

**United States Department of the Interior
Bureau of Land Management**

Environmental Assessment (DOI-BLM-MT-B070-2013-0019-EA)

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Iron Mask Planning Area Environmental Assessment

Location: Just west of Canyon Ferry Lake and Townsend, MT.



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1.0 PURPOSE AND NEED

1.1 Introduction

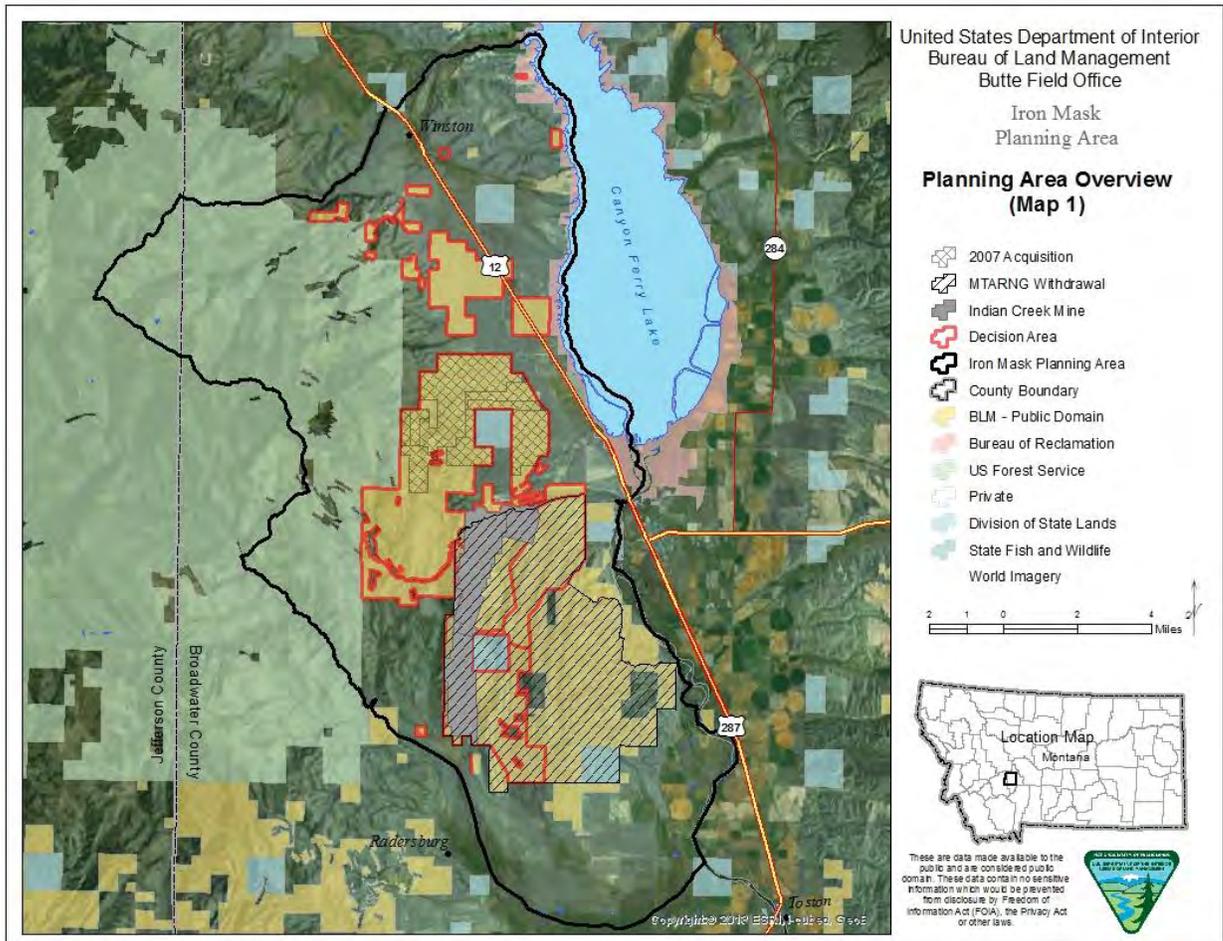
This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of existing and proposed management actions in the Iron Mask area by the BLM. The EA is a site-specific analysis of potential impacts that could result with the implementation of the proposed action or alternatives to the proposed action.

The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by 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 statement of “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) may be signed for the EA approving the selected 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 Butte Resource Management Plan (RMP) (USDI-BLM 2009a).

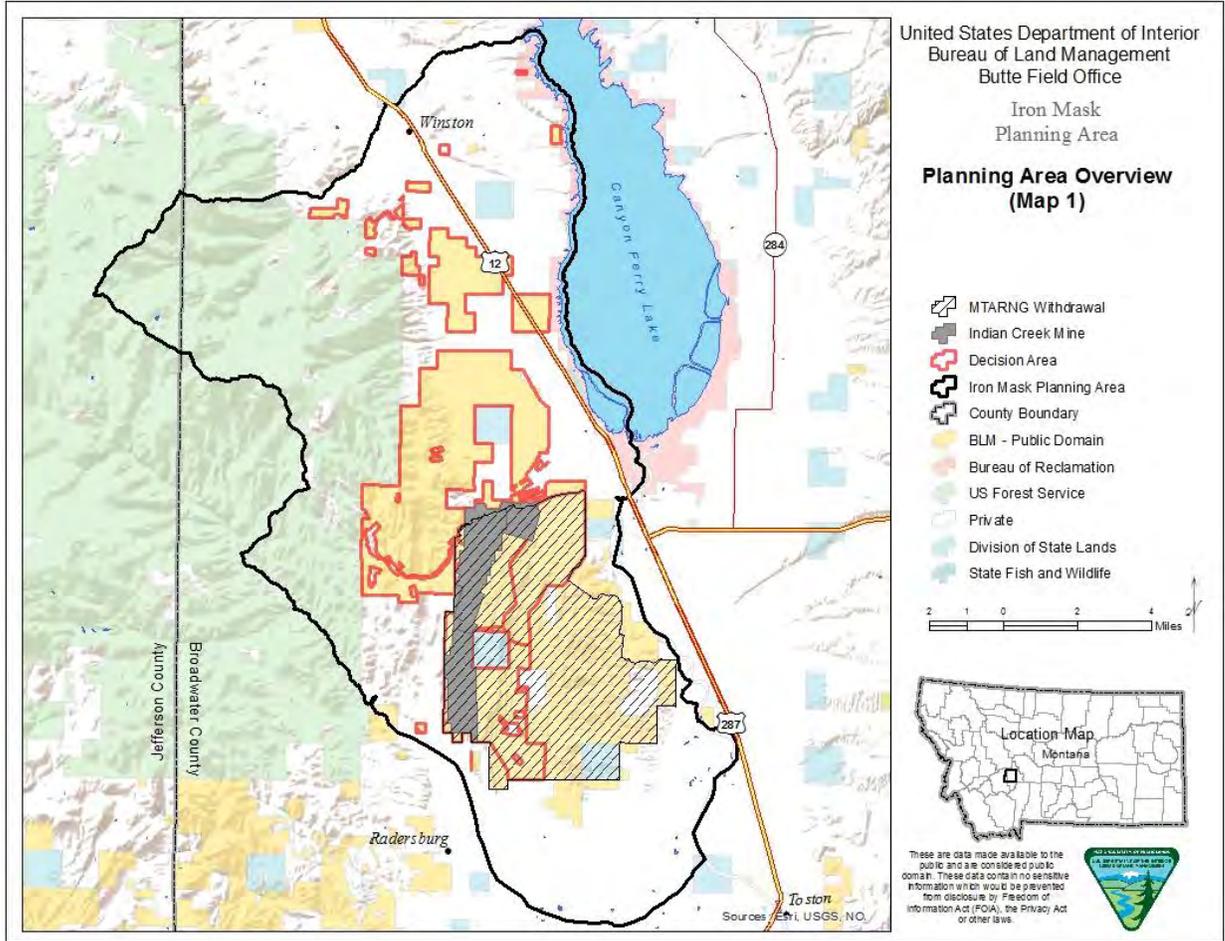
A list of acronyms is included in Section 5.2. The term “**Planning Area**” (PA) refers to the larger land area, defined primarily by watersheds, which contains BLM, Forest Service (USFS), state, and private lands. The term “**Decision Area**” (DA) refers to BLM-administered lands within the PA that are under consideration for management actions. Acreages for the PA, DA, and other management segments can be found in Section 3.2.

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Map 1: General Setting – aerial photo



Map 2: General Setting – land ownership



1.2 Background

The PA boundary is based on watershed boundaries containing BLM lands in need of planning on the east side of the Elkhorn Mountains. Land designations within the Iron Mask PA include the Elkhorn Mountains Area of Critical Environmental Concern (ACEC); a National Guard firing range known as the Limestone Hills Training Area (LHTA), which was withdrawn to the Department of the Army for military use in December 2013 and where BLM retains grazing management and mineral management responsibilities; and the Elkhorns Cooperative Management Area (ECMA), an area managed cooperatively by the USFS, BLM and Montana Department of Fish, Wildlife, and Parks (FWP). Land ownerships in the PA include BLM, USFS, State of Montana, Bureau of Reclamation (BOR), local government, and private.

1.3 Need for Action

The need for action in the Iron Mask Planning Area is to address the following management issues:

Land acquisition: 5,566 acres of land in the Iron Mask area were acquired in 2007 by the BLM to “protect important resource values” and “improve wildlife habitat near the Missouri River corridor, and develop and enhance public recreation opportunities” (USDI-BLM 2005). Project level planning needs to occur to fully realize these goals.

Travel planning: A travel management plan for the Iron Mask lands acquired in 2007 is needed to fulfill directives established by BLM policy (criteria identified at 43 CFR 8340), the Butte RMP, and the Iron Mask Acquisition EA (USDI-BLM 2005). In the context of travel management planning, the Butte RMP indicates that “the recently acquired Iron Mask property will be managed under the limited area designation” and that “Site-specific travel management planning for Iron Mask will be conducted subsequent to the limited area designation and would require an amendment to the Elkhorns Travel Plan.” Decisions resulting from this travel plan in the acquisition area will amend the BLM portion of the Elkhorns Travel Plan. In the remainder of the DA, the Butte Field Office (BFO) would adhere to the existing *Elkhorn Mountains Travel Management Plan* (USDI-BLM et al. 1995).

Forage Reserve: The RMP includes a decision to expand the Indian Creek allotment “up to 5,566 acres and 700 Animal Unit Months (AUMs) by including the Iron Mask acquisition lands. This allotment located in the ECMA will be managed as a forage reserve allotment.” And “use will be authorized on a temporary, nonrenewable basis. The amount of use will be determined by the BLM, but not exceeding the allocation.” However, the Iron Mask acquisition area currently lacks appropriate infrastructure to be managed as a forage reserve allotment. There is a need to establish infrastructure for livestock grazing on these lands and develop an appropriate grazing system so the area can function as a forage reserve allotment.

Grazing authorizations: In addition to the Indian Creek allotment there are 14 active livestock grazing allotments, or portions of allotments in the PA. The grazing authorizations for these allotments are set to expire in coming years. Six of these allotments (Beaver, Beaver Creek, Dowdy Ditch, Kimber Diorite, Limestone Hills, and Whitehorse) will be analyzed and considered for renewal. Of these six allotments, grazing on two, Dowdy Ditch and Limestone Hills, is authorized under provisions outlined in the Consolidated Appropriations Act. After being authorized via the Appropriations Act it is necessary to fully process these permits as soon as feasible.

There is a need per 43 Code of Federal Regulations (CFR) Part 4100 - Grazing Administration, to reevaluate the Terms and Conditions of the six grazing authorizations and to renew them, or renew them with revisions if appropriate, based on the need to meet Standards for Rangeland Health or Land Health Standards. The range of alternatives analyzes whether or not to: 1) renew the grazing authorizations; 2) reevaluate and possibly amend the Terms and Conditions of the authorizations if they are renewed; 3) construct or modify range improvement projects. Also, a decision needs to be made on the disposition of 579 AUMs relinquished in 2012 on the Limestone Hills allotment.

Of the eight remaining allotments, three (Cottonwood Common, Section 33, and Breaks) have the majority of their acreage in other PAs and will be analyzed for renewal when those PA EAs are completed. Five (Bald Hills, Limestone East, Missouri, Riverside School, and Smith Individual) have not had recent Land Health Assessments and will be analyzed in the Broadwater County South EA, which is currently scheduled for 2016.

Upland Vegetation Health: Overall, vegetation communities in the project area have been altered from historic (pre-settlement) conditions by a combination of management activities, including long-term fire suppression and livestock grazing. There is a need to develop management actions that would improve/restore grassland, shrubland, and dry forest habitats on BLM lands in the DA.

Grassland and shrubland habitats in the project area have undergone colonization (often referred to as encroachment) by conifers due to the interruption of the natural disturbance regime primarily by long-term fire suppression. Many acres of grasslands and shrublands within the PA have been converted to woodlands as a result of colonization by juniper, Douglas-fir, ponderosa pine, and limber pine. As a result, these acres are outside the expected historic range of natural variability. In their current condition, they are less stable and more susceptible to damage from disturbance events like severe or uncharacteristically large-scale wildland fire, insect infestations, and weed species establishment. Additionally, they are apt to change to the extent that they could cross thresholds which would prevent them from returning to a condition within the expected range of variability and functionality without help from an outside influence (e.g., application of herbicides to control weed species, spreading native seed to establish early seral communities with desired species composition, etc.).

Goal GS-1 in the Butte RMP is to “Manage upland vegetation communities to move toward or remain in proper functioning condition, including a full range of herbaceous and shrub species.” The RMP also established objectives to treat grasslands and shrublands to reduce conifer colonization resulting from long-term fire suppression and historic grazing practices. Objectives for the Upper Missouri watershed where this project area lies are 1,750 to 6,000 acres of grassland, 150 to 500 acres of shrubland, and 1,900 to 7,000 acres of dry forest to be treated per decade. There is a need to improve/restore grassland, shrubland, and dry forest habitats in the DA to contribute to meeting these management objectives identified in the RMP. (Due to the limitations in mapping grassland and shrubland habitats, the total acreages of grassland and shrubland proposed for treatment are considered in combination throughout this EA.)

Restoration of dry forest vegetation would be done to meet Forest and Woodland goals in the RMP:

- Restore and/or maintain the health and productivity of public forests, to provide a balance of forest and woodland resource benefits, as well as wildlife and watershed needs to present and future generations. (Goal FW1)
- Maintain and/or improve sustainability and diversity of woodland communities to meet ecological site potential. (Goal FW3)
- Manage dry forest types to contain healthy, relatively open stands with reproducing site-appropriate desired vegetation species. (Goal FW4).

Riparian health: There is a need to take action in areas where riparian health within the DA that is being impacted by historic mining, erosion, and unnatural succession.

Currently, two stream crossings of small, unnamed streams on Road #008 within the Iron Mask acquisition area boundary are capturing stream flow and diverting it down the road. This

diversion causes erosion and subsequent sedimentation back into the stream channel farther downstream. A large headcut became established on Indian Creek during high stream flows in 2011. The Whipcracker Gulch channel below the inactive Iron Mask mine has been impacted by contaminants from the mine and dewatered as a result of mining.

Riparian vegetation communities have been affected by historic land use and long-term fire suppression. Some portions of the project area have mixed stands of conifers and aspen or cottonwood in riparian areas. Understory conifer colonization in close proximity to localized hardwood patches is preventing the establishment of aspen and cottonwood regeneration that would be expected to occur under a more natural disturbance regime. Butte RMP Goal RV1 is to “Manage riparian and wetland communities to move toward or remain in proper functioning condition (appropriate vegetative species composition, density, and age structure for their specific area).” Additional guidance in the RMP includes:

- Restorative treatments in riparian areas will focus on re-establishing willows, aspen, and cottonwood stands as well as other riparian vegetation, and to move toward pre-fire suppression stem densities in conifer stands. (Riparian Vegetation Management Action #5)
- Where conifers are outcompeting or precluding regeneration of aspen, or preventing establishment of aspen or cottonwood stands, conifers will be removed (via mechanical methods and/or prescribed burning) to provide suitable habitat for expansion of these species. (Riparian Vegetation Management Action #6)

Fencing: In the DA, and in fact across the American west, there are many fences that were constructed prior to techniques now understood to provide for containment of livestock but also allow greatest freedom of movement for wildlife. These fences constitute hazards to wildlife from entanglement or blocking of movement. One decision in the RMP is “Existing fences not meeting standard BLM wildlife specifications will be modified to meet the standard when reconstruction is done (Goals LG2, WF5, SE4).” There is a need to reconfigure fences within the DA to meet these standards.

1.4 Purpose of Action

The purpose of action is to address the above issues within the context of BLM’s multiple-use mandate and all applicable statutes and regulations.

Specific purposes include:

- To analyze and establish specific routes and supporting infrastructure (such as parking lots, kiosks, trailheads, etc.) that would be available for motorized and non-motorized travel subject to management constraints, legal motorized access considerations, resource protection concerns, resource use needs and social considerations.
- To analyze and determine what structural range improvements and grazing system would be authorized on the Indian Creek Forage Reserve allotment.
- To analyze and determine the appropriate renewal of grazing allotment authorizations to best achieve land health standards.

- To analyze and determine the most practical means for elimination of erosion and sedimentation impacts to soil and water occurring from roads, historic mining, and the Indian Creek headcut.
- To analyze and determine the methods for restoring riparian and upland vegetation communities so that they are more representative of the pre-settlement historic range of variability, and meet RMP goals and management direction for wildlife habitat.
- To analyze replacement or reconstruction of fencing that does not currently meet standards.

1.5 Decisions to be Made

There are a number of decisions to be made within the planning area, including:

- Which travel routes within the Iron Mask acquisition area would be managed as open to the public for motorized use, or limited to authorized/administrative uses, and what restrictions would be required, if any.
- What, if any, types of structural range improvements and grazing systems would be established for the Indian Creek Forage Reserve grazing allotment.
- Whether or not to renew grazing authorizations on six allotments that will expire in coming years or are currently authorized under Appropriation Act provisions.
- Whether changes to existing grazing authorizations are needed to meet RMP Standards for Rangeland Health and land health goals.
- Determine the availability of 579 relinquished AUMs in the Limestone Hills allotment.
- Whether to treat upland vegetation to restore vegetation communities toward a more historic condition with regard to vegetation/wildlife habitat types and wildland fuels conditions, and if so, how many acres would be treated with what types of treatments.
- What actions, if any, would be taken to address soil erosion and water quality impacts in the project area which are occurring from historic mining, one large stream headcut, and locations on roads where water flow is disrupted.
- Whether to treat riparian vegetation communities, and if so how would they be treated to meet RMP goals and management actions for Riparian Management Zones.
- Whether to reconstruct or make adjustments to existing fences that do not currently meet wildlife specifications.

