated. The erosion that was present was what was expected for that ecological site. The long-term trend data gathered during previous evaluation processes indicated an upward or static trend on the allotments with AMPs.

With 53 % of the classified acres in potential natural community (PNC) or late seral stage, the watershed does not meet the JVP-RMP objective of 80% excellent or good ecological condition. The ecological seral stage varies from year to year on a significant portion of the watershed as the ecological sites will score mid seral one year and high seral the next. Clubmoss infestation on the silty range sites has retarded ecological condition and forage production. Land treatments, such as chiseling, generally move ecological condition upward on certain range sites.

The potential for the expansion of weeds, specifically leafy spurge and knapweed, is a major concern. There are identified areas of small infestations on public and private lands, which could spread if we reduced our effort of herbicide control. Recreationists, along with wildlife have the potential to spread leafy spurge and other noxious weeds. At the present time we are gaining control of this potential problem through public education, prevention and herbicide control.

Some allotments dominated by crested wheatgrass do not meet the upland standard, lacking species diversity. However, these crested wheatgrass stands provide a unique habitat on a watershed basis and are a valuable part of the ecosystem.

The following table gives an overview of the allotments in the watershed:

Table 1. Livestock Grazing Allocation and Management						
Allotment Number	**Allotment Number**	**Operator Name**	**Public Aums**	**Public Acres**	**Other Acres**	**Grazing Method**
4000	UPPER CROW CREEK	Lacock, Steven	1033	6061	1120	DR
4002	UPPER BLUFF CREEK	Remmich, Chad	586	3064	1817	RR
4003	UPPER EASTFORK CROW	Swanson Ranch	944	5588	409	RR
4004		Remmich	10	46	0	S
4005	FLINT RESERVOIR	Swanson Ranch	330	1443	324	S
4006	BLUFF CREEK	McColly Ranch	286	1885	1614	S
4007		McColly Ranch	7	52	0	S
4008	WESTFORK BLUFF CR.	Beil Ranch	787	4090	2186	RR
4009	CHAMBERS CREEK	Barnard, Colleen	347	1511	240	DR
4010		Lacock, Steve	574	2687	1357	S
4011		Barnard, Colleen	28	129	1027	S
4012	LOWER TOMATO CREEK	Davenport, Donald	984	5239	1250	DR
4013	NORTH TOMATO CREEK	Winderl, Robert	287	1439	27	S
4014	NORTHFORK ROCK CREEK	Pankratz Ranch	647	3775	2363	DR
4015	SOUTH CREEK	Borderview Ranch	2268	12427	6474	DR
4016	UPPER MORGAN CREEK	Borderview Ranch	156	1194	1400	S
4017	MORGAN CREEK	Pankratz Ranch	28	415	0	S
4018	UPPER SOUTH CREEK	Borderview Ranch	254	1440	0	S
4019	SNAKE CREEK	See Farms; Mogan, Paul	1005	7225	454	DR
4021	UPPER LITTLE SNAKE	Frenchman Valley Ranch	375	2206	0	S
4022	LOWER BLUFF CREEK	Swanson Ranch	798	4459	1360	RR
4023	CHAMBERS COULEE	Barnard, Colleen	671	4429	885	DR
4025	SOUTHFORK ROCK CREEK	Floyd, Bruce Floyd, Ken	1950	9243	2329	S
4026		Solberg Wayne	321	1520	1490	S
4027		Floyd, Bruce Floyd, Ken	15	124	0	S
4028		Nelson Virgil	44	200	0	S
4029		Davenport, Donald	165	800	200	S
4031		Arnold John	150	803	0	S
4032	LOWER SNAKE CREEK	Arnold John	651	3991	1440	S
4033		Arnold John	7	40	0	S
4034		Barnard Jack	64	466	0	S
4035	LITTLE SNAKE CREEK	Jensen, Frank	94	383	0	S
4036		Jensen, Frank	7	40	0	S
4037		Arnold John	117	562	195	S
4038		Frenchman Valley Ranch	159	798	40	S

Table 1. Livestock Grazing Allocation and Management						
Allotment Number	Allotment Number	Operator Name	Public Aums	Public Acres	Other Acres	Grazing Method
4044		Johnson Ranch	94	399	0	S
4047	UPPER WESTFORK CACHE	Canen Ranch	64	404	0	S
4049		Johnson Ranch	100	487	0	S
4051		Swanson, Sharon	22	120	0	S
4052		Arnold John	231	1108	465	S
4062		McColly Ranch	208	1166	0	S
4063		Mcolly, Dana	23	120	0	S
4064		Lacock, Steven	36	160	0	S
4065		Fisher, Glen	87	362	0	S
4066	CACHE CREEK	Eaton, Richard; Swanson Ranch; Lacock, Steven	244	998	0	S
4067	PAPOOSE CREEK	McColly Ranch	339	1823	1909	S
4068		McColly Ranch	174	987	0	S
4070		Funk Brothers	112	481	0	S
4073		Lacock, Steven	14	57	0	S
4075		McColly Ranch	76	440	0	S
4076		Swanson Ranch	34	200	0	S
4077		Remmich, Chad	94	480	0	S
4080	HALL COULEE	Britsch, Julia	276	1548	1746	S
4083		Lacock, Steven	99	479	160	S
4097	EASTFORK CACHE CREEK	Johnson Ranch	99	531	0	S
4126	DRY WEST	Barnard, Colleen	166	880	173	S
4656	WEST ROANWOOD COULEE	Borderview Ranch	19	136	0	S
4657	ROCK CREEK DIVIDE	Nelson, Virgil	107	473	0	S
4700	UPPER MCEACHRAN	Bergtoll, Leo	1006	5124	3327	RR
4701	DAVIDSON COULEE	Lacock, Steven	1184	5278	977	RR
4702	MCEACHRAN CREEK	Lacock, Steven	211	1040	0	S
4703	UPPER ROCK COULEE	Bergtoll Darrel	816	3769	890	DR
4704		Bergtoll Darrel	141	520	0	S
4707	EASTFORK CROW CREEK	Johnstone, Brian	2378	15397	6314	DR
4708	ICHPAIR CREEK	Bergtoll Darrel	2350	11497	1120	RR
4709		Lacock, Steven	155	671	798	S
4710		Bergtoll Darrel	88	390	0	S
4713	LOWER CROW CREEK	Mattfeld, Jim	641	3394	631	RR
4714	ROCK CREEK	Pratt, William	234	1220	490	S

Table 1. Livestock Grazing Allocation and Management						
Allotment Number	Allotment Number	Operator Name	Public Aums	Public Acres	Other Acres	Grazing Method
4715	EAST ROCK CREEK	Pratt, A. W.	264	2016	1654	DR
4716	JONES COULEE	Jones, LLoyd	739	3664	166	RR
4719		Beil, Edward & Fred	60	305	0	S
4720	OREGON RESERVOIR	Pratt, A. W.	22	120	0	S
4721	CLARA RESERVOIR	Beil, Edward & Fred	285	2563	776	S
4723	LITTLE PAPOOSE CREEK	Pratt, A. W.	1626	9289	4796	RR
4724	LOWER ROCK CREEK	JAKZ Partnership	49	309	145	S
4727		Funk Ranch	245	1493	0	S
4728	LIME CREEK	Funk Ranch	369	2096	1543	S
4729	WEST ROCK CREEK	Hanson, Lanny & Randy	343	1912	0	DR
4730	THOENY	Bergtoll Darrel	358	1436	970	S

RR = Rest Rotation DR = Deferred Rotation S = Season Long

Analysis

The upland standard is being met on all the allotments when evaluated on a watershed basis. (See Executive Summary)

Livestock grazing systems and current levels of use are maintaining healthy rangelands. Weed infestations occur over portions of the watershed with the major infestations of leafy spurge occurring along the Rock Creek drainage. The cooperative weed control program has controlled the expansion of weeds. If weed expansion should occur, biodiversity would go down as noxious weeds can totally dominate a site.

Fire control, overgrazing and lack of buffalo herd disturbance probably resulted in an increase in clubmoss density following settlement from the 1890's to the 1930's. Ecological sites dominated by clubmoss are in a stable ecological state unless there is a disturbance. The reintroduction of fire or applying mechanical treatments would reduce clubmoss and advance the ecological seral stage.

Meeting the RMP objective of 80% late seral or PNC in the watershed would entail considerable land treatment in most allotments, which may not be economically feasible and could conflict with wildlife habitat needs.

The crested wheatgrass fields in this watershed provide early spring livestock grazing. This benefits the vegetation and nesting birds, such as sage grouse in the native grass area of these allotments.

Recommendations

Continue existing allotment management plans (AMPs) as most trend data shows an upward trend even with the satisfactory conditions we now have on the allotments. Allotments identified as potential AMPs, (See Table 1) will be considered for future needs.

Encourage mechanical treatment and fire in combination with the grazing systems to increase the total production, cover and height of grasses on the clubmoss infested sites on native range where this does not conflict with habitat needs for sensitive bird species.

Continue the cooperative weed program with the Valley County Weed District and State Grazing Districts. Continue to monitor non-infested lands to prevent any new outbreaks and aggressively treat any new infestations. Continue the use of all management tools, including air and ground treatments, biological control and sheep grazing, to prevent current infestations from expanding. Encourage permittee's to use sheep grazing on heavily infested lands.

Table 2. Ecological Status of Uplands

NUMBER	ALLOTMENT NAME	EXCELLENT (PNC)	GOOD (LATE)	FAIR (MID)	POOR (EARLY)	CRESTED	UNSUITABLE (SHALE OUTCROP)
4002	UPPER BLUFF CREEK	28	1224	1769	0	43	0
4003	UPPER EASTFORK CROW	0	2746	2832	0	0	10
4004		0	46	0	0	0	0
4000	UPPER CROW CREEK	61	3627	2349	0	18	6
4005	FLINT RESERVOIR	0	198	1241	0	0	4
4006	BLUFF CREEK	0	355	1465	0	65	0
4007		0	4	48	0	0	0
4008	WESTFORK BLUFF CR.	0	2035	1799	0	256	0
4009	CHAMBERS CREEK	0	277	1186	0	44	4
4010		0	342	2211	0	134	0
4011		0	78	51	0	0	0
4012	LOWER TOMATO CREEK	0	3289	1070	0	875	5
4013	NORTH TOMATO CREEK	186	661	357	0	173	62
4014	NORTHFORK ROCK CREEK	0	2080	1695	0	0	0
4015	SOUTH CREEK	130	4590	6276	0	1431	0
4016	UPPER MORGAN CREEK	0	684	497	0	0	13
4017	MORGAN CREEK	0	415	0	0	0	0
4018	UPPER SOUTH CREEK	0	1336	88	0	0	16
4019	SNAKE CREEK	0	3471	3748	0	0	6
4021	UPPER LITTLE SNAKE	0	742	1464	0	0	0
4022	LOWER BLUFF CREEK	0	1958	2436	0	65	0
4023	CHAMBERS COULEE	0	3089	1340	0	0	0
4025	SOUTHFORK ROCK CREEK	99	2726	5693	0	721	4
4026		0	863	657	0	0	0
4027		0	10	114	0	0	0
4028		0	5	195	0	0	0
4029		0	500	300	0	0	0
4031		0	774	29	0	0	0
4032	LOWER SNAKE CREEK	8	2247	1715	0	0	21
4033		0	40	0	0	0	0
4034		0	373	93	0	0	0
4035	LITTLE SNAKE CREEK	0	3	227	0	153	0
4036		0	0	40	0	0	0
4037		0	460	6	0	96	0
4038		1	316	432	0	49	0
4044		0	33	366	0	0	0
4047	UPPER WESTFORK CACHE	0	0	314	0	90	0
4049		119	224	75	0	69	0
4051		0	109	11	0	0	0
4052		0	463	585	0	58	2
4062		0	508	564	0	94	0
4063		0	76	44	0	0	0
4064		0	160	0	0	0	0
4065		0	32	330	0	0	0
4066	CACHE CREEK	0	700	298	0	0	0
4067	PAPOOSE CREEK	0	1473	350	0		0
4068		809	0	176	0		2
4070		0	192	289	0	0	0
4073		0	35	22	0		0
4075		0	279	147	0	14	0
4076		119	81	0	0	0	0

