



**Antelope Creek Grazing Allotment #05610  
Grazing Permit Modification  
Environmental Assessment  
DOI-BLM-MT-L070-2010-0008-EA**

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# Table of Contents

## Chapter 1: Purpose and Need for Action

1.1 Introduction	3
1.2 Background	3
1.3 Need for the Proposed Action	4
1.4 Purpose of the Proposed Action	5
1.5 Conformance with Existing Land Use Plan	5
1.6 Decision to be Made	6
1.7 Scoping	6
1.8 Issue Identified for Analysis (Resource Issues)	6
1.8.1 Upland Sagebrush/Grassland Plant Communities	6
1.8.2 Wildlife Habitat	7
1.9 Issue Considered but Eliminated from Further Analysis	7
1.10 Summary	7

## Chapter 2: Description of Alternatives

2.1 Features Common to All Alternatives	8
2.2 Features Common to Alternative A	9
2.3 Features Common to Alternative C	9
2.4 Features Common to Alternative D	10
2.5 Actions Common to All Alternatives	11
2.6 Alternative A (No Action)	11
2.7 Alternative B (No Grazing)	12
2.8 Alternative C (Manage Livestock Grazing with Allowable Use Levels)	13
2.9 Alternative D (Manage Livestock with Allowable Use Levels/Greater Sage-Grouse Management Unit)	15
2.10 Alternatives Considered but Eliminated from Further Analysis	17
2. 11 Summary Comparison of Alternative Actions	17

## Chapter 3: Affected Environment

3.1 Introduction	18
3.2 General Setting	18
3.3 Affected Resources Brought Forward for Analysis	18
3.4 Description of Relevant Non-Affected Resources	26

## Chapter 4: Environmental Consequences

4.1 Introduction	29
4.2 Predicted Effects of Alternatives	29
4.2.1 Predicted Effects Common to All Alternatives	29
4.2.2 Predicted Effects of Alternative A (No Action)	29
4.2.3 Predicted Effects of Alternative B (No Grazing)	33
4.2.4 Predicted Effects of Alternative C (Manage Livestock Grazing with Allowable Use Levels)	38

4.2.5 Predicted Effects of Alternative D (Manage Livestock with Allowable Use Levels/Greater Sage-Grouse Management Unit) .....	42
4.3 Cumulative Effects for All Alternatives .....	46
4.3.1 Past and Present Actions .....	46
4.3.2 Reasonable Foreseeable Future Actions .....	47
4.3.3 Cumulative Effects of Alternative A (No Action) .....	48
4.3.4 Cumulative Effects of Alternative B (No Grazing) .....	50
4.3.5 Cumulative Effects of Alternative C (Manage Livestock Grazing with Allowable Use Levels) .....	51
4.3.6 Cumulative Effects of Alternative D (Manage Livestock with Allowable Use Levels/Greater Sage-Grouse Management Unit) .....	52

**Chapter 5: Consultation & Coordination**

5.1 List of Preparers .....	54
5.2 Reviewers .....	54
5.3 Persons and Agencies Consulted .....	54
5.4 Public Comments on the Draft EA .....	54

<b>References</b> .....	54
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**Appendices**

- Appendix 1 - Structural Improvements
- Appendix 2 - Antelope Creek Grazing Allotment #05610 - Monitoring Plan
- Appendix 3 - Summary Comparison of Alternatives
- Appendix 4 - Response to Public Comments
- Map 1 - Antelope Creek Grazing Allotment Location Map
- Map 2 - Functioning at Risk - Uplands
- Map 3 - Preliminary Priority Greater Sage-Grouse Habitat (Year Round)
- Map 4 - Alternative A (No Action)
- Map 5 - Alternative B (No Grazing)
- Map 6 - Alternative C (Manage Livestock Grazing with Allowable Use Levels)
- Map 7 - Alternative D (Greater Sage-Grouse Management Unit)

# Chapter 1

## PURPOSE AND NEED FOR ACTION

### 1.1 Introduction

The Bureau of Land Management (BLM) has prepared this Environmental Assessment (EA) to analyze the effects of a range of alternatives to change the current grazing use in the Antelope Creek Grazing Allotment #05610 (Allotment). This EA is a site-specific analysis of potential impacts that are expected with the implementation of an alternative or combination of alternatives. The EA assists the BLM in project planning and ensuring determination as to whether there are any “significant” impacts expected from the analyzed actions. “Significance” is defined by the National Environmental Policy Act (NEPA) and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) would be signed for the EA approving the selected alternative, whether the Proposed Action or another alternative. A DR, including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) beyond those already addressed in the Upper Missouri River Breaks National Monument Record of Decision and Approved Resource Management Plan, 2008.

### 1.2 Background

The Antelope Creek Grazing Allotment (51,168 acres) is located in the southwest corner of Phillips County, the very east end of the *Upper Missouri River Breaks National Monument* (Monument)<sup>1</sup>, north of the Missouri River and west of Highway 66 (Map 1).

Divided by Bull Creek, Antelope Creek and Winter Creek and bordering the Missouri River for approximately twelve miles, the area provides recreational opportunities for river users and big game hunting, contains areas of historical importance such as the Lewis and Clark National Historic Trail and distinctive scenic landscapes characteristic of the badlands found along the Missouri River.

The *Antelope Creek Wilderness Study Area* (WSA) (12,350 acres) and portions of the *Cow Creek Wilderness Study Area* (12,620 acres) lie within the Antelope Creek Grazing Allotment. Both were identified in the Montana Wilderness Inventory (BLM 1980). A final suitability study and environmental impact statement completed by the BLM in 1987 recommended wilderness designation for portions of both WSA’s (Map 1).

The Antelope Creek Grazing Allotment also lies within the *Upper Missouri National Wild and Scenic River* (UMNWSR). Management of the UMNWSR is guided by BLM’s Upper Missouri River Breaks National Monument Record of Decision and Approved Resource Management Plan (BLM 2008) (Map 1).

As part of the process for reviewing the three grazing permits in the Antelope Creek Grazing Allotment, resource conditions were assessed during the 2008, 2009 and 2010 field seasons. The evaluation was completed by a BLM Interdisciplinary Team (IDT) composed of resource specialists for the purpose of assessing upland and riparian health, water quality and habitat conditions. This information was then used to conclude whether the Standards of Rangeland Health were being achieved, or if significant progress was being made toward meeting the standards, and whether existing grazing management conformed to the guidelines (Montana/Dakotas Standards for Rangeland Health and Guidelines for Livestock Grazing Management, August 1997).

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<sup>1</sup> The Monument was established by Proclamation issued by President Clinton on January 17, 2001. The Record of Decision (ROD) on the Proposed Resource Management Plan and Final Environmental Impact Statement for the Monument became effective on December 4, 2008 and now guides all management actions and activities occurring on public land.

### 1.3 Need for the Proposed Action

Grazing management activities occurring on public land must meet the Standards of Rangeland Health (Standards) and conform to the Guidelines for Livestock Grazing Management (Guidelines).

Rangeland health standards are physical or biological conditions or functions required for healthy, sustainable rangelands. They address watershed function; nutrient cycling and energy flow; water quality; air quality; habitat for threatened, endangered, proposed or special status species; and, habitat quality for native plant and animal populations and communities. Standards apply to all resource uses on public lands. Standards are the same as goals and are observed on a landscape scale.

The achievement of a standard is determined by measuring appropriate indicators. For example, the amount of bare ground, plant cover and litter are indicators that could be used in determining whether or not a standard is being met.

Guidelines are management practices and tools designed to maintain or achieve land health standards on public lands. Guidelines can be grazing strategies, range improvement projects and best management practices that help to achieve standards.

The Standards for Rangeland Health and Guidelines for northcentral Montana were developed in cooperation with the Central Montana Resource Advisory Council (BLM 1997).

The following five standards apply to public land within the Monument:

*Standard #1* - Uplands are in proper functioning condition (PFC).

*Standard #2* - Riparian and wetland areas are in proper functioning condition.

*Standard #3* - Water quality meets Montana state standards.

*Standard #4* - Air quality meets Montana state standards.

*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.

The determination that land health standards were not being met in the Antelope Creek Grazing Allotment was reported in the *Antelope Creek Grazing Allotment #05610 Evaluation Report* (Evaluation Report) and *Antelope Creek Grazing Allotment #05610 Determination of Conformance with Land Health Standards and Livestock Grazing Guidelines* (Determination Document).

These two documents are available at the BLM office in both Havre and Lewistown and can be found online at:

<http://www.blm.gov/mt/st/en/fo/umrbnm.html>

Based on information from the Evaluation Report the BLM determined that existing livestock grazing management is a significant causal factor for not meeting one or more of the land health standards in the Antelope Creek Grazing Allotment.

The ID Team concluded that:

1. Lewistown Standard #1 was not being met - 15% of the upland areas within the Allotment (7,687 acres) are functioning at risk (FAR) (Map 2).
2. Lewistown Standard #5 was not being met - 43% of upland areas within greater sage-grouse habitat (4,264 acres) are functioning at risk (Map 3).

The permitted grazing use (livestock numbers, season of use and amount of use) must also conform to the guidelines for grazing livestock on public land. After reviewing the current livestock grazing use, the ID Team determined the Antelope Creek Grazing Allotment is not in conformance with Guidelines 5, 8 and 11.

**Guideline #5:** Grazing will be managed to promote desired plants and plant communities of various age classes, based on the rate and physiological conditions of plant growth. Management approaches will be identified on a site-specific basis and implemented through terms and conditions. Caution should be used to avoid early spring grazing use when soils and streambanks are wet and susceptible to compaction and physical damage that occurs with animal trampling. Likewise, late summer and fall treatments in woody shrub communities should be monitored closely to avoid excessive utilization.

**Guideline #8:** When provided, supplemental salt and minerals should not be placed adjacent to watering locations or in riparian-wetland areas so not to adversely impact streambank stability, riparian vegetation, water quality, or other sensitive areas (i.e., key wildlife wintering areas). Salt and minerals should be placed in upland sites to draw livestock away from watering areas or other sensitive areas and to contribute to more uniform grazing distribution.

**Guideline #11:** Grazing management should maintain or improve habitat for federally listed threatened, endangered, and sensitive plants and animals.

BLM grazing regulations require that appropriate action be taken as soon as practicable but not later than the start of the next grazing year [Title 43 Code of Federal Regulations (CFR) 4180.1 (c)]. Appropriate action means modifications to the existing grazing permit terms and conditions (seasons of use, number of livestock, and level of use) and any proposed range improvements to improve livestock grazing management, which would result in significant progress toward achieving land health standards and conformance to the grazing guidelines.

#### **1.4 Purpose of the Proposed Action**

The BLM proposes to modify the current grazing practices on the Antelope Creek Grazing Allotment by adjusting the timing and levels of livestock use so that progress can be made toward meeting the Standards and conform to the Guidelines. The Determination Document concluded Standard #1 (Upland Health) and Standard #5 (Wildlife Habitat) are not being met, that grazing is not in conformance with Guidelines 5, 8 and 11 and that current livestock grazing practices is a causal factor.

*Land health standards would be met by:*

- Improving and maintaining upland areas (plant composition, structure) through changes in livestock grazing management and structural improvements. Increase the canopy cover of cool season perennial grasses; improve infiltration; improve residual grass and litter cover; and, improve diversity of plant species.
- Improving and maintaining upland areas within greater sage-grouse habitat (plant composition, structure) through changes in livestock grazing management and structural improvements. Increase herbaceous cover of native perennial grasses and forbs and increase residual herbaceous cover for greater sage-grouse and other ground nesting birds in sagebrush/grassland plant communities.
- Improving health and vigor of important big game winter browse species by reducing utilization through changes in livestock grazing management and structural improvements. Reduce utilization on key browse species and improve vigor, regeneration and availability for wildlife.

#### **1.5 Conformance with Existing Land Use Plans**

The Antelope Creek Grazing Allotment is located within the Upper Missouri River Breaks National Monument. The Monument was established by Proclamation issued by President Clinton on January 17, 2001. The Record of Decision and Approved Plan for the Upper Missouri River Breaks National Monument became effective on December 4, 2008 (Monument Plan). All actions approved or authorized by the BLM must conform to the Monument Plan.

Livestock grazing will be managed through the implementation of Standards for Rangeland Health and Guidelines for Livestock Grazing Management. Through the watershed and/or activity plan process, assessments of standards

are prepared. If existing grazing management is responsible for not meeting standards, modifications to the grazing authorization are implemented to ensure standards will be met. These can include changes to allocated use, seasons of use, grazing rotations or other grazing management practices. Continued monitoring as it relates to Standards for Rangeland Health will be the basis of making adjustments to livestock grazing (Approved Plan, page 49).

## **1.6 The Decision to be Made**

The Upper Missouri River Breaks National Monument Manager (Monument Manager) will select the alternative or combination of alternatives that best addresses the resource issues identified under Section 1.8, Issues Identified for Analysis.

The Monument Manager must also determine if the selected alternative or combination of alternatives is a federal action that significantly affects the quality of the human environment. If it is, then an EIS must be prepared. If not, then a Finding of No Significant Impact (FONSI) would be issued.

## **1.7 Scoping**

*February 11, 2010* - meeting with the Antelope Creek Grazing Allotment permittees was held to summarize resource conditions and discuss alternatives to current grazing management practices.

*March 9, 2010* - follow up meeting with the Antelope Creek Grazing Allotment permittees was held to discuss alternative management changes.

*January 11, 2011* - external scoping letter with attached Evaluation Report and Determination Document was sent to state agencies, interested publics, grazing permittees and others potentially affected requesting comments by February 15, 2011.

*January 24, 2011* - Evaluation Report and Determination Document posted on BLM Monument NEPA log.

*January 25, 2011* - meeting with Antelope Creek Grazing Allotment permittees was held to discuss the Evaluation Report and Determination Document, resource issues and alternatives being considered that would modify the grazing use.

*January 28, 2011* - internal scoping request routed to BLM staff and resource specialists to identify issues and analysis.

*February 14, 2011* - BLM received comments from two interested publics.

*February 16, 2011* - BLM received comments from one individual.

## **1.8 Issues Identified for Analysis (Resource Issues)**

Issues raised during the analysis were identified during public scoping with interested publics and the grazing permittees. Prior to the scoping process, comments were received from the Montana Fish, Wildlife & Parks (FWP) area biologist expressing concerns over habitat conditions and utilization levels by livestock. A scoping letter was mailed on January 11, 2011 to state agencies, interested publics and others potentially affected by the proposed management changes. Two interested publics and one individual provided written comments that were reviewed and incorporated into this document. Several meetings were held with the affected grazing permittees. Issues were also raised through internal (BLM) review and interdisciplinary processes. The following section is a list of issues relevant to this analysis.

### **1.8.1 Upland Sagebrush/Grassland Plant Communities**

Resource Issue #1. The ID Team identified 7,687 acres, about 15% of upland plant communities within the Antelope Creek Grazing Allotment, as functioning at risk. These are not meeting or making significant progress

toward meeting Lewistown's Standard #1. The timing and intensity of livestock use is affecting plant health and vigor in sagebrush and grassland plant communities.

### **1.8.2 Wildlife Habitat**

Resource Issue #2. Portions of the Antelope Creek Grazing Allotment provides habitat for greater sage-grouse. About 43% (4,264 acres) of the sagebrush and grassland plant communities within this area are functioning at risk and are not meeting or making significant progress toward meeting Lewistown's Standard #5. The timing and intensity of livestock use is affecting plant health and residual cover in greater sage-grouse brood rearing and nesting areas.

Resource Issue #3. The Antelope Creek Grazing Allotment provides habitat for pronghorn antelope, mule deer and elk. Utilization of shrubs, particularly rubber rabbitbrush (*Chrysothamnus nauseosus*), a key browse species, has been high indicating a degree of competition between livestock and big game in the fall.

## **1.9 Issues Considered but Eliminated from Further Analysis**

### *Riparian Habitat/Water Resources*

One comment received from an individual stated BLM's standard for evaluating riparian areas is not adequate to protect Monument resources. "PFC (proper functioning condition) is the minimal condition, the starting point, not the desired condition necessary to support wildlife values." The comment refers to 4.6 miles of Missouri River shoreline managed by the BLM in the Antelope Creek Grazing Allotment.

As indicated on page 45 in the Monument Plan, "the BLM's goal is to achieve, or make significant progress toward, proper functioning condition in riparian and wetland areas and to sustain a diverse age-class and composition of riparian-wetland vegetation for maintenance and recovery of riparian-wetland areas." The Monument proclamation states "Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing permits or leases on all lands under its jurisdiction shall continue to apply with regard to the lands in the monument."

To determine whether or not this goal was being met, the BLM completed an assessment of riparian conditions along the Missouri River during the 2010 field season. Using the PFC protocol as outlined in Technical Reference 1737-15(1998), an ID Team rated this portion of the Missouri River between proper functioning condition and the potential natural community (PNC). Key attributes and processes responsible for the rating of PFC were adequate riparian-wetland species diversity, age class, vigor, cover of riparian-wetland plants with medium to high stability ratings on the streambanks, stable streambanks, and channel attributes and functions within the range of conditions appropriate for this reach. Therefore the rating given by the ID Team was higher than or above the minimum standard required by BLM regulations. Furthermore, riparian-wetland areas in PFC have an upward trend. Invasive weeds and non-native grasses were identified as the basis for not attaining a higher ecological status. The assessment did not indicate current livestock grazing as a significant factor affecting current conditions or as an issue requiring action under this EA.

### **1.10 Summary**

This chapter presented the purpose and need of the proposed action, as well as the relevant issues. To meet the purpose and need and resolve the issues, the BLM has developed a range of action alternatives. These alternatives, as well as a no action alternative, are presented in Chapter 2. The potential environmental impacts or consequences resulting from the implementation of each alternative are then analyzed in Chapter 4 for each of the identified issues.

## Chapter 2

### 2.0 DESCRIPTION OF ALTERNATIVES

The information contained in the Evaluation Report, Determination Document and recommendations and comments received from the grazing permittees and public have been used to develop alternatives that would achieve land health standards. The alternatives were developed based upon issues identified through internal scoping as well as public scoping and involvement. The alternatives are designed to address one or more of the identified issues as well as provide the opportunity for specific comparisons on which the decision maker can base a decision.

#### 2.1 Features Common to All Alternatives

##### *Vegetation - Noxious Weeds and Invasive Plants*

The management of noxious and invasive plants would continue as prescribed in the Upper Missouri River Breaks National Monument: Guidelines for Integrated Weed Management (BLM 2001b) and subsequent updates.

##### *Cultural Resources*

A cultural review, and if needed, on-the-ground inventories would be conducted prior to construction, repair or reclamation of any structural projects.

##### *Water Resources*

All maintenance of existing stock water impoundments would not exceed the original capacity of the impoundment.

##### *Structural Improvements*

Fences constructed, replaced and/or maintained on public land would conform to the guidelines described in BLM's fencing handbook H-1741-1 for fences located in deer, elk, pronghorn antelope and/or greater sage-grouse habitat. In addition, fences located and constructed in greater sage-grouse habitat will conform to the guidelines in the Management Plan and Conservation Strategies for Sage Grouse in Montana - Final (2005).