1.6 Relationship to Statutes, Regulations, or other Plans

The following laws, regulations, and authorities guided the content and scope of the environmental analysis; the list includes, but is not limited to:

- Antiquities Act of 1906, as amended
- Carlson-Foley Act of 1968 (Weed Control on Public Lands)
- Clean Air Act of 1970, as amended
- Clean Air Act of Montana as amended (75-2-102, MCA).
- Clean Water Act of 1972
- Code of Federal Regulations, Title 43, Part 4100 – Grazing Administration – Exclusive of Alaska, 2006
- Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, 2001

- Endangered Species Act of 1973, as amended
- Farmland Protection Policy Act of 1981
- Federal Land Policy and Management Act of 1976
- Federal Noxious Weed Act of 1974, as amended
- Migratory Bird Treaty Act of 1918
- Montana Clean Water Act (75-101 et seq., MCA)
- Montana Streamside Management Law and Rules
- Montana Strip and Underground Mine Reclamation Act of 2008
- National Environmental Policy Act of 1969
- National Historic Preservation Act of 1966
- Public Rangelands Improvement Act of 1978
- Sikes Act of 1960, as amended
- Standards for Rangeland Health and Guidelines for Grazing Management (43 CFR 4180)
- Surface Mining Control and Reclamation Act of 1997
- Taylor Grazing Act of 1934
- National Defense Authorization Act for Fiscal Year 20143

Travel Management: Statutes, regulations, and policies documented in the *2009 Butte RMP* (BLM 2009b, pages 10-13) apply to this Travel Management Plan (TMP)/EA. Additionally, the following regulations, policies, and planning documents provide specific guidance for the formation of travel management actions.

- 43 CFR 8340: Off-Road Vehicles, Subparts 8340-8342.3 (GPO 2014a)
- 43 CFR 9268: Recreation Programs (GPO 2014c)
- *Manual 1626: Travel and Transportation* (BLM 2011d)
- *Handbook H-8342: Travel and Transportation* (BLM 2012c)
- *Record of Decision: Off-Highway Vehicle Environmental Impact Statement and Proposed Plan Amendment for Montana, North Dakota and South Dakota* (BLM 2003)
- *National Mountain Bicycling Strategic Action Plan* (BLM 2002)
- *National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands* (BLM 2001a)
- *Recreation 2000: A Strategic Plan* (BLM 1988)

1.6.1 Conformance to Land Use Plan

All proposed actions are in conformance with and tiered to the Butte RMP (2009) and the Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota (USDI-BLM 1997). All treatments of invasive species conform to the guidance and standards set forth in the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic EIS* (USDI-BLM 2007) and the Butte Field Office Weed Management Plan Revision EA (USDI-BLM 2009b).

The action alternatives presented in this EA would be in conformance with RMP direction more than the No Action alternative. Examples of RMP goals and objectives actions that would be met under the action alternatives but not Alternative A, No Action, include:

- Maintain upland vegetation communities to move toward or remain in proper functioning condition;

- Manage dry forest types to contain healthy, relatively open stands;
- The Indian Creek allotment will be expanded and managed as a forage reserve allotment;
- Manage riparian and wetland communities to move toward or remain in proper functioning condition;
- Manage for a sustainable level of livestock grazing while meeting or progressing toward Land Health Standards;
- Move toward restoring and maintaining desired ecological conditions consistent with appropriate fire regimes;
- Manage to provide a variety of well-distributed plant communities to support a diversity of habitats;
- The Iron Mask acquisition area will be managed for travel under the ‘limited area’ designation;
- Non-motorized recreation will be promoted and emphasized in the Elkhorns ACEC.

1.7 Summary

This chapter has presented the purpose and need for action that drove the development of the proposed action and alternatives. The decisions to be made were presented to show the scope of the analysis being conducted. In order to meet the purpose and need in a way that resolves the issues, the BLM has developed the action alternatives. These alternatives, as well as a No Action alternative, are presented in Chapter 2. The existing conditions of resources are described and potential environmental impacts or consequences resulting from the implementation of each alternative are then analyzed in Chapter 3.

2.0 DESCRIPTION OF ALTERNATIVES

2.1 Introduction

This chapter describes the No Action alternative (Alternative A), and two action alternatives, the Proposed Action (Alternative B), and a second action alternative (Alternative C). Also presented are alternatives considered but not carried forward for detailed analysis. Design features/mitigation measures are also included in this chapter. Alternatives may apply to specific sites (e.g., Whipcracker Gulch), individual allotments (e.g., grazing management changes), or across a broader landscape (e.g., vegetation manipulation).

2.2 Features of Alternatives

This section covers project design features that would be implemented to protect resource values regardless of a specific alternative, or combination of alternatives chosen by the Authorized Officer.

Any projects or actions selected for approval at the conclusion of this environmental analysis would be implemented as time and funding allow, with no exact timeframe unless stated otherwise.

2.2.1 Features Common to all Alternatives

These features are common to all the alternatives, including the No Action alternative.

Travel Management

- Travel management would be conducted in a manner that would meet, or move toward meeting, Land Health Standards.
- With the exception of travel planning in the Iron Mask acquisition area, the *Elkhorn Mountains Travel Management Plan* (1995) would be adhered to.
- In accordance with the 2003 Statewide OHV ROD (USDI-BLM 2003), under the “Limited” designation, all cross-country motorized, wheeled travel would be prohibited, with the following exceptions:
 - Any military, fire, search and rescue, or law enforcement vehicle for emergency operations
 - Official BLM administrative business (prescribed fire, noxious weed control, and range, recreation, travel management, etc.)
 - Other government agency business (surveying, damage control, etc.)
 - Administration of a federal lease or permit (e.g. livestock permittee maintaining fence, delivering salt, etc.)
 - For dispersed camping within 300 feet of an open travel route, site selection must be completed by non-motorized means, and accessed by the most direct route causing the least damage.
- BLM would continue to participate with the Southwest Montana Interagency Travel Management Committee in maintaining map and sign consistency, and seasonal restrictions.

- In order to conform to RMP direction of promoting non-motorized recreation opportunities and enhancing the area for wildlife, and given the general lack of adequate snow cover in the area, the current closure to motorized Over Snow Vehicle (OSV) travel would remain in effect for the Iron Mask DA west of Highway 287.

Recreation

- Dispersed recreational activities would continue to be managed consistent with other resource management objectives. Special Recreation Permits would continue to be considered on a case-by-case basis with the exception of big game hunting. Outfitted big game hunting would continue to be limited to existing permits and use levels. Opportunities for big game hunting, wildlife viewing, horseback riding, and other backcountry recreation would be maintained.

Livestock Management

- In the event of a prescribed fire, allotments or portions of allotments would be rested from livestock grazing up to one year prior to treatment, if necessary, to produce fine fuels to carry the burn. Treatment areas would be rested for a minimum of two growing seasons following treatment to promote recovery of vegetation. Livestock rest for more or less than two growing seasons could be justified on a case-by-case basis (USDI-BLM 2009a).
- Encourage, and, if warranted, require use of temporary electric fence, livestock supplement (e.g., salt, protein block) placement, riding, and herding as a means of improving livestock distribution in all alternatives.
- Annual utilization guidelines on native herbaceous forage would be 45% on native forage and 55% on non-native forage on a pasture average basis to maintain plant health and vigor (USDI-BLM 2009a).
- High tensile electric fences would be considered in areas where they may provide an effective alternative to traditional barbed wire construction. These would also be constructed in conformance with BLM Fencing Handbook H-1741-1.
- All stock water developments would be equipped with a small animal escape ramp.
- Permittees or lessees shall provide reasonable administrative access across private and leased lands to the BLM lands for the orderly management and protection of the public lands.
- The following other Terms and Conditions are common to all grazing permits:
 - No salt and/or mineral blocks shall be placed within ¼ mile of livestock water, springs, meadows or streams. In the event that topography and/or available water sources do not allow for the ¼ mile requirement, coordination would be done with BLM personnel prior to placement of salt each year.
 - You (permittee/lessee) are required to perform normal maintenance on the range improvements to which you have been assigned maintenance responsibility as part of your signed range improvement permit(s), cooperative agreement(s) or assignment of range improvements agreement.
 - The Terms and Conditions of your permit/lease may be modified if additional information indicates that revision is necessary to conform with the Standards and Guidelines for Rangeland Health (43 CFR 4180).

- No livestock grazing would be allowed within any fenced spring, riparian area, or vegetative study enclosure.
- Motorized wheeled cross-country travel is limited to the administration of the lease or permit.
- The following Standard Terms and Conditions are included in every permit and lease throughout the BLM.
 1. Grazing permit or lease Terms and Conditions and the fees charged for grazing use are established in accordance with the provisions of the grazing regulations now or hereafter approved by the Secretary of the Interior.
 2. They are subject to cancellation, in whole or in part, at any time because of:
 - a. Noncompliance by the permittee/lessee with rules and regulations.
 - b. Loss of control by the permittee/lessee of all or a part of the property upon which it is based.
 - c. A transfer of grazing preference by the permittee/lessee to another party.
 - d. A decrease in the lands administered by the Bureau of Land Management within the allotment(s) described.
 - e. Repeated willful unauthorized grazing use.
 - f. Loss of qualifications to hold a permit or lease.
 3. They are subject to the Terms and Conditions of allotment management plans if such plans have been prepared. Allotment management plans **MUST** be incorporated in permits or leases when completed.
 4. Those holding permits or leases **MUST** own or control and be responsible for the management of livestock authorized to graze.
 5. The authorized officer may require counting and/or additional or special marking or tagging of the livestock authorized to graze.
 6. The permittee's/lessee's grazing case file is available for public inspection as required by the Freedom of Information Act.
 7. Grazing permits or leases are subject to the nondiscrimination clauses set forth in Executive Order 11246 of September 24, 1964, as amended. A copy of this order may be obtained from the authorized officer.
 8. Livestock grazing use that is different from that authorized by a permit or lease **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.
 9. Billing notices are issued which specify fees due. Billing notices, when paid, become a part of the grazing permit or lease. Grazing use cannot be authorized during any period of delinquency in the payment of amounts due, including settlement for unauthorized use.
 10. Grazing fee payments are due on the date specified on the billing notice and **MUST** be paid in full within 15 days of the due date, except as otherwise provided in the grazing permit or lease. If payment is not made within that time frame, a late fee (the greater of \$25 or 10 percent of the amount owed but not more than \$250) will be assessed.
- No Member of, or Delegate to, Congress or Resident Commissioner, after his/her election of appointment, or either before or after he/she has qualified, and during his/her continuance in office, and no officer, agent, or employee of the Department of the

Interior, other than members of Advisory Committees appointed in accordance with the Federal Advisory Committee Act (5 U.S.C. App.1) and Sections 309 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) shall be admitted to any share or part in a permit or lease, or derive any benefit to arise there from; and the provision of Section 3741 Revised Statute (41 U.S.C. 22), 18 U.S.C. Sections 431-433, and 43 CFR Part 7, enter into and form a part of a grazing permit or lease, so far as the same may be applicable.

Conifer Treatments

- Pheromones (e.g., verbenone, 3-methylcyclohexen-2-one (MCH)) and/or funnel traps may be applied to selected areas where trees are determined to be at risk to bark beetle attack (USDI-BLM 2011).

Noxious and Invasive Species

- Management of noxious weeds would continue in cooperation with Broadwater County, federal and state agencies, private landowners, and other partners under the current Butte Field Office Weed Plan Revision (2009), which allows an integrated management approach to noxious and invasive species. All invasive species on the Montana state noxious weed list will be treated to the degree financial resources allow. Areas where private landowners cooperate, participate, and support the BLM's weed management strategies, are given a higher priority for treatment.

Special Status Plant Species

- Any newly identified population of Special Status Plants would be documented and forwarded on to the Montana Natural Heritage Program for their tracking system.

Monitoring

- Under all alternatives, resource monitoring (such as riparian and upland health, forage utilization, vegetation establishment following treatments, etc.) would either be continued or new monitoring implemented to measure trends and progress towards meeting Standards for Rangeland Health and objectives.

2.2.2 Features Common to All Action Alternatives

These features are common to the Proposed Action (Alternative B) and Alternative C.

Travel Management

- Route Designations: All wheeled motorized travel would be "Limited" to designated roads, primitive roads, and trails. No cross-country motorized vehicle travel would be allowed, unless otherwise managed.
- Administrative and Authorized Access: This designation would "Limit" motorized access to BLM administrative and authorized uses only. BLM employees and authorized users (i.e. permittees, contractors, and personnel from other agencies) would be allowed motorized access for resource management, maintenance, inventory, monitoring, and/or compliance purposes without the need for a travel variance. General public use on these administrative routes would be limited to non-motorized access. Administrative access

for rights-of-ways or other permit holders would be limited to authorized or permitted activities only. No motorized recreational use would be authorized on these routes.

- Access to BLM Lands and Routes across Private Property: Where public motorized access is contingent upon the governing consent of adjoining private landowner (s), BLM would exercise a reciprocal “All or None” road use policy. This means that as long as the public is allowed access to these roads, no changes in travel management would occur. However, should the adjacent landowner refuse public access, the BLM would reciprocate by closing its travel routes to their use as well, without amending the TMP.

Livestock Management

- Livestock management changes would be initiated during the 2015/2016 grazing seasons. Full implementation, which is dependent on other proposals (e.g., range improvement projects), may take up to several years, due to funding, logistical, or other constraints.
- The Iron Mask EA serves as the equivalent of an Allotment Management Plan (AMP) and replaces the Beaver, Beaver Creek, Dowdy Ditch, Indian Creek, Kimber Diorite, Limestone Hills, and Whitehorse AMPs.
- Any decrease of current active use would be held in suspended non-use on the revised term grazing permits/leases.
- Range improvements generally would be designed to achieve both wildlife and range objectives (USDI-BLM 2009a).
- The following additional Terms and Conditions would be added to all permits/leases:
 - After consultation with the BLM, and written approval, permittees/lessees may be required to adjust the pre-planned pasture grazing sequence identified in an Allotment Management Plan (AMP) or other management plan due to drought or other unforeseen natural events.
 - With prior BLM approval, flexibility would be authorized for the season of use on each allotment if annual weather conditions and forage production warrant. The grazing period may be adjusted up to seven days earlier or later than specified in the Mandatory Terms and Conditions due to yearly variations in weather affecting forage production so long as total grazing days are not exceeded from that stated in the Mandatory Terms and Conditions.
 - With prior BLM approval, more livestock may be grazed for a shorter period within the authorized season of use. However, the maximum authorized AUMs, or season of use, as specified in the term grazing permits/leases cannot be exceeded by allowing this flexibility.
 - Livestock may need to be removed from a specific pasture prior to the maximum number of days specified in the grazing schedule. If this occurs, the time allocated in subsequent pastures would be adjusted proportionally.

Vegetation Treatments

- State of Montana Best Management Practices (BMPs), the Streamside Management Zone (SMZ) laws, and Riparian Management Zone (RMZ) guidelines (USDI-BLM 2009a, pp. 21-22) would be followed for all treatments or road activities in or near riparian areas. Guidelines as described in the Montana SMZ law (available at <http://dnrc.mt.gov/forestry/Assistance/Practices/Documents/SMZ.pdf>) would be the minimum standard design features unless alternative practices authorizations are obtained.

- Conifer treatment units would be monitored for noxious weeds and cheatgrass, and treated to prevent the expansion of noxious weeds.
- Conifer treatment units in suitable habitat would be surveyed for sensitive bird species prior to implementation. If a nest of a sensitive species is found in a treatment unit, timing and/or buffer stipulations would be enforced to avoid disturbing nesting activity.
- Any equipment used for vegetation treatments would be washed free of weed seeds prior to entering and departing the treatment areas to prevent the spread of noxious and invasive weeds between treatment areas.
- Pre-treatment weed inventory/control and post treatment weed control would be completed within each unit.
- Preserve, to the extent possible, limber and ponderosa pines due to high regional mortality of these and similar species from insects and disease.
- Conserve adequate wildlife cover and travel corridors.
- Retain all snags with nest cavities. Retain an average of four snags per acre, depending on stand characteristics, with larger snags preferred. In sagebrush and savannah treatments, all trees with “old growth” characteristics (large, open grown branches, rough limbs, broken tops, etc.) would be retained. This would generally include all snags >15” diameter at breast height (DBH), with the exception of those threatening human safety.
- Retain all trees and snags with active or inactive raptor nests. If raptor nests are discovered during marking, logging, or thinning operations, a 40-acre modified treatment buffer would be established to conserve the nest area. Treatment-related disturbance within a 40-acre buffer of active nests would be approved on a case-by-case basis by the BLM biologist prior to disturbance. The time of implementation could be modified based on the species using the site and the size of the buffer could be larger than 40 acres, depending on species and location of the nest. Although thinning could occur around a nest site, suitable habitat would be retained within 40 acres (or the adequate buffer size determined for the site) surrounding any active or inactive raptor or owl nest sites.
- Silvicultural prescriptions would be consistent with accepted methods related to site, species, habitat types, and the individual requirements of the forest stand to which they will be applied.
- Where slopes exceed 40%, treatment areas would be evaluated on a site-specific basis to determine if the area is suitable for mechanized operation, and appropriate BMPs would be applied. Any material cut by hand would be lopped and scattered to prevent undesirable fuel accumulation. Residual slash must be patchy, not form a continuous mat, not exceed 12 inches in height, and contain less than 5% of pieces greater than 3 feet long.
- Project layout and implementation would be completed in a manner to avoid creating unnatural appearing linear features, as seen from key observation points and the surrounding area.
- Monitor before and after treatment applications to determine whether the treatments were making progress towards meeting the objectives stated in Section 2.4.4. If no vegetation trend monitoring exists throughout the different treatment method areas, then monitoring studies would be established prior to treatment.
- If monitoring over time shows that objectives were initially met but are diminishing due to conifer seed source present at the time of treatment, or other factors, retreatment could be conducted.

- Timing and accomplishment of treatments would be dependent on funding, weather, and grazing pasture rotations.
- Culturally modified trees (trees scarred intentionally for various purposes) would be protected when possible, or mitigated. These trees would not be cut and would be protected from damage by mechanical equipment or falling trees.
- Within vegetation treatments, legacy trees (trees that were well established and mature prior to settlement) and the largest trees with old, structural characteristics or potential to develop old, structural characteristics would be retained.
- Aspen or cottonwood stands within larger treatment unit boundaries would have conifers removed from the periphery of the stand within 1-3 tree lengths. Size restrictions on cutting conifer in the overall treatment unit would be waived within this periphery around aspen or cottonwood stands, except for legacy trees or trees with old growth characteristics.
- Native materials or manufactured fencing would be utilized to create enclosure barriers to wildlife and/or livestock, when necessary, to allow for regeneration of riparian habitats or aspen stands.

Prescribed Fire

- Slash piles would be built so they cover a minimum area of ground (i.e., narrow and tall, rather than broad and short). Piles would be burned when soils are moist and soil temperatures are low, in the fall, winter, or spring. To prevent scorching of, and heat stress to live trees, burn piles would be placed at least 20 feet away from the drip line of crowns of live green leaf trees.
- Slashing of small conifers to augment fuel loading could be necessary before prescribed burning. Slashing could be done by hand or by mechanical methods.
- Burning would be in accordance with Montana/Idaho smoke management programs.
- Prescribed burning could only occur between May 1 and August 30 if surveys identify low potential for impacts to nesting birds or if mitigation measures could adequately reduce negative impacts.

Riparian and Aquatics

- Storage of fuels and toxicants within riparian areas would be prohibited. Refueling within riparian areas would be prohibited except for emergency situations, in which case refueling sites would have an approved spill containment plan.
- No cutting of vegetation that contributes to bank stability (bank rooted trees) would be allowed.
- There would be no pile burning within 25 feet of perennial streams.
- Lop and scatter would be the preferable method to use when reducing low concentrations of conifers in riparian areas.

Stream Crossings

- All applicable State and Federal Permits would be obtained and all permit conditions would be followed for construction of stream crossings.
- The most appropriate stream crossings (e.g., culverts, hardened crossings or temporary bridges), would be selected based on site specific conditions and potential impacts, including: floodplain fill, economics, road safety as well as impacts to stream channel and vegetation.