NUMBER	ALLOTMENT NAME	EXCELLENT	GOOD	FAIR	POOR	CRESTED	UNSUITABLE
		(PNC)	(LATE)	(MID)	(EARLY)		(SHALE OUTCROP)
4080	HALL COULEE	0	702	799	11		1
4083		74	392	13	0	0	0
4097	EASTFORK CACHE CREEK	0	374	157	0		0
4656	WEST ROANWOOD COULEE	0	136	0	0	0	0
4657	ROCK CREEK DIVIDE	0	385	88	0		0
4700	UPPER MCEACHRAN	0	2496	2598	0		30
4701	DAVIDSON COULEE	0	3670	1459	0	149	0
4702	MCEACHRAN CREEK	0	453	465	0	120	2
4703	UPPER ROCK COULEE	0	1425	2344	0		0
4704		0	379	127	0		14
4707	EASTFORK CROW CREEK	637	8485	6099	0	176	0
4708	ICHPAIR CREEK	0	6925	4079	33	354	106
4709		166	357	49	0	99	0
4710		138	181	71	0	0	0
4713	LOWER CROW CREEK	0	1188	2020	0	181	5
4714	ROCK CREEK	0	524	696	0	0	0
4715	EAST ROCK CREEK	0	1097	826	0	93	0
4716	JONES COULEE	330	1596	1558	0	180	0
4719		0	109	174	0	20	2
4720	OREGON RESERVOIR	0	114	6	0	0	0
4721	CLARA RESERVOIR	0	1375	1188	0	0	0
4723	LITTLE PAPOOSE CREEK	410	5788	3063	0	0	28
4724	LOWER ROCK CREEK	0	148	138	0	23	0
4727		465	866	161	0		1
4728	LIME CREEK	105	1963	24	0	4	0
4729	WEST ROCK CREEK	0	1151	744	10	7	0
4730	THOENY	0	949	407	0	80	0
4126	DRY WEST	5	175	620	0	80	0

RIPARIAN AND WETLAND AREAS

Step One: Issues and Key Questions

Riparian/Wetland Health

RMP Decisions:

a) "..Improve or maintain riparian and wetland areas to proper functioning condition"

b) "..Achieve or maintain the desired plant community...provide sufficient plant residue to protect streambanks."

Lewistown Standard # 2

"Riparian and wetland areas are in proper functioning condition"

Key questions:

1) What areas should be classified as wetlands and how should they be evaluated?

2) How is leafy spurge affecting the riparian areas and stream channels?

Step Two: Characterization/Current Conditions

Riparian and Wetland Areas

Hydrology/ stream channel

Stream flow: Rock Creek is the only perennial stream in the watershed. The remaining streams are either intermittent or ephemeral. There are large seasonal variations in flows with the largest flows generally occurring during spring or early summer because of snowmelt and rainstorms.

Stream Riparian Vegetation and Functional Status

Montana riparian vegetation is classified into habitat types and community types. Habitat types (HTs) are stable, climax plant communities, representing the potential natural vegetation for the site. The objectives for such sites are to maintain the current habitat type. Community types (CTs) represent lower seral types that are stable for time frames relevant to land management decisions (Hanson et al 1995). In theory these communities could advance in succession to a habitat type. Although most of the riparian areas inventoried were shrub/grass community and habitat types, trees, such as Green Ash, Cottonwood, Box Elder, Quaking Aspen, and Peach Leaf Willow, were found along some of the inventoried streams, see Table 3.

Wetland Areas

Both natural potholes and constructed reservoirs are classified as wetlands in this watershed. Inventories of these wetlands have been conducted in 2002 and 2003. Pits or reservoirs built solely for livestock water are not evaluated. Because we have water limited climate the riparian vegetation within and around the potholes ranges from marginal riparian to upland species. The vegetation around the reservoirs provides good forage and cover for wildlife and waterfowl. For this reason all of the wetlands have been classified as PFC.

Table 3. Riparian Objectives, Riparian Standard Status					
Allot #	Stream	Vegetation type	Function	Stream Miles	Polygon #
4000	Snake	Licorice, ct	PFC	3	R796
	Crow	Snowberry, ct	PFC	1.6	R743
	E.F. Crow	Tufted hairgrass, ht	PFC	2.3	R45
4003	E.F. Crow	Tufted hairgrass, ht	PFC	4.6	R744
4008	Bluff	Smooth brome, ct	PFC	2.4	R32
4009	Rock	Spikesedge, ht	PFC	1.4	R4009
4010	McEachran	Bulrush, ht	PFC	0.9	R4010M
	Rock	Spikesedge, ht	PFC	0.7	R4010R
4012	Rock		PFC	0.6	R793
	Tomato	Snowberry, ct	PFC	2.4	R238
	South	Western wheat, ht Bluegrass, ct	FR;weeds	4.0	R781
4013	Tomato	Brome, ct	FR;soils	0.9	R762
4015	Tomato	Snowberry/rose, ct	PFC	2.0	R239
4016	Morgan	Bluegrass, ct Bulrush, ht	PFC	0.8	R234
4017	Morgan	Bulrush, ht	PFC	0.9	R4017
4019	Snake	Snowberry/rose, ct	PFC	4.0	R60
	Crow	Snowberry/rose, ct	PFC	2.3	R44
4022	Bluff	Sedge, ht	PFC	3.5	R131
4025	South	Snowberry, ct Sandbar willow, ct	PFC	7.4	RSFC01
	Coal Mine	Snowberry, ct	PFC	3.5	R232
	Coal Mine	Snowberry, ct	PFC	3.5	R233
4032	Snake	Snowberry, ct	FR	1.7	R474
		Snowberry, ct	PFC	1.7	R475
		Snowberry, ct	FR	1.7	R607
4037	Snake	Sandbar willow, ct	PFC	0.8	R729
4052	Little Snake	Snowberry/rose, ct	PFC	1.0	R266
	Snake	Green Ash, ht	PFC	1.0	R732
	Rock	Snowberry/rose, ct	FR	0.8	R712
4083	Rock		PFC	0.4	R4083
4700	Rock	Western wheat, ht	PFC	3.2	R235
	Horse	Licorice, ht Brome, ct	PFC	0.5	R759
4701	Bluff	?	PFC	0.9	R4701
4702	McEachran	Brome, ct	PFC	0.7	R732
4703	Rock	Western wheat, ht	PFC	1.4	R121

Allot #	Stream	Vegetation type	Function	Stream Miles	Polygon #
4707	Crow	Snowberry, ct	PFC	6.3	RCRC05
	Crow	Snowberry, ct	PFC	10.8	R07
	Crow	Photo point		1.6	R100
4708	Rock	Western wheat, ht	PFC	4.5	R97
	Crow	Sandbar willow, ct	PFC	5.3	R95
	Bluff	Brome, ct	PFC	1.5	R96
4709	Rock	Brome, ct	PFC	1.3	R92A
4710	Rock	Bulrush, ht	PFC	1.5	R92B
4713	Crow	Snowberry, ct	PFC	1.0	R7
4714	Rock	Sandbar willow, ct Beaked Sedge, ht	PFC	1.4	R4714
4715	Rock		FR	0.9	R48
4716	Rock	Licorice, ct	PFC	2.6	R237
4719	Rock	Sedge, ht	PFC	0.6	R4719
4724	Rock	Licorice, ct Beaked Sedge, ht	PFC	0.3	R4724
4727	Rock	Sandbar willow, ct	PFC	0.8	R4727
4729	Rock	Prairie cordgrass, ht	PFC	0.6	R37

***** Abbreviations: CT= Community Type, HT= Habitat Type, PFC = Proper Functioning Condition, FR = Functioning–At-Risk.

Stream Riparian Function/Health and Vegetation Communities

Condition of the above listed streams was determined during the 2003 field season.

Examples of habitat types in this watershed are green ash/snowberry, inland saltgrass; and western wheatgrass. These riparian areas are at their potential so the objective for these sites is to maintain the current habitat type.

Community types in the watershed include Woods rose and\or Western snowberrry and Sandbar willow. In theory, these communities are a lower seral community that could advance in succession to a habitat type.

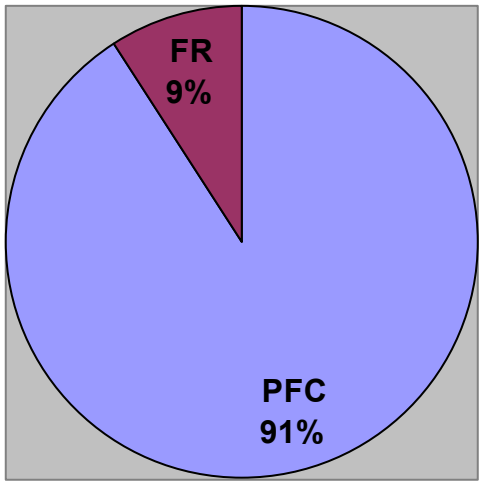
One of the functions of this watershed assessment is to establish realistic objectives for the vegetation. Objectives for community types need to reflect site

potential as nearly as can be determined. Site potential should be based, not just on the "book" characteristics but, on careful evaluation and observation. Below are the results of the function and health assessments, see Table 4.

Table 4. Rock Creek Watershed Riparian Condition 2003 (See Map 4).

PFC	FR	NF	Total miles
99	10	0	109

Figure 1. Riparian Status in Percentage



Wetland Areas

Nearly all wetlands in the watershed are constructed reservoirs.

Step Three: Reference Conditions

The purpose of the section is to look at historical conditions in order to compare current vegetation etc to what was found by early day observers.

Riparian vegetation, presence or lack of trees, appears to be similar to today. Water quality was noted often as alkaline; the surveyors likely had to drink the stuff.

The following excepts illustrate these findings.

"North fork of Rock Creek 20 lks wide, at this season flows considerable water, but later contains only water in holes. There is no timber along the line." (Sections 31 and 33 of T37N,R37E are noted. One of these locations is on McEacheran, the other on Rock.) No trees in this section of Rock Creek now, either.

"Bluff Creek, composed of large and deep pools of standing water of fair quality. The east fork of Crow Creek which is a small running stream of strongly alkaline water. No timber in the tp." T36NR36E. Snake Creek, Crow Creek standing pools of alkaline water, no settlers yet. T36NR35E , 1915.