Permits required by the State and county government would be obtained before any construction activities would be approved.

Only native, certified weed-free seed would be used for reclamation of disturbed areas.

Projects would have a visual contrast rating worksheet completed as a part of the environmental analysis.

The grazing permittees would be required to turn stock water tanks on and off throughout the grazing season to influence livestock distribution.

Construction activities would not be performed during periods when the soil is too wet to support equipment/vehicles. If equipment/vehicles create ruts in excess of three inches operations would cease.

Erosion control and sediment containment products (straw wattles, silt fence, erosion control blankets/mats, sediment stop, etc.) would be installed where necessary to aid in stabilization and capture of sediment until vegetation reestablishes to effectively control erosion and sediment. Products would be installed in accordance with manufacturer's specifications/instructions. This would include areas around the stock water pipeline corridor, Stogie Spring and the stock water pits/reservoirs.

Design and install measures to minimize headcutting at and below reservoir spillways scheduled for repairs.

Where soils are disturbed, topsoil would be stripped, separated from subsoil/parent material and stockpiled for use in reclamation.

Site reclamation would initiate with the ripping to an appropriate depth (generally below the root zone) of any compacted areas and grading to blend with the adjacent site characteristics and topography. In no instance would grading material and/or subsoil be placed over topsoil. The order of soil replacement would be the reverse of removal; first off, last on.

### *Wilderness Study Areas*

Management activities on public land under wilderness review will comply with the Interim Management Policy (1995). BLM's management policy is to continue resource uses on lands under wilderness review in a manner that maintains the area's suitability for preservation as wilderness.

## **2.2 Features Common to Alternative A**

### *Livestock Grazing Management*

Livestock grazing use that is different from that authorized by the grazing permit must be applied for prior to the grazing period and must be filed with and approved by the authorized officer before grazing use can be made.

The grazing permittees would submit an actual livestock grazing use report to the BLM office in Havre within 15 days after livestock are removed from the Allotment.

Supplemental feeding is limited to salt, mineral and/or protein in block or granular form. If used on public lands, these supplements must be placed at least one-quarter (¼) mile away from any riparian area, spring or water development located on public land unless a site specific exemption is approved by the authorized officer.

### *Structural Improvements*

Maintenance of existing and new improvements would be assigned to the appropriate grazing permittee and cooperative agreements completed before construction would occur.

Wildlife escape ramps would be installed in all existing and new stock water tanks.

### *Cultural Resources*

Supplemental feeding would not be authorized within the Bean Place due to the high concentration of cultural sites in the Bell Ridge area (T23N, R24E sections 5, 6, 7, 8 and 18).

## **2.3 Features Common to Alternative C**

### *Livestock Grazing Management*

Grazing permittees would avoid the placement of salt or mineral supplements near leks during the breeding season (March 1 to June 15). The placement of salt or mineral supplements by other entities would not be allowed. Supplemental winter feeding would not be allowed on greater sage-grouse winter habitat and around leks.

Supplemental feeding is limited to salt, mineral and/or protein in block or granular form. If used on public lands, these supplements must be placed at least one-quarter (¼) mile away from any riparian area, spring or water development located on public land unless a site specific exemption is approved by the authorized officer.

Livestock grazing use that is different from that authorized by the grazing permit must be applied for prior to the grazing period and must be filed with and approved by the authorized officer before grazing use can be made.

The grazing permittees would submit an actual livestock grazing use report to the BLM office in Havre within 15 days after livestock are removed from the Allotment.

### *Structural Improvements*

Maintenance of existing and new improvements would be assigned to the appropriate grazing permittee and cooperative agreements completed before construction would occur.

Wildlife escape ramps would be installed in all existing and new stock water tanks.

### *Cultural Resources*

Supplemental feeding would not be authorized within the Bean Place due to the high concentration of cultural sites in the Bell Ridge area (T23N, R24E sections 5, 6, 7, 8 and 18).

### *Water Resources*

Installation of any stock tanks on public land would be added as places of use to the existing water right. The holder of the water right would be required to file the necessary applications. In the event the public land grazing permit is transferred, the transferee would be entitled to use and maintain the pipeline for the purpose of watering livestock as stipulated in the cooperative agreement.

### *Monitoring Plan*

Drought or periods of below average moisture is a natural occurrence in northcentral Montana. Adjustments in grazing management would be implemented during dry periods and in subsequent years to allow rangeland resources to recover. Reductions in the stocking rate, delaying the turn out date and shortened seasons of use would be applied to prevent overgrazing. An interdisciplinary team, in cooperation with the grazing permittees, would be used to assess conditions, establish on-the-ground adjustments and when livestock use would be returned to permit levels.

## **2.4 Features Common to Alternative D**

### *Livestock Grazing Management*

Grazing permittees would avoid the placement of salt or mineral supplements near leks during the breeding season (March 1 to June 15). The placement of salt or mineral supplements by other entities would not be allowed. Supplemental winter feeding would not be allowed on greater sage-grouse winter habitat and around leks.

Supplemental feeding is limited to salt, mineral and/or protein in block or granular form. If used on public lands, these supplements must be placed at least one-quarter (¼) mile away from any riparian area, spring or water development located on public land unless a site specific exemption is approved by the authorized officer.

Livestock grazing use that is different from that authorized by the grazing permit must be applied for prior to the grazing period and must be filed with and approved by the authorized officer before grazing use can be made.

The grazing permittees would submit an actual livestock grazing use report to the BLM office in Havre within 15 days after livestock are removed from the Allotment.

### *Structural Improvements*

Maintenance of existing and new improvements would be assigned to the appropriate grazing permittee and cooperative agreements completed before construction would occur.

Wildlife escape ramps would be installed in all existing and new stock water tanks.

### *Cultural Resources*

Supplemental feeding would not be authorized within the Bean Place due to the high concentration of cultural sites

in the Bell Ridge area (T23N, R24E sections 5, 6, 7, 8 and 18).

*Water Resources*

Installation of any stock tanks on public land would be added as places of use to the existing water right. The holder of the water right would be required to file the necessary applications. In the event the public land grazing permit is transferred, the transferee would be entitled to use and maintain the pipeline for the purpose of watering livestock as stipulated in the cooperative agreement.

*Monitoring Plan*

Drought or periods of below average moisture is a natural occurrence in northcentral Montana. Adjustments in grazing management would be implemented during dry periods and in subsequent years to allow rangeland resources to recover. Reductions in the stocking rate, delaying the turn out date and shortened seasons of use would be applied to prevent overgrazing. An interdisciplinary team, in cooperation with the grazing permittees, would be used to assess conditions, establish on-the-ground adjustments and when livestock use would be returned to permit levels.

**2.5 Actions Common to All Alternatives**

*Structural Improvements*

There is approximately four miles of boundary fence that have been abandoned and identified for removal from public land. They consist of barb wire and steel and wood posts. These fences are both a barrier and hazard to livestock and wildlife movement. Barb wire would be hand rolled, wood posts would either be pulled or cut off at ground level and steel posts would be removed by hand.

**2.6 Alternative A (No Action)**

*Livestock Grazing Management*

This alternative is a continuation of current management. The current grazing permits, which are not due to expire until February 28, 2016, would remain in effect at current levels and under the same terms and conditions.

**Table 1. Current Grazing Authorization for the Antelope Creek Grazing Allotment**

Operator	Area	Livestock		Grazing Period		% Public Land	Animal Unit Months		
		Number	Class	Begin	End		Active	Suspended	Total
Charles Schwenke	Common	215	Cattle	5/1	12/31	90%	1559	0	1559
	Bean Place	16	Cattle	3/1	2/28	Custodial	202	0	202
Winston Mitchell	Common	148	Cattle	5/1	11/15	94%	908	0	908
Square Butte	Common	284	Cattle	5/1	12/31	84%	1925	0	1925
Totals							4594	0	4594

*Existing Permit Terms & Conditions*

The three grazing permits currently issued to Charles Schwenke, Winston Mitchell and the Square Butte Grazing Association for grazing in the Antelope Creek allotment contains the following terms and conditions.

1. The terms and conditions of this permit may be modified if additional information indicates that revision is necessary to meet the Standards of Rangeland Health as described in 43 CFR 4180 (Code of Federal Regulations);

Administration of Grazing on Public Lands) and the Standards for Rangeland Health and Guidelines for Livestock Grazing Management Environmental Impact Statement.

2. An actual livestock grazing use report must be submitted to the Havre BLM Office within 15 days after livestock are removed from the Allotment.

3. Salt on public land will be placed ¼ mile from water and moved to different locations every year.

#### *Structural Improvements*

No new projects would be authorized; however, repairs and reconstruction of existing projects would be allowed. Seven man-made reservoirs would be scheduled for maintenance to repair existing problems ranging from spillway headcuts, replacement or removal of deteriorated overflow pipes, widening the top of the embankment to limit erosion and raising the embankment to offset the loss of storage from siltation. Stogie Spring would be reconstructed to replace a deteriorated metal spring box and stock tank (Map 4). Refer to Appendix 1 for a description of the work to be performed.

## **2.7 Alternative B (No Grazing)**

#### *Livestock Grazing Management*

The three existing grazing permits would be canceled and grazing eliminated in the “common use area” and Bean Place. The grazing preference would be reduced by 99% from 4,594 AUMs<sup>2</sup> to 21 AUMs. The remaining 21 AUMs would be assigned to those isolated tracts of public land fenced in with private land. Public land in the Kendall Cow Camp pasture, totaling 57 acres and 11 AUMs, would continue to be authorized for grazing and permitted to the adjoining landowner. Public land tracts lying outside of the Allotment boundary in the SE¼SE¼ of section 3, T24N, R23E and SE¼SE¼ of section 2, T24N, R23E, totaling 80 acres and 10 AUMs, would continue to be authorized for grazing and permitted to the adjoining landowner.

Other unfenced private and state lands, totaling 6,041 acres, within the “common use area” and Bean Place could only be grazed by the private landowner and state land lessee by a combination of intensive riding and herding and/or fencing.

#### *Structural Improvements*

Livestock related range improvements on public land would be abandoned and/or removed and reclaimed where there is no clear benefit to other resources.

The Duvall Creek Fence along the west side of the Bean Place, located in section 31 of T24N, R24E and sections 1, 12 and 13 of T23N, R23E, about 3.2 miles in length, would be removed (Map 5).

There are 28.5 miles of fence, either bordering or located on public land, serving as the Allotment boundary. To prevent unauthorized grazing use on public land, BLM would assume maintenance responsibility for these fences, and if needed, replace those portions that are no longer serviceable (Map 5).

Four spring developments located on public land would be abandoned and the sites reclaimed; Shane Spring, Stogie Spring, Bull Creek Spring and Mud Spring (Map5).

There are 27 man-made stock water reservoirs located on public land that would be abandoned. Of these, ten are located within the Cow Creek WSA and one within the Antelope Creek WSA (Map 4A). The abandoned reservoirs would not be reclaimed and only repaired if structural problems develop affecting dam safety (headcutting,

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<sup>2</sup> Animal Unit Month (AUM) is the amount of forage necessary to support a cow or its equivalent for a period of one month.

breached). The exception is those determined important for wildlife. These could be repaired and maintained within the guidelines to limit habitat for mosquitos potentially carrying West Nile Virus.

An existing stock water pipeline that provides water to four stock tanks located on public land would be abandoned. The stock tanks would be removed and the sites reclaimed (Map5).

Refer to Appendix 1 for a description of the work to be performed.

## 2.8 Alternative C (Manage Livestock Grazing with Allowable Use Levels)

### *Livestock Grazing Management*

The three existing grazing permits would be canceled and new permits issued with modified terms and conditions. The beginning date for grazing in the “common use area” would be changed from May 1st to May 15th for all three grazing permittees. In addition, the off date would be changed from December 31st to December 15th for Charles Schwenke and the Square Butte Grazing Association. The changes in the season of use results in a 10% reduction totaling 473 AUMs.

The authorized use in the Bean Place would remain the same.

A portion of the public land, totaling 57 acres, is fenced in with private land in a pasture referred to as the Kendall Cow Camp. The carrying capacity is 11 AUMs. These AUMs would be deducted from the “common use area” and assigned to Charles Schwenke.

Public land tracts lying outside of the Allotment boundary in the SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> of section 3, T24N, R23E and SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> of section 2, T24N, R23E, totaling 80 acres and 10 AUMs, would be deducted from the “common use area” and assigned to Winston Mitchell.

With prior approval from the BLM authorized officer, more cattle for a shorter period of time may be grazed in the “common use area” as long as the carrying capacity is not exceeded and grazing occurs during the permitted season of use.

With prior approval from the BLM authorized officer, the equivalent number of yearling cattle may be authorized to graze the Allotment. BLM typically uses a factor of 1.3 to convert a cow/calf livestock operation to a yearling operation. For example, 100 cows and calves would be converted to 133 yearlings (100 X 1.3). Rather than use a specific conversion factor, BLM would retain the flexibility to authorize yearling cattle based on resource needs, current forage conditions and animal size. If needed, a one to one ratio would be used substituting one yearling for one cow.

**Table 2. Grazing Authorization (Alternative C - Manage Livestock with Allowable Use Levels)**

Operator	Area	Livestock		Grazing Period		% Public Land	Animal Unit Months		
		Number	Class	Begin	End		Active	Suspended	Total
Charles Schwenke	Common	215	Cattle	5/15	12/15	90%	1368	182	1550
	Bean Place	1	Cattle	3/1	2/28	Custodial	200	0	200
	Kendall Cow Camp	1	Cattle	3/1	2/28	Custodial	11	0	11
Winston Mitchell	Common	148	Cattle	5/15	11/15	94%	846	52	898
		1	Cattle	3/1	2/28	Custodial	10	0	10
Square Butte	Common	284	Cattle	5/15	12/15	84%	1686	239	1925
Totals							4121	473	4594

*Permit Terms & Conditions*

Livestock use in greater sage-grouse habitat would be based on allowable use levels to improve nesting cover. Utilization of grasses would not exceed 40% measured at or near the end of the grazing season. The utilization transects located within greater sage-grouse habitat would be read and the average percent utilization determined for the entire area. Management decisions (changing the stocking rate and season of use) would not be based on the results at any one location. If the grazing permittees are unable to meet the allowable use levels for two consecutive years or in any two years out of five the beginning date for grazing would be changed to June 1st. If implemented, the management changes would only affect Charles Schwenke and the Square Butte Grazing Association resulting in a 16% reduction totaling 714 AUMs.

**Table 3. Grazing Authorization (Alternative C - Allowable Use Levels not met in Greater Sage-Grouse Habitat)**

Operator	Area	Livestock		Grazing Period		% Public Land	Animal Unit Months		
		Number	Class	Begin	End		Active	Suspended	Total
Charles Schwenke	Common	215	Cattle	6/1	12/15	90%	1260	290	1550
	Bean Place	46	Cattle	6/1	12/15	67%	200	0	200
	Kendall Cow Camp	1	Cattle	3/1	2/28	Custodial	11	0	11
Winston Mitchell	Common	148	Cattle	5/15	11/15	94%	846	52	898
		1	Cattle	3/1	2/28	Custodial	10	0	10
Square Butte	Common	284	Cattle	6/1	12/15	84%	1553	372	1925
Totals							3880	714	4594

In other upland areas, north and south of Bull Creek, livestock use would be based on allowable use levels to improve rangeland health. Utilization of grasses would not exceed 40% measured at or near the end of the grazing season. The utilization transects would be read and the average percent utilization determined for the entire area. Management decisions (changing the stocking rate and season of use) would not be based on the results at any one location. If the grazing permittees are unable to meet the allowable use levels for two consecutive years or in any two years out of five the off date for grazing would be changed to November 1st for Winston Mitchell and December 1st for Charles Schwenke and the Square Butte Grazing Association resulting in a 16% reduction totaling 736 AUMs.

**Table 4. Grazing Authorization (Alternative C - Allowable Use Levels not met North & South of Bull Creek)**

Operator	Area	Livestock		Grazing Period		% Public Land	Animal Unit Months		
		Number	Class	Begin	End		Active	Suspended	Total
Charles Schwenke	Common	215	Cattle	5/15	12/1	90%	1279	271	1550
	Bean Place	1	Cattle	3/1	2/28	Custodial	200	0	200
	Kendall Cow Camp	1	Cattle	3/1	2/28	Custodial	11	0	11
Winston Mitchell	Common	148	Cattle	5/15	11/1	94%	782	116	898
		1	Cattle	3/1	2/28	Custodial	10	0	10
Square Butte	Common	284	Cattle	5/15	12/1	84%	1576	349	1925
Totals							3858	736	4594

If the allowable use levels in the greater sage-grouse habitat and north and south of Bull Creek are not met, both the on and off date would be changed resulting in a 32% reduction totaling 1,450 AUMs.

For both the greater sage-grouse habitat and areas north and south of Bull Creek, changes to the on and off dates would continue until the allowable use levels are met.

### *Structural Improvements*

Seven man-made reservoirs would be scheduled for maintenance to repair existing problems ranging from spillway headcuts, replacement or removal of deteriorated overflow pipes, widening the top of the embankment to limit erosion and raising the embankment to offset the loss of storage from siltation. Stogie Spring would be reconstructed to replace a deteriorated metal spring box and stock tank. Schwenke Pipeline would be extended 7.2 miles following the county road and six stock tanks installed on public land (Map 6).

Refer to Appendix 1 for a description of the work to be performed.

### *Monitoring Plan*

Rangeland monitoring conducted in the Antelope Creek Grazing Allotment would be according to the monitoring plan presented in Appendix 2.

## **2.9 Alternative D (Manage Livestock with Allowable Use Levels/Greater Sage-Grouse Management Unit)**

### *Livestock Grazing Management*

The three existing grazing permits would be canceled and new permits issued with modified terms and conditions. The beginning date for grazing in the “common use area” would be changed from May 1st to May 15th for all three grazing permittees. In addition, the off date would be changed from December 31st to November 15th for Charles Schwenke and the Square Butte Grazing Association. The changes in the season of use results in a 28% reduction totaling 1300 AUMs.

A greater sage-grouse management unit would be created with installation of 4.6 miles of fence. The size of the area would be approximately 9,500 acres. The public land AUMs, totaling 1,242, within the greater sage-grouse management unit would be suspended. Grazing would still be allowed but would have to be applied for and approved annually. Whether grazing would be approved and how much use is allowed would be dependent on first meeting greater sage-grouse habitat objectives as defined under Greater Sage-Grouse Habitat (Winter/Nesting) on page 2 of the Antelope Creek monitoring plan. Unfenced private and state lands, totaling 1,730 acres, within the greater sage-grouse management unit could still be grazed by the private landowner and state land lessee by a combination of intensive riding and herding and/or fencing.

The authorized use in the Bean Place, which would become part of the greater sage-grouse management unit, would be eliminated. The Duval Creek Fence, located along the west side, would be removed.

A portion of the public land, totaling 57 acres, is fenced in with private land in a pasture referred to as the Kendall Cow Camp. The carrying capacity is 11 AUMs. These AUMs would be deducted from the “common use area” and assigned to Charles Schwenke.