- Temporary and/or permanent culverts would be adequately sized to maintain stream dimensions, patterns and profiles.

Soils

- Broadcast and jackpot burning would be performed when soil moisture levels are high as determined by the BLM.
- On forested treatment sites, sufficient residual down woody material (5-20 tons/acre) would be left on-site to maintain nutrient recycling and desirable micro-site conditions.
- If skid trails are needed, their locations would be approved by the BLM prior to use.
- Designated skid trails would be utilized to limit the amount of soil surface disturbance, to minimize soil erosion and to limit compaction. Skid trails would be designed and located in such a manner to minimize compaction, erosion and loss of soil productivity. Skid trails would avoid wet (hydric) soils and those with a high water table. Examples of skid trail design features include locating them over deep soils, on low slopes and over down woody debris.
- Soils rated with a severe or very severe erosion potential would be avoided for mechanical and burn treatments. Soils with a severe compaction risk would be avoided for mechanized use. Wet (hydric) soils, which indicate wetlands, would be excluded from mechanical treatment. Hand-cut operations would be employed on hydric soils and in riparian areas.
- Mechanical activity would only be allowed when soils are dry or frozen.
- Use of a subsoiler could be used to accelerate break-up of compacted layers in roads and landings, thereby accelerating recovery and return to normal surface water infiltration rates.

Noxious and Invasive Species

- Any new noxious weed infestations would be targeted for prompt eradication before they have a chance to become established.
- Biological control agents would be released on larger infestations of noxious and invasive species in remote and difficult terrain to reduce the plant's competitiveness and help control the spread of weeds by reducing seed production.
- When a biological control becomes available for houndstongue it would be considered for release on infestations within the PA.
- All project maintenance or construction involving ground disturbance would be reseeded with a native seed mix approved by the authorized officer.
- Areas where noxious weeds dominate the landscape would be reseeded with a native seed mix appropriate for the site approved by the authorized officer.
- Weed patches would be avoided when operating machinery.
- All heavy equipment and off-road equipment associated with project implementation would be inspected and approved prior to entering the project area to ensure they are "weedfree." In some cases, weed inspections could also be required before moving between units on the same project.
- Areas proposed for burning or for the operation of mechanized equipment that occur within existing weed populations would be treated for weeds prior to activities.
- All roads and trails (new and old) would be treated to control weeds before the initiation and after the completion of project activities. All project areas would be monitored for

the emergence of new weed species, as well as the expansion or establishment of known weed species.

- All weed treatment sites would be monitored for infestations before operations and weeds would be treated annually after project completion.

Special Status Plant Species

- Activities that disturb mineral soil (such as blading, plowing, ripping, etc.) may not be allowed within the boundaries of populations of special status plant species. In habitats likely to support rare plants, field inspections would be conducted to search for special status plant species prior to authorizing surface disturbing activities. If rare plants are found in the course of the botanical survey, adverse impacts would be mitigated through project redesign or abandonment.
- All projects would have Special Status Plant inventory completed prior to implementation. If Special Status Plants are present, the project would be redesigned or abandoned to reduce impacts to the species.

Water Developments

- All applicable State and Federal Permits would be obtained and the Terms and Conditions applied.
- Spring sources and associated riparian wetland habitat would be fenced to exclude livestock use on developed springs.
- Flow measurements would be gathered at springs proposed for new development. Springs that have inadequate flows to provide a reliable water source for authorized livestock, while maintaining existing wetland/riparian habitat would not be developed. Adequate water would be left at the spring source to maintain wetland hydrology, hydric soils, and hydric vegetation.
- Routes leading to previously authorized water developments may be maintained. Maintenance routes could be constructed with minimal (less than 1/2 acre total per maintenance route) ground disturbance exposing bare mineral soil. These new routes would be "Limited to administrative and authorized users." Permit/lease holders may be authorized to travel along pipeline routes to perform maintenance as defined in the term grazing permit/lease.
- All old materials (pipeline, troughs, head boxes, etc.) would be cleaned up and removed when springs are redeveloped, maintained, or abandoned. Permittees are responsible for cleanup on projects they maintain or construct; BLM is responsible for cleanup on projects that BLM maintains and/or constructs.
- Soil disturbance resulting from pipeline installation would be seeded with a BLM approved native seed mix following construction.

Cultural Resources

- Personnel from the BLM would be notified of the presence and location of any cultural resources should they be encountered by any permittees or contractors during the course of operations on public lands.
- A Class III cultural resource inventory would be conducted in areas where construction or ground disturbing activity would take place to ensure compliance with Section 106 of the National Historic Preservation Act.
- Sites located in construction areas would be avoided, when possible, or mitigated.
- Culturally modified trees (trees scarred intentionally for various purposes) would be protected when possible, or mitigated. These trees would not be cut and would be protected from damage by mechanical equipment or falling trees.
- Sites located in burn areas would be avoided by reducing fuels in and around vulnerable features or by stationing suppression equipment in those same areas during implementation.
- A 1:24,000 USGS topographic map would be provided to the fire/fuels staff showing the location of all recorded cultural resources to facilitate avoidance.
- Hand cutting or slashing of trees during vegetation treatments would be allowed within the boundary of known cultural resources, as long as the slash is scattered or removed and piled off the site area for burning.
- Prior to the initiation of broadcast burning, a safety zone or “black line” 100 feet in width would be established around the perimeter of the site and/or any wooden structures or features. During the broadcast burning process, fire suppression equipment would be kept on hand and structure protection efforts initiated at all site locations that contain standing or collapsed structures.
- The archaeologist would be available to relocate and reestablish site boundaries, as needed.
- During the course of project design or implementation, the discovery of any previously unrecorded cultural/heritage resources would cause project operations in the area of the discovery to cease until analysis and evaluation of the heritage resources are completed, including consultation with the Montana State Historic Preservation Office and appropriate Indian Tribes.

Wildlife

- Prescribed burning could only occur between May 1 and August 30 if surveys identify low potential for impacts to nesting birds or if mitigation measures could adequately reduce negative impacts.
- Retain all trees and snags with active or inactive raptor nests. If raptor nests are discovered during marking, logging, or thinning operations, a 40-acre modified treatment buffer would be established to conserve the nest area. Treatment-related disturbance within a 40-acre buffer of active nests would be approved on a case-by-case basis by the BLM biologist prior to disturbance. The time of implementation could be modified based on the species using the site and the size of the buffer could be larger than 40 acres, depending on species and location of the nest. Although thinning could occur around a nest site, suitable habitat would be retained within 40 acres (or the adequate buffer size determined for the site) surrounding any active or inactive raptor or owl nest sites.

- Unless otherwise stated, all snags >15” DBH would be retained, with the exception of those threatening human safety.
- If any sensitive bird species are found to be nesting in a treatment unit, appropriate timing or buffer stipulations would be established by the BLM biologist.
- Timing restrictions would be used in crucial wildlife breeding and wintering areas that would be identified during project planning depending on the species present in treatment units.
- Native materials or manufactured fencing would be utilized to create enclosure barriers to wildlife and livestock, when necessary, to allow for regeneration of riparian habitats or aspen stands.
- Gates would be strategically placed along fencelines to allow for wildlife passage when grazing allotments are not in use.

2.3 Alternative A – No Action

Under the No Action alternative, the BLM would not implement any new activities in the PA. Livestock grazing would continue to be authorized by BLM on all allotments as currently permitted, including the class of livestock, season of use, animal unit months (AUMs), percent public land, and Terms and Conditions.

No new range projects would be constructed and no modifications would be made to existing projects. There would be no vegetation treatments. Fences would remain in their current locations and conditions, unless modified under a separate project-specific action after environmental review. Grazing would not be authorized on the Indian Creek Forage Reserve allotment, due to a lack of infrastructure such as fences and water developments. Restoration projects on Indian Creek and Whipcracker Gulch would not occur. Travel planning for the Iron Mask acquisition area would not be completed and the current management of the area would continue as directed under the temporary closure order that was implemented in 2007. The entire area would remain closed to motorized uses yearlong and the two boundary trailheads located at in the northeast and southwest extremities would remain at the same condition level with no improvements.

Livestock Management

Under Alternative A, livestock management would continue under the current Terms and Conditions in seven grazing allotments:

Table 1

<i>Current Livestock Grazing Regimes</i>										
Allotment Name, Number	Authorization Number	Livestock Number & Kind*	Season of Use	Grazing System*	BLM Stocking Rate (acres per AUM)	% Public Land	BLM AUMs	BLM Acres	Acres in Other Ownership	Total Acres
Beaver 20223	2507857	21 C	6/1 – 10/30	D	5.3	100	11	39	19 Pvt.	2,747

Current Livestock Grazing Regimes

Allotment Name, Number	Authorization Number	Livestock Number & Kind*	Season of Use	Grazing System*	BLM Stocking Rate (acres per AUM)	% Public Land	BLM AUMs	BLM Acres	Acres in Other Ownership	Total Acres
Beaver Creek 10229	2507866	2 C	5/15 – 10/31	C	3.5	100	101	559	6570 Pvt.	7,129
Dowdy Ditch 20209	2504527 2504487	18	5/1 – 6/15	D	59.6	100	30	1,547	3,509 Pvt.	5,056
Indian Creek 20233	NA	NA	NA	NA	NA	NA	NA	7,932	643 State 481 Local Gov. 1513 Pvt.	9,767
Kimber Diorite 20227	2507866	221 C	6/1 – 10/15	RR	10.7	100	221	2,366	3,532 Pvt.	5,781
Limestone Hills 20273	2500155 2500156 2507897	486 C	5/31 – 9/30	RR	14.0 (10.4)***	100	1,944 (1,365) ***	13,118	640 State 484 Pvt.	14,242
Whitehorse 20222	2507857	62 C	6/10 – 10/15	D	5.9	36	87	511	934 Pvt.	1,481

*Kind: C = cattle

**Grazing System: C = custodial, D = deferred, RR= rest rotation

***Numbers in parentheses indicate active AUMS and Stocking Rate after the relinquishment of one operator's 579 AUMS.

(An AUM is the amount of forage needed to sustain one animal unit for one month. An animal unit is one mature cow of approximately 1,000 pounds and her calf up to 6 months of age, or their equivalent.)

Terms and Conditions listed for the allotments below are in addition to those Terms and Conditions that are common to all allotments (Section 2.2.1):

Beaver #20223

- This allotment will be used in conjunction with your normal livestock operation, during the period shown, as long as such use is not detrimental to the public lands and fees are paid prior to turnout.
- The begin/end grazing date may be adjusted by up to two weeks to account for annual weather variability. Adjustments must be coordinated with the BLM before turnout. Total grazing time is limited to 152 days for Beaver allotment.
- Active use is 108 AUMs for Beaver allotment. The grazing schedule shows a smaller amount (I.E. 105) because any further livestock number increase for those grazing periods would exceed the active AUMs.

Beaver Creek #10229

- This allotment will be used in conjunction with your normal livestock operation, during the period shown, as long as such use is not detrimental to the public lands and fees are paid prior to turnout.

- The begin/end grazing date may be adjusted by up to four weeks to account for annual weather variability. Adjustments must be coordinated with the BLM before turnout. Total grazing time is limited to 170 days for Beaver Creek allotment.

Dowdy Ditch #20209

- This allotment will be used in conjunction with your normal livestock operation, during the period shown, as long as such use is not detrimental to the public lands and fees are paid prior to turnout.
- The begin/end grazing date may be adjusted by up to two weeks to account for annual weather variability. Adjustments must be coordinated with the BLM before turnout. Total grazing time is limited to 46 days for Dowdy Ditch allotment.

Indian Creek #20233

- Under Alternative A there are no Terms and Conditions specific to this allotment.

Kimber Diorite #20227

- Grazing use would be in accordance with the Kimber Diorite AMP dated March 2001.
- Livestock numbers may vary as long as 221 AUMs are not exceeded and the change is coordinated with the BLM before turnout.
- The begin/end grazing date may be adjusted by up to four weeks to account for annual weather variability. Adjustments must be coordinated with the BLM before turnout. Total grazing time is limited to 137 days for Kimber Diorite allotment.

Limestone Hills #20273

- Actual use for the Limestone Hills allotment must be turned in within 15 days following the grazing season.
- The Limestone Hills Training Area (LHTA) portion of the Limestone Hills allotment was withdrawn by the United States of America on December 26, 2013, by an Act of Congress, (H.R. 3304), also known as the National Defense Authorization Act for Fiscal Year 2014. As part of the withdrawal, the Department of the Interior and the Department of the Army will:
- Jointly establish procedures that are consistent with the Department of the Army's explosive and range safety standards,
 - a. Provide for the safe use of the withdrawn land.

With the agreement of the Secretary of the Army, the Secretary of the Interior may assign the authority to issue and to administer grazing permits and leases to the Secretary of the Army, except that the assignment may not include the authority to discontinue grazing on the land withdrawn.

Whitehorse #20222

- Livestock numbers may vary as long as 87 AUMs are not exceeded and the change is approved by the BLM before turnout.
- The begin/end grazing date may be adjusted by up to two weeks to account for annual weather variability. Adjustments must be coordinated with the BLM before turnout. Total grazing time is limited to 118 days for Whitehorse Allotment.

- Active use is 88 AUMs for Whitehorse Allotment. The grazing schedule shows a smaller amount (87) because any further livestock number increase for those grazing periods would exceed the active AUMs.

2.4 Alternative B – Proposed Action

2.4.1 Travel & Recreation

Under this alternative, the temporary closure of the acquisition area routes to motorized use by the general public would become permanent for the majority of the area. Wheeled motorized use on all travel routes in the Iron Mask acquisition area would become limited to administrative (BLM) and authorized uses (i.e. grazing operators, other agencies, etc.) only, except on the routes described below. Segments of routes 012 and 013 (1.6 miles) in and around the county shooting range that were designated as open in the Elkhorns Travel Plan would be closed yearlong to provide for public safety. No public access to these routes currently exists. Route 002 (0.1 miles), immediately across the railroad tracks off Whitehorse Lane, would be open yearlong to the public for wheeled motorized use to provide private access to a proximity home and upper lands northwest of the area. A locked gate would be installed at the beginning of Route 003 (east boundary). Route 19 (0.5 miles) that leads to the abandoned Iron Mask Mine Site would be open from May 16th to Dec 2nd to wheeled motorized use following reclamation work planned at the site. A small trailhead would be established and historical interpretive information displayed. In addition, two road closure gates would be installed to prevent unauthorized motorized travel on BLM and the Forest Service between the Iron Mask Mine and Indian Creek Road in Sections 25 and 30.

Finally, the two existing boundary trailheads at the end of Whitehorse Lane and Shep's Ridge Roads would be improved. Improvements would include:

- Grading and graveling parking surfaces large enough for several vehicles and trailers.
- Placing barriers to limit vehicle violations as needed.
- Installation of locking gates for administrative traffic.
- Installation of a smaller side gate to allow for non-motorized entrance (foot, horses and mountain bikes).
- Erecting kiosk panels with maps and other information.

Roads in the Iron Mask acquisition area necessary for administrative use and authorized use of the forage reserve allotment would be maintained as necessary. Areas where roads could be causing stream channel alteration, erosion, or other resource damage would be improved to mitigate the damage. Culverts would be installed on two spots on road 008 where stream flows are currently diverted and run down the road. (Current PA roads are shown on Map 7).

There are two poured concrete cisterns in the acquisition area. They are approximately 3-4 feet wide and at least 10 feet deep, if not more. They present a safety hazard to people and animals using the area, and the most durable means of mitigating this hazard would be to fill them with dirt to within a foot or less, of the tops. This is most easily done with a backhoe, which would gather dirt from an approved area and drop it into each opening.

A few inches of each feature would remain visible to provide special and technical information for future historical reference. Utilization studies focused on ranching and homesteading would find the proximity of the cisterns to their companion features useful. Also, determining the type of concrete used for these cisterns would also play an important part in these studies.

2.4.2 Indian Creek Forage Reserve Allotment

The land acquired in the Iron Mask acquisition in 2007 would be combined with the existing unleased Indian Creek allotment. This would be managed as a forage reserve allotment, and would be utilized by permittees of other allotments within the ECMA, on a temporary basis, when their own allotments are unavailable or unusable due to events such as drought, fire, vegetation treatments, or agency project work. The RMP allows for up to 1,076 AUMs to be utilized over 7,932 acres. A two-pasture system would be devised using existing and new fencing, which would result in a West pasture consisting of approximately 3,605 acres, an East pasture consisting of approximately 3,330 acres, and approximately 775 acres of isolated tracts that would remain unleased for grazing (Map 3). Based on the historic stocking rates and current data from the NRCS (2013), the West pasture could support a maximum of 489 AUMs and the East pasture 448 AUMs. Approximately 136 AUMs would become unavailable for grazing. Applications would be accepted after the pasture division fence and proposed water developments are implemented. Current regulations under 43 CFR 4100 and the following criteria would be used to assess applications:

1. Be a state or federal permittee or lessee, or private landowner within the boundaries of the Elkhorns Cooperative Management Area (ECMA).
2. Implementing projects or vegetation management on ECMA lands.
3. Facilitating a change in management to improve resource conditions on ECMA lands.
4. Accommodating permittees or lessees displaced by natural causes (i.e. wildland fire, drought, insect infestations, etc.)
5. The criteria found at 43 CFR §4130.1-2 (USDI-BLM 2006) when conflicting applications are submitted.

Applicants selected to graze the Indian Creek Forage Reserve allotment would be required to sign a cooperative agreement and assume maintenance responsibility of all range improvement projects for the duration of their temporary nonrenewable permit (43 CFR 4120.3-2 and 4120.3-5). Range improvement projects would be maintained to BLM specifications and standards (43 CFR 4120.3-4).

Applicants selected to graze the Indian Creek Forage Reserve allotment would also be responsible for obtaining a grazing permit from the Montana Department of Natural Resources (DNRC) for the state section included within the allotment. Permittees would be responsible for any additional coordination with private landowners of inholdings within the forage reserve allotment.

The season of use for the Indian Creek Forage Reserve allotment would be from 5/15-10/15 (see Table 1), or within the dates of the permittees' normal allotment, whichever is more restrictive.