T36N R37E: The southeastern portion of tp. Is drained by Willow Creek but the greater portion of the tp is drained by Rock Creek which is a running stream of good water about 50 lks wide and 12 inches deeps. No timber in the tp." 1915.

"East fork of Rock Creek 5 lks (to 15 lks) wide scattering willow brush along banks." 1897. This is South Creek which has good bank cover of willows today.

"Frenchman Creek crosses Section 31 and 36. There is some brush consisting of cottonwood,willows, etc along the stream. Except for the badlands the soil produces good grass." 1897 This location is now in allotment # 4034, Frenchman Creek today has cottonwood and willow at this location and is in PFC.

"The line between Sections 13 and 18 crosses Rock Creek which is a stream of about 1 chain and which contains considerable water. There is no timber." 1897 This location is in today's allotment # 4716, there are no trees in this section of Rock Creek today, either.

T34N R36E: *"No timber in TP except a few scattered cottonwood trees along Rock Creek".* 1915. This is the section of Rock Creek that includes Pratt Ranch fields, there are a few trees in this section today but none north of Rock Creek crossing of Pratt Road.

West boundary of T33N R35E: *"The only timber is a little scattering box elder in the ravines."* These are the ravines in west breaks of Rock Creek Canyon. Today these have ash tree cover, suspect misidentification of box elder.

T32 N R36E: " Timber cottonwood of good quality, brush, willows and rose. Heavily timbered and covered with dense undergrowth". 1896. This is the lower section of the creek on Funk Ranch that is cottonwood , willow and rose/snowberry today. Map shows broad timber cover to mouth of Rock Creek Canyon (same as today).

Step Four: Analysis and Recommendations

Riparian and Wetland Areas

Standard

"Riparian and Wetland Areas are in proper functioning condition."

Procedure to determine conformance with standard

Previously established and previously monitored riparian polygons were reevaluated by a BLM interdisciplinary team. At these sites photos were taken at the same locations as previous years and Montana Riparian/Wetland Association (MRWA) inventory forms were used to assess site conditions. New riparian study sites were set up in all other allotments, within the watershed, where there were no previously established sites.

Natural potholes and constructed reservoirs were assessed as lentic wetlands. Pits constructed for the sole purpose of livestock watering were not inventoried. Still water wetland forms were used to record vegetation types, soil types and water source (e.g. stream, overland flow, seeps, etc.) for each wetland. The perimeter of each pothole and reservoir was mapped using a Trimble GPS unit. Maximum depth of the reservoirs was also measured, for use in determining reservoir capacity.

Findings

One hundred and nine stream miles were inventoried for riparian function/health status. Of those miles monitored, 10 (9%) were found to be functional-at-risk and 109 (91%) were in proper functioning condition (See Figure. 1, page 15).

Recommendations

Of the sixty riparian sites monitored, only six were found to be functioning-at-risk. Livestock was a determining factor at four of those sites. The amount of bare ground caused by livestock trailing lowered the overall condition of the riparian area. Because there has been a change in the management of these areas and because the trend is up the only recommendation at this time is continued monitoring. As long as the riparian areas continue to improve there shouldn't be a need for any other changes within the allotment. Soils and weeds were the determining factors of the other two functioning-at-risk sites. Spurge is found in many of the riparian areas and although it provides excellent protection for the stream banks it will out compete more desirable vegetation. Biological and chemical methods have been used to control the weed population. Again continued monitoring of these sites is the only recommendation at this time.

WATER QUALITY

Step One: Issues and Key Questions

RMP Decisions

"Surface and groundwater quality will be maintained to meet or exceed state and federal water quality standards"

Lewistown Standard #3

"Water quality meets Montana State standards."

Key Question:

1) Are the Montana water quality standards being met in this watershed?

2) What effect will water right restrictions have on new construction?

3) Could the water rights from reservoirs that have silted in be transferred to build new reservoirs?

Step Two: Characterization/Current Conditions

Surface Water

The water quality standard listed in the Standards and Guidelines states that surface and groundwater on public lands must fully support the designated beneficial uses described in the Montana Water Quality Standards. The Montana Department of Environmental Quality (DEQ) has classified all streams within this watershed as B-3. Designated beneficial uses for B-3 streams are bathing, swimming and recreation, growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers. The quality of these waters is naturally marginal for drinking, culinary and food processing purposes, agriculture and industrial water supply.

As a result of the Clean Water Act (CWA) passed in 1972, states were directed to develop Total Maximum Daily Loads (TMDLs) that set limits on point and nonpoint source pollution loading to water quality-limited water bodies. These water bodies are listed in the CWA 303 (d) list of impaired streams. The CWA section 303(d) and the U.S. Environmental Protection Agency (EPA) Water Quality Planning and Management Regulations require each state to:

1) Identify water bodies that are water quality-limited

2) Prioritize and target water bodies for TMDLs

3) Develop TMDL plans to attain and maintain water quality standards for all water quality-limited waters.

All streams within the study area are considered to be meeting water quality standards as long as the channel is stable and the riparian area is in proper functioning condition.

Ground Water

Because of naturally high TDS levels groundwater is marginal to unsuitable for domestic use but suitable for livestock (*Milk River Investigation Report, 1960*).

Step Three: Reference Conditions

No historical observations are available.

Step Four: Analysis and Recommendations

Water quality meets Montana state standards."

Surface and groundwater on public lands fully support designated beneficial uses described in the Montana Water Quality

standards. Water quality is indicated by dissolved oxygen (DO) concentration, pH, turbidity, temperature, fecal coliform, sediment, toxins, and others such as chlorides, cyanide, nitrates, phenols, sodium, sulfates, etc. For a complete definition of the standard contact the Glasgow Field Station office.

Procedure to determine conformance with standard

To determine conformance with standard the BLM refers to Montana's 303(d) list of impaired streams.

Recommendations

Water quality in this watershed is directly affected by the condition of the riparian areas. Because of this the recommendations listed in Table 3 for meeting riparian standards would be the same as those for meeting water quality standards. Waterfowl ponds, fisheries and livestock watering reservoirs are an important aspect of the BLM as a multi resource management agency. Because we are a water limited environment, water rights have always been a contentious issue. For this reason water rights are becoming harder and harder to acquire. One way to satisfy our water right needs would be to transfer those rights from pits and reservoirs that have either been breached or have lost capacity due to siltation. Part of this watershed assessment has been the inventory and mapping of reservoirs. The capacity was determined and compared against the original water right volume. If possible we would then transfer the rights from the silted or breached reservoirs to new construction projects. This way the available water volume would not be adversely affected.

Riparian Photographs

Bluff Creek, R-96 (PFC)

Crow Creek, RCRC-05 (PFC)

W.F. Willow Creek, R-420 (PFC)

WILDLIFE HABITAT / BIODIVERSITY

Step One: Issues and Key Questions

RMP Decisions:

"The BLM will maintain and enhance suitable habitat for all wildlife species. The emphasis for habitat maintenance and development will be on present and potential habitat for sensitive, threatened and/or endangered species, nesting waterfowl, crucial wildlife winter ranges, non-game habitat, and fisheries. The BLM will maintain or manage prairie dog towns on BLM lands based on the values or problems encountered."

Lewistown Standard #5:

The regional standard for rangeland health that applies is the Central Montana Standard #5:

"Habitats are provided to maintain healthy, productive and diverse populations of native plant and animal species, including special status species (federally threatened, endangered, candidate or Montana species of special concern as defined in BLM Manual 6840. Special Status Species Management)."

Key Questions:

1) Sage grouse: What are the limiting factors for greater sage-grouse in silver sage habitats?

2) Fisheries: What is the status of native fish assemblages in Rock Creek?

3) Prairie Dogs: What is the current status and trends for black-tailed prairie dogs in the watershed? What is potential for transplanting to ensure connectivity between prairie dog towns in Canada and more intact populations further south?

4) Waterfowl: What management techniques and land treatments should be employed to enhance or maintain current habitat? Is nesting cover adequate?

5) Grassland birds: How do we meet habitat requirements for a number of species (especially special status species) that require a range of habitats from very short vegetation to dense, tall cover? What is the effect of crested wheatgrass on bird distribution and reproductive success? Is the goal of 80% good to excellent ecological status appropriate for the full range of grassland bird species?

6) Raptors: What is the current status and trends of raptors nesting in this watershed, especially special status species such as the Ferruginous Hawk and Burrowing Owl.

Step Two: Characterization/Current Conditions

Wildlife Habitat / Biodiversity

This watershed contains a variety of wildlife habitats and most of the species expected in these habitats are extant within this watershed. The principal types of wildlife habitats are: grassland habitat, silver sagebrush-grass shrub habitat, woody draw deciduous tree and shrub habitat, and cottonwood-green ash-willow riparian forest habitat. Less common habitats include reservoir wetlands, sandstone cliffs and outcrops, and sparsely vegetated hardpan. Grasslands are the predominate habitat in the watershed with silver sagebrush habitats found on silty soils along drainages. Sandstone cliffs are an important habitat feature in areas along Rock Creek.

Most of the wildlife species that are found in the rest of the Valley County can also be found in the Rock Creek watershed, but grassland dependent species are most prevalent. The Rock Creek watershed is located near the center of grassland bird diversity in North America.

The combinations of woody draws, wetlands, and grasslands provide habitat for mule deer, along with, coyotes, beaver, mourning doves, and sharp-tailed grouse. There are 38 known sharp-tailed grouse leks on BLM land within the watershed. A number of additional leks are located on private land within the watershed.

The sagebrush-grass shrub habitat provides habitat for pronghorn antelope and greater sage-grouse. There are three known greater sage-grouse leks on BLM land within the watershed. An addition three leks are located on private land within the watershed. Counts of these breeding grounds in the last six years averaged 11 males/lek. . Not every lek was counted every year during the past six years.

There is limited crucial winter habitat for mule deer or antelope, but the watershed contains important spring, summer, and fall habitat for deer and antelope. Small game animals commonly found in the watershed are mountain cottontail, white-tailed jackrabbit, mink, badger, and long-tailed weasel.

Some of the amphibians and reptiles located or suspected in the watershed are: chorus frogs, tiger salamanders, garter snakes, racers, bull snakes, and western rattlesnakes. Raptors that breed in the area are golden eagles, prairie falcons, northern harriers, Swainson's hawks, ferruginous hawks, red-tailed hawks, and merlins. Additionally, rough-legged hawks winter within the watershed. Natural and artificial wetland sites throughout the watershed provide habitat for a wide variety of waterfowl. The woody draws, wetlands, and grasslands provide habitat for neotropical migratory birds and other landbirds.

Special Status Species –

There are no threatened or endangered animal species breeding in the Rock Creek watershed. Bald eagles, currently a threatened species, may be found migrating through the watershed in both spring and fall. Black-tailed prairie dogs, a candidate species, are found on two towns within the watershed. One of these towns is currently unoccupied. The other town covered 153 acres in 2002.