Public land tracts lying outside of the Allotment boundary in the SE $\frac{1}{4}$ SE $\frac{1}{4}$  of section 3, T24N, R23E and SE $\frac{1}{4}$ SE $\frac{1}{4}$  of section 2, T24N, R23E, totaling 80 acres and 10 AUMs, would be deducted from the “common use area” and assigned to Winston Mitchell.

With prior approval from the BLM authorized officer, more cattle for a shorter period of time may be grazed in the “common use area” as long as the carrying capacity is not exceeded and grazing occurs during the permitted season of use.

With prior approval from the BLM authorized officer, the equivalent number of yearling cattle may be authorized to graze the Allotment using the same criteria as described under Alternative C above.

**Table 5. Grazing Authorization (Alternative D)**

Operator	Area	Livestock		Grazing Period		% Public Land	Animal Unit Months		
		Number	Class	Begin	End		Active	Suspended	Total
Charles Schwenke	Common	210	Cattle	5/15	11/15	90%	1150	600	1750
	Kendall Cow Camp	1	Cattle	3/1	2/28	Custodial	11	0	11
Winston Mitchell	Common	148	Cattle	5/15	11/15	94%	846	52	898
		1	Cattle	3/1	2/28	Custodial	10	0	10
Square Butte	Common	250	Cattle	5/15	11/15	84%	1277	648	1925
Totals							3294	1300	4594

*Permit Terms & Conditions*

In other upland areas, north and south of Bull Creek, livestock use would be based on allowable use levels to improve rangeland health. Utilization of grasses would not exceed 40% measured at or near the end of the grazing season. The utilization transects would be read and the average percent utilization determined for the entire area. Management decisions (changing the stocking rate and season of use) would not be based on the results at any one location. If the grazing permittees are unable to meet the allowable use levels for two consecutive years or in any two years out of five the off date for grazing would be changed to November 1st for Charles Schwenke and the Square Butte Grazing Association resulting in a 34% reduction totaling 1547 AUMs.

**Table 6. Grazing Authorization (Alternative D - Allowable Use Levels not met North & South of Bull Creek)**

Operator	Area	Livestock		Grazing Period		% Public Land	Animal Unit Months		
		Number	Class	Begin	End		Active	Suspended	Total
Charles Schwenke	Common	210	Cattle	5/15	11/1	90%	1063	687	1750
	Kendall Cow Camp	1	Cattle	3/1	2/28	Custodial	11	0	11
Winston Mitchell	Common	148	Cattle	5/15	11/1	94%	782	116	898
		1	Cattle	3/1	2/28	Custodial	10	0	10
Square Butte	Common	250	Cattle	5/15	11/1	84%	1181	744	1925
Totals							3047	1547	4594

For the areas north and south of Bull Creek, changes to the off date would continue until the allowable use levels are met.

*Structural Improvements*

The Duvall Creek Fence along the west side of the Bean Place, located in section 1 of T24N, R24E and sections 1, 12 and 13 of T23N, R23E, about 3.2 miles in length, would be removed (Map 7).

An electric or barb wire fence would be constructed, about 4.6 miles in length, to create a management unit containing a large portion of identified greater sage-grouse habitat (Map 7).

Seven man-made reservoirs would be scheduled for maintenance to repair existing problems ranging from spillway

headcuts, replacement or removal of deteriorated overflow pipes, widening the top of the embankment to limit erosion and raising the embankment to offset the loss of storage from siltation. Stogie Spring would be reconstructed to replace a deteriorated metal spring box and stock tank. Schwenke Pipeline would be extended 7.2 miles following the county road and six stock tanks installed on public land (Map 7).

Refer to Appendix 1 for a description of the work to be performed.

#### *Monitoring Plan*

Rangeland monitoring conducted in the Antelope Creek Grazing Allotment would be according to the monitoring plan presented in Appendix 2.

### **2.10 Alternatives Considered but Eliminated from Further Analysis**

One comment BLM received advocated implementing a 3-pasture rest rotation grazing system based on a reference made for the Antelope Creek Grazing Allotment in the Missouri Breaks ES (1979). This particular grazing strategy was considered in the late 1970's along with other fencing options to create individual pastures for rotating livestock use. As indicated on page 4 of the *Antelope Creek Grazing Allotment #05610 Evaluation Report*, BLM does not recommend dividing the Allotment into pastures which would require constructing several miles of fence. Reasons given and supported by the ID Team include rough topography, impacts to other resources such as WSA's and wildlife, and the high cost of fence maintenance.

### **2.11 Summary Comparison of Alternative Actions**

Refer to Appendix 3 for a brief summary of livestock management changes, structural improvements and the cost to BLM for each alternative.

## Chapter 3 AFFECTED ENVIRONMENT

### 3.1 Introduction

Chapter 3, beginning on page 175 in the Upper Missouri River Breaks National Monument Proposed Resource Management Plan and Final Environmental Impact Statement, Volume 1, dated January 2008, provides a description of the affected environment for the physical, biological, cultural, economic and social conditions. A copy of the plan can be obtained from the following website:

[http://www.blm.gov/mt/st/en/fo/lewistown\\_field\\_office/um\\_rmp\\_process/rmp.html](http://www.blm.gov/mt/st/en/fo/lewistown_field_office/um_rmp_process/rmp.html)

A more detailed description of the resource values most likely to be affected by the alternative actions is included in the following sections.

### 3.2 General Setting

The Antelope Creek Grazing Allotment is located in the northcentral portion of Montana in the southwest corner of Phillips County, the very east end of the Monument, north of the Missouri River and west of Highway 66. The size of the Allotment is 51,168 acres which includes 44,584 acres of public land, 3,287 acres of private land and 3,297 acres of state land (Map 1).

There are a wide variety of plant community and habitat types influenced by soil type, elevation, slope and aspect occurring within the Antelope Creek Grazing Allotment. Timbered areas contain both ponderosa pine (*Pinus ponderosa*) and Douglas fir (*Pseudotsuga menziesii*) habitat types. Douglas fir is more common on north-facing (wetter) slopes while ponderosa pine tolerates drier sites such as south and west-facing slopes. Grassland plant communities, where grass species are the dominant plant, occur in upland areas and along the Missouri River. Probably the most common rangeland vegetation community is the sagebrush/grassland type. These occur on open ridges in timbered areas and cover large areas of the landscape that are nearly level to slightly sloping.

Climatic conditions for the Antelope Creek Grazing Allotment are influenced by the Little Rocky Mountains, which lie to the north and northeast, and the Missouri River, which serves as the southern boundary. Average annual precipitation ranges from 12 to 14 inches. The greatest amount of precipitation occurs mostly in the form of rainfall during the months of May through September. Snow generally falls between November and April. Winter temperatures can be as low as -40 degrees F. Temperatures in the summer, especially along the Missouri River, can reach over 100 degrees F. Frost free time periods range from 90 to 110 days. The average date of the first frost in the fall occurs in mid-September. The average date of the last frost is in late May.

### 3.3 Affected Resources Brought Forward for Analysis

#### *Livestock Grazing Management*

The Antelope Creek Grazing Allotment is the largest grazing allotment located within the Monument. The size of the Allotment is 51,168 acres with a carrying capacity of 5,293 AUMs. This includes 44,584 acres of public land, capacity of 4,465 AUMs; 3,287 acres of private land, capacity of 426 AUMs; and 3,297 acres of state land with a capacity of 402 AUMs. The Allotment carrying capacity includes a 7% reduction for wildlife implemented in the 1970's for public, private and state land.

The Antelope Creek Grazing Allotment is a "common allotment" permitted to two individuals and the Square Butte Grazing Association<sup>3</sup>. The term of the current grazing permits are from March 1, 2006 to February 28, 2016.

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<sup>3</sup> The Square Butte Grazing Association (Association) and Charles Schwenke entered into a Trade-In-Use Agreement in 1978. Charles Schwenke exchanges 740 AUMs in the CMR Wildlife Refuge located in the Cyprian Grazing Allotment to the Association for use of 750 AUMS in the Antelope Creek Grazing Allotment. In addition,

The Allotment is grazed seasonlong from May 1st to November 15th with 650 cow-calf pairs. Following this grazing period, the stocking level is reduced to 500 cows and grazing continues until December 31st. The Allotment has not been fenced and divided into pastures or separate areas of use. In the late 1970's plans were considered to implement a rest or deferred rotation grazing system which would require fencing the Allotment into at least three pastures. Fencing the Allotment and implementing a rotational grazing system was eliminated from consideration because of rough topography, impacts to other resources such as WSA's and wildlife and the high cost of maintenance.

Instead of installing fences to implement a rotational grazing system a simple rotation formula was proposed where cattle would be turned out at different locations each year and allowed to drift naturally. This approach was modified somewhat because the rough topography along Bull Creek creates a natural barrier to livestock movement. Today, two herds are turned out at different locations. At the beginning of the grazing season, one herd of 150 cows is turned out north of Bull Creek near the north end of the Allotment. The second herd of 500 cows is turned out south of Bull Creek, more toward the center of the Allotment, and driven farther south. No effort is made to keep the herds separated and some mixing does occur by midsummer or early fall. This approach has worked fairly well in most years. However, one concern is that the number of AUMs harvested north of Bull Creek may be more than the grazing capacity. Also, stock water conditions north of Bull Creek are less than desirable and can be critically short by the end of summer.

The current grazing authorization for the Allotment is:

Charles Schwenke

215 Cows from 5/1 to 12/31

90% Public Land with a grazing preference of 1559 AUMs (Common Use Area)

Square Butte Grazing Association (Grazed by Charles Schwenke through a Trade-In-Use Agreement with, and as a member of, the Square Butte Grazing Association)

284 Cows from 5/1 to 12/31

84% Public Land with a grazing preference of 1925 AUMs (Common Use Area)

Winston Mitchell

148 Cows from 5/1 to 11/15

94% Public Land with a grazing preference of 908 AUMs (Common Use Area)

*Structural Improvements*

There are four developed springs located within the "common use area" for livestock use. Three were constructed along the bottom of Bull Creek; Bull Creek Spring (lower end), Stogie Spring (middle) and Mud Spring (upper end). The source of Mud Spring is fenced to exclude livestock, whereas the other two spring sites are not. All three springs were likely developed in the 1960's or earlier. Both Stogie and Bull Creek springs were reconstructed in the 1980's. The fourth spring, Shane Spring, was constructed in 1981.

Herding and the use of supplements have been effective grazing management practices used to influence and control livestock distribution within the Allotment. To further reduce the areas of over and under use by livestock about fifteen miles of stock water pipelines have been installed in areas to the south of Bull Creek on public, private and state land. Water is currently piped to eight stock tanks. In recent years, turning stock water tanks on and off has been used successfully to rotate livestock in and out of grazing areas without the use of fences to control their movement. All of these practices and improvements have resulted in better distribution of livestock when compared to historic grazing patterns.

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Charles Schwenke exchanges 708 AUMs located in the Cyprian Grazing Allotment to the Association for 631 AUMs in the Antelope Creek Grazing Allotment and 77 AUMs in the Upper Cyprian Grazing Allotment. Charles Schwenke, as a member of the Association, also uses 554 AUMs of grazing preference in the Antelope Creek Grazing Allotment.

There are a total of 27 man-made stock water reservoirs constructed within the Allotment. Many of these were built in the 1960's and 1970's. Their use and availability is dependent on overland flow during spring runoff and from intense rainfall events. When reservoirs are critically short of water, a common occurrence during dry years and late in the grazing season, livestock distribution is affected resulting in uneven patterns of utilization and concentrated use around more reliable reservoirs and along the Missouri River.

### Vegetation

The most common upland plant community identified during field assessments as functioning at risk and impacted by livestock grazing is the sagebrush/grassland complex. This habitat type features a canopy of Wyoming big sagebrush (*Artemisia tridentata* subsp. *wyomingensis*) with an herbaceous understory dominated by rhizomatous grasses, junegrass (*Koeleria macrantha*) and Sandberg bluegrass (*Poa secunda*). Bunchgrasses such as bluebunch wheatgrass (*Agropyron spicatum*) and green needlegrass (*Nassella viridula*) are still present but in smaller amounts. Green needlegrass appears more in areas receiving additional moisture such as along swales or coulee bottoms. Bluebunch wheatgrass prefers well-drained loamy soils and is most common on south facing slopes. Rhizomatous grasses, mostly western wheatgrass (*Pascopyron smithii*) and some thickspike wheatgrass (*Agropyron dasystachyum*), are the most common. In some areas the shrub canopy also includes small percentages of rubber rabbitbrush, an important big game browse species. Hansen (2008) described the Wyoming big sagebrush/western wheatgrass association as a habitat type during an inventory of public land near Miles City, Montana. Hansen noted these stands are open and much more soil surface is exposed. Forbs do not contribute much to the canopy cover. On clayey soils, the sagebrush/grassland habitat type is extensive covering large areas of the grazing allotment.



Upland areas dominated by Wyoming big sagebrush with an understory of native, perennial grasses

When compared to reference conditions (Natural Resource Conservation Service Ecological Site Description - Rangeland, Technical Guide for the Sedimentary Plains, Central Montana, 2004), reasons for the FAR rating included increases in less desirable species such as junegrass, Sandberg bluegrass and broom snakeweed (*Gutierrezia sarothrae*) with corresponding losses in western, thickspike and green needlegrass. Wyoming big sagebrush makes up a large portion of the canopy cover competing with understory herbaceous vegetation. Although Wyoming big sagebrush is a desirable component in greater sage-grouse habitat, with a more natural fire occurrence interval, the amount would be much smaller and more closely represent the reference plant community. Also noted were a higher percentage of bare ground and less litter covering the soil.

About 60% of the Antelope Creek Grazing Allotment is timbered with ponderosa pine and Douglas fir as the dominant overstory tree species. The ponderosa pine type is common on drier south and west-facing slopes. On sites with a fairly open canopy, the understory is most often dominated by bluebunch wheatgrass and sun sedge (*Carex heliophila*) with only a small amount of shrubs and forbs. In slightly wetter areas where ponderosa pine forms a more closed canopy, although grasses still dominate the understory, shrubs become more prominent and would include western snowberry (*Symphoricarpus occidentalis*), Woods' rose (*Rosa woodsii*), common (*Juniperus communis*) and horizontal juniper (*Juniperus horizontalis*) and skunkbrush sumac (*Rhus trilobata*).

Douglas fir prefers wetter aspects and is mostly restricted to north-facing slopes. This type has an understory of littleseed ricegrass (*Oryzopsis micrantha*), green needlegrass, western wheatgrass, horizontal and Rocky Mountain juniper (*Juniperus scopulorum*), western snowberry, Woods' rose, chokecherry (*Prunus virginiana*) and skunkbrush sumac. The combination of these plants in the understory depends on slope, moisture and the density of the overstory (open or closed canopy). On many sites, lichen and moss can be prominent covering extensive areas of the ground.



*Ponderosa pine and Douglas fir timber types*

The Antelope Creek Grazing Allotment has known populations of noxious weeds, principally Russian knapweed (*Centaurea repens*), Canada thistle (*Cirsium arvense*) and leafy spurge (*Euphorbia esula*), located along the Missouri River. Noxious weeds were not discovered along Antelope, Bull and Winter Creek or at any of the upland areas during completion of the field health assessments.

The history of the establishment and spread of invasive weed species along the Missouri River within the Monument is very similar to other western rivers although probably more recent. Vegetation inventories completed in 1975 and 1976, which included the river corridor, major tributaries and adjacent upland areas, did not document any infestations of invasive weed species on public land (George Hirschenberger, retired BLM, personal communication). However, by 1983 the BLM had identified several areas where invasive weed species, mainly leafy spurge, were becoming established along the river corridor. These areas were widely dispersed and small in size and density. In that year BLM personnel chemically treated an estimated 20 acres of leafy spurge and Canada thistle on public land (John Fahlgren, retired BLM, personal communication). By 2001, compiling information collected from surveys conducted over several years, the size of infested acres on public land had grown to 615 acres. The number of new invasive weed species had also grown considerably, from two in 1983 to over 10 in 2001. Again in 2010 the BLM completed a survey for invasive weed species along the entire river corridor from Fort Benton to the boundary of the Charles M. Russell National Wildlife Refuge covering a distance of 139 miles. The results of the survey indicated the acres infested on public land more than doubled, increasing from 615 acres in 2001 to 1,363 acres in 2010.

Non-native species, principally quackgrass (*Elymus repens*), Kentucky bluegrass (*Poa pratensis*), creeping meadow foxtail (*Alopecurus arundinaceus*), yellow sweetclover (*Melilotus officinalis*), red top (*Agrostis gigantea*) and smooth brome (*Bromus inermis*), are common on river terraces along the Missouri River. Their occurrence and density is often related to repeated disturbances caused by ice, high flow events and sedimentation.

No BLM Threatened and Endangered or special status plant species were found at any of the assessment sites or likely to occur within the Antelope Creek Grazing Allotment. The Montana Natural Heritage Program has identified five BLM sensitive plant species that occur or could occur within Phillips County. These include hot spring phacelia (*Phacelia thermalis*), Slender-branched popcorn-flower (*Plagiobothrys leptocladus*), dwarf woolly-heads (*Psilocarphus brevissimus*), long-sheath waterweed (*Elodea bifoliata*) and slender bulrush (*Schoenoplectus heterochaetus*). None of these plant species were found during assessment of upland and riparian sites.

## *Soils*

Detailed soil surveys have been published by the Natural Resources Conservation Service for Blaine and Phillips counties covering the Antelope Creek Grazing Allotment. Pertinent information for review and analysis is from the published Soil Surveys and the National Soils Information System (NASIS) database for the area. For each soil mapping unit, interpretive ratings and soil characteristics are provided that can be used for general land-use planning and management. Soil investigations were done at the site-specific level to determine the suitability of soils at specific locations.

Soils in the analysis area developed from calcareous or acid shales, siltstones and sandstones of the Bearpaw, Judith River, Clagget and Eagle Sandstone formations. Soils developed in shale are typically fine textured, have a high clay content and are very shallow (<10 inches) to moderately deep (20 to 40 inches). Where high sandstone ridges occur, soils are loamy or sandy. These sedimentary soils are vulnerable to degradation and are highly erosive because of their steep to very steep slopes and extreme physical properties such as high clay content, slow permeability, very high surface runoff, relatively shallow depth to bedrock and sparse vegetative cover. Sedimentary soils are generally low in organic matter and high in sodium and soluble salts.

## *Wildlife*

Refer to Chapter 3, beginning on Page 179 in the Upper Missouri River Breaks National Monument Proposed Resource Management Plan and Final Environmental Impact Statement, Volume 1, dated January 2008, for a complete description of wildlife species present or potentially present within the Antelope Creek Grazing Allotment and surrounding area.

Region wide and on a landscape-scale, the alteration of sagebrush ecosystems and habitat fragmentation has occurred from conversion to cultivated crops, the conservation reserve program (CRP), road construction, oil and gas production and other construction activities. The loss or alteration of sagebrush ecosystems has led to declines in species diversity, provides opportunities for invasive species to establish and fragments quality habitat for all wildlife species. Over the long term, changes in plant community composition has occurred from grazing and browsing by livestock and wildlife, wildfire, suppression of wildfire, increase in recreation use and noxious weeds. Impacts can vary depending on the degree of habitat change and the requirements of each wildlife species.