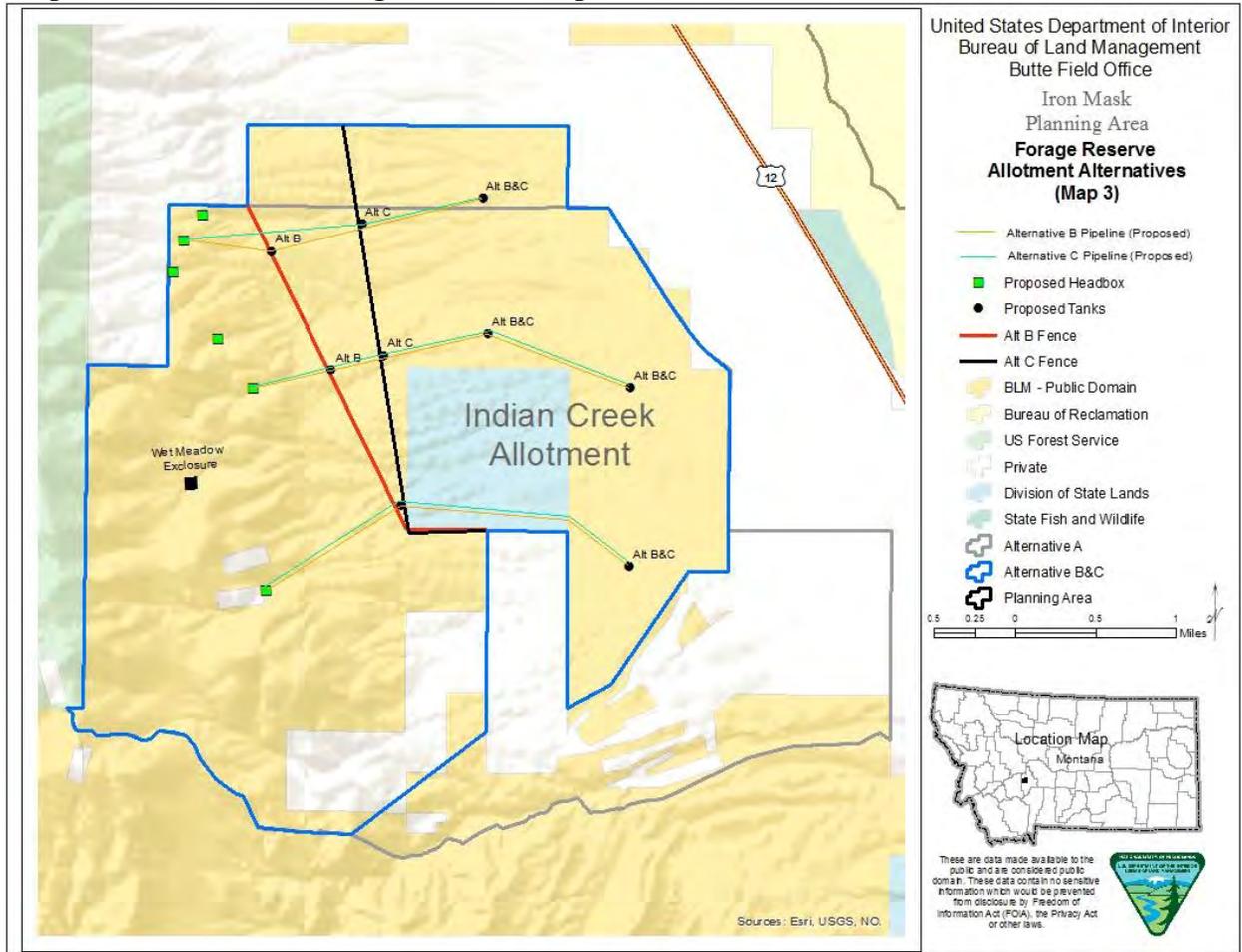
Generally it is expected that most years the East pasture would be used first. Livestock would be moved to the West pasture when 40% use is achieved in the East pasture. In dry or warm years the West pasture could be used first. Each pasture would only be utilized once per grazing season although trailing may occur up to twice per year.

On an annual basis, the West pasture would not be used until either 40% relative use (USDI-BLM 1999a) on the East pasture is met, or when soil moisture and plant phenology thresholds are achieved which would enable the West pasture to be used first. Due to microclimate differences from elevation and topography, the soil moisture and plant phenology thresholds would not typically be met until mid-June in the West pasture in most years.

Grazing would end in the West pasture after a 6" stubble height is achieved on key riparian species that are outside of proposed riparian exclosures. Livestock would then be moved to the East pasture if the West pasture had been used first, or taken off of the allotment. To confirm the accuracy of the estimated carrying capacity, clipping and weighing of key forage species would be conducted on at least one low precipitation year, one average year, and one above average year (USDI-BLM 1999b). If results of monitoring show herbivory overuse, the allowable AUMs in this allotment would be reduced accordingly.

Jackleg and rail riparian exclosures would be constructed around spring sources for stock water developments. A let-down exclosure would be constructed around the wet meadow in the west pasture that would be let down when livestock are not using the allotment. A pipeline and tank would be constructed adjacent to the exclosure using the wet meadow as a source.

Map 3: Indian Creek Forage Reserve Proposals



Removal of approximately six miles of obsolete fence would occur along with construction of approximately five miles of new fence. All new fence construction would meet wildlife-friendly standards, and let-down fence would be utilized where possible. Existing boundary fences would be repaired or rebuilt where needed. Three headboxes/spring developments would be constructed and feed up to seven tanks to maximize cow dispersal across the pastures. Three tanks would be fenceline tanks accessible from both pastures, and four tanks would be located in the East pasture. The headboxes would be fenced if necessary, based upon impacts from hoof or grazing damage in the immediate vicinity. The tanks would be either of fiberglass or rubber tire construction.

Up to 6 ½ miles of pipelines would need to be installed to supply the tanks. Pipelines would be buried where possible. Pipelines would be on the surface where rock or topography prevents burial. A total of less than four acres of disturbance may occur from pipeline burial. Pipeline trenches would be reseeded with native plant mix following pipeline burial.

Minimal (less than ½ acre per new water development) ground disturbance may occur while creating new maintenance routes and access to new spring development locations. Route work would be only to the extent necessary to allow access of necessary equipment, generally a rubber

tire equipped backhoe. The routes created as a result of this initial access would be “Limited to administrative and authorized users.” These routes would serve as maintenance routes for the spring development and subsequent pipelines. Erosion control measures (i.e. waterbars, rolling dips, waddles, etc.) would be installed where overland flow is observed or expected to occur.

If monitoring and/or consistent reports from local landowners indicate that wild ungulates are being displaced by cattle, the East and West pastures would be divided into four pastures to reduce the displacement.

The authorization would read as follows:					
Allotment Name, Number	Authorization number	Livestock Number & Kind	Season of Use	% public land	BLM AUMs
Indian Creek	Changes with each use.	185 C	5/15 - 10/15	100	937

Other information would include:				
Grazing System	BLM Stocking Rate (ac./AUM)	BLM Acres	Acres in Other Ownership	Total Acres
D	7.4	6933	643 State 512 Private	8088

Additional Terms and Conditions:

- Allowable use by livestock would not exceed 40% relative use in both pastures.
- An average riparian stubble height of 6 inches would be maintained in key areas. (These key areas would be identified once infrastructure is in place and livestock patterns and high use areas are determined.)
- Livestock numbers may vary as long as 937 AUMs are not exceeded and use occurs within the identified season of use.
- You are required to perform normal maintenance on the range improvements associated with the Indian Creek forage reserve allotment during your authorized period of use.

2.4.3 Grazing Authorizations

Grazing Management under Alternative B for the following allotments would be similar to Alternative A: Beaver, Beaver Creek, Kimber Diorite, and Whitehorse. The only changes would be additional Terms and Conditions listed in Section 2.2.2 that standardize language and allow for seasonal variation within the mandatory Terms and Conditions of the permit.

Dowdy Ditch #20209

Under Alternative B the transfer of grazing preference would be approved for authorization #2504487 and a new 10-year term grazing permit would be issued to the applicant. The percent

Public Land would also change from 100% to 10% and the season of use would change from 5/1 – 6/15 to 6/1 – 8/15 to reflect the actual use of the BLM and private lands fenced within the Dowdy Ditch Allotment.

Authorization #2504527 would continue with the same livestock numbers and mandatory Terms and Conditions as under Alternative A, but with the inclusion of the new Terms and Conditions listed in Section 2.2.2.

The authorizations would read as follows:					
Allotment Name, Number	Authorization Number	Livestock Number & Kind	Season of Use	% Public Land	BLM AUMs
Dowdy Ditch 20209	2504527	7 C	5/1 – 6/15	100	11
	2504487	13 C	6/1 – 8/15	10	20

Other allotment information would include:				
Grazing System	BLM Stocking Rate (ac./AUM)	BLM Acres	Acres in Other Ownership	Total Acres
D	59.60	284	699	983
D	59.60	1,263	2,810	4,073

Limestone Hills #20273

In 2012, one grazing operator on the Limestone Hills allotment relinquished their entire 579 AUMs. The 2010 land health assessment indicated that three of the six pastures on this allotment did not meet land health standards. Under Alternative B, the BLM proposes to not reallocate the 579 relinquished AUMs, thereby reducing the total permitted livestock AUMs from 1,944 to 1,365, a 30% reduction in total AUMs on the allotment.

The 2009 Butte RMP (p.25, Action 20) states that allotments where grazing preference is relinquished during the life of this plan will be evaluated for suburban/urban interface issues, important wildlife habitat, riparian values, or recreational considerations before re-offering the grazing preference on the allotment for permit or lease.

Reducing the AUMs on this allotment would reduce livestock grazing pressure and would be expected to move the three pastures that didn't meet the land health standards towards meeting standards.

The pasture rotation schedule established in the 1985 AMP does not work well on the ground, which in turn has contributed to nonconformance to the grazing schedule. The current pasture rotation does not allow logical trailing and movement of cattle throughout the allotment. It is

impractical and inefficient to move cattle in the southernmost pasture all the way to the northernmost pasture and back down to another pasture in the south end of the allotment. In addition, with construction of the proposed pasture fencing, the Whipcracker pasture would be an independent pasture in the grazing system and no longer used in conjunction with the Cold Springs pasture.

Under Alternative B, a revolving type of pasture rotation schedule is proposed that would lead to more efficient cattle movement throughout the allotment. BLM also proposes that this rotation schedule be flexible so as to meet the training needs of the Montana Army National Guard (MTARNG), allow the BLM to be responsive to variable precipitation and plant growth levels that may change from year to year, as well as to incorporate rest periods before and after vegetation treatments. Overall, this proposed pasture rotation schedule would be followed as closely as possible with the ultimate goal of improving or maintaining rangeland health.

The following pasture rotation schedule is proposed to address these issues:

Year	6/1 – 6/30	7/1 – 7/31	8/1 – 8/31	9/1 – 9/30	Rest
2015	Marble Quarry	Compound	Cold Springs	Whipcracker	Tank Range, Iron Mask
2016	Tank Range	Marble Quarry	Whipcracker	Iron Mask	Compound, Cold Springs
2017	Compound	Tank Range	Iron Mask	Cold Springs	Marble Quarry, Whipcracker
2018	Marble Quarry	Compound	Cold Springs	Whipcracker	Tank Range, Iron Mask
2019	Tank Range	Marble Quarry	Whipcracker	Iron Mask	Compound, Cold Springs
2020	Compound	Tank Range	Iron Mask	Cold Springs	Marble Quarry, Whipcracker
# of days	30	31	31	30	0

In summary, BLM proposes to renew the three grazing authorizations with the following modifications: the part of the Whipcracker pasture south of Indian Creek would be allocated to trailing use only, the relinquished 579 AUMs would not be reallocated for grazing, the Whipcracker and Cold Springs pastures would be separated with new fencing, and the pasture rotation schedule would be revised.

The authorizations would read as follows:					
Allotment Name, Number	Authorization Number	Livestock Number & Kind	Season of Use	% Public Land	AUMs
Limestone Hills 20273	2500155	126 C	6/1 – 9/30	100	505
	2500156	126 C	6/1 – 9/30	100	505
	2507897	73 C	6/1 – 9/30	100	295

Other allotment information would include:				
Grazing System	BLM Stocking Rate (ac./AUM)	BLM/LHTA Acres	Acres in Other Ownership	Total Acres
RR	26	2,545 BLM 10,573 LHTA	640 State	13,758
RR	26	2,545 BLM 10,573 LHTA	640 State	13,758
RR	45	2,545 BLM 10,573 LHTA	640 State	13,758

Additional Terms and Conditions would include those under Alternative A, the Terms and Conditions listed in Section 2.2.2., and the following:

The Iron Mask EA serves as the equivalent of an AMP and replaces the Limestone Hills AMP dated 10/25/84. Prior to issuing grazing permits within the LHTA the BLM would coordinate with the Department of the Army and Montana Army National Guard on any special terms or conditions required in the grazing permit for the safe use of the LHTA lands.

After the Whipcracker and Cold Springs fences are constructed, the portion of the Whipcracker pasture south of Indian Creek would be used for trailing purposes only.

The LHTA was withdrawn by Congress to the Department of the Army on December 26, 2013, by an Act of Congress (H.R. 3304), also known as the National Defense Authorization Act for Fiscal Year 2014. The permittee is required to coordinate with MTARNG prior to maintaining range improvements, grazing, or moving livestock between pastures.

Limestone Hills Allotment - Proposed Range Improvement Projects

BLM proposes to construct wildlife-friendly pasture boundary fences on BLM land to create livestock barriers between the Whipcracker, Cold Springs, and Iron Mask pastures (Map 4). ATVs or four-wheel-drive vehicles may be used cross-country to transport fence materials and fence-building equipment. For subsequent annual maintenance, access to the Shep’s Ridge and Whipcracker Fences would be by foot or horseback. Permittees would be required to sign Cooperative Agreements to maintain all new range improvements that are built for the purpose of livestock grazing.

By establishing fence boundaries between pastures, the grazing operators would be able to better adhere to the proposed rest-rotation schedule discussed above.

Fence #1, Whipcracker Fence: A three-wire barbed wire boundary fence approximately 10,500 feet in length would be built to the north of Indian Creek to form a south pasture boundary for the Whipcracker pasture. The west end of this new fence would tie into rimrock. The proposed Whipcracker pasture fence would separate the Whipcracker and Cold Springs pastures and would allow the permittees to keep cattle in the scheduled pastures.

A cattle guard would be installed where this proposed fence crosses the north-south road in the Whipcracker pasture. A 150-foot section of let-down fence would be installed to the west of the cattle guard location to provide an open area for wildlife to cross the fence after cattle have been removed from the allotment in the fall. The part of the Whipcracker pasture south of Indian Creek would be used for trailing purposes only.

Fence #2, Shep's Ridge Fence: A pasture boundary fence, approximately 8,400 feet long, would be built between the Iron Mask and Whipcracker pastures just to the west of the north-south limestone ridge to prevent cattle movement between the two pastures. This ridge is also used by elk to move east and west of this ridge during winter. Without a barrier between the pastures, the cattle can access both pastures at the same time, which is not in compliance with the proposed pasture rotation schedule. This fence would be designed with three separate let-down segments that would be laid on the ground when the pastures are not being used, primarily October through May 15th of each year. These let-down segments would be located on bare, less steep slopes where field inspections have determined (by visual observations of elk and scat sign) wildlife crossings commonly occur along the ridge.

Fence #3, Cold Springs Pasture Fence: A pasture boundary fence, approximately 8,500 feet in length, would be built on the north boundary of the Cold Springs pasture and just south of Indian Creek along the ownership boundary. The west end would tie into the BLM/USFS boundary fence and the east end would tie into an existing BLM fence.

No fence currently exists between these pastures, and cattle can move uninhibited between pastures. This fence would function in conjunction with the Whipcracker pasture fence proposed above to create two entirely separate Cold Springs and Whipcracker pastures, as well as lessen conflicts between private landowners and grazing operators.

Spring Improvements: Ten developed springs exist on the Limestone Hills allotment and outside of the LHTA, some of which were constructed prior to standardized range improvement requirements. These springs are a critical key in better cattle distribution throughout the pastures, thereby resulting in less overuse in concentrated areas. In addition, enhanced water availability benefits many wildlife species that drink from these developed springs.

The developed springs are proposed for redevelopment. These water developments were constructed as early as 1942 and currently require reworking or may require reworking in the future.

Redeveloping these springs would entail a combination of the following, dependent on the needs at each spring location:

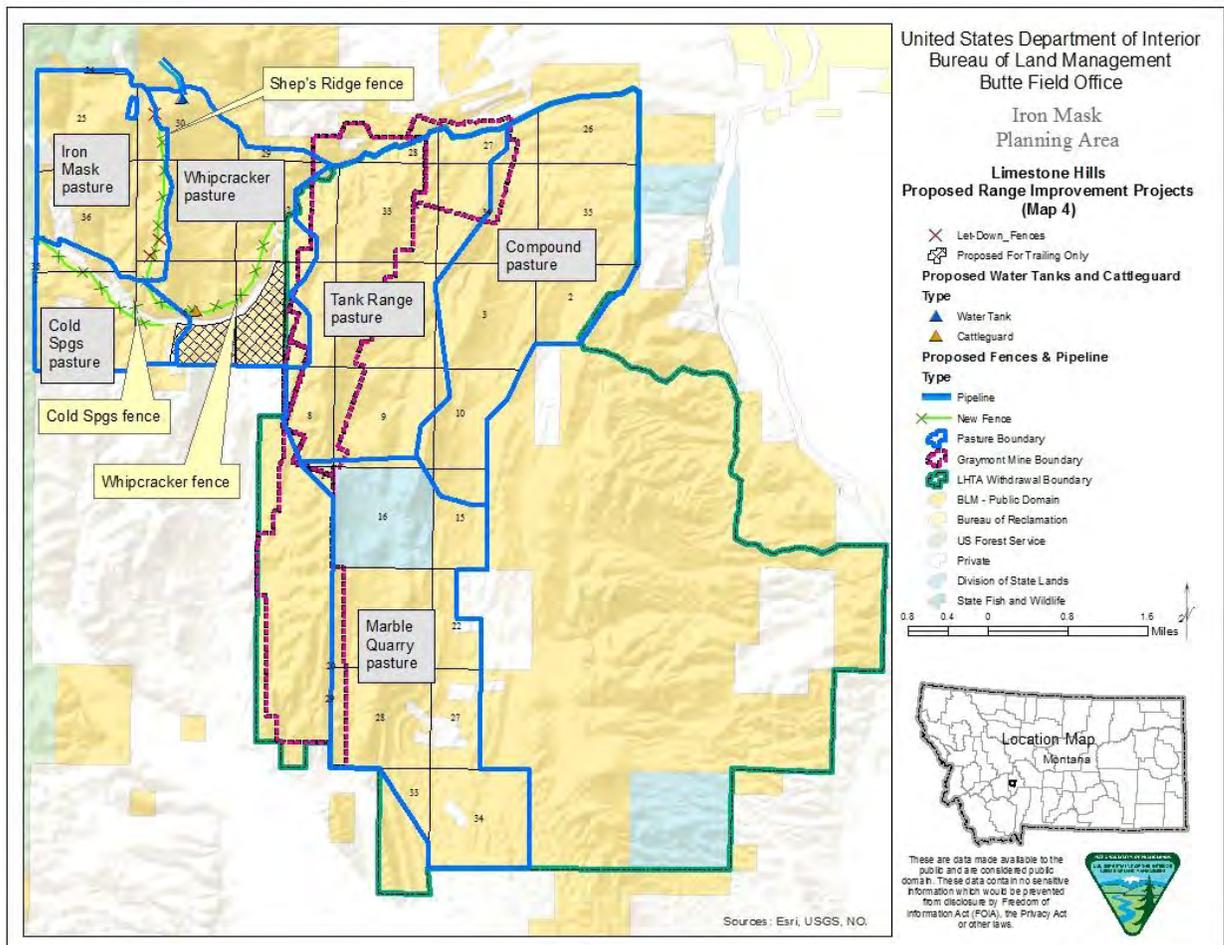
- a. Re-digging and resetting spring headboxes,
- b. Digging up and replacing pipeline from headboxes to watering tanks,
- c. Replacing drain lines, and
- d. Replacing water tanks.

Depending on each location the rework would be done by hand and/or by excavating machinery such as a rubber-tired backhoe. The reworks would be contained within the original areas of disturbance.

Iron Mask Pipeline and Tank: A new pipeline from the spring at the Iron Mask Mine would be constructed going to the south and through the fence line into the Whipcracker pasture of the Limestone Hills allotment. A new water tank would be installed at the end of this pipeline. The pipeline would be trenched underground and the trench line reseeded. The tank would be either a fiberglass or rubber tire type.