Plains spadefoot toads, great plains toads and northern leopard frogs are Montana FWP amphibian species of concern found within the watershed. The greater short-horned lizard, western hognose snake, and milk snake are reptile species of concern

that have been or may be found in the watershed. One fish species of concern, the pearl dace has been found in Rock Creek. In addition, a large number of state animal species of concern, U.S. Fish and Wildlife Service bird species of conservation concern, and Partners if Flight birds species of concern breed within the watershed

(Table1). The presence, abundance and distribution of these species across the watershed reflect the relatively intact habitats in the watershed and the range of disturbance factors still operating within the watershed.

Fisheries

No reservoirs are managed for fisheries within this watershed. Native fish species are well represented in Rock Creek.

Any management practice may enhance some species and deter others. Grazing is not incompatible with a diverse avifauna, as shown in Table 5 and Figures 2 and 3. Each grassland species has a particular kind of preferred vegetation for nesting, facilitating management for particular groups of species. Information contained in the following table came mainly from: Johnson, D. H., and L. D. Igl (Series Coordinators). 2001. Effects of management practices on grassland birds. *Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page: http://www.npwrc.usgs.gov/resource/literatr/grasbird/grasbird.htm (Version 11APR2001).*

Table 5. Habitat Affinities of Grassland Birds Found in the Watershed			
Species	**ESA Status**	**Preferred Habitat**	**Approximate Grazing method / intensity**
Mallard	None	Wetlands and a high density of brushy vegetation or tall, dense grass, native or introduced.	Mallard, which nest early, do not show a reduction in nest density on spring grazed fields. The previous year's grass regrowth is important to provide nesting cover.
Lesser scaup	None	Wetlands with shallow marsh emergent vegetation. Mallard avoided this type.	Grazing has little effect, unless the emergent vegetation is grazed.
Greater Sage-grouse	**Potential candidate**	**Sage grouse can be found in or near sagebrush habitats year round. They also require moist wetland and wet meadows to aid in brood rearing.**	**The previous year's regrowth of grass is important to provide nesting cover in combination with taller sagebrush plants growing in dense stands. Light grazing on sagebrush in combination with moderate to heavy grazing of grass and forbs with regrowth during early summer is preferable.**
Sharp-tailed grouse	None	Grasslands interspersed with some brushy cover.	Any grazing that allows grass regrowth. Hens select from residual cover remaining from the previous year's growth and cover removal factors (grazing, mowing, burning, snow flattening). The largest breeding grounds have been located in areas surrounded by extensive, heavy stands of residual herbage.
Long billed curlew	**Former candidate**	**Expansive, open, level to gently sloping or rolling grasslands with short vegetation such as shortgrass or recently grazed mixed-grass prairie.**	**Grazing can be beneficial if it provides suitably short vegetation, particularly during the pre-laying period. In Idaho, neither cattle nor sheep could graze dense stands of perennial wheatgrasses, such as crested wheatgrass, to a height that was usable by curlews. Long-billed curlews preferred recently grazed areas and did not use areas that had not been grazed for over 1 yr.**
Loggerhead Shrike	**None**	**Open habitat characterized by grasses and forbs of low stature interspersed with bare ground and shrubs or low trees. Scattered shrubs or trees, particularly thick or thorny species, serve as nesting substrates and hunting perches. Thorny shrubs or trees also serve as impaling stations.**	**Grazing can provide preferred habitat by shortening vegetation in taller grassland areas. Trees and shrubs used for nesting and perches should be protected from cattle grazing and rubbing. In shortgrass habitat, Loggerhead Shrikes preferred to forage in ungrazed areas, which provided taller (>20 cm) grass, as they serve as food reserves for small mammals, which are potential Loggerhead Shrike prey.**
Burrowing Owl	**None**	**Well-drained, level to gently sloping areas characterized by sparse vegetation and bare ground such as moderately or heavily grazed pasture, with populations of prey species and of burrowing mammals to ensure availability of burrows as nest sites. In particular, the conservation of black-tailed prairie dog and Richardson's ground squirrel colonies appears to be vital to the preservation of Burrowing Owls.**	**Because owls forage over tall grass and nest and roost in short grass, a mosaic of habitats may be important in conserving habitat. Allow heavy grazing on saline, gravelly, stony, or sandy areas. Allow moderate to intense grazing on good soils that otherwise would support tall vegetation. Protect colonies and increase populations of burrowing mammals. Maintain abandoned prairie dog colonies at an early successional stage, with short (<8 cm) vegetation. Implement rotational grazing in heavily grazed areas to increase prey populations.**
Swainson's Hawk	**None**	**Open grasslands that contain patches of trees for nesting and perching and that are near cultivated areas. Swainson's Hawks prefer open grassland areas with scattered trees or with small clumps of trees or shrubs. They use shortgrass, mixed-grass, tallgrass, and sandhill prairies; aspen parklands; riparian areas; isolated trees; shelterbelts; woodlots; black-tailed prairie dog colonies; pastures; hayland; and cropland**	**In the absence of large tracts of native prairie, Swainson's Hawks will breed in small patches of natural or semi-natural cover containing trees near cultivated areas. Plant trees and, if necessary, build livestock exclosures around existing stands of trees to provide and protect nesting sites.**

Table 5. Habitat Affinities of Grassland Birds Found in the Watershed			
Species	**ESA Status**	**Preferred Habitat**	**Approximate Grazing method / intensity**
Sprague's pipit	**None**	**Native prairie grassland habitat, with intermediate vegetation height, low visual obstruction, moderate litter cover, decreasing bare ground, and little or no woody vegetation.**	**Abundance of Sprague's Pipits was positively associated with percent clubmoss cover and plant communities dominated by native grass (Stipa, Bouteloua, Koeleria, and Schizachyrium). Avoid heavy grazing; throughout the breeding range, light to moderate grazing may be beneficial. Grazing tame pastures in spring allows native pastures to be deferred, which improves habitat in the native pastures for Sprague's Pipits.**
McCown's longspur	**None**	**Short, sparsely vegetated native grasslands with little litter and low forb cover. McCowan's Longspurs often breed on barren hillsides with southern exposures.**	**Mixed-grass areas can be made suitable for breeding McCowan's Longspurs by implementing moderate to heavy, or season-long grazing, and preferred heavily grazed pastures over lightly or moderately grazed pastures. McCowan's Longspurs preferred continuously grazed (season-long) native pastures, and were fairly common in native pastures grazed in early summer and they avoided deferred-grazed (grazed after 15 July) native pastures.**
Baird's sparrow	**Former candidate**	**Idle native or idle tame grasslands, and lightly to moderately grazed pastures with moderately deep litter, moderately high, but patchy, forb coverage; patchy grass and litter cover; and little woody vegetation. Baird's Sparrows respond more strongly to vegetative structure than to species composition.**	**Heavy or continuous grazing that reduces residual vegetation and litter is detrimental in both moist and dry parts of the species' breeding range. Grazing systems that provide range in good (moderate vegetative and litter cover) condition provide suitable habitat. Prevent overgrazing in pastures utilized by Baird's Sparrows. Graze using a deferred rotational system to ensure that only part of the range is grazed during the growing season. Grazing tame pastures in spring allows native pastures to be deferred, which improves habitat in the native pastures for Baird's Sparrows.**
Grasshopper sparrow	**None**	**Large areas of contiguous grassland of intermediate height with moderately deep litter cover, low shrub density, and are often associated with clumped vegetation interspersed with patches of bare ground.**	**Use various grazing systems (e.g., early-season, deferred, and continuous grazing of native grasslands, and spring-grazing of tame grasslands) to maintain a mosaic of grassland types. By allowing tame pastures to be grazed in spring, suitable habitat is maintained in the tame pastures for Grasshopper Sparrows, and grazing in native pastures can be deferred**
Lark bunting	None	Grasslands of low to moderate height with high vegetative cover and some bare ground, often with a superstory component such as shrubs. Sagebrush and greasewood are important shrubs.	In shortgrass prairie, heavy grazing is often detrimental to Lark buntings because it increases bare ground cover, reduces vegetation height, and removes protective cover. Lightly to moderately grazed areas were preferred over heavily grazed areas in shortgrass and shrubsteppe habitats. Pasture that was heavily grazed in the winter was preferred over pasture that was heavily grazed in the summer in northcentral Colorado.
Western meadowlark	None	A variety of grassland types and heights, sparse woody cover, and high forb and grass cover. In the Great Plains, Western Meadowlarks use a wide range of vegetation heights and densities, although they avoid extremely sparse or tall cover. They prefer high forb and grass cover, low to moderate litter cover, and little or no woody cover.	Western Meadowlarks usually respond positively to light to moderate grazing and negatively to heavy grazing, although they also may exhibit no response to grazing. In North Dakota, Western Meadowlarks preferred grazed fields over DNC, but showed no response to grazing intensities or to short-duration (involved a system of pastures rotated through a grazing schedule of about 1 wk grazed and 1 mo ungrazed, repeated throughout the season), twice-over rotation (involved grazing a number of pastures twice per season, with about a 2-mo rest in between grazing), or season-long (involved leaving cattle on the same pasture all season) grazing systems.

Table 5. Habitat Affinities of Grassland Birds Found in the Watershed			
Species	**ESA Status**	**Preferred Habitat**	**Approximate Grazing method / intensity**
Horned Lark	None	Short, sparse herbaceous vegetation with little or no woody vegetation or litter. Occupied areas are characterized by moderate coverage (10-37%) of bare ground.	Burning, mowing, or grazing can be used interchangeably to create short, sparse vegetation. Horned Larks preferred heavily grazed over lightly or moderately grazed pastures and preferred heavily winter-grazed sites over heavily summer-grazed sites for breeding.
Vesper Sparrow	None	Dry, open areas with short, sparse and patchy vegetation. However, they may be found in a variety of habitats, including shortgrass, mixed-grass, and tallgrass prairie; semidesert grasslands; sagebrush; pastures; hayland; cropland; shrubby grasslands; and woodland edge. The availability of sagebrush for nest cover and song perches is important.	Densities of Vesper Sparrows were highest on moderately grazed and lightly grazed shrubsteppe/grassland habitat. Areas with highest densities of Vesper Sparrows also had above-average abundance of wheatgrasses, Junegrass, fringed sagewort, and big sagebrush.
Lark Sparrow	None	Open grasslands with sparse to moderate herbaceous and sparse litter cover, and a shrub component, and allowing moderate grazing or occasional burning.	Lark Sparrows nested in moderately to heavily grazed pastures, but also nested in idle fields.

Table 5. Habitat affinities for selected grassland bird species. Accounts in bold are species of concern.