Traffic into the area can reduce security to ground nesting species, such as greater sage-grouse, and the nesting success of birds in the local area. A few individuals could be lost to vehicle strikes. Noise from traffic, construction, maintenance and other human activities can deter wildlife from using an area. Animals would react to noises, but it is especially troublesome for songbirds, including migratory birds. Noise related problems for birds would include interference with the males' ability to attract mates and defend territory, interference with the ability to recognize warning calls and calls from juveniles.

Roads would be considered disturbance corridors and activities associated with their use could cause wildlife to avoid or abandon areas. Habitat in the vicinity to the corridor would be effectively lost. Fragmentation of the landscape could occur if avoidance of disturbance corridors prevents wildlife from fully using land on either side of a corridor. The presence of disturbance activities, notably traffic, would impact the security of crucial big game habitat and reduce the quality of habitat for breeding, nesting and brood rearing of birds, including greater sage-grouse. Vehicle strikes are also a common impact affecting birds, reptiles and small mammals.

These changes and activities have occurred on both public, private and state land and have resulted in habitat loss for some species, fragmented habitat, the creation of smaller islands of habitat and isolated blocks of public land that are surrounded by extensive areas of agricultural lands. Expansion of roads for grazing management, recreation and during gas development, and the noise and disturbance associated with maintenance activities, have also disrupted wildlife populations.

With designation of the area as a "National Monument", it is expected that most habitat loss in the future would occur on private land. Activities permitted on public land would be more restrictive and more closely managed than previous uses, regardless of what could occur on adjacent private and state land.

## *Wildlife - General*

The Antelope Creek Grazing Allotment contains habitat types typical of the Missouri River Breaks including sagebrush/grassland, timbered coulees and Missouri River riparian that support a variety of wildlife species. Mule deer, elk, pronghorn antelope, raptors, furbearers, reptiles and amphibians are common throughout the area. The Allotment includes 12,461 acres of pronghorn antelope winter range, 42,411 acres of elk winter range, 43,955 acres of mule deer winter range and 372 acres of occupied bighorn sheep habitat, with more available but not yet occupied.

## *BLM Montana Designated Sensitive Species*

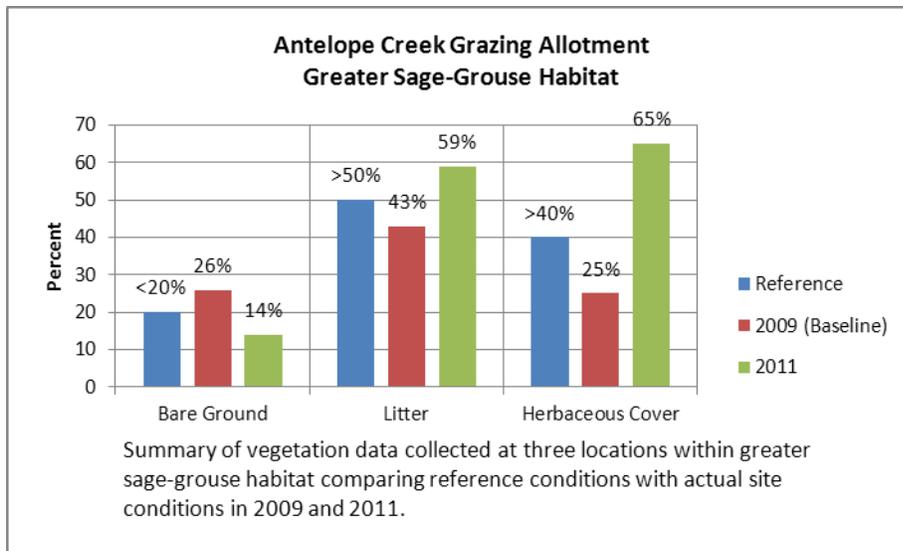
BLM Sensitive Species are designated by BLM State Directors with input from BLM, State and Natural Heritage Program Biologists, and other recognized specialists. This species list includes federally designated candidate species, species proposed for listing and delisted species for the five years following their removal from the list. Sensitive species are species requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under the Endangered Species Act (ESA). Most Montana BLM Designated Sensitive Species (BLM, 2004b) have no suitable habitat within the project area; these species are not considered to be part of the affected environment.

Northern goshawk, bald and golden eagle, long-legged and long-eared myotis and Townsends big-eared bats all have habitat and could occur within available habitat; however, there are no documented roosting or nesting sites within the Allotment. There are five black-tailed prairie dog towns on public, private and state land within the Allotment. Burrowing owls and mountain plover have nested previously on two of the prairie dog towns. Loggerhead shrike and red-headed woodpecker likely occur within the Allotment but have not been documented. The greater short-horned lizard, Northern leopard frog and plains spade-foot toad occur in the Allotment.

On March 5, 2010, the United States Department of Interior Fish and Wildlife Service (FWS) announced that listing of greater sage-grouse as an endangered species under the Endangered Species Act (ESA) is warranted, but the need to address higher priority species and limited funding precluded immediate listing action. As a result, greater sage-grouse are now candidate species for protection under the ESA. The FWS will review the status of greater sage-grouse annually and will propose them for listing when funding and workload permit. Candidate species do not receive statutory protection under the ESA and individual states are responsible for their management. BLM manages sensitive species habitat to promote their conservation and reduce the likelihood and need for future listing under the ESA.

The Allotment contains 8,784 acres of BLM, 1,277 acres of private land and 850 acres of state land designated as Core Habitat and Preliminary Priority Habitat for greater sage-grouse. The 2011 Evaluation Report determined 4,264 acres of this habitat was functioning at risk due to vegetative conditions. The greater sage-grouse habitat within the Allotment is only a small part of the 1,007,705 acres of Core Habitat within Phillips County, Montana. There is one breeding lek within the Allotment on state land. The lek is located at the edge of a prairie dog town and may have relocated up to ½ mile from its historic location on public land, based on comments from Montana Fish, Wildlife and Parks biologists. There are two additional leks located less than one mile from the Allotment boundary. Greater sage-grouse will use habitat within 4 miles of a lek, indicating the entire core habitat is available for breeding and nesting. Winter habitat is part of the much larger block of habitat contiguous to the Allotment. Portions of the Allotment may be used for wintering birds in any given year.

The factors contributing to the functioning at risk rating in greater sage-grouse habitat is the height and density of herbaceous cover and the amount of standing vegetation at the end of the grazing season. Baseline vegetation data was collected in 2009 establishing a starting point for monitoring key attributes such as bare ground, litter and herbaceous cover. These, along with grass height, amount of forbs and sagebrush canopy, are indicators used in measuring the quality of greater sage-grouse habitat. A target of 40% herbaceous cover was established based on site potential (soil type) and information collected from similar sites less disturbed by grazing. As the graph below indicates the goals were met in 2011 recognizing that growing season precipitation was above average and yellow sweetclover contributed a large part to the amount of herbaceous cover.



### *Migratory Birds*

The Migratory Bird Treaty Act (16 USC 703-711) protects all migratory birds including those listed as BLM Sensitive Species. The sagebrush/grassland and ponderosa pine/Douglas-fir habitat types within the Allotment are considered minor components of the larger adjacent habitat for Neotropical Migratory Birds. The species present are those common to these habitat types within northcentral Montana. The riparian woodland community along the Missouri River is important nesting, feeding, roosting and stopover for many migratory species, including several Designated Sensitive Species.

### *Socioeconomics*

Starting on page 238, the Upper Missouri River Breaks National Monument Proposed Resource Management Plan and Environmental Impact Statement (January 2008) describes the social and general economic conditions for the Monument and local communities. The production of cattle in the area involves the utilization of both private and public resources. The Antelope Creek Grazing Allotment provides pasture for about 650 cattle annually for grazing during the months of May through December. The permitted use from public land totals 4,594 AUMs. Grazing fees on public lands for the 2011 grazing year are \$1.35 per AUM. The value of leased private lands in the area ranges from \$15 to \$25 per AUM. The associated cost with public land grazing includes maintenance of range improvement projects (fences, water developments), herding and the use of supplements.

### *Visual Resources*

The BLM uses a Visual Resource Management (VRM) system to inventory and manage visual resources on public land. The primary objectives of VRM are to help identify visual (scenic) values and to minimize visual impacts on BLM land from proposed projects and management activities. The VRM classification system uses four classes to describe the different degrees of modification allowed to the landscape. VRM classes are based on a process that considers scenic quality, sensitivity to changes in the landscape and distance zone. The four VRM classes are numbered I to IV; the lower the number the more sensitive and scenic the area. The Antelope Creek Grazing Allotment contains all four visual resource management classes.

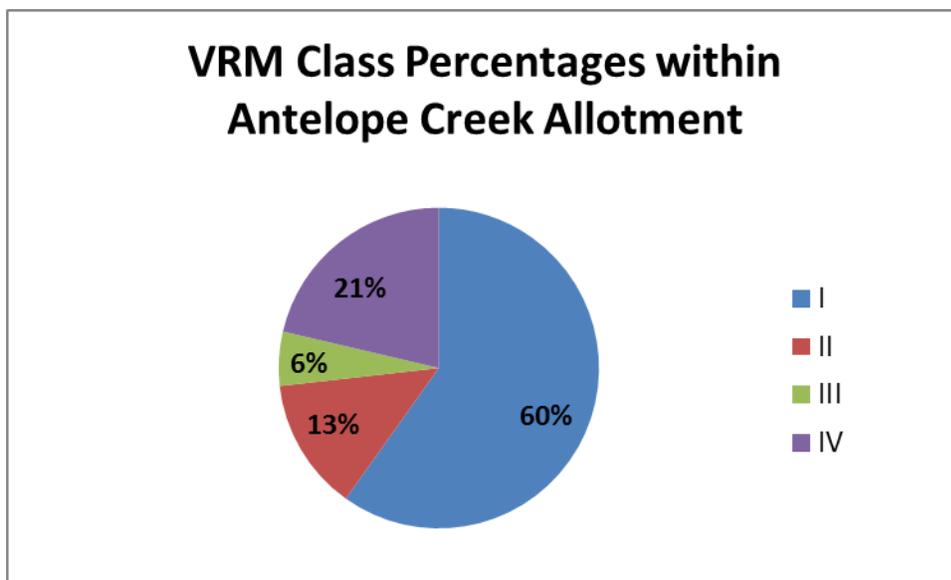
The VRM Class Objectives are defined as follows:

Class I Objective - the objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II Objective - the objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.

Class III Objective - the objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Class IV Objective - the objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic elements.



#### *Wilderness Study Areas*

The Antelope Creek WSA (12,350 acres) and portions of the Cow Creek WSA (12,620 acres) lie within the Antelope Creek Grazing Allotment. Both were identified in the Montana Wilderness Inventory (BLM 1980). A final suitability study and environmental impact statement completed by the BLM in 1987 recommended wilderness designation for portions of both WSA's.

A summary of both the Antelope Creek and Cow Creek units can be found starting on page 126 of the Upper Missouri River Breaks National Monument Proposed Resource Management Plan and Final Environmental Impact Statement (January, 2008).

#### *Cultural Resources*

A more complete description of cultural resources can be found starting on page 176 of the Upper Missouri River Breaks National Monument Proposed Resource Management Plan and Final Environmental Impact Statement (January, 2008). An examination of the Central Montana's cultural resource site and survey atlas, and the Montana State cultural resource database, was completed in December 2011. Prior to 2010 cultural resource inventories were restricted to large-scale range inventories conducted in the 1970's or project-specific undertakings. Inventories were limited to the scope of the area of potential effects, which most often were associated with range improvement projects. About 5,800 acres of inventory, both intensive and sample, were completed. Within the Antelope Creek

Grazing Allotment eighteen sites had been documented. In 2010 the BLM had approximately 600 acres of the west end of the Allotment surveyed for cultural resources. Eleven sites, primarily petroglyphs, fire-cracked rock and lithic tools and flakes, were documented.

In 2011 the BLM surveyed an additional 900 acres at the east end of the Allotment. This report is not finalized so the data is preliminary. Seventeen sites were documented in the Allotment; an additional 32 were recorded on adjacent public land. Site types include fire-cracked rock and lithic tools and flakes, rock cairns and rock alignments. Based on early analysis, the east end of the Antelope Creek Grazing Allotment (referred to below as Hay Coulee) contains one of the highest site densities in Montana. The frequency of sites in the Hay Coulee area is 1 site per 36.7 acres or 17.4 sites per square mile. Two 2010 cultural resource surveys in the Monument resulted in documenting the highest density of sites known for the Monument at that time. Those project site densities were Cow Creek (1 site per 160.7 acres or 3.98 sites per square mile) and Raintrap (1 site per 476.4 acres or 1.3 sites per square mile). The Hay Coulee site density is about five times greater than Cow Creek and about 13 times greater than that of Raintrap. Through 2010 about 89 pre-contact sites had been recorded in the Monument including the Cow Creek and Raintrap projects. Thus the Hay Coulee pre-contact site discoveries account for about 55% of previously known sites recorded over the past 40 years in the Monument. Up to the point of the Hay Coulee survey, one of the highest known pre-contact site frequencies for Montana was reported from portions of the Custer National Forest, Ashland District, in southeastern Montana where a density of 1 site per 55 acres or 11.6 sites per square mile were reported. The overall site density for the Central Montana District (District) is 1 site per 94.2 acres or 6.8 sites per square mile. The District analysis counts all sites within the counties making up the District; sites within Great Falls and other towns in the District inflate the actual site density calculation. The Hay Coulee site density is over 2.5 times greater than densities in the entire District, even with the District's inflated numbers. Adding the newly-documented sites to all previous work gives a site total of 46 sites for the Antelope Creek Grazing Allotment, with a site density of 1 site per 1,112 acres.

### **3.4 Description of Relevant Non-Affected Resources**

#### *Fisheries*

There are small native fisheries located in Bull Creek, Winter Creek and Antelope Creek when water is present. These ephemeral drainages flow water during spring runoff with a few pools retaining native fish until they freeze in winter. While none of these drainages have been inventoried by BLM or FWP, it is likely that they provide important spawning habitat for several Missouri River species. The Missouri River is a major river system with endangered pallid sturgeon and numerous sensitive species, including paddlefish, sauger, sturgeon chub, pearl dace and spiny softshell turtle (river restricted reptile).

#### *Threatened or Endangered Species*

There are no threatened or endangered species present and no designated critical habitat for any listed species within the Allotment. Pallid sturgeon (endangered) are present in the Missouri River adjacent to the Allotment, but would not be affected by any of the Alternatives. Black-footed ferret (endangered) could occur in prairie dog towns east of the Allotment within Phillips County. Previous surveys by BLM have not located any ferrets or sign of ferrets within these prairie dog towns, nor have they been observed within the Allotment or on lands near the Allotment. Prairie dog towns within the Allotment are not suitable habitat for black-footed ferrets due to their small size and low population densities. Other prairie dog towns in Phillips County, located on BLM land and the Charles M. Russell National Wildlife Refuge, have suffered extensive disease die-offs in recent years. Efforts have been made to relocate black-footed ferrets to more suitable prairie dog complexes in other states. There will be no effect to black-footed ferret or any critical habitat by any of the alternatives.

#### *Riparian Habitat/Water Resources*

The amount of information regarding riparian and water resources within the Antelope Creek Grazing Allotment is extensive. A detailed discussion about the condition of these resources can be found in the *Antelope Creek Grazing Allotment #05610 Evaluation Report*. What follows is a summary of their conditions within the Allotment and the rationale as to why they would not be affected by any of the Alternatives.

The streams and riparian habitat in the Antelope Creek Grazing Allotment are meeting BLM riparian and water quality standards and were not identified as a concern or resource issue requiring any management changes. The four Alternatives summarized in the EA would continue current livestock management, eliminate livestock grazing or shorten the season of use along with reducing the stocking rate. One would reasonably expect the condition of riparian habitat and water resources to continue or actually improve under any of the Alternatives.

Under Alternatives C and D, Schwenke Pipeline would be extended and additional places of livestock use would be added. However, the pipeline would follow existing roads, thereby resulting in no additional disturbance. Furthermore, although there would be additional places of use, the livestock season of use and stocking rate would remain the same, be eliminated or reduced. None of which would result in additional consumptive use of water.

There are 4.6 miles of riparian-wetland habitat on BLM land along the Missouri River. An ID team rated this portion of the Missouri River between proper functioning condition and the potential natural community. Key attributes and processes responsible for the proper functioning condition rating were sufficient riparian-wetland species diversity, age class, vigor, cover of riparian-wetland plants with medium to high stability ratings on the streambanks, stable streambanks and channel attributes and functions within the range of conditions appropriate for this section of the Missouri River. Therefore the rating given by the ID Team was higher than or above the minimum standard required by BLM regulations. Invasive weeds and non-native grasses were identified as the basis for not attaining a higher ecological status. The assessment did not indicate livestock grazing as a factor affecting current conditions or as an issue requiring action under this EA.

The riparian complexes supported by Bull Creek, crossing 21 miles of public land, and Winter Creek, which is 10 miles in length, are a function of an intricate interaction of landform, geology, soils and water. Both Bull Creek and Winter Creek were rated to be in PFC. Grazing use in the upper end of Winter Creek, less than 10 percent of the drainage, was of concern to the ID team. The diversity and amount of vegetation were adequate for riparian function but livestock use levels were high in 2008.

The Missouri River from Bullwhacker Creek to Fort Peck Reservoir is listed as water quality impaired by the Montana Department of Environmental Quality (MDEQ). Probable causes include alteration in stream-side vegetative cover, arsenic and copper. Probable sources listed by MDEQ include agriculture, grazing in riparian or shoreline zones and impacts from abandoned mine lands. No water quality determination for Bull Creek and Winter Creek has been made by MDEQ.

The cause of impairment on the Missouri River is listed as alteration in stream-side vegetative cover. For this reason BLM completed an evaluation of riparian conditions within the Allotment on the Missouri River, Bull Creek and Winter Creek using standard PFC protocol. BLM considers PFC to be an acceptable level of impacts and evaluation technique for identifying areas of nonpoint source pollution. This is supported by the Montana Nonpoint Source Management Plan developed by MDEQ. The riparian conditions on this Allotment were in PFC. Although PFC does not necessarily imply "good" water quality, it does imply that adequate vegetation remains to trap and filter sediments and decrease the amount of fecal coliform and nutrients entering the waterbody.

Based on the Missouri River PFC assessment and extensive review of historical data done before the assessments, the above mentioned causes and sources are inappropriate for reasons of impairment on the Upper Missouri. Well documented, widespread channel narrowing on all reaches of the Upper Missouri is indicative of a system that is trapping and storing sediment, not a source of sediment/siltation. Livestock grazing in riparian or shoreline zones are not a source of unstable streambanks, alteration in streamside cover or physical substrate habitat alterations.