The proposed pipeline and tank installation would be located far enough away from the planned Iron Mask trailhead parking area to the east to avoid cattle-recreationist conflicts.

Map 4: Limestone Hills Proposed and Identified Projects



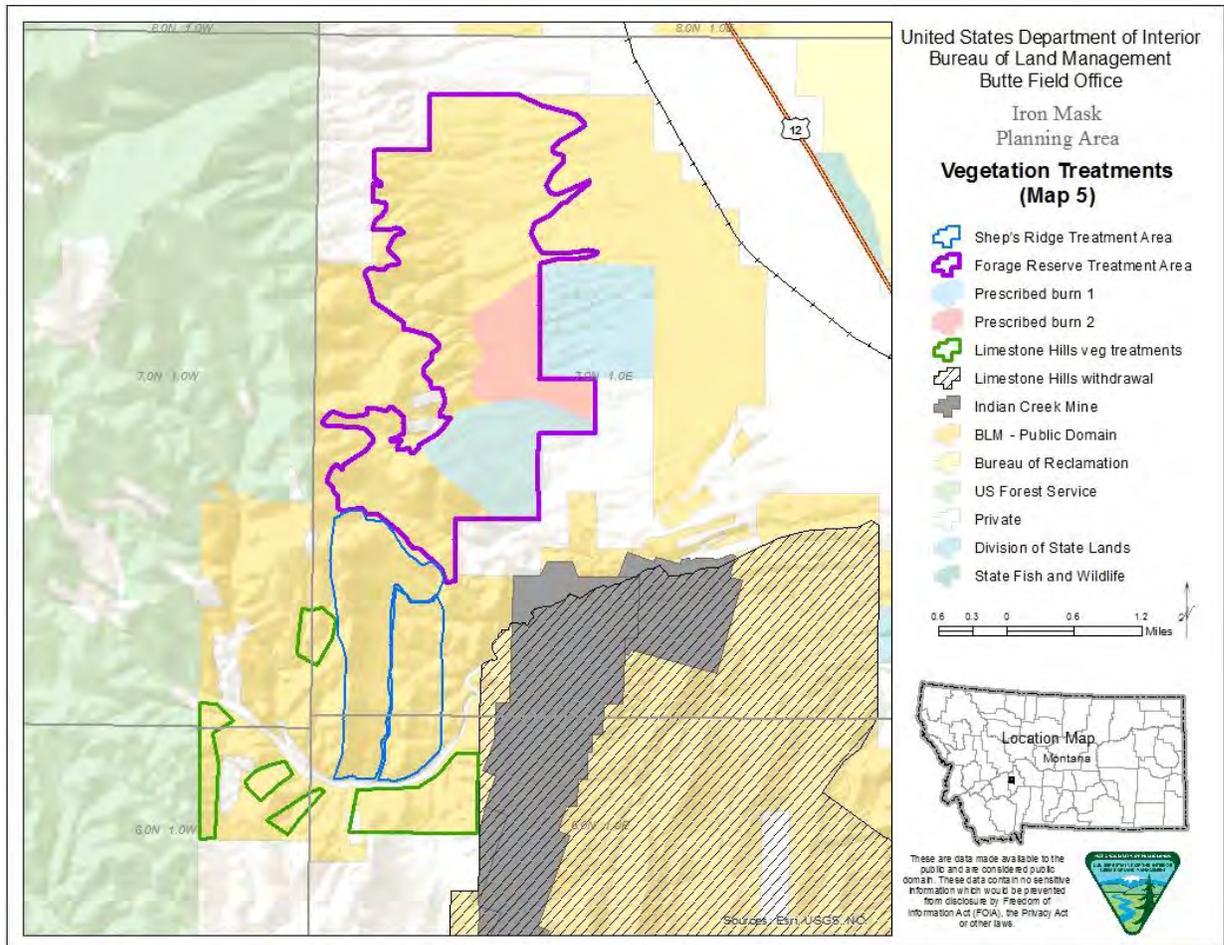
2.4.4 Upland Vegetation Treatments

The following projects are proposed to address the vegetative impacts from a lack of historic fire regime and improve the upland and riparian land health (Map 5). Vegetation Treatment Objectives (VTOs) include:

1. Maintaining or making progress towards meeting Land Health Standards.

2. Reducing conifer colonization to open up vegetation areas for grasses and forbs that would be more prevalent on the landscape had fire been allowed to occur naturally.
3. Improving native habitat for wildlife including elk and mule deer by increasing herbaceous vegetation.
4. Reducing fuel loads and the risk of larger, hotter wildfires.
5. Promoting riparian and deciduous tree health.
6. Moving vegetation communities toward pre-settlement conditions.

Map 5: Proposed Vegetation Treatment Areas

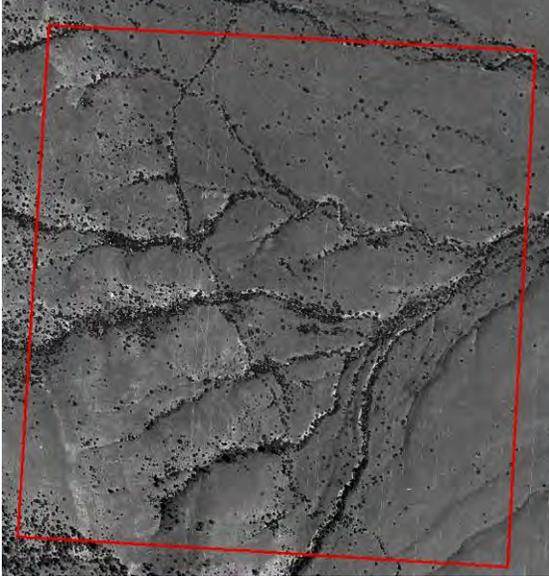


Indian Creek Forage Reserve allotment: Colonization of conifers, primarily juniper and Douglas-fir, has occurred to a great extent in this area primarily due to change in fire disturbance regime (see FRCC discussion, Chapter 3). The grassland/shrubland type habitat in this area is undergoing habitat type change towards woodland. (See cover photo and photos below.) Within a polygon of 3,547 acres that encompasses most of the conifer expansion in this area, up to approximately 978 acres would be treated with prescribed fire. These acres were determined by where burns could be safely controlled. All of the 3,547 acres could be treated by mechanical or hand-cutting means. Pockets of forest, especially on north-facing slopes, would not be treated. Some conifer patches would be left for habitat diversity and big game hiding and thermal cover.

Treatments would focus on restoring grassland/shrubland habitats, and reducing conifer expansion into aspen stands, especially in riparian areas.

Photos 1 and 2: Conifer expansion into grassland/shrubland from 1955 to 2011.

Aerial photo of T7N, R1E, Sec. 8, SW ¼ in 1955



Aerial photo of T7N, R1E, Sec. 8, SW ¼ in 2011



Shep's Ridge treatment maintenance and aspen stand improvement: In 2006, a 1,200-acre mastication and prescribed burn treatment was completed on Shep's Ridge to reduce conifer expansion and improve habitat, primarily for bighorn sheep. Since completion of that project, juniper and Douglas-fir seedlings have returned from the seed source that was in the soil at the time, with most of the density of the seedlings at the southern end of the treatment. Under this alternative, those seedlings would be cut to maintain the results of the 2006 treatment.

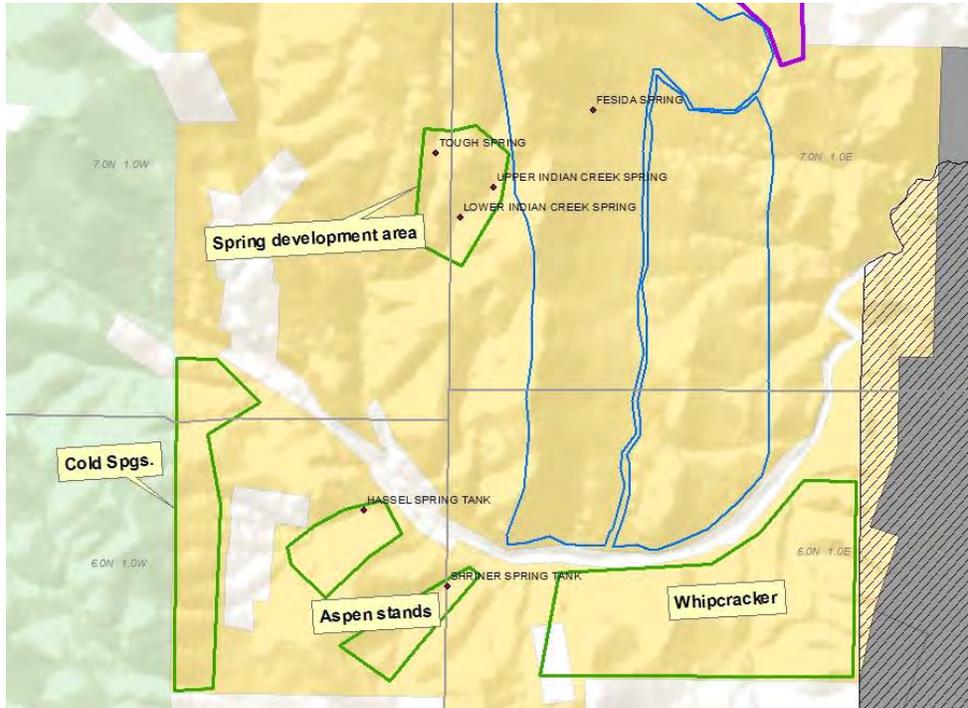
Photo 3: Small Douglas-fir and juniper reestablishment on Shep's Ridge.



In the drainages within this unit, aspen stands which were on the periphery of the 2006 treatment would be treated by either hand cutting or mechanical removal of colonizing conifers. Conifers up to three tree lengths from the aspen stands would be removed, with the exception of conifers that have old growth structural characteristics.

Limestone Hills Proposals:

Map 5 zoomed to Limestone Hills proposals.



Whipcracker Treatment Area: If the proposed Whipcracker fence is built, BLM proposes to treat up to 344 acres in this area to open up the tree canopy and promote an environment for a more historic forest savannah.

The proposed project in this area would benefit wildlife habitat and begin moving this upland toward a healthier condition by opening up the understory and overstory, and reducing competition between conifers. This treatment would also reduce the risk and severity of wildfire if it were to occur. Proposed treatments in this area would address VTOs 1-4 and 6.

By observing the larger diameter trees that formed old open savannah-type groups, then looking at the interspaces that are filled with small diameter trees, it can be determined that fire has not returned in regular intervals to keep the open savannah-like characteristics. There is also spruce budworm activity in this stand which can indicate that the stand condition is crowded, tree crowns are overlapping, and the trees are competing for sunlight and water.

Photo 4: Larger diameter tree groups compared to colonizing smaller diameter trees. (Red arrows indicate leaf trees.)



BLM proposes to reduce the understory trees by 70% and the overstory by 40% to move this area towards more historic vegetative condition of open forest savannah. Hand cutting conifers, primarily juniper and Douglas-fir, would create open patches with large-diameter trees retained in groups. Cuttings would be arranged into piles for burning. Burn piles would be located at least 50 feet from live uncut trees.

Since many of the slopes in this area are greater than 40%, treatment areas would be evaluated on a site-specific basis to determine if the area is suitable for mechanized operation, and appropriate BMPs would be applied. A commercial timber sale is also not practicable due to the low volume of marketable trees and numerous trees having too many stem branches to be considered commercial sawlogs.

Spring Development Treatment Areas: Six of the spring developments in the Limestone Hills allotment that provide water to cattle and wildlife are colonized by conifers. These spring developments are: Hassel, Schrinier, Tough, Lower Indian, Upper Indian, and Fesida. In separate treatment areas with a combined total acreage of approximately 298 acres, BLM proposes to use prescribed fire, hand-cutting, or a combination of both to reduce colonizing conifers above and around these drainages to move these areas towards better upland health, lower the risk of severe wildfire, and reduce fuel loads. Cut conifers would be arranged in small, vertical piles and burned. Burn piles would be located a minimum of 50 feet from live aspen, ponderosa pine and limber pine trees.

Conifers up to 8" DBH could be removed, with the exception that larger conifers up to those showing old growth structural characteristics within three tree lengths of aspen or cottonwood stands could be removed. In the Hassel and Schrinier Spring drainages, the reduction of conifers would also promote existing aspen stands by allowing more sunlight through the overstory, and reducing competition for soil moisture; thereby providing a better environment for aspen seedlings and saplings to increase and flourish.

These separate but similar treatments would strive to reduce the smaller-sized conifers by 80-90%, which would also help promote regeneration of native grasses and forbs in important elk winter habitat area.

Treatments in these areas would address all of the VTOs.

Cold Springs Treatment Area: In the Cold Springs pasture, the U.S. Forest Service conducted a prescribed fire several years ago adjacent to the west boundary to reduce conifer colonization and promote native grasses and forbs. BLM proposes hand-cutting or terra-torching (using a flame throwing device, usually mounted on ground-based equipment to burn individual trees, normally conducted in winter) conifers along the west one-quarter of the Cold Springs pasture that would “bump up” alongside the Forest Service prescribed burn. This vegetation treatment would be approximately 125 acres in size and would reduce conifers that have colonized due to a lack of a natural fire regime (VTOs 1, 2, 5). This treatment would result in mosaic patterns throughout the treatment area but would strive to kill up to 80% of the conifers less than 8” DBH.

Prickly Pear Treatments: Along the eastern, low elevation portions of the proposed Indian Creek Forage Reserve allotment, there is a large amount of prickly pear growing densely and displacing grasses and forbs as a result of historic overgrazing. The exact amount and extent of prickly pear is currently undetermined since it would need to be mapped by hand in the field. Currently, information on effectiveness of large-scale treatments to reduce prickly pear in this ecosystem is lacking. Test plots of up to ten acres total would be developed in the heaviest infestation spots for treatment. Experimental treatments of these plots could include removal of prickly pear by hand tools, dragging tires or other objects to remove the plants, hand spraying of herbicide, and spreading of native grass seed.

2.4.5 Riparian Treatments

Indian Creek Headcut Restoration: BLM proposes to stabilize this headcut to prevent further destabilization of the reclaimed stream channel (Photos 5 & 6). Specific designs for the headcut stabilization would be developed and would likely include a combination of physically hardened grade control structures, slope reduction and revegetation with both native riparian and upland species.

Photos 5 and 6: Indian Creek Headcut



Whipcracker Gulch Restoration: Whipcracker Gulch is the perennial interrupted stream that flows generally east-southeast towards Indian Creek below the abandoned Iron Mask Mine and Mill Site. The mine is proposed for reclamation under a separate effort under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) authority to clean up soil and sediment at the site that are contaminated with heavy metals. No alternative presented in the Expanded Engineering Evaluation/Cost Analysis (EEE/CA) (DOA 2009) to clean up the hazards has been selected at the time this EA is written. The proposed restoration action is therefore included in this EA in case funding to conduct the restoration is not secured under CERCLA.

The stream source of Whipcracker Gulch is an adit at the Iron Mask mine site. If reclamation under CERCLA can clean up the source of the stream at the site for the surface water to meet water quality standards, then BLM proposes to enhance stream flow and function by rehabilitating up to approximately one mile of stream immediately below the site. A synthetic or grout groundwater sill would be constructed to increase surface flow where it currently disappears below the streambed due to mine altered channel morphology. Banks and incised and straightened sections of stream would be recontoured to reduce erosion, restore the floodplain, and channel morphology to improve stream water quality, stability and be able to more effectively dissipate stream energy. Conifer colonization would be removed and riparian vegetation would be established, consistent with treatment proposals in the riparian section of this document.

If the CERCLA reclamation does not result in clean stream water and stream sediment, then BLM would not attempt to enhance stream connectivity between the surface water at the site and the channel below the site. The connectivity effort would not be undertaken to prevent contamination of downstream water.

Kelly Spring Gulch: Aerial photography from 1955 shows approximately eight forested acres in the gulch. In 1982, a 25-acre exclosure was built around the gulch to protect aspen. Conifers have increased in the immediate area and are now jeopardizing the aspen that the exclosure was built to protect, as well as possibly reducing water flow in the channel. Removal of approximately 60-90% of the conifers by hand cutting, focusing on the smaller size trees, in a 21-acre area on the west side of the Kimber Diorite allotment adjacent to USFS land is proposed to restore riparian vegetation and improve water flow and availability for wildlife.

Indian Creek Riparian Vegetation Treatments: All of Indian Creek and the West Fork of Indian Creek would receive treatments to improve riparian health. The treatment area along the banks of these creeks would total approximately 69 acres. A total of 12 reaches exist on Indian Creek and its' West Fork where it goes through BLM land: MIDR-20, 21, 22, 23, 24, 25, 38, 39, 43, 44, 45, 49 (please refer to the riparian reach table in Section 3.4.5 for statistics). In the last Proper Functioning Condition (PFC) evaluations, ten of these reaches were rated as FAR, three were NF, and only one was PFC. The primary reason for the low ratings in these reaches was conifer colonization. Aspen, cottonwood, willows, alder, and other native riparian species would be expected to occur in greater density and vigor under historical conditions than exist presently because they are being out-competed by conifers. Reaches 20, 21, and 22, at the lower (eastern) end of Indian Creek in the DA, have been colonized by Russian olive trees in addition to conifer. Dense stands of Russian olive exist along the Missouri River and are spreading up Indian Creek.

Species diversity is typically lower, and value to wildlife and livestock in Russian olive stands is generally lower than riparian areas dominated by native species (Zouhar 2005).

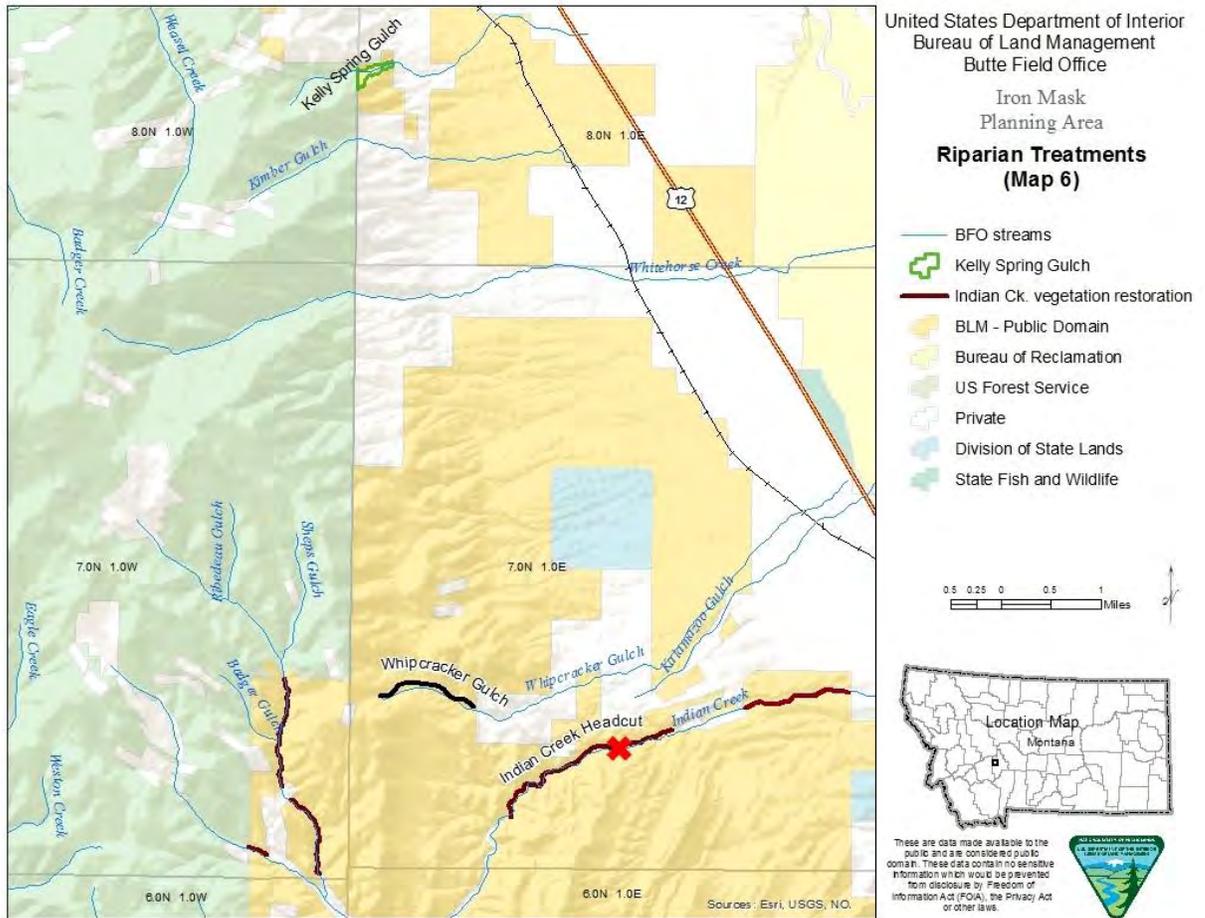
On the main stem of Indian Creek in reaches MIDR-23, 24, 25, 43, 44, 45, and on the West Fork of Indian Creek (MIDR-49), where deciduous trees are not present, conifers less than 8" DBH would be hand-cut to decrease understory and overstory vegetation competition and promote the cover and vigor of riparian vegetation species. In aspen or cottonwood stands, larger conifers up to those showing old growth structural characteristics could be removed. Conifers would be cut to a distance of no more than 50 feet on each side of the drainage.