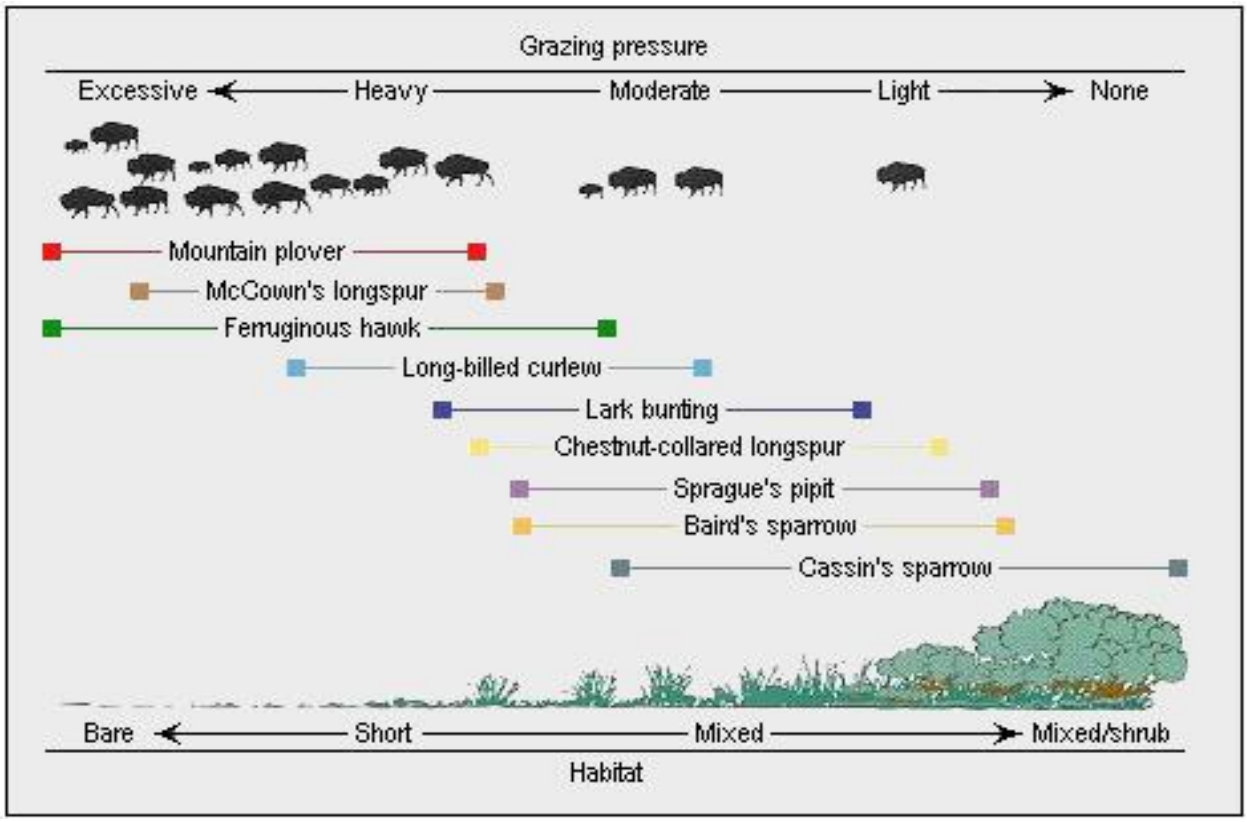


Figure 2. Importance of co-evolution between grazing and native prairie bird distributions and abundances.

The mountain plover responds to highly disturbed sites, the chestnut-collared longspur to moderately grazed areas, and the Baird's sparrow to sites with taller grasses. Major anti-grazing structures evolved in plants: thorns and spikes; thick or hard tissues difficult to bite, chew, or digest; and secondary compounds difficult to digest. These structures have arisen through the long co-evolutionary association between plants and animals with grazing on grasslands. Figure 2 came from: *Samson, F. B., F. L. Knopf, and W. R. Ostlie. 1998. Grasslands. Pages 437-472 in M. J. Mac, P. A. Opler, C. E. Puckett Haecker, and P. D. Doran, eds. Status and Trends of the Nation's Biological Resources, Vol. 2.*

Step Three: Reference Conditions

Wildlife Habitat / Biodiversity

It is difficult to quantify changes in species composition and abundance in the prairie ecosystem of this watershed over the past 200 years. Historical disturbance factors that modified plant and animal habitats were fire, buffalo, and precipitation levels. Fire is no longer a major disturbance factor in this landscape and bison grazing has been replaced with managed domestic livestock grazing. The last bison in the area were probably killed in 1885 along Cherry Creek immediately south of this watershed. Precipitation patterns and drought cycles presumably function the same as they have in the past. The intensity of recent human disturbance in this area varies; some of the land was tilled and has left fallow and has returned to grass and forbs while other areas have never been cultivated and have experienced changes in grazing and predator regimes from those associated with free range bison herds to relatively predator free managed domestic livestock. Wildlife species extirpated from the area are bison, grizzly bear, and gray wolf. Swift fox were extirpated but have recently recolonized this watershed from reintroduction efforts in Canada. The extent or presence of historic prairie dog towns is unknown, and consequently the presence of black-footed ferrets in the watershed is difficult to determine.

Wildlife species that have been introduced or are more extensive include ring-necked pheasants, gray partridge, raccoons, striped skunk and red fox. Waterfowl production within the watershed has probably increased due to the construction of reservoirs for waterfowl production. There are non-native plants scattered throughout the area; primarily sweet clover and crested wheatgrass.

The sage grouse was the leading upland game bird in 9 western states during settlement times. This area saw in 1917 its land rush peak. Prior to 1870 there were no regulations relative to hunting sage grouse or sharp-tailed grouse in Montana. Starting in 1870 the season on those species was closed from March 1 to August 15. In the early 1900s regulations became more restrictive until in 1927 the season was closed completely. For the next 10 years, seasons for sage grouse were short, usually only 3 days in length. During 1936 and 1937, the sage grouse season was again closed. Seasons for sage grouse were closed from 1945 to 1951. The sharp-tailed grouse seasons in those years ran for 2 to 7 days.

Statewide the sage grouse harvest in 1958 was just under 20,000 and peaked in 1964 at 100,000 with another peak at 65,000 in 1979. Harvest of sage grouse dropped to 15,000 during 1985-86 and has been staying around that level or slightly lower since then. These figures demonstrate the variability in these game bird numbers and suggest that much of that variability is regulated by the interplay of climatic variability and more localized weather events

The number of grassland bird species currently breeding in the watershed is probably the same as it was in prehistoric times but their relative abundance may be quite different. The relative abundance for these species is determined by the frequency and extent of disturbance factors such as grazing, fire, and weather events. Prehistoric patterns for these disturbances are not known and therefore the relative abundance of these species on the landscape is unknown. Grazing intensity and fire

frequency were probably greater and the abundance of species that respond to shorter vegetation structure may be lower now than in prehistoric times (Figures 2 and 3).

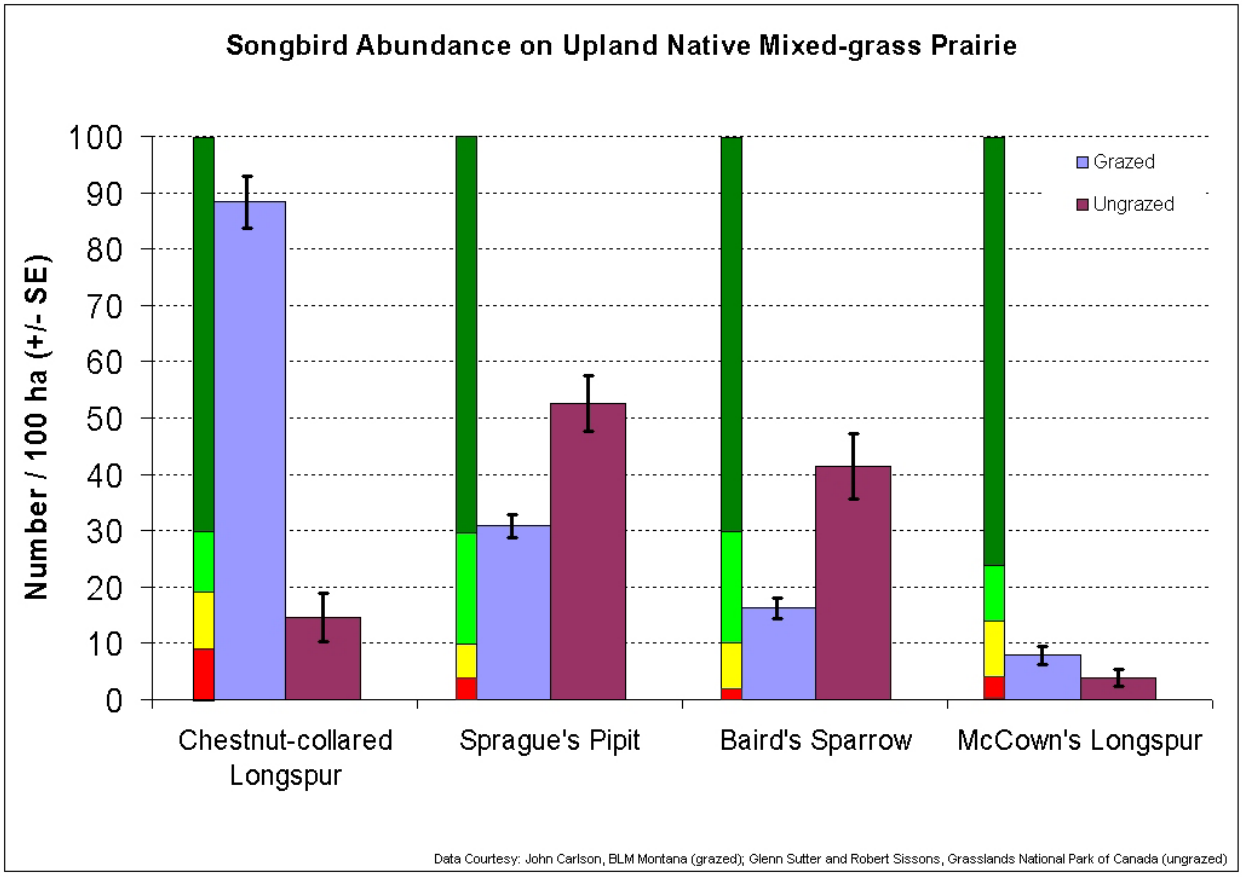


Figure 3. Relative abundance of four grassland bird species of concern in North Valley County MT (grazed) and Grasslands National Park, Saskatchewan, Canada (ungrazed). Colored bars to the left of each species are measures of viability across the landscape: dark green – excellent, light green – good, yellow – at risk, red – non-functional. Current grazing management appears to provide habitat for both mid and tall grass species but may not provide enough short grass habitat for McCown's longspurs and other short grass associated species. *Figure provided by Rob Sissons, Grasslands National Park. Canada.*

Step Four: Analysis and Recommendations

Wildlife Habitat / Biodiversity

Standard

Standards are statements of physical and biological conditions or degree of function required for healthy sustainable rangelands.

The regional standard for rangeland health that applies to this watershed is Standard #5: Habitats are provided to maintain healthy, productive and diverse populations of native plant and animal species, including special status species (federally threatened, endangered, candidate or Montana species of special concern as defined in *BLM Manual 6840*, *Special Status Species Management*).

Procedure to determine conformance with standard

Standard #5 is similar to an overall assessment that includes the previous standards but also adds wildlife habitat standards. The present state of the watershed will be compared to the reference conditions, the functionality of the uplands and riparian areas, new information since the RMP was completed, and the key questions.

The S&G EIS also explains ways to recognize compliance with the wildlife habitat/biodiversity standard. The document says the following are indicators of meeting the standard:

- •plants and animals are diverse, vigorous, and reproducing satisfactorily; noxious weeds are absent or insignificant in the overall plant community
- •spatial distributions of species is suitable to ensure reproductive capability and recovery
- •a variety of age classes are present
- •connectivity of habitat or presence of corridors prevents habitat fragmentation
- •species richness (including plants, animals, insects and microbes) are represented
- •plant communities in a variety of successional stages are represented across the landscape.