### *Climate Change*

Current conditions regarding climate and the effects of greenhouse gases on climate change for the Monument can be found in the Upper Missouri River Breaks National Monument Proposed Resource Management Plan and Final Environmental Impact Statement on pages 176 and 271. The purpose and need of this EA is to address rangeland health issues. All three action alternatives address these issues to varying extents. Improving the condition of rangeland resources and the landscape would have a positive effect on climate change because healthy rangelands provide a sink for greenhouse gases. Liebig et al. (2010) found that net reductions in greenhouse gas emissions can most effectively be achieved by moderate stocking rates on native vegetation in the northern Great Plains. However,

given the variability in climate and trends over such a short time frame, considering the term of the grazing permit is for 10 years, the effects of the actions described in this EA on climate change are impossible to predict.

*Recreation*

Recreational use within the Monument is generally dispersed recreational activities such as hunting, hiking, scenic and wildlife viewing and driving for pleasure. The actions proposed under each alternative would not affect the ability for dispersed recreational activities to continue. Current upland Special Recreation Permits are all outfitter services for hunting.

## **Chapter 4**

### **ENVIRONMENTAL CONSEQUENCES**

#### **4.1 Introduction**

The following sections present the predicted effects related to Resource Issue #1, #2 and #3 for each alternative. The cumulative effects analysis considers the consequences of the Alternatives when added to other past, present and reasonably foreseeable future actions within the Antelope Creek Grazing Allotment.

#### **4.2 Predicted Effects of Alternatives**

##### **4.2.1 Predicted Effects Common to All Alternatives**

###### *Structural Improvements*

Removing four miles of barb wire fence would eliminate barriers to wildlife movement reducing the risk of entanglement and wildlife mortality. Access to the fences identified for salvage would be limited to foot or ATV. Vehicles used for hauling materials from the site would be limited to existing roads. Blading, mechanical line clearing and other surface disturbing activities, such as tree and brush removal, would not be authorized. During fence salvage operations native vegetation would be disturbed in the immediate area. Effects would be short-term with no expected loss of vegetation.

##### **4.2.2 Predicted Effects of Alternative A (No Action)**

This alternative is a continuation of current management.

#### **Resource Issue #1 and #2 - Upland Sagebrush/Grassland Plant Communities & Greater Sage-Grouse Habitat**

###### *Livestock Grazing Management*

The current grazing permits, which are not due to expire until February 28, 2016, would remain in effect at current levels and under the same terms and conditions.

###### *Structural Improvements*

Seven man-made reservoirs would be scheduled for maintenance to repair existing problems ranging from spillway headcuts, replacement or removal of deteriorated overflow pipes, widening the top of the embankment to limit erosion and raising the embankment to offset the loss of storage from siltation. The proposed construction activities would cause short-term disturbances to vegetation communities in the immediate vicinity at each site. Total disturbance is estimated to be fifteen acres. Reseeding using a mixture of native, certified weed free seed may be required to revegetate sites where the soil would be exposed following disturbance or in areas where the vegetation has been removed. Without the repairs, the temporary or permanent loss of stock water developments would lead to undesirable patterns of livestock use and overuse in areas where remaining stock water sources are located. Reductions in permitted use (forage allocated to livestock) would eventually be necessary in areas of the Allotment where the distance from water becomes too great to travel for forage.

Stogie Spring would be repaired to replace the metal spring box and stock tank. The area impacted is estimated to be less than one acre. Two modifications would be made; the spring source would be fenced to prevent livestock trampling and excess water would be diverted into Bull Creek. The fence around the spring source would be approximately 25 feet by 25 feet and constructed of wooden posts and poles. Protecting the spring source would eliminate livestock trampling resulting in improved herbaceous cover and water quality.

###### *Vegetation and Soils*

No changes would be expected in plant and soil health or composition within sagebrush/grassland plant

communities identified as functioning at risk. Trend, indicated by the amount of litter, bare ground and desirable plant species, would either decline or remain static. Standards of rangeland health would not be met and the Allotment would continue to be out of conformance with the Guidelines.

Compaction of soils in the immediate vicinity at each reservoir site would occur from heavy equipment used to repair the reservoirs. Severity would be directly related to soil moisture, frequency and vehicle weight. Soil erosion from wind and water could occur during and shortly after project construction. Erosion containment structures (straw wattles and/or silt fences) may be installed to provide containment of suspended soil particles in storm-water runoff and to keep sediment on site. Once construction is completed and vegetation is reestablished, erosion and compaction would return to natural conditions. Soil erosion would be controlled at those sites where maintenance and reconstruction is needed to repair primary and emergency spillways that are eroding.

Soil compaction from livestock trailing back and forth from water and congregating in the immediate vicinity of the stock tank located at Stogie Spring would continue. Short-term soil disturbance associated with repair activities would occur during replacement of the spring box and stock tank. Fencing the spring source would improve vegetative cover reducing the erosion potential.

### *Wildlife*

Without improvement in FAR upland areas, habitat for greater sage-grouse (4,264 acres FAR), other Designated Sensitive Species, big game and migratory birds would not improve and could decline. Increases in the canopy cover of Wyoming big sagebrush that has occurred is providing excellent nesting, winter, brood-rearing and foraging habitat for greater sage-grouse. However, current levels of livestock grazing and the timing of use has affected the height and density of herbaceous cover, measured by the amount of grasses and forbs in the understory, and residual cover going into winter. Both herbaceous cover and the amount of standing vegetation from the previous year is an important habitat component for greater sage-grouse and other ground nesting birds. Continuing with the same pattern of grazing management would not meet greater sage-grouse habitat objectives.

Man-made and natural water sources would remain the same providing habitat for larva of the Western Encephalitis mosquito which may be carriers of West Nile Virus (WNV). This mosquito prefers shallow, still water with emergent vegetation. Steep sided stock tanks are not considered good habitat. Man-made reservoirs with emergent vegetation may favor this species but also provide important habitat for greater sage-grouse and many other species, including many birds, invertebrate and amphibian predators of the mosquito species and its larva. This alternative would not increase or reduce habitat for the Western Encephalitis mosquito (BLM, Instruction Bulletin MT-2011-033, July 2011).

There are wildlife species within the Allotment which benefit from degraded or declining range conditions. This includes prairie dogs and species which prefer prairie dog towns, degraded range conditions and bare ground. These would include but are not limited to mountain plover, burrowing owl and the short-tailed lizard, which are Designated Sensitive Species. The same conditions which favor prairie dog expansion could result in the reduction of sagebrush cover further reducing greater sage-grouse habitat. While prairie dogs might expand into areas where vegetation has been removed through grazing, wildfire and mechanical control, no expansion of existing towns has been documented in the Allotment.

Levels of traffic and road use to manage livestock and maintain projects would continue at current levels with impacts to wildlife remaining the same.

### *Socioeconomics*

Two of the seven reservoirs would be repaired by the grazing permittees. Repairs to the remaining five reservoirs would be completed by contract issued through the BLM. The average cost per reservoir for repairs using a contractor is estimated to be \$5,000 for a total of \$25,000.

Stogie Spring would be repaired by the grazing permittees. BLM would furnish the materials to replace the stock tank and spring box. The cost is estimated to be \$1,500.

### *Visual Resources*

Seven reservoirs are scheduled for maintenance; Gumbo Reservoir, June Reservoir, Reserve Reservoir, Bull Creek Reservoir, Kyle Reservoir, Roy Reservoir, and Williams Reservoir. Gumbo Reservoir, June Reservoir and Reserve Reservoir are located in VRM Class I where the objective is to preserve the existing character of the landscape. Bull Creek Reservoir and Kyle Reservoir are located in a VRM Class II where the objective is to retain the existing character of the landscape. Roy Reservoir and Williams Reservoir are located in a VRM Class IV where the objective is to provide for management activities which require major modification to the existing character of the landscape.

Gumbo Reservoir is a 3 to 5 acre foot stock water reservoir constructed in 1949 and is located in the Cow Creek WSA. Access to the site is by county road. The spillway is headcutting and exposing a corrugated overflow pipe. Repairs are needed to remove the pipe, fill the headcut and restore the top of the embankment to its original size and profile.

June Reservoir and Reserve Reservoir are 1 to 3 acre foot stock water reservoirs constructed in 1971. They are located in the Cow Creek WSA. The embankment of the reservoirs has eroded away from wave action reducing the width of the top. Repairs are needed to restore the embankment to its original size and profile.

Bull Creek Reservoir is a 2 to 3 acre foot stock water reservoir constructed in 1962. The embankment requires a repair where the headcut exists. Fill to repair the headcut would be taken from previously disturbed areas where it would not attract the attention of the casual observer.

Kyle Reservoir is a 1 to 2 acre foot stock water reservoir constructed during the 1960's. It is located 200 feet from the nearest road and is in a coulee with timber on both sides, thus allowing for natural screening from the casual observer. Driving on the road to access Kyle Reservoir would occur when the road is hardened and dry.

Stogie Spring is located in a VRM Class I area where the objective is to preserve the existing character of the landscape. The Monument Plan on page 48 states "Maintenance of existing range improvements and other structures in VRM Class I will be allowed." The degree to which an action affects the visual quality of the landscape depends on the visual contrast which is created between the action and the existing landscape character. This can be measured in terms of the changes in texture, form, line, and color. The addition of a wooden post and pole fence around the existing spring source would decrease the impacts from livestock. The wooden post and pole fence would preserve the existing character of the landscape by protecting the spring. To keep the visual contrasts of the structures low, the color of the stock tank and spring box would be light to dark brown. The post and pole fence would be wood which would age over time. The proposed repairs would not exceed the original area of disturbance or increase their size and storage capacity. Visual impacts to the landscape would be localized and short term lasting only until the disturbed areas revegetate to current conditions.

### *Wilderness Study Areas*

Of the seven man-made reservoirs scheduled for maintenance, three are located within the Cow Creek WSA; Gumbo, Reserve and June reservoirs. Again, these structures were constructed prior to October 21, 1976 and are therefore "grandfathered" livestock developments. In the short-term, impacts from repair activities would be evident until the sites revegetate to current levels. All scheduled repairs to the reservoirs located within the WSA would be limited to the extent of their development that existed on October 21, 1976.

Motorized access would be required to repair the three man-made stock water reservoirs. Travel on closed roads is allowed for administrative purposes directly involved with implementation of a grazing permit. There would be some new surface disturbance; however, the use would be short-term and temporary, lasting only one or two days. Road maintenance would not be necessary or authorized.

Stogie Spring is located within the Cow Creek WSA, was constructed prior to October 21, 1976 and is therefore considered a "grandfathered" livestock development. The BLM's Interim Management Policy for Lands Under Wilderness Review permits maintenance of "grandfathered" livestock developments to maintain the usefulness of

the project for its intended purpose. The development should not be modified to the extent where it exceeds the physical and visual impacts existing on October 21, 1976. However, actions that clearly benefit a WSA's wilderness values through activities that restore, protect or maintain these values are allowable. Protecting the spring source by adding a wooden post and pole fence (exclosure) would eliminate trampling by livestock, allow vegetation to become established and improve water quality. No new impacts have been identified that would impair the area's wilderness suitability. The access road to the spring would not be modified, altered or improved in any way.

#### *Cultural Resources*

Based on site conditions as observed in the 2010 and 2011 seasons, selecting this alternative would have no effect on cultural resources in the Antelope Creek Allotment. No site degradation associated with livestock grazing, trailing or loafing was observed. Since supplemental feeding has the expressed purpose of attracting animals to a single point there is the potential for trailing and trampling impacts to lithic sites.

### **Resource Issue #3 - Big Game Habitat**

#### *Livestock Grazing Management*

The effects would be the same as described under Resource Issue #1 and #2.

#### *Structural Improvements*

The effects would be the same as described under Resource Issue #1 and #2.

#### *Vegetation and Soils*

No changes would be expected in the amount of use by cattle on shrubs or any improvement in the health and vigor of rubber rabbitbrush and greasewood. Utilization of shrubs by cattle would likely remain the same as current levels and would only vary with yearly differences in weather conditions and forage availability. The difficulty is in determining the degree of use on browse species between cattle and big game. Forage utilization and browse use data has been collected at multiple locations in late fall throughout the Allotment starting in 2008 through 2011. In 2008 and 2009, drier than average years, browse use was very high in areas where it was obvious that big game and cattle had grazed. However, in 2010 and 2011, wetter than average years, use levels on rubber rabbitbrush was still very high and similar to previous years, even in areas where there was little or no grazing use by cattle.

The effects to soils would be the same as described under Resource Issue #1 and #2.

#### *Wildlife*

Without improvement in FAR upland areas, 7,687 acres of upland vegetation and big game habitat would not improve and could decline. Utilization of big game browse species, including spring use of greasewood and fall use of rabbitbrush and other species, would continue at current levels. Winter forage for big game could become the limiting factor for mule deer and elk populations within this portion of the Missouri River Breaks. The amount of use on important browse species by livestock and wildlife has not been differentiated. Browse and utilization data collected during November 2011 showed high levels of browse use even in areas with relatively light use on grasses by livestock. Continued monitoring of existing browse studies would help to determine the type of use occurring and whether livestock are contributing to the high levels of use observed in late summer and early fall.

Levels of traffic and road use to manage livestock and maintain projects would continue at current levels with impacts to wildlife remaining the same.

#### *Socioeconomics*

The effects would be the same as described under Resource Issue #1 and #2.

### *Visual Resources*

The effects would be the same as described under Resource Issue #1 and #2.

### *Wilderness Study Areas*

The effects would be the same as described under Resource Issue #1 and #2.

### *Cultural Resources*

The effects would be the same as described under Resource Issue #1 and #2.

## **4.2.3 Predicted Effects of Alternative B (No Grazing)**

Livestock grazing would be eliminated from the “common use area” beginning in 2012.

## **Resource Issue #1 and #2 - Upland Sagebrush/Grassland Plant Communities & Greater Sage-Grouse Habitat**

### *Livestock Grazing Management*

The AUMs available for grazing would be reduced by 99% from 4,594 AUMs to 21 AUMs resulting in a considerable loss in grazing preference assigned to the grazing permittees. Grazing would be eliminated on public land in the “common use area”. The remaining 21 AUMs would be assigned to Charles Schwenke and Winston Mitchell. These AUMs are attached to 137 acres of public land fenced in with other private land. Their location, the topography and costs make them impractical to fence separately.

Other unfenced private and state lands, totaling 5,521 acres, within the “common use area” and Bean Place could only be grazed by the private landowner and state land lessee by a combination of intensive riding and herding and/or fencing. Surveying the boundary of private and state land where it borders public land may be required to identify property lines to avoid unauthorized grazing on public land.

The grazing regulations, under Title 43, Code of Federal Regulations, Part 4100, do allow BLM to make reductions in permitted use. Decreasing permitted use is covered under 4110.3-2. “When monitoring or field observations show grazing use or patterns of use are not consistent with the provisions of subpart 4180, or grazing use is otherwise causing an unacceptable level or pattern of utilization, or when use exceeds the livestock carrying capacity as determined through monitoring, ecological site inventory or other acceptable methods, the authorized officer shall reduce permitted grazing use or otherwise modify management practices. However, “these changes must be supported by monitoring, field observations, ecological site inventory or other data acceptable to the authorized officer” as cited under 43CFR 4110.3. Current monitoring data and recent rangeland health assessments would not support the scale of reductions in permitted use as described under this alternative.

### *Structural Improvements*

Removing 3.2 miles of barb wire fence (Duval Creek Fence) would eliminate barriers to wildlife movement reducing the risk of entanglement and wildlife mortality. Access would be limited to foot or ATV. Vehicles used for hauling materials from the site would be limited to existing roads. Blading and mechanical line clearing would not be authorized. During fence salvage operations native vegetation would be disturbed in the immediate area. Effects would be short-term with no expected loss of vegetation.

There are 28.5 miles of barb wire fence, either located on or bordering public land, serving as the allotment boundary. To avoid unauthorized grazing on public land, BLM would be responsible for repairs and upkeep. During fence maintenance activities, native vegetation would be disturbed in the immediate area. Effects would be short-term, similar to those occurring now, with no expected loss of vegetation above current levels.

The amount of water provided for livestock use by the four spring developments is minimal and the area impacted is small, less than one acre at each site. Impacts from livestock grazing to spring sites typically include trampling and

removal of vegetation and reduced water quality. Of the four spring developments, one has been fenced to protect the water source. Improvements to herbaceous cover at this site would be minimal. However, concentrated use around the stock tank location would be eliminated. At the other three spring sites, trampling damage from livestock at the spring source would be eliminated, herbaceous cover would increase and water quality would improve. At all four locations, water that is now diverted, collected and piped to a stock tank would be returned to its natural flow and channel.

The man-made stock water reservoirs were constructed for livestock use and to a large degree provide most of the daily requirements within the “common use area”. Within a short time, about three to five years, emergent cover around the shoreline of each reservoir would increase and water quality would improve. Without continued maintenance, eventually the reservoirs would silt full severely reducing their storage capacity and usefulness.

Reclaiming the four stock tank locations would improve vegetative cover, eliminate concentrated use at the tank location and eliminate trailing to and from water sources.

### *Vegetation and Soils*

The amount or percentage of change and how quickly upland areas may improve would depend on the soil type, climatic factors and other site characteristics such as aspect and slope.

On the sagebrush/grassland plant communities identified as functioning at risk, Wyoming big sagebrush canopy cover ranges from 17% to 29%. These sites should be dominated by grasses, cover ranging from 75% to 85% with shrubs typically making up only 1% to 5% of the plant community (NRCS Technical Guide 2004). Without the use of fire, improving species composition on these areas would be slow especially on the sites with the greatest density of big sagebrush plants. Wyoming big sagebrush and the herbaceous understory compete for available soil moisture, nutrients and space. Laycock (1991) found numerous examples in the literature reporting that once a sagebrush stand becomes dense with a reduced understory, big sagebrush can dominate a site for very long periods. Protection from grazing sometimes results in an increase in total cover or production of grasses, forbs and shrubs without any change in species composition (Laycock 1991). As a result, changes in livestock grazing management are often not enough to move towards a grass dominated plant community with scattered big sagebrush plants which more closely represents the site potential.

Bunchgrasses such as bluebunch wheatgrass and green needlegrass, which depend on seeds for regeneration, may increase in composition. Green needlegrass is very palatable and sought out by livestock. Bluebunch wheatgrass is often described as highly palatable and preferred by livestock, but it is seldom grazed by cattle in the Missouri River Breaks. Improvement in the health and vigor of these forage species, along with western wheatgrass, would be expected following consecutive years of growing season rest. Grass species would produce more leafy material enabling the plant to store more carbohydrates for growth.

Plant litter and the amount of standing plant material remaining at the end of the growing season would increase improving site conditions and soil-water relationships. The amount of bare ground would also decline with corresponding increases in the amount of standing cover and litter. Holechek et al (1998) found that vegetation residue is the primary factor determining degree of soil erosion and water infiltration into the soil. Molinar, Galt and Holechek (2001) noted that soil litter increases the rate water enters the soil, improves soil moisture holding capacity, reduces the effect of rainfall impact, reduces evaporation from the soil and reduces runoff and erosion.

In the long-term, as residual vegetation increases, the potential for wildfires would also increase. These fires would be expected to spread more rapidly and burn more intensely.