In reaches MIDR-38 and 39 understory junipers and Douglas-fir with a DBH up to 8 inches and up to 30 feet on each side of the stream would be hand-cut.

In reaches MIDR-20, 21, and 22 Russian olive trees would be removed by cutting and/or chemical application to eliminate resprouting. Any Russian olive trees spreading into the upper reaches would also be removed.

In all treatments of Indian Creek riparian reaches, felling would direct tree crowns away from open water in the creek. Cut conifers would be pulled back away from the immediate stream area to lessen impacts to fish from large amounts of conifer needles. (The addition of large amounts of decomposing needles into the creek would negatively impact fish by reducing available oxygen.) Large conifers that provide bank stabilization and shade to help keep cool water temperatures would be retained.

Map 6: Proposed Riparian Treatments



2.4.6 Wildlife Friendly Fencing

All new fences would be configured and maintained to wildlife-friendly specifications in accordance with BLM Handbook H-1741-1 (1989) or *A Landowner's Guide to Wildlife Friendly Fences: How to Build Fence with Wildlife in Mind* (Paige 2012), with the exception of fences built specifically to keep ungulates out of an area or fences built to meet specific public safety or other administrative purposes. Existing fences not meeting standard BLM wildlife specifications or those that impede wildlife movement would be removed, modified, or reconstructed to BLM specifications (USDI-BLM 2009a). Electric or let-down fences could be installed, or gates would be strategically placed along fencelines to be left open for wildlife passage when grazing allotments are not in use.

2.5 Alternative C

2.5.1 Travel & Recreation

Alternative C would be the same as Alternative B with the exception that Route segments 001, 004 and 007 (two miles) in the northern extremity of the area would be open to the public

seasonally for wheeled motorized vehicles from May 16th to Dec 2nd. An additional trailhead would be established just before the junction of routes 005 and 006 with a locked gate and other amenities as described in Alternative B (Map 8).

2.5.2 Indian Creek Forage Reserve Allotment

Alternative C is similar to Alternative B, with the exception that the pasture division fence would be moved to the east at the north end to where route 004 forks into routes 005 and 006 (Map3). This pasture fence location would be used if Alternative C was chosen for travel planning. Placing the pasture division at this location would aid in travel management enforcement, by having the pasture division fence and trailhead/parking area at the same location. This would add approximately ¼ mile of fence. Also this would move one coinciding fenceline tank location to the east. Approximately 640 acres and 86 AUMs would be allocated from the East pasture to the West pasture, when compared to Alternative B. The East pasture would consist of 2690 acres and 362 AUMs. The West pasture would consist of 4245 acres and 575 AUMs.

2.5.3 Grazing Authorizations

Under Alternative C, no livestock grazing would be authorized on the Beaver, Beaver Creek, Dowdy Ditch, Kimber Diorite, Limestone Hills, and Whitehorse allotments. The existing range improvements (water developments and pasture fences) would be abandoned and removed.

2.6 Alternatives Considered but Eliminated from Further Analysis

2.6.1 Travel and Recreation

Opening Route 008 from trailhead to trailhead was considered and dropped since it would not conform with RMP guidance mandates for the area, which include: Non-motorized recreation will be promoted and emphasized; and Management activities will have long-term benefits to wildlife and will minimize short-term impacts. Opening Route 008 would not be beneficial to wildlife, nor would it promote non-motorized recreational uses and has been dropped from further consideration.

2.7 Cumulative Actions

Cumulative Actions are actions occurring in the area, not proposed by BLM, but have the potential to contribute to cumulative impacts when considered in combination with the proposed action or alternatives. Impacts attributable to cumulative actions are described in the Cumulative Impacts section of Chapter 3.

2.7.1 Past Actions

Settlement: Lewis & Clark passed through the current PA on the voyage of discovery in 1805, although the first white settlers, homesteaders, and Civil War veterans in search of gold did not arrive until the late 1860's. In 1883, a rail stop was established as businesses became established supporting gold mining in the region (Townsend website 2014). Early mining caused a variety of detrimental localized impacts to uplands and waterways.

Beaver reduction: Over-trapping of beavers and unregulated livestock use during the late 1800s and early 1900s changed the character (hydrologically and vegetatively) of most mountain streams in the Intermountain West (Elmore and Kaufman 1994). No active beaver colonies are known to occur in the DA. However, during 2010 PFC surveys in the proposed Indian Creek forage reserve allotment, an old beaver skull was found in a drainage that now lacks riparian beaver habitat characteristics, indicating that they once occurred there and the site had more riparian characteristics to support beaver.

Aspen decline: Aspen has declined across the western U.S. This is a phenomenon that can be attributed primarily to a combination of successional processes including reduction (or elimination) of fire and long-term overuse by ungulates (Bartos and Campbell, 1998).

Fire suppression: Human-caused factors, primarily fire suppression, have resulted in ecosystem successional stages becoming more advanced than would occur under a natural fire regime.

Mining: Historic dredge and placer mining occurred along Indian Creek east of the current Indian Creek mine. Graphite and lead mining occurred at the inactive Iron Mask mine (USDI-BLM, MT DEQ 2010). Other small mining activity areas are scattered throughout the PA.

Nonnative species: Many nonnative species of plants and animals have been introduced both intentionally and unintentionally by humans and have a wide variety of impacts. Examples of nonnative plants include knapweed, cheatgrass, and thistle species; nonnative fish include brook trout, rainbow trout, and brown trout; nonnative birds include house sparrow, European starling, pheasant, and grey partridge.

2.7.2 Present Actions

Indian Creek Mine: Graymont or its' predecessor companies have been mining at the Indian Creek Mine since 1981. Impacts from ongoing mining operations were assessed in the 2010 Indian Creek Mine Final Environmental Impact Statement (USDI-BLM, MT DEQ 2010). The Record of Decision on this EIS expanded the mine permit area to 3,675 acres and extended the permit duration by 50 years.

Various ownerships: Land ownership across the PA includes BLM, USFS, BOR, state, county, and private. All the agencies have differing objectives and methods for managing the land under their jurisdiction. Private landowners have many differing uses and methods for management of their property. All of these land management methods include practices and barriers that the natural ecosystem did not have to cope with until the 1800s.

Demographics: The population of Broadwater County stood at 5612 residents in the 2010 census, a 28% increase over the 2000 census. The total land area of the county is 762,560 acres, with farms and ranches accounting for an estimated 474,892 (62.3%) of those acres as of 2007. From 2002-2007 the number of farms in the county increased but their size decreased (MT Dept. of Labor & Industry 2012).

Agriculture: Statistics for 2012 indicate that there were approximately 22,000 cows in Broadwater County, and approximately 68,800 acres of hay and barley harvested. Statistics for

other types of livestock and crops were not available (USDA-NASS 2012). Most of BLM and USFS land within the PA is open to cattle grazing. Most of the cropland in Broadwater County lies outside of the PA; some cropland exists at the south end of the PA, however.

2.7.3 Reasonably Foreseeable Future Actions

Iron Mask Mine Reclamation: Mine features at the Iron Mask include an adit portal, a waste rock dump, a mill site, and tailings deposited at two locations below the mill. Water is discharging from the portal. Waste rock and tailings have four contaminants of concern, including arsenic, cadmium, lead, and manganese. The water emanating from the adit flows on the surface through the waste rock, and along the tailings in Whipcracker Gulch before vanishing to subsurface flow. The water meets Montana Department of Environmental Quality drinking water standards, but the sediment in the stream bed is contaminated.

An Intra-Governmental Order with the U.S. Army Corps of Engineers (USACE) for reclamation activities at this site was established in 2006 and resulted in closure of a hazardous mine opening, site characterization work, cultural resources/Potentially Responsible Party investigation and a Draft Final Expanded Engineering Evaluation/Cost Analysis under CERCLA authority. The USACE and/or their contractor(s) are responsible for completing the following tasks under an Action Memorandum to be signed by the BLM:

- Conduct pre-construction work including investigations, studies and engineering design.
- Conduct reclamation activities and provide construction oversight.
- Design and construct road and water improvement projects in the Iron Mask area.

Limestone Hills Training Area: Public lands in the LHTA have been used since the 1950s for military training purposes. Uses include live firing of ammunition and explosives, helicopter training, infantry maneuvers, equipment maintenance and testing, construction and maintenance of facilities, and clearing unexploded ordinance (UXO). Most recently it was used for about 140 days per year from mid-April through November. It has not normally been used from December 1 through mid-April as requested by FWP to protect big game wildlife habitat.

On December 26, 2013, some 18,000 acres of public land in the LHTA were withdrawn from the public domain to the Department of the Army. Under the withdrawal legislation, the BLM retains management responsibility only for livestock grazing and mining activity inside the LHTA. The MTARNG will lease the LHTA from the Department of the Army. Under the Sikes Act, the military is required to prepare an Integrated Natural Resource Management Plan (INRMP) for the area. The MTARNG issued the final INRMP in 2014. The goals and Natural Resources Program Management and Implementation sections of the INRMP are compatible with previous and adjacent BLM management. The Montana Department of Military Affairs will conduct annual reviews of the INRMP in cooperation with FWP and the U.S. Fish and Wildlife Service.

The following project proposals were developed before the LHTA withdrawal by the MTARNG to aid in fire suppression, vegetation management, and to control movement of livestock in the LHTA:

- Drill two wells and install storage and water tanks at each of the two locations,
- Rebuild and extend the boundary fence on the west side of the LHTA,
- Build gap fences around the perimeter of the active firing area,
- Remove redundant or unneeded fences around the Tank Range pasture,
- Annually spot-burn in the Tank Range Pasture, and
- Use hand-thinning and prescribed fire on the west side of the Marble Quarry pasture.

Decision-making authority to approve and implement these projects now rests with the Department of the Army, or MTARNG under license by the Army, and not with the BLM. Because these actions could still be implemented by either the Army or MTARNG, they have been included as cumulative actions for analysis purposes.

Abandoned Mine Lands: The Abandoned Mine Lands (AML) program will continue to inventory and assess the impacts of abandoned mines on BLM lands as mandated by the RMP, the Surface Mining Control and Reclamation Act (1997), the Montana Strip and Underground Mine Reclamation Act (2008), and two Internal Memorandums to reduce or eliminate risks to human health from hazardous mine openings, and to implement immediate temporary or permanent measures to mitigate known dangerous sites. Once mines have been evaluated, the appropriate closures, reclamation, or mitigation would be conducted as funding and/or staffing allow. Closure methods would be determined on individual basis in future environmental analyses, as appropriate.

Increasing population: Human population, development, and subdivision of private land within the PA are likely to increase. The Highway 287 corridor between Townsend and Helena has been becoming more developed as the population and economic opportunities of Helena increase.

Increasing recreation: Outdoor recreation of all types; motorized and non-motorized, consumptive and non-consumptive, are expected to increase.

Restoration treatments: Vegetation restoration treatments on non-BLM lands are expected to continue. These treatments are promoted by citizen groups and agencies to return earlier successional stages to the landscape and reduce the likelihood of catastrophic fire events.

State Section T7N, R1E, S16: This section is roughly in the middle of the Indian Creek forage reserve allotment and can be seen in blue on Maps 2 and 3. It is managed by the MT DNRC. The southwest portion of this section is in the process of undergoing conversion to woodland/coniferous habitat from grassland/shrubland habitat as discussed in Section 3.4.4.5. In cooperation with DNRC, approximately 200 acres of this section could be added to proposed treatment units for reduction of conifers. Treatments in this section could include mastication, hand thinning, or prescribed burning. Prior to implementation DNRC would complete appropriate Montana Environmental Policy Act (MEPA) analysis.

Invasive species control: Invasive and non-native weed treatments have a high likelihood to continue.

2.8 Preferred Alternative Identification

Alternative B, the Proposed Action is the BLM's Preferred Alternative for management actions in the Iron Mask Planning Area. The identification of a preferred alternative does not constitute a decision but is intended to inform the public which way the agency is leaning at this point in time. Upon completion of the EA a preferred alternative will be selected in a Decision Record released to the public with rationale for its selection, along with information on how to protest or appeal the BLM decisions.

2.9 Summary Comparison of Alternatives

A comparison of the main elements in each alternative is presented below in Table 2.

Table 2

	Alternative A	Alternative B	Alternative C
Travel, Recreation	<p>Iron Mask Acquisition area remains closed to motorized use.</p> <p>Roads in the acquisition area necessary for administrative use would be maintained in primitive condition. Areas where roads could be causing stream channel alteration, erosion, or other resource damage would be improved to mitigate the damage.</p> <p>In the rest of the DA, the 1995 Elkhorns Travel Plan remains in effect.</p>	<p>Current trailheads improved and open yearlong. Motorized use restricted to administrative purposes in acquisition area.</p> <p>(Same as A): Roads in the acquisition area necessary for administrative use and authorized use of the forage reserve allotment would be maintained in primitive condition. Areas where roads could be causing stream channel alteration, erosion, or other resource damage would be improved to mitigate the damage.</p> <p>In the rest of the DA, the 1995 Elkhorns Travel Plan remains in effect.</p> <p>Old cisterns in the acquisition area that pose a safety hazard to visitors would be filled.</p>	<p>Approximately two miles of routes in the north end of the acquisition area would be open from 5/16 – 12/2.</p> <p>(Same as A): Roads in the acquisition area necessary for administrative use and authorized use of the forage reserve allotment would be maintained in primitive condition. Areas where roads could be causing stream channel alteration, erosion, or other resource damage would be improved to mitigate the damage.</p> <p>In the rest of the DA, the 1995 Elkhorns Travel Plan remains in effect.</p> <p>Old cisterns in the acquisition area that pose a safety hazard to visitors would be filled.</p>
Indian Ck. Forage Reserve allotment configuration	<p>Infrastructure necessary for grazing to occur would not be constructed.</p>	<p>East and west pastures created. Seven water developments constructed. Exclosures around spring sources and wet meadows constructed. Use season is 5/15-10/15. Use RMP criteria to assess applications.</p>	<p>Same as B except pasture division fence is moved for travel route. Approximately 620 acres would be moved from the West pasture and added to the East pasture.</p>
Beaver allotment authorization #2507857			
Season of use	6/1 – 10/30	Same as A, but with added Terms and Conditions	No grazing would be permitted. Existing water developments and pasture fences would be abandoned and removed.
Livestock number & kind	21 C		
Active BLM AUMs	105		

Grazing system	Deferred		
Beaver Creek allotment authorization #2507866			
Season of use	5/15 – 10/31	Same as A, but with added Terms and Conditions.	No grazing would be permitted. Existing water developments and pasture fences would be abandoned and removed.
Livestock number & kind	2 C		
Active BLM AUMs	11		
Grazing system	Custodial		
Dowdy Ditch allotment authorization #2504527			
Season of use	5/1 – 6/15	Same as A, but with added Terms and Conditions.	No grazing would be permitted. Existing water developments and pasture fences would be abandoned and removed.
Livestock number & kind	7 C		
Active BLM AUMs	11		
Grazing system	Custodial		
Dowdy Ditch allotment authorization #2504487			
Season of use	5/1 – 6/15	6/1 – 8/15	No grazing would be permitted. Existing water developments and pasture fences would be abandoned and removed.
Livestock number & kind	13 C	80 C	
Active BLM AUMs	20	20	
Grazing system	Custodial	Custodial	
Kimber Diorite allotment authorization #2507866			
Season of use	6/1 – 10/15	Same as A, but with added Terms and Conditions.	No grazing would be permitted. Existing water developments and pasture fences would be abandoned and removed.
Livestock number & kind	221 C		
Active BLM AUMs	221		
Grazing system	Rest rotation		
Limestone Hills allotment authorizations #2500155, 2500156, 2507897			
Season of use	5/31 – 9/30	6/1 – 9/30	No grazing would be permitted. Existing water developments and pasture fences would be abandoned and removed.
Livestock number & kind	486 C	486 C	
Active BLM AUMs	1944	1365 (579 relinquished AUMs would not be reallocated to livestock grazing.)	
Grazing system	Rest rotation	Rest rotation	
Grazing-related projects	none	Three new pasture boundary fences. Springs outside of the LHTA rebuilt. Install a new pipeline and water tank in Whipcracker pasture.	
Whitehorse allotment authorization #2507587			
Season of use	6/10 – 10/15	Same as A, but with added Terms and Conditions.	No grazing would be permitted. Existing water developments and pasture fences would be abandoned and removed.
Livestock number & kind	62 C		
Active BLM AUMs	87		
Grazing system	Deferred		

Upland vegetation treatments	No vegetation treatments would occur.	A total of approximately 5397 acres are proposed for treatments. A maximum of 978 acres within that total could be subject to prescribed burns. The rest would be hand-cut, masticated, or terra-torched.	Same as B.
Riparian treatments	<p>Up to one mile of Whipcracker Gulch below the Iron Mask mine could be restored to increase surface flow and function. Restoration would only occur if adequate funding were secured under CERCLA.</p> <p>No restoration would occur on the Indian Creek headcut.</p> <p>No vegetation treatments would occur.</p>	<p>Whipcracker Gulch restoration could be accomplished under NEPA if not accomplished under CERCLA.</p> <p>A large headcut on Indian Creek would be stabilized.</p> <p>Juniper, Douglas-fir, and Russian olive removal would take place along all of Indian Creek in the DA.</p> <p>Conifer removal would occur on 21 acres of Kelly Spring Gulch.</p>	Same as B.
Wildlife-friendly fencing	Fence modification could be accomplished under Categorical Exclusions.	All fences in the DA would be configured to wildlife-friendly specifications.	Same as Livestock Alt. C.