The JVP - RMP has additional decisions on what are the priorities for management. They are: The BLM will maintain and enhance suitable habitat for all wildlife species. The emphasis for habitat maintenance and development will be on present and potential habitat for sensitive, threatened and/or endangered species, nesting waterfowl, crucial wildlife winter ranges, non-game habitat, and fisheries. The BLM will maintain or manage prairie dog towns on BLM lands in the Valley RA, based on the values or problems encountered.

The allotments in this watershed are part of the plains-prairie grasslands. We will attempt to replicate the range of natural variation in the conditions of prairie ecosystems to ensure meeting the standards for wildlife. General wildlife habitats expected within this watershed are: grasslands with a variety of statures from short and sparse to tall and dense, bare ground, streams, wetlands, riparian areas, shrublands, and various mixes of these components. During prehistorical times the

grassland landscape would have been characterized as variable and patchy -- with bare areas, areas of short grass, shrubs, and areas of ungrazed long grass a result of the interplay of unregulated but presumably variable bison grazing, fire, and weather conditions. The riparian areas were also influenced by these same disturbance factors and may have been quite different than they are today.
The key to providing a wide range of habitats in this system is the recognition of the range of variability inherent in these systems and the scale at which these processes have operated.

Findings

Most vegetation classifications are represented by a variety of age classes although some riparian areas could have more younger age classes of woody species to be optimal.

The wildlife habitat/biodiversity standard is being meet overall in this watershed.

Cultivation of native prairie has caused the greatest loss in grassland/shrubland wildlife habitat in the region; however, this watershed has experienced limited change from the original native prairie and these habitats continue to provide a diverse, mostly complete, and abundant flora and fauna assemblage. Some of the grassland had been cultivated but were abandoned and have reverted to native vegetation. Some of these areas were planted with crested wheatgrass however, and these areas probably do not provide conditions similar to native prairie. Overall, the plant communities that are the basis for wildlife habitats are well represented in a variety of structural conditions. Areas with more short grass stature could be allowed however. No cultivation will occur on BLM-administered lands.

This watershed continues to have large blocks of land in grassland cover and is well connected with other grassland systems in neighboring watersheds. The habitat is not fragmented.

The wildlife species missing from the area that would have been present in prehistoric times are elk, bison, grizzly bear, and gray wolf. These species require extensive, connected habitat to survive and to be tolerated. There are no recommendations to actively re-establish these species.

The "Key Questions" considered are:

1) *Sage grouse: What are the limiting factors for greater sage-grouse in silver sage habitats?*
We are currently investigating this question throughout North Valley Co. in cooperation with Canadian land managers. Sage grouse ecology in relation to silver sage habitats is relatively unknown, however recent work on this issue in Canada may be applicable to these resources within this watershed. We will continue to evaluate habitat conditions and explore this issue further.

2) *Fisheries: What is the status of native fish assemblages in Rock Creek?*

Recent work by MSU researchers suggest that the native fish assemblage in Rock Creek is relatively intact. Monitoring within the watershed will continue to evaluate the status of these species.

3) *Prairie Dogs: What is the current status and trends for black-tailed prairie dogs in the watershed? What is potential for transplanting to ensure connectivity between prairie dog towns in Canada and more intact populations further south?*

There are currently two prairie dog towns within the watershed and one town does not currently have any prairie dogs inhabiting it. There is only one other prairie dog town in north Valley County. This area probably had more prairie dog colonies than are currently extant during pre-settlement times, but their exact location and distribution in the watershed is unknown. We will continue to monitor the acreages for these towns and will consider management actions consistent with the state-wide prairie dog management plan.

4) *Waterfowl: What management techniques and land treatments should be employed to enhance or maintain current habitat? Is nesting cover adequate?*

We will maintain the current waterfowl production reservoirs and monitor the use of these areas annually. Current use of these reservoirs appears to be quite high and grassland conditions probably are adequate to provide excellent nesting cover for most waterfowl species. Emergent vegetation may be limited for those species needing this type of habitat but it is unknown if these reservoirs are capable of producing this habitat type.

5) *Grassland birds: How do we meet habitat requirements for a number of species (especially special status species) that require a range of habitats from very short vegetation to dense, tall cover? What is the effect of crested wheatgrass on bird distribution and reproductive success? Is the goal of 80% good to excellent ecological status appropriate for the full range of grassland bird species?*

It appears that the status of grassland birds within the watershed is currently quite good (Figure 3.). We have found that most species are represented in adequate numbers throughout the watershed as well as the surrounding landscape. The only concern may be the status of those species that require shorter stature grassland habitats. We are continuing to monitor these populations and current research is ongoing to elucidate various factors influencing the distribution and status of these species. This watershed has many allotments, the larger ones have had grazing management plans developed for them, while the smaller ones are in custodial management with much variably in the grazing intensity. A variety of habitat conditions result from differing grazing intensity and timing.

6) *Raptors: What is the current status and trends of raptors nesting in this watershed, especially special status species such as the Ferruginous Hawk and Burrowing Owl?*

We will continue to monitor known Ferruginous Hawk nests and other raptor species of concern including burrowing owls. We will also continue to survey for burrowing owls in conjunction with statewide efforts. In addition we will continue to collect information on all species of concern as they are encountered during regular work. We continue to work with Montana FWP to inventory, survey and catalog sensitive wildlife species.

Recommendations

Encourage the establishment and production of silver sagebrush on all sites with potential sage grouse habitat improvement though trial land treatments and research opportunities. Maintain a diverse forb community on sites that occur around brood rearing areas for sage grouse.

To maintain waterfowl production in the watershed, rest-rotation grazing systems are

encouraged in areas surrounding current waterfowl reservoirs.

Vary grazing pressure by interspersing areas of heavy, light, and non-grazing of livestock to provide habitat for a variety of grassland bird species.

If any chisel plowing projects are proposed consider the short grass bird species, by re-seeding native grasses. Before that occurs determine if McCowns longspurs are breeding within the affected area. Consider a prescribed burning program.

Consider implementing a system of back-to-back rest of a pasture (2 years of rest), where this could be accomplished without over utilizing the remaining pastures.

Work with Montana Fish, Wildlife & Parks and other agencies to survey additional prairie streams for fish species as well as inventories of other sensitive wildlife species.

Habitats for threatened and endangered and special status species would be managed for recovery and protection.

CULTURAL RESOURCES:

The Rock Creek Watershed area has a very diverse representation of cultural resources. There are both historic and prehistoric resources located in the Rock Creek Watershed area. The view-shed from a few of the ridge tops would have been very advantageous to indigenous groups camped there. From several ridge tops one can see all the way south to the Milk River valley and approaching game. It would have also provided excellent protection against enemy who may be coming upon unsuspecting groups. The year-round water supply would have been attractive to groups traveling in the area.

The Rock Creek Watershed area is located within the Great Plains region of the United States. This area was once home to various indigenous groups (ie. Plains Indians) who utilized the landscape effectively, living on large game such as bison, elk, deer and antelope. These groups mostly followed the game herds and thus lived a largely nomadic lifestyle. The archaeological sites left behind are a direct representation of that lifestyle. Most sites left behind show signs of expediency and they maximized use of "disposable" type tools such as quartzite scrapers. These tools are littered across the landscape. It wasn't until the historic period with the coming of homesteaders that sites have a "permanent" component.

Examples of prehistoric resources would be tipi rings of stone, cairns of stone, hearths, bison jumps, and areas traditionally used by Native Americans for spiritual and/or religious ceremony.

Examples of historic resources are homesteads including cabins, dugouts, outbuildings, farm machinery, and historic debris; old railroad grades, roads and trails; historic schools and churches.

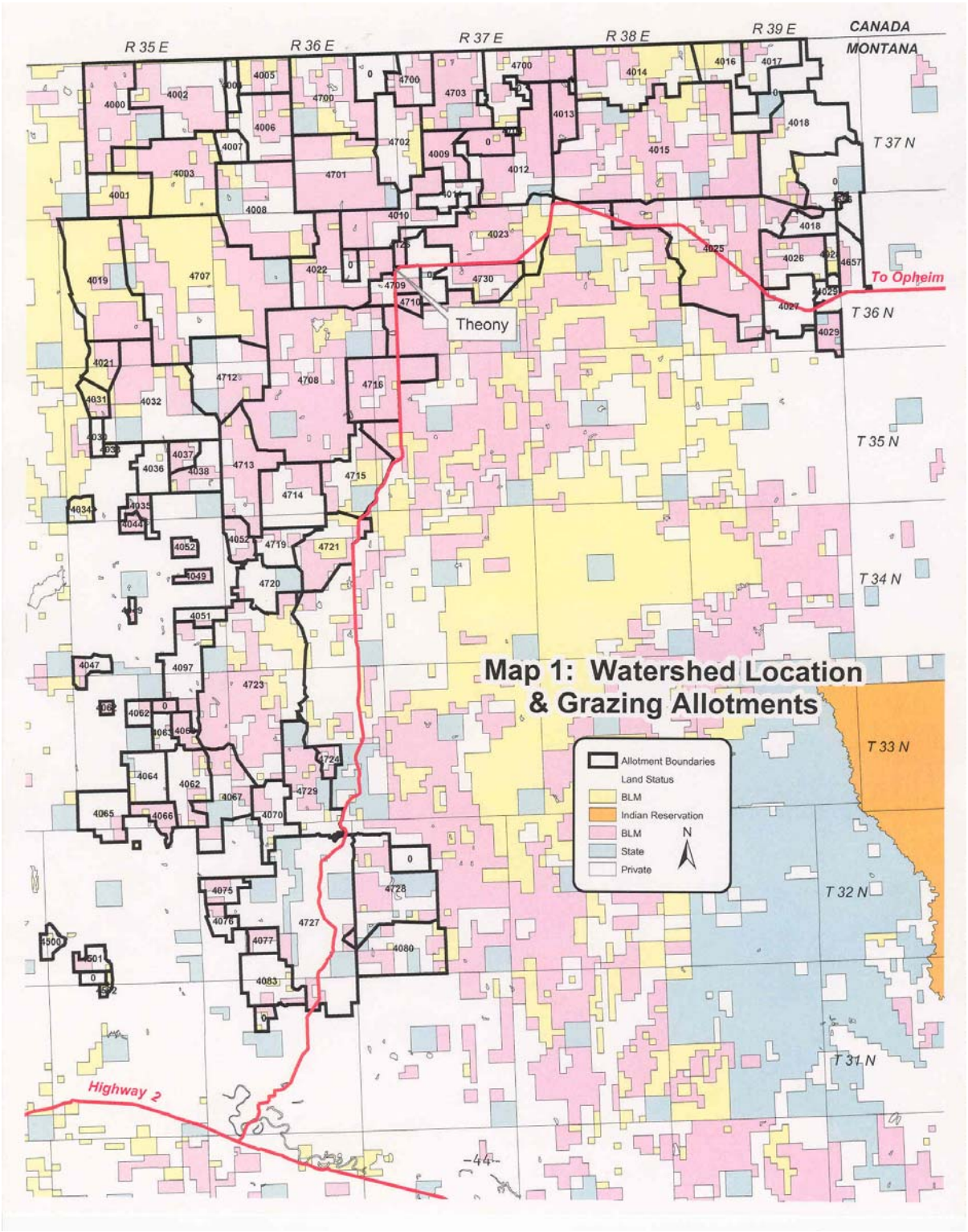
One site, FNRC#1, was inventoried within the Rock Creek Watershed area during the 2003 field season. The site was chosen randomly and surveyed pro-actively. FNRC#1 began on a ridge top with 10 tipi rings, two cairns and various debitage littered on the surface. Below at the base of the bluff, a few bones were recorded. The site was most likely a campsite with a possible killsite below. The correlation between the bones and the rings above is impossible to associate definitively because of a lack of information as to the absolute dates of the site above and the bones below. The dense weight of the bones due to chemical composition change inflicted upon them by an immense time period of which they were buried indicate a very old age. However, a lack of technology to definitively date the rings above offer a date from anywhere from 500 to 5000 years ago, therefore a definite association with the two components is not possible.