Equipment and vehicles used to salvage the Duval Creek Fence would cause minor, localized soil compaction. These effects would be short-term with recovery expected to occur within one to two growing seasons.

Impacts to soils, mostly compaction from vehicle travel, would continue during times when the allotment boundary fence is repaired or replaced. Access to the fence is primarily by existing resource roads (two-track trails) although some off-road vehicle use would be needed to haul fence materials to and from more remote locations. Effects would not increase above current levels.

Soil would be disturbed during reclamation of the four spring sites and four stock tanks. New surface disturbance at each location is estimated to be less than one acre. These sites would be recontoured and revegetated with native plant species. The potential for soil erosion is minor based on the size of the locations and the level terrain, less than 5% slopes. Once revegetated, the potential for compaction and erosion would return to expected conditions and likely improve without the trampling effect from livestock.

### *Wildlife*

The removal of grazing by domestic livestock would increase vegetative cover and health benefiting many species, including greater sage-grouse, by providing more food, escape and nesting cover. An increase in herbaceous cover would provide additional protection from predators for greater sage-grouse and other ground nesting birds.

In the short-term, emergent cover around the shoreline of each man-made, stock water reservoir would increase and water quality would improve. Increases in riparian-wetland vegetation would benefit many wildlife species by providing additional forage, nesting and escape cover. This would benefit migratory birds and some Designated Sensitive Species, including greater sage-grouse and amphibians. There would be an increase in habitat for aquatic and terrestrial invertebrates providing food for many bird, reptile and amphibian species. Man-made reservoirs with emergent vegetation is often favorable mosquito breeding habitat, but also provides important habitat for greater sage-grouse and many other species, including many bird, invertebrate and amphibian predators of the mosquito species and its larva.

This alternative would provide additional habitat for the Western Encephalitis mosquito which may be carriers of West Nile Virus (WNV). Without maintenance, the amount of shallow water and stagnant pools would increase as reservoirs silt full creating habitat for larva of the Western Encephalitis mosquito (BLM, Instruction Bulletin MT-2011-033, July 2011). Some species of amphibians and invertebrate predators of the mosquito and their larva would also increase. In addition, the loss of open surface water would impact waterfowl, shore birds, bats, big game and many other migratory and resident species, including greater sage-grouse.

Maintaining external allotment boundary fences would still be necessary to control livestock on adjoining grazing allotments and would continue to be obstacles for wildlife movement and have the potential to cause mortality.

Removing 3.2 miles of barb wire fence (Duval Creek Fence) would benefit greater sage-grouse and other ground nesting birds reducing the risk of entanglement and mortality. However, due to the location of private and state land within the Allotment, fencing the boundaries would require an additional 44 miles of new fence, with 15 miles constructed through greater sage-grouse core habitat and located within 100 feet and possibly through the one identified lek. Fences constructed on private and state land would not be subject to BLM fencing standards for areas with pronghorn antelope and greater sage-grouse further restricting their movement and potentially increasing the number injured and killed. Vehicles used to construct new fences would impact Wyoming big sagebrush and other vegetation which would have minor and short term impacts on wildlife in the area.

Levels of traffic and road use to manage livestock and maintain projects would likely increase. The addition of fences around private and state land would require maintenance and BLM would be required to allow vehicle access to isolated properties. Greater sage-grouse and other species would be affected by increased traffic, much of which would be in greater sage-grouse core habitat.

As residual herbaceous vegetation increases, the potential for wildfires would also increase. If a fire occurred it would be expected to spread more rapidly and burn more intensely. Following a fire there may be benefits to vegetative and successional diversity for many wildlife species within sagebrush/grassland habitat. However, a wildfire within greater sage-grouse habitat would remove Wyoming big sagebrush, which is easily killed by fire and can take many years to reestablish, potentially reducing or eliminating greater sage-grouse populations from impacted areas.

### *Socioeconomics*

The elimination of domestic livestock grazing within the “common use area” would financially impact all three

grazing permittees. If 4,573 AUMs are no longer available for grazing by domestic livestock, the grazing permittees would have to adjust their grazing operations primarily by replacing these AUMs through the purchase or leasing of private and state land dramatically increasing the cost of their ranching operations. Using \$15 to \$25 per AUM, the value of an AUM to lease private land for grazing in the local area, the cost to replace the AUMs would range from \$68,595 to \$114,325. The loss of public land AUMs would also reduce property values if the livestock operation is no longer a viable economic unit.

Salvage and removal of 3.2 miles of abandoned barb wire fence is estimated to cost \$6,720 using a value of \$2,100/mile (Duval Creek Fence).

A portion of the Allotment boundary fence is located in areas of rough topography and accessible only by foot or horseback. Other high maintenance areas would include locations where the fence crosses steep coulees and drainages such as Bull Creek. These fence crossings usually require repairs after spring runoff from snowmelt and following periods of heavy rainfall and severe thunderstorms. In addition, portions of the fence would need replaced each year. It is estimated that the cost annually to the BLM would be \$12,000; (4) seasonal employees, (1) work month @ \$3,000 per work month.

The estimated cost to reclaim each spring development would be \$3,750.00. Each site would require about three days to remove the posts and planks from around the stock tank, remove the stock tank and plumbing, remove any fence enclosing the spring source, redirect the water to its natural channel, recontour the site and apply a mixture of native seed. Costs include \$750/day labor for two equipment operators and \$500/day for a backhoe.

There would not be any short-term costs associated with abandoning the 27 man-made stock water reservoirs. However, BLM may incur future costs if structural repairs were needed to protect dam safety.

The estimated cost for reclaiming each stock tank location is \$2,500. This cost includes two days of labor at \$750 per day and two days using a backhoe at \$500 per day. Reclaiming each tank site includes removing the stock tank and any above ground pipe (hydrant/air vent), recontouring the site and applying a mixture of native seed to revegetate disturbed areas.

#### *Visual Resources*

The existing stock tanks and developed springs would be removed and the sites reclaimed. The man-made reservoirs would be abandoned and the Duvall Creek Fence removed. Reducing the number of man-made features within the project area would improve the visual quality of the landscape for all VRM classes.

#### *Wilderness Study Areas*

Reclamation of Stogie Spring and the abandonment of three reservoirs would preserve the existing character of the landscape. These activities meet the nonimpairment criteria, since the activity would be temporary.

#### *Cultural Resources*

Selection of this alternative has the potential to reduce impacts to historic properties. Livestock can impact sites by trampling, breaking, and mixing artifact assemblages, especially in areas where cattle congregate and trail. Removal of the reservoirs may require evaluation of the dams to determine if they are historic properties, or in other words, eligible for listing on the National Register of Historic Places. If they are eligible, their removal could constitute an adverse effect.

### **Resource Issue #3 - Big Game Habitat**

#### *Livestock Grazing Management*

The effects would be the same as described under Resource Issue #1 and #2.

### *Structural Improvements*

The effects would be the same as described under Resource Issue #1 and #2.

### *Vegetation and Soils*

Cattle currently graze the “common use area” of the Allotment until December 31st. Removing livestock from the area would eliminate the use on shrub species by cattle. The amount of rubber rabbitbrush and greasewood would not be expected to increase but health and vigor would improve and may provide additional forage for wildlife. Mackie (1970) noted that cattle use of rubber rabbitbrush was an additional impact in areas already heavily utilized by game and with deteriorated plants. This may be more pronounced within the Antelope Creek Grazing Allotment during dry years and also because rubber rabbitbrush and greasewood only occur in small amounts. The difficulty is in determining the degree of use on browse species between cattle and big game. Forage utilization and browse use data has been collected at multiple locations in late fall throughout the Allotment starting in 2008 through 2011. In 2008 and 2009, drier than average years, browse use was very high in areas where it was obvious that big game and cattle had grazed. However, in 2010 and 2011, wetter than average years, use levels on rubber rabbitbrush was still very high and similar to previous years, even in areas where there was little or no grazing use by cattle.

The effects to soils would be the same as described under Resource Issue #1 and #2.

### *Wildlife*

This alternative would improve herbaceous and residual cover and reduce utilization on browse species. Removing grazing would improve vegetative health and vigor, allowing for greater productivity of herbaceous vegetation. The increase in forbs would benefit big game and delay use on browse species by wildlife. Additional vegetative cover would provide protection from predators for big game fawns and calves until they become mobile.

Without periodic maintenance and repairs, many of the man-made reservoirs would silt in or breach and lose their value for wildlife. Any wildlife species which benefit from these water sources and associated riparian-wetland habitat would be impacted in the long-term by the loss of open water.

Reclaiming the four stock tank locations would improve vegetative cover, eliminate concentrated use at the tank location and eliminate trailing to and from water sources. Eliminating water sources would impact big game species which would be more pronounced during drought years.

Existing allotment boundary fences would be maintained to control livestock on adjoining grazing allotments and around private and state land. These would continue to be obstacles for wildlife movement and have the potential to cause mortality.

Removing 3.2 miles of barb wire fence (Duval Creek Fence) would eliminate some barriers to wildlife movement reducing the risk of entanglement and wildlife mortality for mule deer, elk and pronghorn antelope. Due to the location of private and state land within the Allotment, fencing the boundaries would require construction of over 44 miles of new fence through big game habitat. These fences would not be subject to BLM fencing standards for areas with pronghorn antelope, mule deer, elk and big horn sheep further restricting their movement and potentially increasing the number injured and killed. Vehicles used to construct new fences would impact Wyoming big sagebrush and other vegetation which would have minor and short term impacts on wildlife in the area.

Levels of traffic and road use to manage livestock and maintain projects would likely increase. The addition of fences around private and state land would require maintenance, and BLM would be required to allow vehicle access to isolated properties. Greater sage-grouse and other species would be affected by increased traffic, much of which would be in greater sage-grouse core habitat.

As residual herbaceous vegetation increases, the potential for wildfires would also increase. If a fire occurred it would be expected to spread more rapidly and burn more intensely. Following a fire there may be benefits to vegetative and successional diversity and habitat for big game and other wildlife species within the Missouri River Breaks.

### *Socioeconomics*

The effects would be the same as described under Resource Issue #1 and #2.

### *Visual Resources*

The effects would be the same as described under Resource Issue #1 and #2.

### *Wilderness Study Areas*

The effects would be the same as described under Resource Issue #1 and #2.

### *Cultural Resources*

The effects would be the same as described under Resource Issue #1 and #2.

## **4.2.4 Predicted Effects of Alternative C (Manage Livestock Grazing with Allowable Use Levels)**

This alternative would defer livestock grazing until May 15th, shorten the season of use by 30 days and reduce the stocking rate by 10%. Allowable use levels would be implemented for both greater sage-grouse habitat and upland sagebrush/grassland plant communities north and south of Bull Creek.

### **Resource Issue #1 and #2 - Upland Sagebrush/Grassland Plant Communities & Greater Sage-Grouse Habitat**

#### *Livestock Grazing Management*

Deferring the start of grazing until May 15th and removing livestock on December 15th in the “common use area” would result in a 10% reduction totaling 473 AUMs.

The Antelope Creek Grazing Allotment is currently authorized for cow/calf pairs. Conversion to yearlings or a combination of yearling cattle and cow/calf pairs would be considered. There are differences in behavioral grazing patterns between yearling cattle and cow-calf pairs, however, the differences in forage selection and consumption is very minor. Yearling livestock are more willing to utilize uneven terrain, graze areas that receive little or no use, travel farther from water and spend less time lingering around stock water developments and riparian areas. The distribution of livestock should improve providing a more even pattern of utilization over the “common use area”. BLM typically uses a factor of 1.3 to convert from cows to yearlings. For example, 100 cows would be converted to 133 yearlings (100 times 1.3). Rather than use a specific conversion factor, BLM would retain the flexibility to authorize yearling cattle based on resource needs, current forage conditions and animal size. If needed, a one to one ratio would be used substituting one yearling for one cow. Applications to change the class of livestock would be submitted by the grazing permittees and approved by BLM before the start of the grazing season.

#### *Structural Improvements*

Seven man-made reservoirs would be scheduled for maintenance to repair existing problems ranging from spillway headcuts, replacement or removal of deteriorated overflow pipes, widening the top of the embankment to limit erosion and raising the embankment to offset the loss of storage from siltation. The proposed construction activities would cause short-term disturbances to vegetation communities in the immediate vicinity at each site. Total disturbance is estimated to be fifteen acres. Reseeding using a mixture of native, certified weed free seed may be required to revegetate sites where the soil would be exposed following disturbance or in areas where the vegetation has been removed. Without the repairs, the temporary or permanent loss of stock water developments would lead to undesirable patterns of livestock use and overuse in areas where remaining stock water sources are located. Reductions in permitted use (forage allocated to livestock) would eventually be necessary in areas of the Allotment where the distance from water becomes too great to travel for forage.

Stogie Spring (Cow Creek WSA) would be repaired to replace the metal spring box and stock tank. The area impacted is estimated to be less than one acre. Two modifications would be made; the spring source would be

fenced to prevent livestock trampling and excess water would be diverted into Bull Creek. The fence around the spring source would be approximately 25 feet by 25 feet and constructed of wooden posts and poles. Protecting the spring source would eliminate livestock trampling resulting in improved herbaceous cover and water quality.

To influence livestock distribution and reach a more uniform use of forage, Schwenke Pipeline would be extended 7.2 miles and six stock tanks installed on public land. The pipeline route follows and is within the width of existing roads and vehicle trails. Pipeline construction would consist of ripping in 1½ to 2 inch, flexible, polyethylene pipe to a depth of five to six feet. During installation, vegetation would be disturbed in the immediate area of the ripping operation, up to a width of two to three feet. The effect to vegetation in the disturbed area would be short-term and minimal with recovery to existing conditions within one or two growing seasons. Total disturbance is estimated to be 11 acres. Vegetation in and around the proposed stock tank locations would be permanently lost. The combined disturbance for all six stock tank locations is estimated to be less than ½ acre. Extending the existing stock water pipeline and turning the tanks on and off during the grazing season, would be an effective tool used to more evenly distribute livestock use over the entire grazing unit and rest areas preferred by livestock.

### *Vegetation and Soils*

Although some shift has occurred away from the expected plant community, the FAR sites are still in a mid-successional level, possess good species composition and are diverse represented by a variety of native herbaceous plant species. Progress would be slow in those areas dominated by high densities of Wyoming big sagebrush.

Deferment combined with proper stocking is a relatively simple practice that would maintain and improve rangeland health. A more moderate stocking rate, coupled with the allowable use levels measured at the end of the grazing season, would result in more standing vegetation carrying over into winter.

Deferring livestock grazing until May 15th would provide an additional two weeks of rest when plants are actively growing. This would improve the health and vigor and increase forage production of green needlegrass and western wheatgrass, the most palatable grasses and those preferred by livestock. Green needlegrass is the most vulnerable in the early part of the growing season to grazing. Western wheatgrass, the dominant understory grass species typically decreases with heavy use (Everson 1966). Eneboe et al. (2002) found that western wheatgrass recovered rapidly following periods of drought and from heavy grazing.

Implementing allowable use levels would help improve upland conditions and enhance and improve cover and composition. More standing material would remain at the end of the grazing season. These areas would catch and hold more snow improving soil moisture conditions during the plants active growth periods. Providing more litter would protect the soil surface from water erosion and improve infiltration. As soil moisture conditions improve, the density and amount of the more preferred forage plants would also improve.

The Antelope Creek Monitoring Plan (Appendix 2) would be implemented to measure progress toward achievement of land health standards and conformance with livestock grazing guidelines. Permanent upland monitoring studies have been established on sites sensitive to management changes and located within areas FAR and within important wildlife habitat.

The effects from repairing the reservoirs and Stogie Spring would be the same as Alternative A.

Soil would be impacted from disturbance during installation of the stock water pipeline and compaction associated with construction equipment and vehicles. There would be approximately 11 acres disturbed; however, the number of acres directly affected would be much less since the pipeline route follows the centerline of existing resource roads. The roads are already compacted and the vegetation altered from frequent vehicle use.

Ripping in the pipeline would result in minimal disturbance to soils. Ripping slices the soil without extensive excavation. Very little bare ground would be exposed during the ripping process and any disturbed areas should quickly recover in one to two growing seasons.

Soils could also be impacted by fluid spills, including engine oil, hydraulic oil and fuel. These spills could severely affect soil in localized areas; excessive concentrations may be capable of soil sterilization.

There would be long-term soil compaction in the immediate vicinity where the stock tanks would be installed.

Soil erosion from wind and water would be minimal during project construction. Erosion rates would return to natural levels once vegetation is re-established.

### *Wildlife*

The proposed changes in grazing management would improve herbaceous and residual cover. Implementing allowable use levels would ensure there is adequate herbaceous cover and standing material remaining at the end of the grazing season improving nesting and escape cover for ground nesting birds, including greater sage-grouse. Improving herbaceous species cover and the amount of forbs would increase forage availability for a variety of species, including greater sage-grouse, migratory birds and big game. Allowable use levels would limit the amount of livestock use on grass species improving herbaceous cover which is an important habitat component for greater sage-grouse. If necessary, additional changes in the season of use and stocking rate would occur if allowable use levels are not met, providing the flexibility to change management operations to address greater sage-grouse concerns as recommended by Connelly et al. (2000) and The Wildlife Society (2010).

The repairs at Stogie Spring would eliminate livestock trampling resulting in improved herbaceous cover and water quality. This would benefit many invertebrates, amphibians, migratory birds and big game. Fencing the spring source to protect riparian vegetation would reduce the habitat for the Western Encephalitis mosquito (BLM, Instruction Bulletin MT-2011-033, July 2011). Emergent vegetation provides important habitat for many species, including many birds, invertebrate and amphibian predators of the mosquito species and its larva.

Although constructed for livestock, man-made reservoirs provide water, forage and cover in the form of riparian-wetland vegetation for associated invertebrates. Besides waterfowl and shorebirds, greater sage-grouse, migratory birds, bats, amphibians, big game and many other species benefit from these water sources. The young of greater sage-grouse benefit from abundant insects in wetland areas and all greater sage-grouse benefit from succulent forbs in wetland areas during dry periods.

Extending Schwenke Pipeline would provide additional sources of stock water improving management flexibility in greater sage-grouse habitat. Turning stock tanks on and off would influence livestock distribution and could be used as a tool to draw livestock away from greater sage-grouse habitat. Steep sided stock tanks are not considered good habitat for larva of the Western Encephalitis mosquito.

Man-made reservoirs provide habitat for larva of the Western Encephalitis mosquito which may be carriers of WNV. This mosquito prefers still, shallow water with emergent vegetation. This alternative would reduce habitat for this species as shallow reservoirs are repaired creating additional deep, open water. Man-made reservoirs with emergent vegetation also provide important habitat for greater sage-grouse and many other species, including many birds, invertebrate and amphibian predators of the mosquito species and its larva. This alternative would not increase or decrease habitat for the Western Encephalitis mosquito (BLM, IB MT-2011-033, July 2011).

Levels of traffic and road use to manage livestock and maintain projects would continue at current levels with impacts to wildlife remaining the same.