3.0 AFFECTED ENVIRONMENT and ENVIRONMENTAL IMPACTS

3.1 Introduction

Chapter 3 describes the potentially affected existing environment of the PA with a focus on resource conditions that are relevant to the planning issues. Chapter 3 then describes the changes, or potential impacts, to those resources that could occur as a result of each alternative.

3.2 General Setting

The Iron Mask DA consists of 19 separate BLM-owned land parcels totaling 26,235 acres. Elevations range from approximately 3850' just west of Canyon Ferry Reservoir to 6700' east of Indian Creek. Habitat types are generally grasslands in the lower, eastern portions of the planning area, transitioning into shrublands/woodlands as elevation rises to the west. The highest, westernmost portions are generally coniferous forest. Several aspen stands are also included in the area.

The DA consists of a variety of land uses and classifications:

Elkhorns Cooperative Management Area: All of the DA west of Highway 287 is within the ECMA. All National Forest lands in the Elkhorn Mountains were designated in 1981 as a Wildlife Management Unit, the only one of its' kind in the National Forest system. In 1992, the BLM and FWP entered into a Memorandum of Understanding (MOU) with the Helena and Deerlodge National Forests to manage the Elkhorns as a contiguous ecosystem across administrative boundaries with an emphasis on healthy wildlife and fish habitats.

Elkhorn Mountains ACEC: Most of the DA was designated in the Butte RMP as part of the Elkhorn Mountains ACEC. ACEC designations highlight areas where special management attention is needed to protect important historic, cultural, and scenic values, fish or wildlife resources or other natural systems or processes. ACEC designation indicates to the public that an area has significant values and has established special management measures to protect those values. In addition, designation serves as a reminder that significant value(s) or resource(s) exist which must be accommodated when future management actions and land use proposals are considered within or near an ACEC (USDI-BLM 1988).

Limestone Hills Training Area: The MTARNG has trained in the Limestone Hills south of Indian Creek since 1959 under a BLM Special Use Permit and a Right of Way issued in 1984. In December 2013, Congress approved the withdrawal of this area from the public domain to the Department of the Army (who subsequently is licensing the area to the MTARNG for military training). The legislation provides for BLM to continue to manage the grazing and mining activity under its current regulations. This withdrawal is set to expire in 2039. The training area is used for maneuver and live fire training for infantry, armored, artillery, engineer, aviation, and special operations units. Over the years, military training has resulted in unexploded ordnance contamination in the Limestone Hills. Two grazing allotments within the training area are analyzed for grazing permit renewal in this EA. Two other allotments within the training area will be analyzed in future EAs due to the length of time left in their current grazing

authorizations. Any BLM actions for the LHTA, other than grazing permit renewals, will not occur under this EA.

Indian Creek Mine: The Indian Creek Mine, operated by Graymont Western U.S., Inc. has been in operation in the Limestone Hills since 1981 and is a major local employer and producer of lime. In 2010 a modified Plan of Operations was approved by BLM increasing the mine permit area from 1735 acres to 3675 acres. All but about 230 of those acres are also within the LHTA withdrawal.

Iron Mask Property Acquisition: The Iron Mask property, named after an old mine site, was acquired by BLM in 2007 with assistance from the Rocky Mountain Elk Foundation (RMEF), The Conservation Fund (TCF), and other entities. Prior to that, it had been held by various private owners. The property covers 5566 acres and has been open to non-motorized recreational use, but closed to motorized use, since 2005.

Iron Mask Mine: The old Iron Mask mine site, located in the southwest portion of the acquired property, was a historic producer of lead and zinc. Mine features include an adit, waste rock dumps, a mill site, and tailings below the mill. Heavy metals have been identified and documented as contaminants of concern. Alternatives for reclamation have been developed in an EEE/CA prepared for BLM by the Corp of Engineers (DOA 2009). Reclamation and removal actions would be conducted under the authority of CERCLA.

Acreage figures summary:

Planning Area acres: 124,933

Decision Area acres (for grazing permits only): 26,235

Decision Area acres (for all other proposals): 15,662

BLM acres in ECMA: 25,902

BLM acres in ACEC: 15,019

LHTA withdrawal acres in PA: 18,644

LHTA withdrawal acres in DA: 10,573 (8441 acres are in the Limestone East and Section 33 allotments that are not analyzed in this EA).

Indian Creek Mine permit area acres: 3,675

Acres of disturbance allowed in mine permit boundary area: 2,048

Indian Creek Mine permit acres on BLM land outside MTARNG withdrawal area: 230

Iron Mask property 2007 acquisition acres: 5,566

3.3 Critical Elements of the Human Environment

Table 3

Determination*	Resource	Rationale for Determination*
PI	Air Quality	Wildland or prescribed fire may temporarily affect air quality.
PI	Areas of Critical Environmental Concern	Most of the Decision Area is within the Elkhorns ACEC. The alternatives presented in this EA are designed to protect the values of this area.
NI	Cultural Resources	A Class III inventory will be performed prior to all ground-disturbing activities and vegetation treatments. All sites recorded in activity areas will be avoided or mitigated.
NI	Environmental Justice	No alternative considered in the course of this analysis resulted in any identifiable effects or issues specific to any minority or low income population or community as defined in Executive Order 12898.
NI	Farmlands (Prime or Unique)	Prime farmlands are present, but there is no impact by the proposed action. Design features and BMPs would be employed to prevent degradation of soil properties, thereby preserving farmland designations. Loss of Prime Farmland designation would be possible due to erosion resulting from potential catastrophic wildfire in the No Action Alternative.
NI	Floodplains	No treatments are proposed in floodplains. Effects from treatments upslope of floodplains would not impact or impede floodplain function.
PI	Invasive, Non-native Species	Invasive, non-native plant species are present in the project area, and are contributing to the Limestone Hills allotment not meeting Land Health Standards. Annual weed control efforts plus mitigation measures will be implemented to reduce the potential spread of noxious weeds during pre and post project implementation.
NI	Native American Religious Concerns	Class III cultural resource inventories will be performed prior to ground-disturbing activities and vegetation treatments. All known sites will be avoided. Vegetation treatments intended to restore historic conditions would, over time, improve Traditional Religious experiences.
NI	Socioeconomics	Socioeconomics is eliminated from further consideration. Although some of the alternatives may affect individuals, none of the alternatives would change the socioeconomics of the region or the Planning Area.
NP	Threatened, Endangered or Candidate Plant Species	There are no plants listed under the ESA in the Decision Area. Ute Ladies' tresses (Threatened) occur in approximately one acre south of Townsend but are not believed to exist within the DA. Whitebark pine (Candidate) could occur on USFS land within the Planning Area but would not be affected by any alternative.
NI	Threatened, Endangered or Candidate Animal Species	Grizzly bears (Threatened), and lynx (Threatened), could travel or disperse through the Planning Area. However, favored habitat for these species does not occur and no Federally listed animal species are known to be permanent residents in the Planning Area.
NI	Wastes (hazardous or solid)	Abandoned mine waste removal is outside the scope of this EA. Abandoned mines are discussed separately in Sections 2.7.2 and 3.4.12. No hazardous wastes have been identified in the Decision Area.
PI	Water Quality (drinking/ground)	Alternative A would cause water quality to remain static, and in some instances may become more impaired. Alternatives B and C would improve water quality by reducing sediment loading of streams.
PI	Wetlands/Riparian Zones	Alternative A would be expected to cause riparian conditions to remain static in some areas, and in other areas conditions may decline. Alternatives B and C would improve riparian areas and wetlands.
NP	Wild and Scenic Rivers	There are no rivers with this designation in the Planning Area.
NP	Wilderness	There is no designated wilderness or lands under wilderness review in the Planning Area.

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present and may be impacted to some degree. Will be analyzed in affected environment and environmental impacts.
(NOTE: PI does not mean impacts are likely to be significant in any way).

3.4 Issues/Resources Brought Forward For Analysis

3.4.1 Travel & Recreation

Existing Condition

Special Designations: There are no Wilderness, Wilderness Study Areas, Lands With Wilderness Characteristics, or Wild & Scenic Rivers in the DA. The Lewis and Clark National Historic Trail and the Missouri River border BLM lands along the southeast portion of the PA for about one mile. These resources are dropped from further analysis since they would not be affected by any of the alternatives.

Special Recreation Management Areas (SRMAs): The PA does not contain any administratively designated SRMAs. These areas were administratively established by the BFO while Special Designations are nationally designated by Congress.

Areas of Critical and Environmental Concern: The existing Elkhorn Mountains ACEC is discussed in Section 3.4.7.

Recreation Sites: Crimson Bluffs is the only established recreation site within the PA boundary, but is not within the DA. This site is located off the River Frontage Road on the Missouri River west of Townsend. This interpretative site consists of a parking area, interpretive displays, a boundary fence and trails leading down to the river and the Crimson Cliffs, which were recorded in the Lewis & Clark Expedition. Management of this site is not within the DA for this analysis, but will be considered in subsequent analysis at a later date. There are also two non-developed trailheads on the east and south boundaries of the Iron Mask area where visitors currently park vehicles and access the area via non-motorized means. These access sites are located in the northeast and southwest extremities via public routes (Whitehorse Lane and the Iron Mask Road off the Indian Creek Road respectively). No recreation sites other than the potential establishment of two trailheads to access the acquisition area under Alternative B, and three trailheads under Alternative C, are considered in this analysis.

Recreation Opportunity Spectrum (ROS): The entire Iron Mask acquisition area is classified as **Semi-Primitive Motorized** in the Butte RMP. The remainder of the PA is primarily Roded Natural with a few small tracts classified as Rural. The ROS classification system identifies varying outdoor recreation environments, activities and experience opportunities that are divided into six different classifications that range from Primitive to Urban settings to guide future management.

Management guidance for **Semi-Primitive Motorized** areas is described as follows: Some opportunity for isolation from man-made sights, sounds and management controls in a predominantly unmodified environment. Opportunities exist for visitors to have a high degree of interaction with the natural environment and to experience moderate challenges in conducting dispersed activities. Concentration of visitors is low, but evidence of other area users is present.

On-site managerial controls are subtle. Facilities are provided for resource protection, management and the safety of users. Motorized use is permitted.

Roaded Natural settings provide more limited opportunities for visitors to enjoy isolated settings. The landscape is generally natural with some modifications evident. Visitor concentrations are low to moderate. Opportunities for both motorized and non-motorized uses are present. Rural settings are characterized as areas where the sights and sounds of man are readily evident and the natural environment is substantially modified. These areas are relatively small in acreage and located near Highway 287.

Current recreation uses and opportunities in the PA are dispersed in nature and include hiking, horseback riding, mountain biking, scenic viewing, wildlife observation and hunting. Primary hunting opportunities exist for upland bird and big-game (elk, deer and antelope). Motorized recreation opportunities are available throughout the PA with the exception of the Iron Mask acquisition area, where uses are unavailable due to the temporary closure currently in place.

Visual Resources

The visual resource inventory process is a systematic process used to determine visual values. The inventory consists of a scenic quality evaluation, viewer sensitivity level analysis, and a delineation of distance zones. Considering these three factors, BLM lands are placed into one of four visual resource inventory classifications that represent the relative value of the visual resources. Lands placed in Class I and Class II are the most valued, while lands in Class III are of moderate value. Lands in Class IV are of least value.

The Visual Resource Management (VRM) classification for the Iron Mask acquisition area is Class II. This classification was established under the Butte RMP. The remainder of the planning area north of Indian Creek is primarily VRM Class III while the Limestone Hills area is primarily Class IV.

VRM management objectives for Class II areas are to retain the existing character of the landscape. The level of change to the landscape should be low and must not attract attention. Management activities may be seen but must not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found within the predominant natural features of the characteristic landscape.

The objective for Class III areas 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.

The objective for Class IV areas is to provide for management activities which require major modifications 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.

All alternative actions in this planning effort meet the VRM objectives for the area. Mitigation efforts to minimize visual contrasts within the affected landscapes would be utilized for all management actions. Changes would repeat the basic elements of form, line, color, and texture

found within the predominant natural features of the characteristic landscape. No new roads would be created; trailhead improvements would not be located in seldom seen locations as viewed from highways and communities; range improvements would be dark in color and low gloss finishes would be used so they do not attract attention; and vegetative improvement projects although slightly visible the first year would not be apparent thereafter as the area revegetates naturally.

Travel Management

The Iron Mask acquisition area is categorized as a **Limited Area** and no site specific travel plan or route designation has been completed for this area. This classification means that some types of motorized travel may be appropriate during all or some periods of the year, subject to resource constraints, social use conditions and public safety.

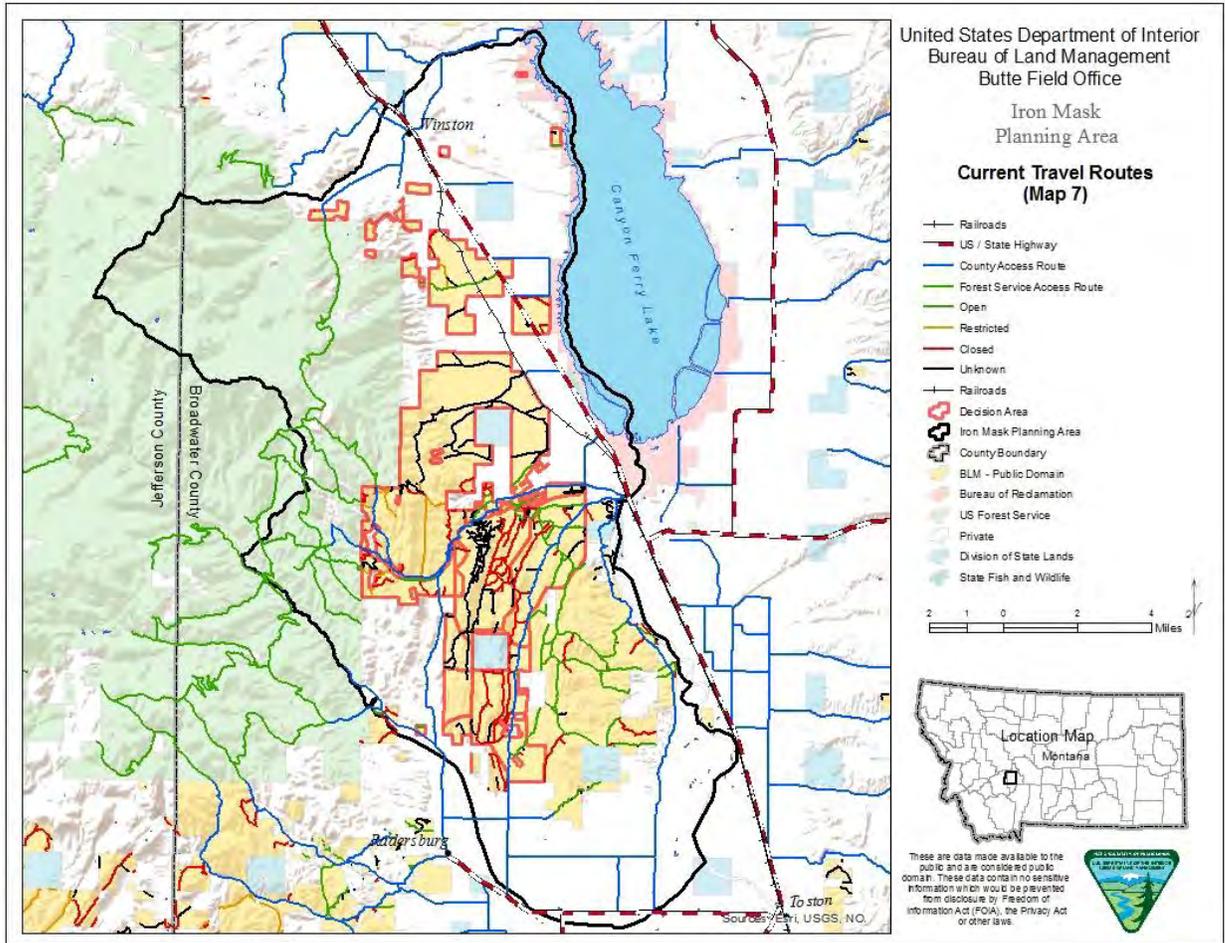
The existing travel route inventory map identifies 19 miles of primitive roads in the area that are not maintained or used by the public currently, due to the temporary closure currently in place. The only road within the area that is consistently traveled occasionally by private landowners is the northernmost route that extends off Whitehorse Lane through Sections 4 and 5 to private lands in Sections 6 and 7 near the USFS boundary. These two landowners have Right-of-Ways on this route to access their property.

The Iron Mask property first became available to the public during the big-game hunting season in 2005, when the private lands were managed as a Block Management Area through FWP. Under this program motorized access to the area was limited to two boundary trailheads that were gated. These access points are located on the southwest and northeast boundaries of the Iron Mask acquisition area. The northeast entrance point is located along the lower bench lands off Highway 287 via Whitehorse Lane while the southwest entrance provides access into the higher elevations of the area from which visitors can easily disperse. This upper trailhead is accessible via the Indian Creek Road and then along BLM route 2588 east of Shep's Ridge, which leads to the old mine. This dead-end route is closed from December 2nd through May 14th.

A temporary area closure order was implemented shortly after the Iron Mask area was acquired. This order closed all travel routes in the area to motorized uses yearlong in order to protect public health and safety, prevent the spread of noxious weeds, protect cultural and historic values until resource inventories are completed, and a management plan is developed. The two undeveloped parking lots/trailheads are currently provided at the northeast and southwest extremities for public access in a manner that was similar under the Block Management Program. Recreation use within the area is provided for non-motorized activities only.

The Elkhorns Travel Management Plan was completed for the remainder of the PA in 1995 and no designation changes are proposed for the area outside the Iron Mask acquisition. The 2002 Elkhorn Mountains Travel and Recreation Map, available at USFS offices and online for \$10 (<http://www.nationalforestmapstore.com/product-p/mt-26.htm>), contains route information for the entire ECMA.

Map 7: Current Travel Routes



Alternative A Direct & Indirect Effects

The Iron Mask acquisition area would continue to be closed to all motorized uses and the remainder of the PA would be managed as specified under the Elkhorns Travel Management Plan of 1995. The two primitive trailheads off Whitehorse Lane and Shep’s Ridge would not be upgraded and as a result no visitor information or safety enhancements would be provided. Motorized access to the historic Iron Mask Mine would be allowed and no interpretive information would be provided.

This alternative would continue to have the greatest impacts to motorized users since no routes in the acquisition area would be open for motorized use. These users would continue to experience a lack of recreation and access opportunities in the area. Non-motorized users would benefit since potential conflicts with motorized users would be absent and opportunities for hiking, horseback riding and mountain biking within a natural setting would be available.

Cisterns which pose a safety hazard to recreationists would not be filled and remain a hazard.

Alternative B Direct & Indirect Effects

Cisterns which pose a safety hazard to recreationists would be filled to mitigate the hazard.

This alternative would keep Routes 012 and 013 (east of the shooting range and north of Indian Creek Road) closed to motorized use yearlong for members of the public. The impacts of these closures would have minor effects on motorized users, given that access to these routes is currently only available by obtaining adjacent landowner permissions.

Routes open to wheeled motorized use in the acquisition area would change from 0 to 0.6 miles. Opening Route 019 seasonally from 5/16 to 12/1 to the historic Iron Mask Mine site would enhance motorized access to this attraction. A trailhead at this site and the existing two primitive trailheads off Whitehorse Lane and Shep's Ridge (BLM route 2588) roads would be improved. Visitor opportunities to park at these facilities would be enhanced since maps and area information would be displayed, safer parking provided and small gates installed to allow easier entrance to the area.