No time diagnostic tools were associated with either the rings above or the bones below so the animal[s]could have died by accident on their own and not at the hands of the visitors camped up above. The animal[s] could have died at a

different spot and washed down stream and buried there later.

This site is a good example of the prehistoric sites commonly found in the general area. FNRC#1 was determined to not be eligible for the National Register of Historic Places.

When implementing Standards and Guidelines (ie. Water retention areas, range chiseling, pipelines) cultural resources can potentially be damaged or destroyed. Direct cooperation between staff specialists in coordination with Section 106 of the National Historic Act would ensure protection for all possible cultural resources.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MONTANA
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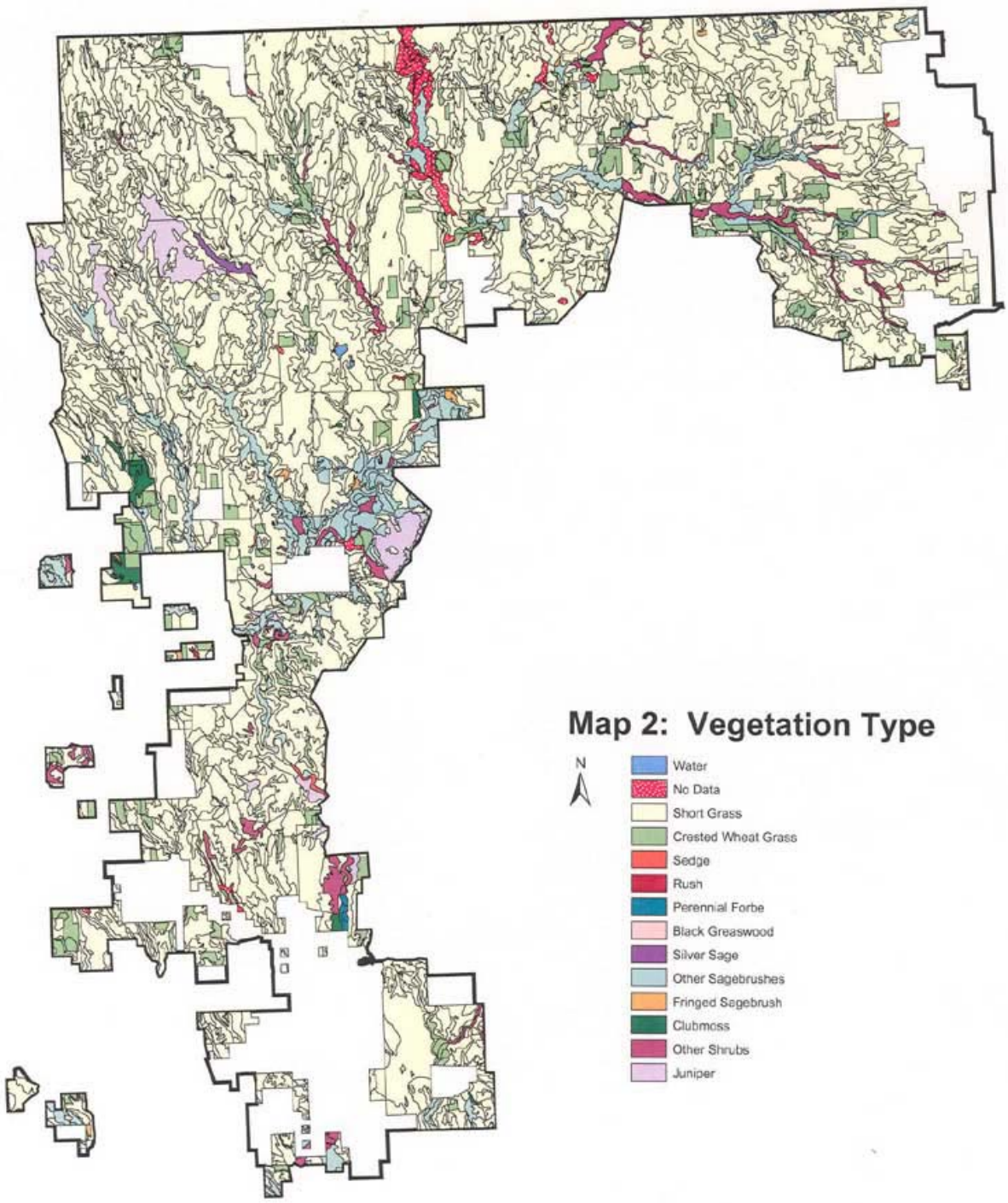
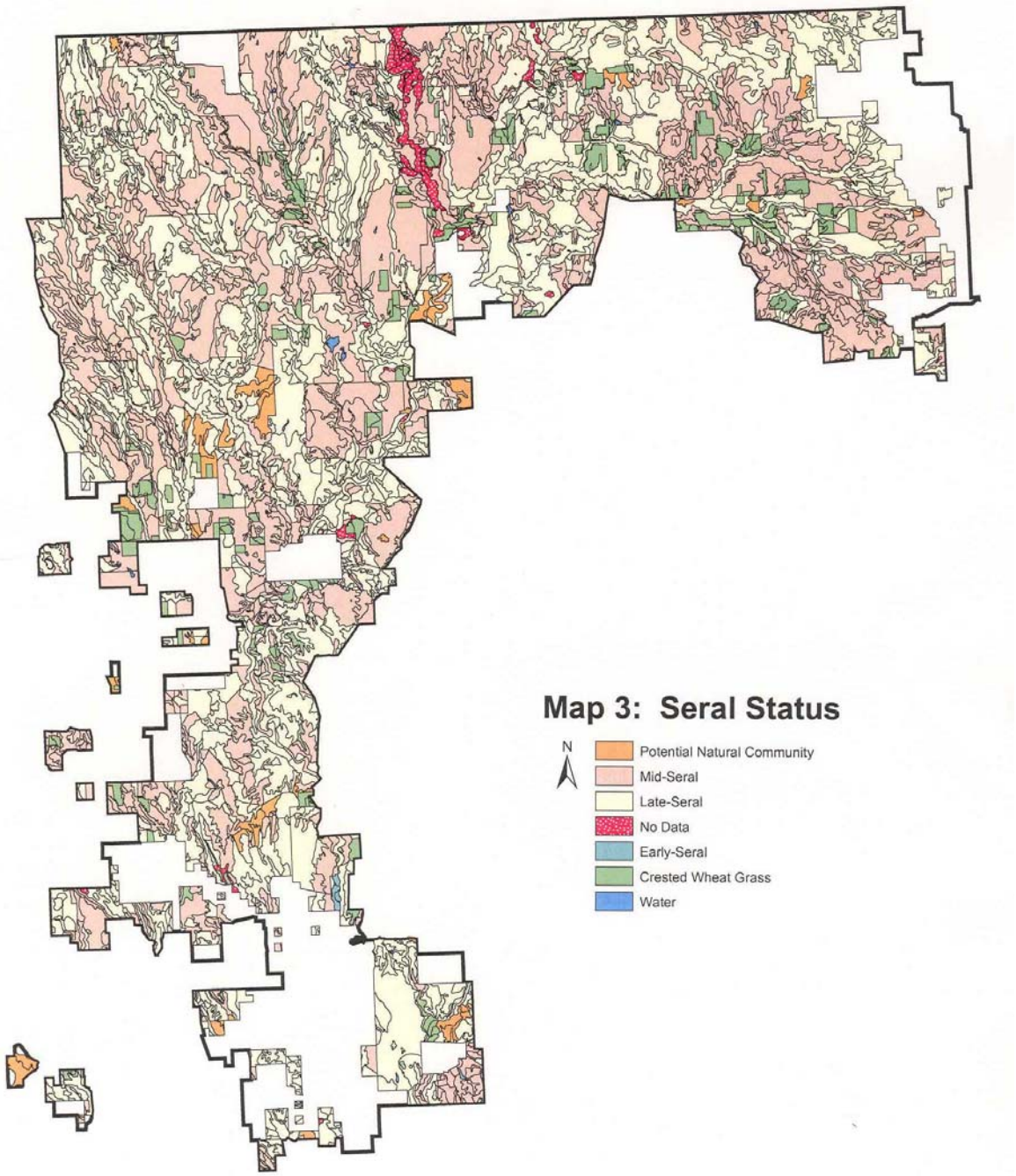
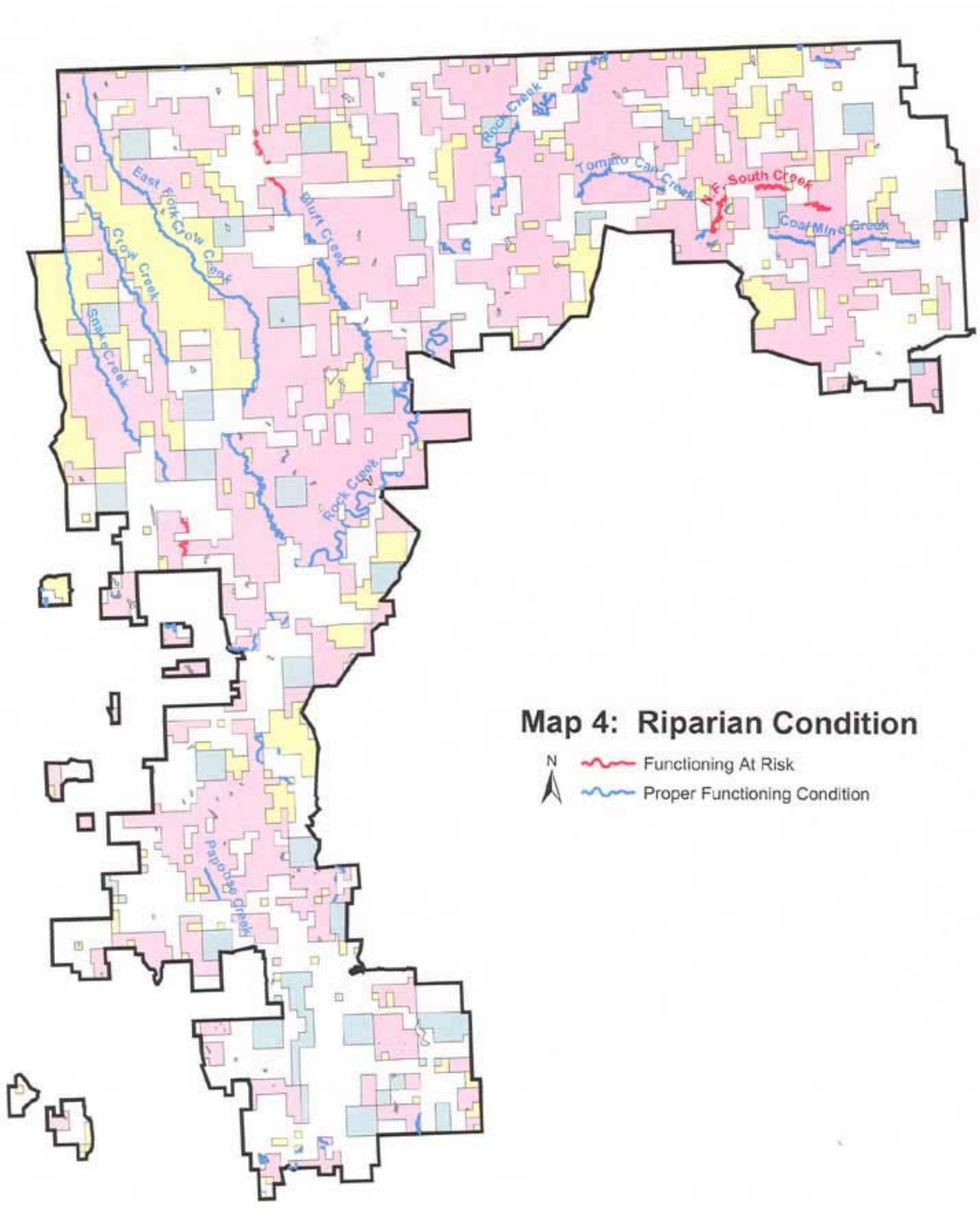
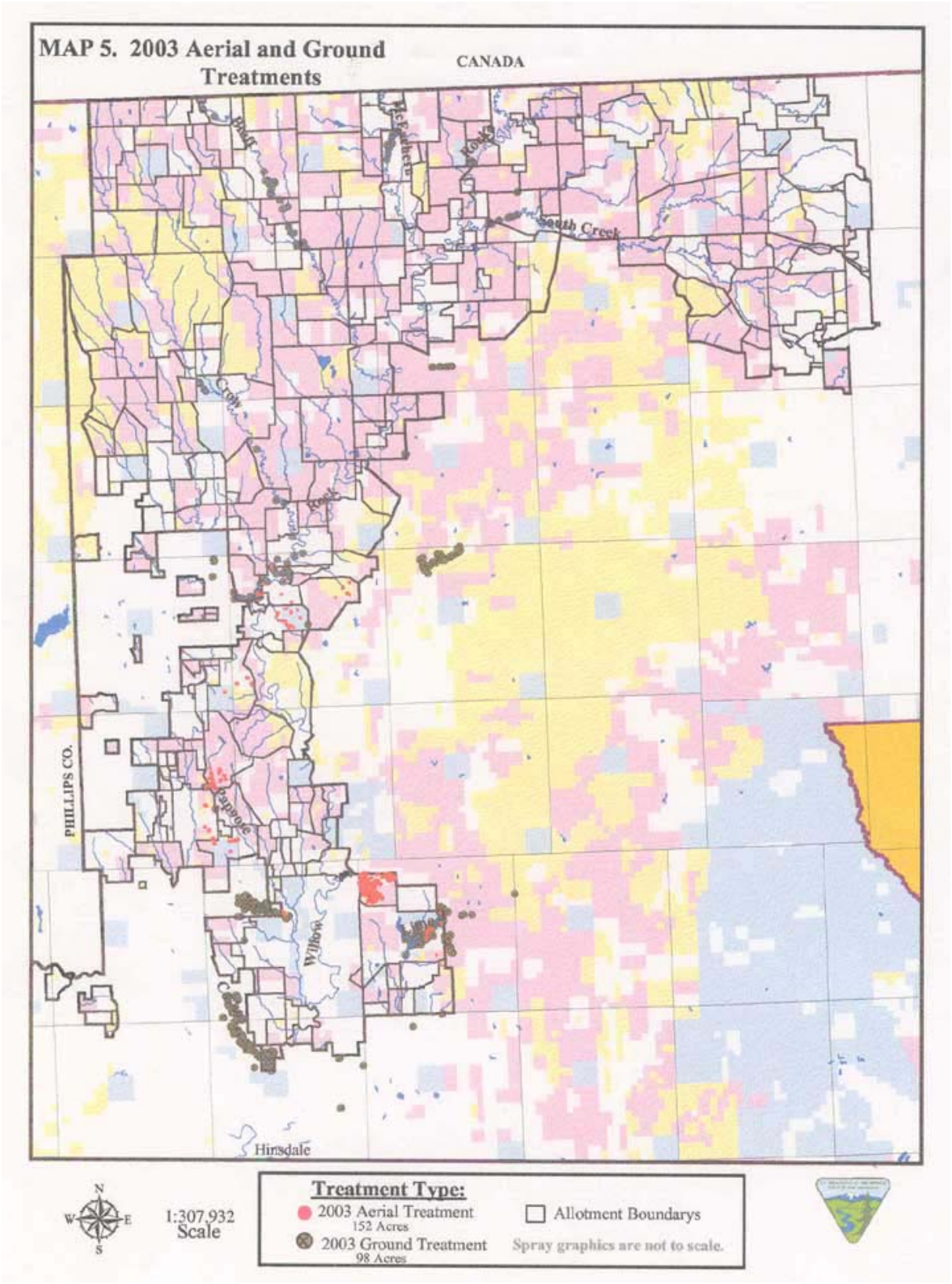
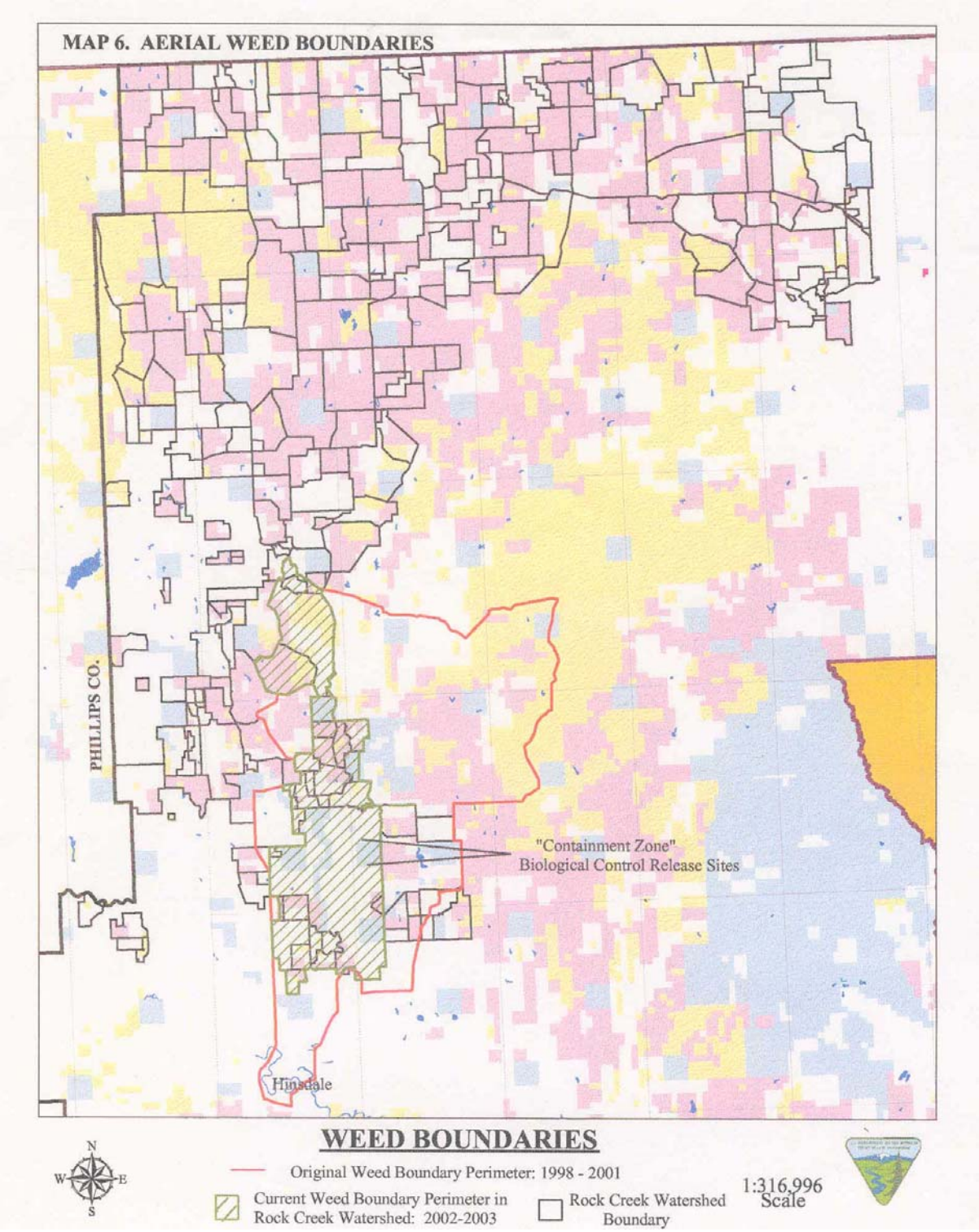
Highway 2
Map 1: Watershed Location
& Grazing Allotments
Allotment Boundaries
Land Status
BLM
Indian Reservation
BLM
State
Private
N