In the long-term, as residual vegetation increases, the potential for wildfires would also increase. If a fire occurred it would be expected to spread more rapidly and burn more intensely. Following a fire there may be benefits to vegetative and successional diversity and habitat for many wildlife species within sagebrush/grassland habitat. However, a wildfire within greater sage-grouse habitat would remove Wyoming big sagebrush, which is easily killed by fire and can take many years to reestablish, potentially reducing or eliminating greater sage-grouse populations from impacted areas. The buildup of vegetation under this Alternative would be less than the No Grazing Alternative but greater than current management. During severe fire conditions, this Alternative would still have the flexibility to reduce herbaceous cover (fine fuels) through grazing in and adjacent to sagebrush habitat.

### *Socioeconomics*

Two of the seven reservoirs would be repaired by the grazing permittees. Repairs to the remaining five reservoirs

would be completed by contract issued through the BLM. The average cost per reservoir for repairs using a Contractor is estimated to be \$5,000 for a total of \$25,000.

Stogie Spring would be repaired by the grazing permittees. BLM would furnish the materials to replace the stock tank and spring box. The cost is estimated to be \$1,500.

The Natural Resources Conservation Service (NRCS) is contributing both financial and technical assistance through the Environmental Quality Incentives Program (EQUIP) for extending Schwenke Pipeline. The program assists local producers with the installation and maintenance of various conservation projects to improve grazing management systems on public and private lands. The grazing permittee would be responsible for installing the pipeline and stock tanks with a portion of these costs reimbursed by NRCS.

#### *Visual Resources*

The effects from repairing Stogie Spring would be the same as Alternative A.

Alternative C adds 7.2 miles of stock water pipeline and six stock tanks, all of which are located in VRM Class IV. The six stock tanks have been located a short distance from existing roads and trails, in small depressions, behind hills or screened by vegetation to reduce the visual contrast. The pipeline would be buried in the already existing two-track road.

#### *Wilderness Study Areas*

The effects from repairing Stogie Spring and three man-made stock water reservoirs would be the same as Alternative A. The proposed stock water pipeline and six stocks are not located within the Cow Creek or Antelope Creek WSA.

#### *Cultural Resources*

Based on site conditions as observed in the 2010 and 2011 seasons, selecting this alternative would have no effect on cultural resources in the Antelope Creek Allotment. No site degradation associated with livestock grazing, trailing, or loafing was observed. Since supplemental feeding has the expressed purpose of attracting animals to a single point there is the potential for trailing and trampling impacts to lithic sites. A cultural resource inventory has been completed for the proposed Schwenke Pipeline extension; no historic properties were identified within the area of potential effect.

### **Resource Issue #3 - Big Game Habitat**

#### *Livestock Grazing Management*

The effects would be the same as described under Resource Issue #1 and #2.

#### *Structural Improvements*

The effects would be the same as described under Resource Issue #1 and #2.

#### *Vegetation and Soils*

Reducing the stocking rate and shortening the season of use would be expected to reduce the amount of browse use by cattle on rubber rabbitbrush and greasewood. Livestock use on greasewood would likely be more noticeable in the spring. Delaying the on date for two weeks would allow grasses to develop and produce more forage reducing the need for cattle to use greasewood. As mentioned previously, during the fall it is difficult to distinguish the degree of use on browse species between cattle and big game. Given that shrubs make up only a small percentage of the vegetation, and although the use of shrubs is only of minor importance to cattle, their preference for rubber rabbitbrush is higher during September and October (Mackie 1970).

Implementing allowable use levels in upland areas of the Allotment together with browse utilization monitoring, to determine the degree of use between cattle and big game, would be used to adjust the season of livestock use. The date cattle are removed from the Allotment could change based on the utilization guidelines for upland grasses.

Maintaining adequate water sources for cattle would be used as a tool to influence livestock distribution. Extending the existing pipeline and adding stock tanks would provide reliable water throughout the grazing period and allow some control of cattle use by turning off the tanks before allowable use levels are exceeded in grazed areas.

The effects to soils would be the same as described under Resource Issue #1 and #2.

#### *Wildlife*

The proposed changes in grazing management would improve herbaceous and residual cover and reduce utilization on browse species. Implementing allowable use levels and delaying the start of grazing by livestock would improve vegetative health and vigor allowing for greater productivity of herbaceous vegetation. The increase in forbs would benefit big game and delay use on browse species by wildlife. Additional vegetative cover would provide protection from predators for big game fawns and calves until they become mobile. Removing livestock from the Allotment earlier would reduce the direct competition between livestock and big game for browse species, necessary for big game winter forage.

Extending the existing stock water pipeline and adding stock tanks would provide reliable water for big game in areas without natural water. Benefits to big game would be most notable during drought years.

Levels of traffic and road use to manage livestock and maintain projects would continue at current levels with impacts to wildlife remaining the same.

In the long-term, as residual vegetation increases, the potential for wildfires would also increase. If a fire occurred it would be expected to spread more rapidly and burn more intensely. Following a fire there may be benefits to vegetative and successional diversity and habitat for big game and other wildlife species within the Missouri River Breaks.

#### *Socioeconomics*

The effects would be the same as described under Resource Issue #1 and #2.

#### *Visual Resources*

The effects would be the same as described under Resource Issue #1 and #2.

#### *Wilderness Study Areas*

The effects would be the same as described under Resource Issue #1 and #2.

#### *Cultural Resources*

The effects would be the same as described under Resource Issues #1 and #2.

### **4.2.5 Predicted Effects of Alternative D (Manage Livestock with Allowable Use Levels/Greater Sage-Grouse Management Unit)**

This alternative would create a greater sage-grouse management unit, defer livestock grazing until May 15<sup>th</sup>, change the off date to November 15<sup>th</sup>, shorten the season of use by 60 days and reduce the stocking rate by 28%.

## **Resource Issue #1 and #2 - Upland Sagebrush/Grassland Plant Communities & Greater Sage-Grouse Habitat**

### *Livestock Grazing Management*

Deferring the start of grazing until May 15th and removing livestock on November 15th in the “common use area” would result in a 28% reduction totaling 1300 AUMs.

In the greater sage-grouse management unit, when grazing would be approved and how much use would be allowed would be dependent on first meeting greater sage-grouse habitat objectives; primarily maximizing the amount of cover remaining at the end of the growing season.

The effect of converting to yearlings or a combination of yearling cattle and cow/calf pairs was described under *Livestock Grazing Management* in Alternative C.

### *Structural Improvements*

To create a greater sage-grouse management unit (pasture), 4.6 miles of new fence would be installed. The fence would be permanent and either a 3-strand barb wire or electric fence. Either type of fence would be constructed to BLM standards in areas with greater sage-grouse, pronghorn antelope, elk and mule deer. Vehicles used for hauling materials to the site would be limited to existing roads. Access to remote areas for installation would be limited to foot or ATV. Blading, mechanical line clearing and other surface disturbing activities, such as tree and brush removal, would not be authorized. During fence construction native vegetation would be disturbed in the immediate area. Temporary trails from foot and vehicle traffic next to the fence would be created. Effects would be short-term with no expected loss of vegetation.

The effect of removing the Duval Creek Fence was described under *Structural Improvements* in Alternative B. The effect of repairing seven stock water reservoirs and Stogie Spring and extending Schwenke Pipeline was described under *Structural Improvements* in Alternative C.

### *Vegetation and Soils*

Creation of a greater sage-grouse management unit (pasture) would allow BLM to manage the timing and intensity of grazing use. Timing refers to when grazing would occur while intensity refers to how much of the plant is used.

The effect on other FAR sagebrush/grassland plant communities would be the same as described under *Vegetation and Soils* in Alternative C.

The Antelope Creek Monitoring Plan (Appendix 2) would be implemented to measure progress toward achievement of land health standards and conformance with livestock grazing guidelines. Permanent upland monitoring studies have been established on sites sensitive to management changes and located within areas FAR and within important wildlife habitat.

Equipment and vehicles used to construct a new fence would cause soil compaction. Severity would be directly related to soil moisture, frequency and weight of equipment. Compaction alters soil structure, decreases porosity, infiltration rate, air space and available water holding capacity. Soils are the most susceptible to compaction during moist conditions. The affected area along the proposed fence line is estimated to be 5 to 7 acres. Impacts would be short-term with recovery in one to two growing seasons.

The effects to soils from removing the Duval Creek Fence would be the same as Alternative B. The effects of repairing the stock water reservoirs and Stogie Spring and extending Schwenke Pipeline would be the same as Alternative C.

### *Wildlife*

This alternative would improve nesting and escape cover and forage availability for a variety of species including

greater sage-grouse, migratory birds and big game.

This Alternative adds 4.6 miles of new fence to manage an area specifically for greater sage-grouse habitat objectives. New fences would be constructed and placed to minimize impacts to greater sage-grouse and resident big game species as per BLM fencing guidelines; however, construction would occur through and adjacent to greater sage-grouse habitat. Fences would continue to be obstacles for wildlife movement and have the potential to cause mortality of greater sage-grouse and other wildlife. Removing 3.2 miles of barb wire fence (Duval Creek Fence) would eliminate some barriers to wildlife movement reducing the risk of entanglement and wildlife mortality. In the short term, vehicles used to construct new fences would impact Wyoming big sagebrush and other vegetation.

Levels of traffic and road use to manage livestock and maintain projects would likely increase. The addition of 4.6 miles of fence would require maintenance. Greater sage-grouse and other species would be affected by increased traffic, much of which would be in greater sage-grouse core habitat. These impacts would be less than Alternative B but greater than Alternative A & C.

If necessary, additional changes in the season of use and stocking rate would occur if allowable use levels are not met, providing the flexibility to change management operations to address greater sage-grouse concerns as recommended by Connelly et al. (2000) and The Wildlife Society (2010). This alternative would offer better management of greater sage-grouse habitat than Alternative C. However, impacts to habitat and other wildlife would be greater than Alternative C with the net increase of 1.4 miles of fence within and adjacent to greater sage-grouse habitat.

All other impacts would be the same as Alternative C.

#### *Socioeconomics*

Contracting to construct 4.6 miles of fence to create the greater sage-grouse management unit, using either an electric or barb wire fence, would range in cost from \$9,200 to \$32,200. The estimated cost of materials and labor to install an electric fence is \$2,000 per mile and a barb wire fence \$7,000 per mile.

Salvage and removal of 3.2 miles of abandoned barb wire fence is estimated to cost \$6,720 using a value of \$2,100/mile (Duval Creek Fence).

Two of the seven reservoirs would be repaired by the grazing permittees. Repairs to the remaining five reservoirs would be completed by contract issued through the BLM. The average cost per reservoir for repairs using a contractor is estimated to be \$5,000 for a total of \$25,000.

Stogie Spring would be repaired by the grazing permittees. BLM would furnish the materials to replace the stock tank and spring box. The cost is estimated to be \$1,500.

The Natural Resources Conservation Service (NRCS) is contributing both financial and technical assistance through the Environmental Quality Incentives Program (EQIP) for extending Schwenke Pipeline. The program assists local producers with the installation and maintenance of various conservation projects to improve grazing management systems on public and private lands. The grazing permittee would be responsible for installing the pipeline and stock tanks with a portion of these costs reimbursed by NRCS.

#### *Visual Resources*

The effects from repairing Stogie Spring and extending Schwenke Pipeline would be the same as described under Alternative C.

This Alternative also proposes to add 4.6 miles of new fence to create a greater sage-grouse management unit; 2.8 miles of the fence is located in a VRM Class IV, 1.1 miles is within a VRM Class II. The remaining 0.7 miles is located on state land and is not subject to BLM's visual contrast rating system. To decrease the visual contrast it is recommended to install an electric fence instead of a barb wire fence. Posts for a barb wire are 16.5 feet apart, whereas posts for the electric fence would be spaced 50 to 60 feet apart. The barb wire fence would have three

wires instead of two typically used in an electric fence. The height of an electric fence is shorter making it less noticeable. For the electric fence, wooden posts would age with time and the fiberglass line posts in between the wooden posts would be dark colored. All posts would be required to be lusterless and have no glare.

#### *Wilderness Study Areas*

The effects would be the same as described under Alternative C.

#### *Cultural Resources*

Based on site conditions as observed in the 2010 and 2011 seasons, selecting this alternative would have no effect on cultural resources in the Antelope Creek Allotment. No site degradation associated with livestock grazing, trailing, or loafing was observed. Since supplemental feeding has the expressed purpose of attracting animals to a single point there is the potential for trailing and trampling impacts to lithic sites. A cultural resource inventory has been completed for the proposed Schwenke Pipeline extension; no historic properties were identified within the area of potential effect. Removing fence reduces the potential for cattle trailing through and impacting sites.

### **Resource Issue #3 - Big Game Habitat**

#### *Livestock Grazing Management*

The effects would be the same as described under Resource Issue #1 and #2.

#### *Structural Improvements*

The effects would be the same as described under Resource Issue #1 and #2.

#### *Vegetation and Soils*

The stocking rate would be further reduced by 28% and the off date changed to November 15th. The incidence and amount of use on greasewood by cattle in the spring would be similar as described under Alternative C. It would be expected that the degree of use on rubber rabbitbrush in the fall would decrease with corresponding reductions in the stocking rate and shorter seasons of use.

The effects to soils would be the same as described under Resource Issue #1 and #2.

#### *Wildlife*

The effects of this Alternative on big game habitat would be the same as Alternative C with the benefit of additional health and vigor on browse species within the greater sage-grouse management area. The flexibility in management operations would provide for adaptive management to address vegetative health of important browse species. This alternative would offer better vegetative management within the greater sage-grouse management area than Alternative C. Impacts to big game and other wildlife would be greater than Alternative C due to the additional 1.4 miles of fence within big game habitat.

Any new fences would create additional obstacles for wildlife movement and have the potential to cause mortality. Removing 3.2 miles of barb wire fence (Duval Creek Fence) within greater sage-grouse and big game habitat would eliminate barriers to wildlife movement and reduces the risk of entanglement and wildlife mortality. In the short term, vehicles used to construct new fences would impact Wyoming big sagebrush and other vegetation.

Levels of traffic and road use to manage livestock and maintain projects could continue at current levels, but would likely increase. The addition of 4.6 miles of fence would require maintenance. Impacts to big game and other species would be greater with increased traffic, all of which would be in big game winter range. These impacts would be less than Alternative B, but greater than Alternative A & C.

### *Socioeconomics*

The effects would be the same as described under Resource Issue #1 and #2.

### *Visual Resources*

The effects would be the same as described under Resource Issue #1 and #2.

### *Wilderness Study Areas*

The effects would be the same as described under Resource Issue #1 and #2.

### *Cultural Resources*

The effects would be the same as described under Resource Issue #1 and #2.

## **4.3 Cumulative Effects for All Alternatives**

### **4.3.1 Past and Present Actions**

Cumulative effects are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person who undertakes such other actions. The cumulative impacts for this EA include all lands within the Antelope Creek Grazing Allotment.

A number of modifications to the landscape have occurred within the Antelope Creek Grazing Allotment as part of past and current management activities. These include road construction and maintenance, routes created by off-road vehicle use, range improvement project construction and maintenance (fences, reservoirs, pipelines, developed springs) and natural gas development. Current resource conditions are described under the “Affected Environment” in Chapter 3 and also in the *Antelope Creek Grazing Allotment #05610 Evaluation Report*.

Some of the earliest widespread grazing in the Missouri River Breaks began during the early 1880's (Mackie 1970). Cattle and domestic sheep were common although the latter declined rapidly because of market conditions and high levels of predation in the breaks. Large livestock companies grazed herds on the range throughout the year until the early 1900's. Open range grazing was simply based on “first come, first served”. Drought, improper management and feuds caused many of these organizations to fail or they dissolved and were succeeded by local stockmen and smaller herds. While free range grazing was a widespread problem throughout the Great Plains, the “commons” method of grazing was more localized and short-lived in the Missouri River Breaks.

Much of the area was taken up under the Homestead Acts and settled between 1906 and 1915 when attempts were made to cultivate upland sites. Recurrent drought conditions, especially during 1918 to 1921 and 1930 to 1937 and other factors led eventually to abandonment of most of these lands and a gradual depopulation of the area (Mackie 1970). Horses were once a problem in the 1930's and 1940's. Abandoned by homesteaders leaving the area, their numbers grew and “horse gathering” was a source of income for local ranch families (local ranchers, personal communication). Today there are far fewer ranch families and the amount of livestock grazing the area has been largely reduced over historic levels.

Within the Antelope Creek Grazing Allotment, the amount of forage allocated to grazing and livestock stocking levels have been fairly stable over the last 30 to 40 years. During this period livestock have been grazing the common pasture seasonlong from May 1<sup>st</sup> to December 31<sup>st</sup>. Without interior fences to regulate periods of grazing use, herding livestock has been the principle method used to control areas of over and under use.

As indicated in the Monument Plan, all motorized and mechanized off road vehicle use, except for emergency or authorized administrative purposes, is prohibited within the Antelope Creek Grazing Allotment. There are a total of 95 miles of roads. The Bull Creek Road, designated as a county road, is maintained by the county and includes two segments; the road that ends where Bull Creek enters the Missouri River and the other section that ends at the old

Power Plant Ferry crossing. The total length of the Bull Creek county road is 20 miles. The remaining 75 miles are spur roads normally referred to as two-track roads or resource roads. On public and state land, there are 26 miles of roads that are open yearlong. An additional 18 miles have seasonal restrictions, use limited to certain times of the year, to protect wildlife habitat and for erosion concerns. The remaining 31 miles of road are located on private land.

There are no existing oil and gas leases within the Antelope Creek Grazing Allotment. The Proclamation does not allow for new oil and gas leases in the Monument. Oil and gas activity will eventually cease to exist (page 208, Monument Plan, Volume 1). There are 11 plugged and abandoned wells within the Allotment. Data was taken from P:/state office/apps/layerfiles/gas & oil layer (ARCGIS).

There are a variety of range improvement projects constructed on private, state and public land within the Antelope Creek Grazing Allotment to facilitate the management and control of livestock grazing. There are 46 miles of fence, largely 3 and 4-strand barb wire, about 35 earthen dam reservoirs have been built, 15 miles of stock water pipeline servicing 8 stock tanks and 5 developed springs. Portions of these would be checked and repaired annually during the period of livestock use.

#### **4.3.2 Reasonable Foreseeable Future Actions**

Livestock grazing within the Antelope Creek Grazing Allotment would still comply with the Standards of Rangeland Health and Guidelines for Livestock Grazing Management. Future management changes could occur if the Standards would not be met and grazing is identified as the cause. Maintenance of existing range improvements would still continue in essentially the same manner and degree as in the past. New range improvements could be considered if needed to support implementation of grazing management strategies, enhance Monument resources or meet overall management goals.

The rivers, streams and riparian habitats within the Antelope Creek Grazing Allotment are currently meeting BLM riparian and water quality standards. The three action Alternatives are intended to address upland health issues and wildlife habitat concerns. Although riparian and water quality standards are being met, these changes would have a positive cumulative effect on riparian habitat and water resources. Cumulative effects of the action Alternatives would be negligible because one would reasonably expect the condition of riparian habitat and water resources to continue or actually improve under any of the Alternatives. Under Alternative C and D, Schwenke Pipeline would be extended and additional places of use would be added. However, the pipeline extension would follow existing roads, thereby resulting in no additional disturbance. Furthermore, although there would be additional places of use, the season of livestock use and AUMs would remain the same, be eliminated or reduced. None of which would result in additional consumptive use of water. However, the Upper Missouri has a vast watershed, and the activities that occur within that watershed affect the condition of riparian-wetland resources on BLM lands within the Monument. This means that sustainability of the riparian-wetland resources within the Monument are dependent upon many factors that are outside the control of the BLM.

In completing the assessment for the reach of the Upper Missouri containing the Antelope Creek Grazing Allotment, the limiting factors affecting potential (the cumulative effects within the watershed) are discussed in great detail. The following cumulative effects discussion is directly from the assessment of conditions completed in 2010.

Two significant dams regulate flows on the upper Missouri River through the Wild and Scenic reach, Canyon Ferry Dam on the Missouri and Tiber Dam on the Marias. Although the frequency of flood pulses and the timing of a snow melt dominated hydrograph has not changed, the magnitude of large peak flows has been reduced from 40% to 50% as a result of regulation (Bovee and Scott, 2001). Examination of post dam recruitment patterns of cottonwood by Scott and Auble (2002) identified that all stands originating in the post dam period occurred within unconstrained channel reaches. Reduction in the magnitude of peak flows has resulted in establishment of stems at lower elevations that are subject to more frequent disturbance. If this pattern continues, cottonwood recruitment would be limited to unconstrained reaches. In the reach containing the Antelope Creek Grazing Allotment, this effect would be most noticeable in the constrained reaches, but more frequent unconstrained portions would be capable of maintaining cottonwood forest under lower flow regimes although in smaller amounts.

The possibility does exist that the capability of this reach in terms of flow regime may move closer to potential. Bureau of Land Management (BLM), Bureau of Reclamation (BOR), U.S. Army Corps of Engineers (USACE), and other groups and organizations have been investigating the potential for augmenting flow releases from reservoirs to mimic natural flow regimes. Social and economic constraints would not allow for a completely natural flow regime, but efforts to increase peak flows would move the capability of this system closer to potential. A key factor affecting potential is the decrease in the magnitude of fluvial disturbances on the upper Missouri River associated with both climatic shift and dams. A shift from wetter conditions in the mid to late 1800's combined with the effect of flow regulation has resulted in a process of channel narrowing (Scott and Auble, 2002). This affect has resulted in the establishment of cottonwood trees in existing back channels that have begun to fill in. Currently, this increase in trees has mitigated the effects of the loss of trees from higher surfaces and current amounts of cottonwood forest are similar to those in 1890 (personal communication, G. Auble (USGS) and M. Scott (USGS)). However, this is a one-time response as the channel would not be capable of narrowing forever.

Vegetation potential on the upper Missouri River is also influenced by non-native plants and invasive weed species. Evidence exists that direct competition between native plants and areas dominated by exotic plants (non-native and invasive weeds) can result in the disappearance of native species. Kudray (2004) found reduced species richness was most strongly correlated with greater exotic herbaceous cover and also had a negative correlation with native woody species richness.

Kudray (2004) also indicated that Russian olive was the only well-established non-native woody species occurring along the river although small infestations of salt cedar have been discovered below the PN Bridge. Russian olive can have significant effects on riparian forests. According to Lesica and Miles (2001), Russian olive can displace native trees and shrubs and form monotypic stands, especially where the riparian zone is less dynamic. There is the possibility of Russian olive becoming the dominant or co-dominant tree on the Upper Missouri (personal communication, G. Auble (USGS)). Along the upper half of the Missouri River, which is mostly private land, it may be socially and economically impractical to control invasions of Russian olive. However, along the lower half of the Missouri River, which is largely public land, the opportunity to control Russian olive and limit its spread and establishment is still a viable option. No Russian olive is currently located in the Antelope Creek Grazing Allotment, but it is present on the other side of the river.

#### **4.3.3 Cumulative Effects of Alternative A (No Action)**

##### *Livestock Grazing Management*

There would be no changes to the current grazing permits which are not due to expire until February 28, 2016.

##### *Structural Improvements*

It is estimated that 15 acres would be disturbed during repair of the seven stock water reservoirs and less than one acre for Stogie Spring. The additional impacts would be minor, short-term, with a return to existing conditions within 3 to 5 years.

##### *Vegetation and Soils*

Without any changes in current levels of livestock use, the vegetation and soil health and composition of sagebrush/grassland plant communities would remain static or decline. This currently affects about 15% of the upland plant communities within the Antelope Creek Grazing Allotment. These areas would still rate as functioning at risk, land health standards would not be met and the permitted grazing use would not conform to the guidelines for grazing livestock on public land.

Surface disturbing activities affecting soil compaction and the potential for erosion would likely remain static under this alternative. These effects are localized and more pronounced around stock water sources, fences corners and trails where livestock concentrate.

## *Wildlife*

The Antelope Creek Grazing Allotment contains 12,461 acres of pronghorn antelope winter range, 42,411 acres of elk winter range, 43,955 acres of mule deer winter range and 372 acres of bighorn sheep year-round habitat with more available but not yet occupied. Without improvement in FAR upland areas, 7,687 acres of upland vegetation for big game would not improve and could decline.

The Allotment contains 8,784 acres of BLM, 1,277 acres of private land and 850 acres of state land designated as Core Habitat and Preliminary Priority Habitat for greater sage-grouse. The 2011 Evaluation Report determined 4,264 acres of this habitat was functioning at risk due to vegetative conditions. The greater sage-grouse habitat within the Allotment is only a small part of the 1,007,705 acres of Core Habitat within Phillips County, Montana. Increases in the canopy cover of Wyoming big sagebrush that has occurred is providing excellent nesting, winter, brood-rearing and foraging habitat for greater sage-grouse. However, current levels of livestock grazing and the timing of use has affected the height and density of herbaceous cover, measured by the amount of grasses and forbs in the understory, and residual cover going into winter. Herbaceous cover and the amount of standing vegetation from the previous year is an important habitat component for greater sage-grouse and other ground nesting birds. Continuing with the same pattern of grazing management would not meet greater sage-grouse habitat objectives.

Region wide and on a landscape-scale, the alteration of sagebrush ecosystems and habitat fragmentation has occurred from conversion to cultivated crops, the conservation reserve program (CRP), road construction, oil and gas production and other construction activities. The loss or alteration of sagebrush ecosystems has led to declines in species diversity, provides opportunities for invasive species to establish and fragments quality habitat for all wildlife species. Over the long term, changes in plant community composition have occurred from grazing and browsing by livestock and wildlife, wildfire, suppression of wildfire and noxious weeds. Impacts can vary depending on the degree of habitat change and the requirements of each wildlife species.

Existing livestock fences would continue to be obstacles for wildlife movement and have the potential to cause mortality.

Traffic into the area can reduce security to ground nesting species, such as greater sage-grouse, and the nesting success of birds in the local area. A few individuals could be lost to vehicle strikes. Noise from traffic, construction, maintenance and other human activities can deter wildlife from using an area. Wildlife react to noises, but it is especially troublesome for songbirds, including migratory birds. Noise related problems for birds would include interference with the males' ability to attract mates and defend territory and interference with the ability to recognize warning calls and calls from juveniles.

Roads would be considered disturbance corridors and activities associated with them could cause wildlife to avoid or abandon areas. Fragmentation of the landscape could occur if avoidance of disturbance corridors prevents wildlife from fully using land on either side of a corridor. The presence of disturbance activities, notably traffic, would impact the security of big game and reduce the quality of habitat for breeding, nesting and brood rearing of birds, including greater sage-grouse. Vehicle strikes are also a common impact affecting birds, reptiles and small mammals.

Man-made and natural water sources would remain the same providing habitat for larva of the Western Encephalitis mosquito which may be carriers of West Nile Virus (WNV). Steep sided stock tanks are not considered good habitat for this mosquito species. Man-made reservoirs with emergent vegetation may favor this species, but also provide important habitat for greater sage-grouse and many other species, including many birds, invertebrate and amphibian predators of the mosquito species and its larva. This alternative would not increase or reduce habitat for the Western Encephalitis mosquito (BLM, Instruction Bulletin MT-2011-033, July 2011).

There are wildlife species which benefit from degraded or declining range conditions. This includes prairie dogs and species which prefer prairie dog towns, degraded range conditions and bare ground. These would include but are not limited to mountain plover, burrowing owl and the short-tailed lizard, which are Designated Sensitive Species. The same conditions which favor prairie dog expansion could result in the reduction of sagebrush cover further reducing greater sage-grouse habitat. While prairie dogs might expand into areas where vegetation has been

removed through grazing, wildfire and mechanical control, no expansion of existing towns has been documented in the Allotment.

#### *Visual Resources*

Repairing Stogie Spring would improve the visual quality of the landscape by decreasing the contrast. The color of the tank would be a dark brown and the wooden post and pole fence would create a barrier to decrease the trampling effect by livestock. Repairing the reservoirs would maintain the visual quality characteristic of the landscape through mitigation.

#### *Wilderness Study Areas*

Maintenance within the Cow Creek WSA would be minimized to activity on existing vehicle ways and improvement of existing structures. The wooden post and pole fence proposed to protect the spring source at Stogie Spring would decrease the disturbance and allow for more vegetative cover. Repair of the reservoirs located within the Cow Creek WSA would restore the reservoirs to their original condition prior to Federal Land Policy Management Act (FLPMA).

### **4.3.4 Cumulative Effects of Alternative B (No Grazing)**

#### *Livestock Grazing Management*

Grazing would be reduced on public land by 99% resulting in a net reduction of 4,573 AUMs. Grazing other unfenced private and state lands within the Allotment could only occur through intensive riding and herding and/or fencing.

#### *Structural Improvements*

With the removal of livestock grazing the need to maintain and repair existing range improvement projects would be greatly reduced. The Duvall Creek Fence would be removed eliminating 3.2 miles of barb wire fence. The four developed springs would be removed reclaiming two acres. Although BLM would abandon 27 stock water reservoirs, these would not be reclaimed and only repaired if safety issues were identified or if it is concluded that they would benefit another resource such as habitat for wildlife. The four stock tanks currently located on public land and serviced by Schwenke Pipeline would be removed and two acres reclaimed. Maintenance and repairs to 46 miles of existing allotment boundary fence would continue. The actual number of miles of fence could potentially increase if the boundary of state and private land were fenced.

#### *Vegetation and Soils*

With the removal of livestock grazing plant and soil health and herbaceous cover would improve resulting in an upward trend on the 7,687 acres identified as functioning at risk. This results in a net gain in the amount of acres and area meeting the *Standards of Rangeland Health*. The most noticeable difference would be the amount of herbaceous cover remaining at the end of the growing season. However, after several consecutive years of no grazing by domestic livestock the amount of fine fuels would increase appreciably increasing the risk of a wildland fire. These would likely burn at a much higher intensity and over a larger area potentially altering plant community types within the Antelope Creek Grazing Allotment.

This alternative would have the fewest impacts to soils, and compared to the other Alternatives, would result in the overall improvement of soil productivity from reduced soil compaction at livestock watering sources and the elimination of vehicle travel to check livestock, maintain range improvement projects and the placement of supplements.

#### *Wildlife*

There would be short-term impacts to habitat and disturbance to animals as range improvements are removed. In the long-term, as residual vegetation increases, the potential for wildfires would also increase. If a fire occurred it

would be expected to spread more rapidly and burn more intensely. Following a fire there may be benefits to vegetative and successional diversity and habitat for many wildlife species within sagebrush/grassland habitat. However, a wildfire within greater sage-grouse habitat would remove Wyoming big sagebrush, which is easily killed by fire and can take many years to reestablish, potentially reducing or eliminating greater sage-grouse populations from impacted areas. During severe fire conditions, this alternative would not have the flexibility to use grazing as a tool to reduce herbaceous cover in and adjacent to sagebrush habitat.

Existing allotment boundary fences would be maintained to control livestock on adjoining grazing allotments and around private and state land affecting wildlife movement and having the potential to cause mortality. Due to the location of private and state land within the Allotment, fencing the boundaries would require an additional 44 miles of new fence, with 15 miles constructed through greater sage-grouse core habitat and located within 100 feet and possibly through the one identified lek. Fences constructed on private and state land would not be subject to BLM fencing standards for areas within big game and greater sage-grouse habitat further restricting their movement and potentially increasing the number injured and killed.

#### *Visual Resources*

Removal and reclamation of existing structures would reduce the number of man-made features within the project area having a positive effect on Visual Resources.

#### *Wilderness Study Areas*

The existing character of the landscape would be improved with the removal of grazing, reclamation of developed springs and stock tanks, removal of the Duvall Creek Fence and abandonment of man-made stock water reservoirs.

### **4.3.5 Cumulative Effects of Alternative C (Manage Livestock Grazing with Allowable Use Levels)**

#### *Livestock Grazing Management*

Grazing would be reduced on public land by 10% resulting in a net reduction of 473 AUMs.

#### *Structural Improvements*

It is estimated that 15 acres would be disturbed during repair of the seven stock water reservoirs and less than one acre for Stogie Spring. The additional impacts would be minor, short-term, with a return to existing conditions within 3 to 5 years.

Extending Schwenke Pipeline 7.2 miles and installing six stock tanks on public land would affect 11 acres. Most of the impacts would occur on existing roads which have already been disturbed from vehicle traffic.

#### *Vegetation and Soils*

Implementing allowable use levels in upland areas would improve rangeland health resulting in an upward trend on the 7,687 acres identified as functioning at risk. This results in a net gain in the amount of acres and area meeting the Standards of Rangeland Health.

This alternative would result in added surface disturbing activities associated with extending Schwenke Pipeline. However, impacts would be short-term with no expected loss to soil productivity. Areas would be subject to short-term increases in soil compaction returning to existing conditions within 3 to 5 years.

#### *Wildlife*

The duration of grazing and levels of livestock use would be less than Alternative A and the physical impacts from fences and reservoirs would be less than Alternative B. Implementing allowable use levels would improve upland conditions in areas currently FAR and provide the management flexibility to make additional changes to ensure that habitat conditions improve.

In the long-term, as residual vegetation increases, the potential for wildfires would also increase. If a fire occurred it would be expected to spread more rapidly and burn more intensely. Following a fire there may be benefits to vegetative and successional diversity and habitat for many wildlife species within sagebrush/grassland habitat. However, a wildfire within greater sage-grouse habitat would remove Wyoming big sagebrush, which is easily killed by fire and can take many years to reestablish, potentially reducing or eliminating greater sage-grouse populations from impacted areas. The buildup of vegetation under this Alternative would be less than No Grazing Alternative but greater than current management. During severe fire conditions, this Alternative would still have the flexibility to reduce herbaceous cover (fine fuels) through grazing in and adjacent to sagebrush habitat.

#### *Visual Resources*

Additional man-made features (7.2 miles of pipeline and six stock tanks) would be located in VRM Class IV. To decrease the visual contrast the pipeline would be buried in the already existing two-track road and the stock tanks located a short distance from existing roads and trails, in small depressions, behind hills or screened by vegetation to reduce the visual contrast.

#### *Wilderness Study Areas*

Disturbance within the Cow Creek WSA would be limited to activity on existing vehicle ways. Maintenance and repairs to existing livestock improvements would be limited to the original area of disturbance, short-term and temporary.

### **4.3.6 Cumulative Effects of Alternative D (Manage Livestock with Allowable Use Levels/Greater Sage-Grouse Management Unit)**

#### *Livestock Grazing Management*

Grazing would be reduced on public land by 28% resulting in a net reduction of 1,300 AUMs.

#### *Structural Improvements*

An additional 4.6 miles of fence would be installed to create a greater sage-grouse management unit. The effects from removing the Duval Creek fence, repairing seven stock water reservoirs, repairing Stogie Spring and extending Schwenke Pipeline would be the same as Alternatives B and C.

#### *Vegetation and Soils*

The effects to vegetation would be the same as described under Alternative C.

Additional surface disturbing activities would occur associated with new fence construction, fence salvage operations, repair of stock water reservoirs and a spring and extending Schwenke Pipeline. However, the impacts are short-term with no net gain or loss in soil conditions.

#### *Wildlife*

With the creation of a greater sage-grouse management unit, the duration of grazing and levels of livestock use would be less than Alternative A and C. The physical impacts from fences would be greater than Alternative C, with construction of 4.6 miles of fence within and adjacent to greater sage-grouse and big game habitat. Implementing allowable use levels would improve vegetation conditions and provides the management flexibility to make additional changes to ensure that habitat conditions improve.

In the long-term, as residual vegetation increases, the potential for wildfires would also increase. If a fire occurred it would be expected to spread more rapidly and burn more intensely. Following a fire there may be benefits to vegetative and successional diversity and habitat for many wildlife species within sagebrush/grassland habitat. However, a wildfire within greater sage-grouse habitat would remove Wyoming big sagebrush, which is easily

killed by fire and can take many years to reestablish, potentially reducing or eliminating greater sage-grouse populations from impacted areas. The buildup of vegetation under this alternative would be less than No Grazing Alternative but greater than current management. During severe fire conditions, this Alternative would still have the flexibility to reduce herbaceous cover (fine fuels) through grazing in and adjacent to sagebrush habitat.

#### *Visual Resources*

The proposed 7.2 miles of pipeline and six stock tanks would be located in VRM Class IV. To decrease the visual contrast the pipeline would be buried in the already existing two-track road and the stock tanks located a short distance from existing roads and trails, in small depressions, behind hills or screened by vegetation to reduce the visual contrast. The 4.6 miles of fence for the greater sage-grouse management unit would be located in VRM Class II and IV. Installation of an electric fence would be optimal for Visual Resource Management since there would be less of a visual contrast between the electric fence and a barb wire fence. The height, number of posts and wires would be decreased in comparison to a barb wire fence.

#### *Wilderness Study Areas*

Cumulative impacts would be the same as described under Alternative C.

## **Chapter 5**

### **Consultation & Coordination**

#### **5.1 List of Preparers**

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**Chad Krause**; Hydrologist, Lewistown Field Office

#### **5.2 Reviewed By**

**Josh Sorlie**; Soil Scientist, Malta Field Office

#### **5.3 Persons and Agencies Consulted**

1. Fish, Wildlife & Parks - a letter was mailed to Region 6 Headquarters in December 2009 requesting data on greater sage-grouse and big game populations in the Antelope Creek area. A response was received in January 2009 summarizing their observations.
2. A scoping letter dated January 11, 2011 with attached Evaluation Report, Determination Document and maps was mailed to Montana Fish, Wildlife & Parks, Region 6 Headquarters and the Department of Natural Resources & Conservation (State Lands). Neither state agency provided any comments.

#### **5.4 Public Comments on the Draft EA**

The Draft Antelope Creek Environmental Assessment was released for public review and comment on February 3, 2012. Written comments were to be submitted to the BLM by March 2, 2012. The BLM received 12 comment letters. All of the letters were read and the comments identified and grouped by category (grazing, wildlife, riparian, wilderness study areas). Some of the comments received expressed personal opinions or individual preferences and did not receive an individual response. The BLM's responses to comments can be found in Appendix 4 (Response to Public Comments).

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