Map 2: Vegetation Type
N
Water
No Data
Short Grass
Crested Wheat Grass
Sedge
Rush
Perennial Forbe
Black Greaswood
Silver Sage
Other Sagebrushes
Fringed Sagebrush
Clubmoss
Other Shrubs
Juniper


Map 3: Seral Status
N
Potential Natural Community
Mid-Seral
Late-Seral
No Data
Early-Seral
Crested Wheat Grass
Water


Rock Creek
Tomato Can Creek
Ft. South Creek
Coal Mine Creek
East Fork Crow Creek
Crow Creek
Soak Creek
Blunt Creek
Rock Creek
Papoose Creek
Map 4: Riparian Condition
N
Functioning At Risk
Proper Functioning Condition


MAP 5. 2003 Aerial and Ground Treatments
CANADA
South Creek
Crow
Peapod
Willow
PHILLIPS CO.
Hinsdale
N
W
E
S
1:307,932 Scale
Treatment Type:
2003 Aerial Treatment
152 Acres
2003 Ground Treatment
98 Acres
Allotment Boundarys
Spray graphics are not to scale.


MAP 6. AERIAL WEED BOUNDARIES
PHILLIPS CO.
"Containment Zone"
Biological Control Release Sites
Hinsdale
WEED BOUNDARIES
N
W
E
S
Original Weed Boundary Perimeter: 1998 - 2001
Current Weed Boundary Perimeter in Rock Creek Watershed: 2002-2003
Rock Creek Watershed Boundary
1:316,996
Scale