The vegetation treatments, implementation of the forage grazing reserve and range improvements identified under this alternative would have a minimal effect on recreation opportunities over the long-term. Some limited conflicts during implementation may occur due to temporary uses of motorized vehicles, sights and sound interruptions from construction activities and smoke conditions during active burning periods. Periodic grazing under the forage reserve system and occasional authorized vehicle uses in the Iron Mask acquisition area may impact natural setting experiences and use conflicts, including archery hunting, during active periods of cattle grazing. Impacts to general season rifle hunters would be non-existent since grazing would not occur during that time period.

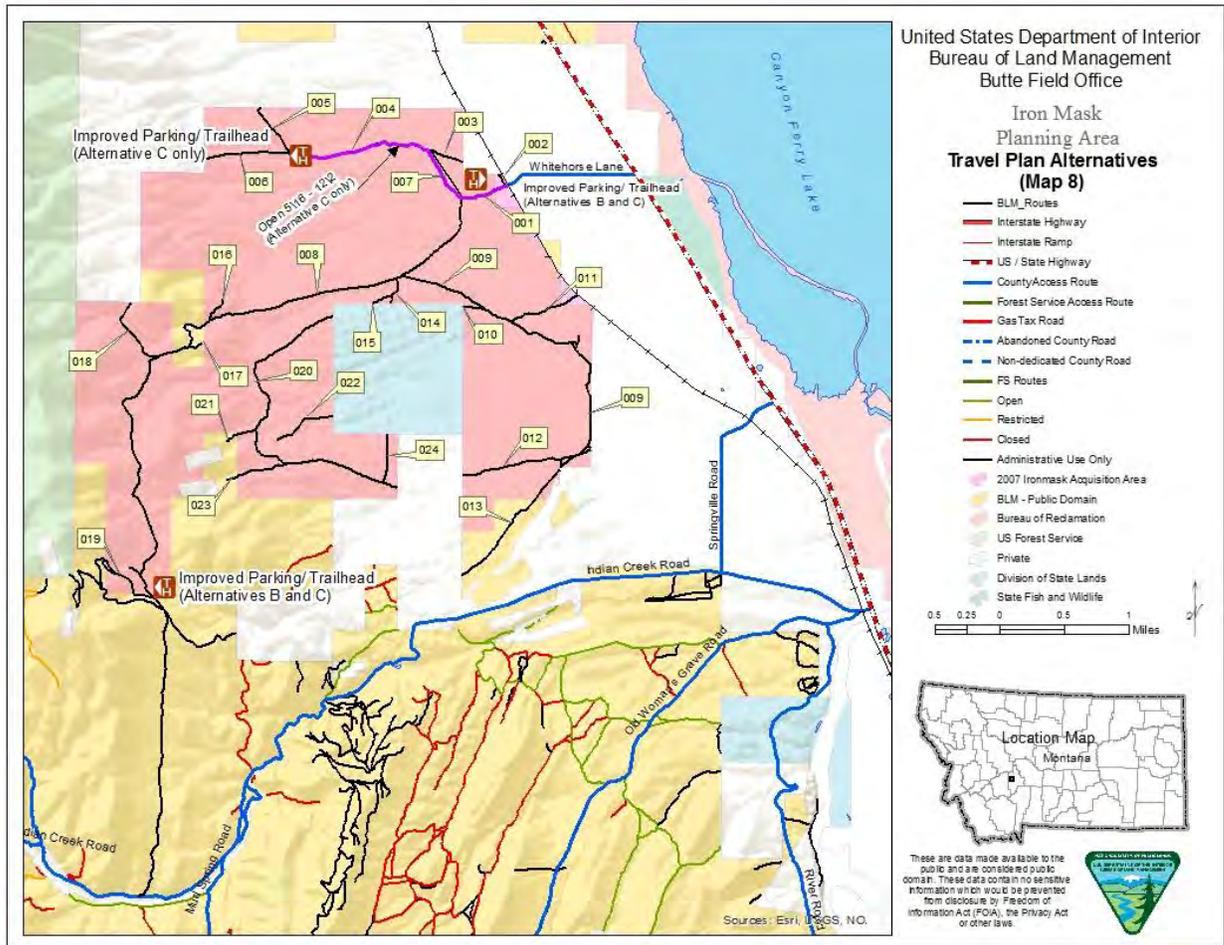
Alternative C Direct & Indirect Effects

Travel management changes to the existing Elkhorns Travel Plan for areas outside the Iron Mask acquisition would be the same as Alternative B.

This alternative would seasonally open an additional 2 miles of roads (001, 004 and 007) to wheeled motorized uses in the northern extremity of the Iron Mask area from 5/16 to 12/1 and an additional trailhead facility would be installed at the end of Route 004. This alternative would benefit motorized users the most since it would provide the most routes open. Seasonally opening these northern routes would reduce potential conflicts with authorized private landowner uses since everyone would be allowed to drive motorized vehicles on these routes. Hunters and other recreationists seeking access to the upper foothills of the area would be provided greater access. Impacts to non-motorized users would be limited given the northern extremity location of these routes. The potential for travel violations into the remaining area would increase given the lack of physical barriers along these open terrain routes. Moving the north-south running pasture fence for the forage reserve so it crosses Route 004 at its end point would reduce travel violations on routes 005 and 006 since it would create a good barrier with a locked gate.

All other recreation impacts would be similar to Alternative B.

Map 8: Travel Routes Action Alternatives



3.4.2 Indian Creek Forage Reserve Allotment

Existing Condition

The Indian Creek allotment consists of approximately 7,932 acres of federal land, 1,513 acres of private, 643 acres of state land, and 481 acres of local government. BLM acquired 5,566 acres that are included in this allotment in 2007, as shown above in Map 8 and on Map 1. Elevation on BLM land ranges from approximately 4000 to 6500 feet. The eastern half of Indian Creek allotment is characterized by level to moderately sloping terrain. Recent allotment use has been limited. Non-use was taken for 11 of the 19 years prior to the 2007 acquisition. Drought, persistence of locoweed, limited water availability, and changes in property ownership contributed to the limited amount of livestock use prior to 2003. Since 2003 the entire area has been rested from livestock grazing.

A rangeland health assessment was conducted during 2010, and the interdisciplinary team (IDT) found that the Upland, Riparian, Water Quality, and Diversity standards were not being met (see Land Health Summary Table, Section 3.4.3). The higher elevation uplands were in good condition, however the majority of the uplands located on the lower elevation were not as

expected compared to the Web Soil Survey report (NRCS 2010). The amount of litter and annual production were not as expected because bluebunch wheatgrass was not present at the levels expected compared to the ecological site guide. Cheatgrass was noted in several areas on the site, and as a result of the cheatgrass and lack of bluebunch wheatgrass, the functional structural plant groups have shifted away from a dominance of deep-rooted perennials towards more shallow rooted species. The lower elevation portion of the allotment had similar characteristics throughout. Dalmatian toadflax was prevalent throughout most drainages and scattered throughout the uplands, which was also a contributing factor of the Diversity Standard not being met. Douglas-fir and juniper expansion into upland sites was also identified as contributing factor to not meeting standards.

The forested portions of the allotment were located on the hillslope that divided the allotment into higher and lower elevation areas. Dominant species included Douglas-fir, Rocky Mountain juniper, ponderosa pine, and some patches of mountain mahogany. Ponderosa pine is very decadent and there is also some decadence in the Douglas-fir. Both Rocky Mountain juniper and Douglas-fir have expanded into upland sites, and in some areas have formed very dense patches.

Table 4

<i>Summary of Indian Creek Allotment Monitoring Studies and Land Health Assessment Results</i>				
Study Plot	Study Type	Years Read	Changes Detected	Determination
T.007N R.001E Sec. 18	Rangeland Health Assessment	2010	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- None to Slight	Meeting Standards for Rangeland Health
T.007N R.001E Sec. 9	Rangeland Health Assessment	2010	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- Slight to Moderate	Not Meeting Standards for Rangeland Health
T.007N R.001E Sec. 20	Rangeland Health Assessment	2002*	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- Slight to Moderate Biotic Integrity- Slight to Moderate	Meeting Standards for Rangeland Health
T.007N R.001E Sec. 30	Rangeland Health Assessment	2002*	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- None to Slight	Meeting Standards for Rangeland Health
T.007N R.001E Sec. 19	IC Daub #1	1988, 2008, 2010	Increase in litter, Decrease in sagebrush, Increase/Decrease in cool season grasses dependent on species.	Static to slightly downward

*Assessment done prior to land acquisition

Alternative A Direct & Indirect Effects

Alternatives for this allotment are shown in Map 3, Section 2.4.2. The No Action alternative would not provide the necessary infrastructure for the Indian Creek allotment to be operated as a forage reserve. No livestock grazing would therefore occur. Herbaceous plants would continue to produce minimal seed heads and would not attempt to expand as vigorously. Club moss would continue to operate as a seed and water barrier. Cheatgrass would continue to expand and utilize resources before native plants. Plants would become decadent and overall production could decline.

Alternative B Direct & Indirect Effects

This allotment would only be used when necessary, due to natural or human causes making a permittee's own allotment unusable. Examples of natural causes include wildland fire or drought. Human causes would primarily be vegetation treatments occurring on the permittee's regular allotment. For example, if a prescribed fire is determined to be necessary for land health on the regular allotment, it would likely need to be rested for one year before the burn and two growing seasons after. The availability of this forage reserve would reduce or eliminate the logistical problem of where to put the permittee's livestock during that time period and enhance the ability of BLM to conduct restoration treatments. There would be no net increase of livestock use within the ECMA.

With the Terms and Conditions set forth the livestock would be a source of controlled disturbance that could increase vigor and reproduction of native plants in the Indian Creek forage reserve. By removing no more than 40% of the plant's vegetative material prior to the seed head elevating, the plant would direct more energy to seed production. This would increase the amount of seeds available to germinate in the microsites produced by the hoof action of the livestock. This hoof action disturbance could create microsites for native vegetation by breaking up the club moss mat and prickly pear. Removal of decadent vegetative cover could increase plant productivity by allowing more resources; sunlight, water, and other nutrients, to be intercepted by actively photosynthesizing leaves (Zlatnik 1999). Removing cattle prior to plant senescence provides the opportunity for fall regrowth. Properly timed grazing could also reduce the amount of cheatgrass seeds viable to complete the annual lifecycle if plants are impacted prior to seed ripening. Seeds that are consumed at this stage have a reduced viability of 38-71% (Zouhar 2003). The two-pasture rotation along with multiple water sources would help spread use more evenly across the pastures and with less concentration on the natural water sources in the area.

The existing condition of some of the lower elevation areas are in a relatively stable yet undesirable state. These areas may have crossed a threshold in plant communities from that expected for the area. Although some areas have crossed a threshold, the new community is still capable of producing forage adequate to support livestock operations on an annually prescribed basis. Available forage would not only be consumed by livestock but the disturbance associated with the livestock operations would be utilized as a tool to help increase vigor and reproductive opportunities for plants.

No lasting effects from installation of water pipelines are anticipated. A total of less than four acres would be disturbed; trenches would be reseeded with native seed mix after being backfilled. Pipeline routes and installation procedures would adhere to the *Montana Stockwater Pipeline Manual* (USDA-NRCS 1992, edited 2004).

Alternative C Direct & Indirect Effects

Alternative C would be similar to Alternative B. The different location of the fence and corresponding water developments would slightly adjust the amount of forage available in each pasture and therefore adjust the number of cattle and/or duration in each pasture to ensure the available AUMs are not exceeded. All other effects would be the same.

3.4.3 Livestock Grazing

Existing Condition

Grazing allotments provide an important source of late spring, summer, and fall livestock forage. Nine individual operators have grazing permits/leases on six different allotments covering approximately 18,381 acres of public lands administered by the BFO within the Iron Mask DA. The BFO currently authorizes 1,819 active AUMs on the allotments. The current authorized stocking rate averages approximately 10 acres per AUM, and varies from 3.3 to 59.6 acres per AUM. The variation in stocking rate is a result of the differing capabilities of various sites to support grazing animals due to soils, vegetation, topography and distance from water.

From 1999 to 2012, Land Health Assessments have been conducted on the grazing allotments to assess the existing resource conditions on BLM lands. Eight grazing allotments were assessed to determine whether or not the five Land Health Standards were met. The five Standards that apply to BLM lands in Montana are (USDI-BLM 1997):

- Standard #1: Uplands are in Proper Functioning Condition
- Standard #2: Riparian and Wetland Areas are in Proper Functioning Condition
- Standard #3: Water Quality Meets State Standards
- Standard #4: Air Quality Meets State Air Quality Standards
- Standard #5: Provide habitat as necessary, to maintain a viable and diverse population of native plant and animal species, including Special Status Species

Table 5

<i>Standards for Rangeland Health Summary by Allotment</i>							
Allotment Name & Number	Year Assessed (Previous year assessed)	Are Land Health Standards Being Met?					Significant Factors in Failing to Achieve Standards From Most Recent Assessment
		Uplands	Wetlands & Riparian Areas	Water Quality	Air Quality	Providing Habitat	
Beaver 20223	2008 (none)	Y	NA	Y	Y	Y	Some small seeps were not considered riparian areas and not evaluated as such.
Beaver Creek 10229	2008 (none)	Y	N	N	Y	Y	Weasel Creek was rated FAR up. The FAR status was caused by historic mining activity and sedimentation from an access road, not grazing. Beaver Creek is designated as impaired on the Montana 303(d) list.
Dowdy Ditch 20209	2006 (none)	Y	NA	NA	Y	Y	No riparian areas or water exist on BLM land in this allotment.
Indian Creek 20233	2010 (2002 ⁴)	N (Y)	N (N)	N (Y)	Y (Y)	N (Y)	Soil surface loss, plant composition shift, invasive weeds, stream bank instability, stream sedimentation in two locations.

Standards for Rangeland Health Summary by Allotment							
Kimber Diorite 20227	2012 (1999)	Y (Y)	Y (Y)	Y (Y)	Y (Y)	Y (Y)	N/A
Limestone Hills 20273	2010 (2002)	N (N ¹)	N (N)	N ² (N)	Y (Y)	N (Y ³)	Munitions firing, past grazing management, past and current mining, noxious weeds, current livestock grazing out of compliance with annual grazing schedules.
Whitehorse 20222	2012 (1999)	Y (Y)	NA (NA)	NA (NA)	Y (Y)	Y (Y)	No riparian areas or water exist on BFO land in this allotment.

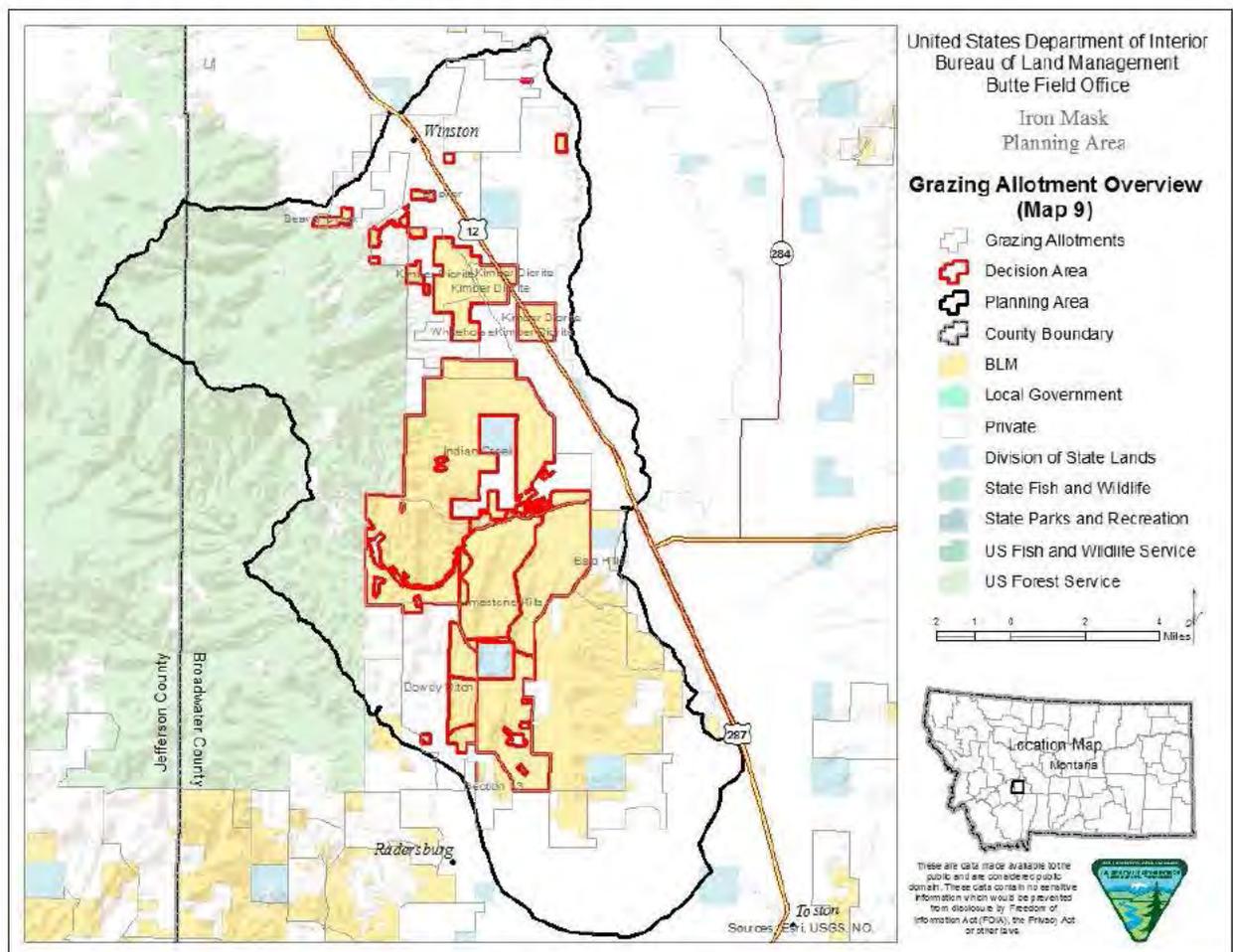
¹ Iron Mask, Cold springs and Whipcracker Pastures met Upland Health in 2002, but the Tank Range, Compound and Marble Quarry Pastures did not.

² The Montana Department of Environmental Quality (DEQ) has the responsibility for making water quality determinations and has completed its evaluation of 303(d)-listed streams.

³ In 2002, the allotment as a whole met the Biodiversity Standard, but the Compound, Tank Range, and Marble Quarry Pastures would require management changes to ensure that the habitat in these two pastures does not degrade further.

⁴Assesment was done prior to acquisition of additional private lands.

Map 9: Livestock Grazing Allotments



Beaver allotment: The Beaver allotment contains about 39 federal acres and 19 private acres. Elevation on BLM land ranges from approximately 4,200 to 6,000 feet. Plant communities are primarily a mix of grasslands and big sagebrush-steppe in the lower elevations and Douglas-fir or mixed conifer forest/woodland in the higher elevations.

The Beaver allotment is grazed during the authorized dates in conjunction with a ranching operation that controls the private intermingled lands. This allotment is generally grazed in conjunction with the Whitehorse allotment, and allotments on the Helena National Forest (HNF). One year, Whitehorse is used in mid-June as cattle are being moved from private lands up to the HNF, then cattle are moved down from the HNF to the Beaver allotment in early October. The next year the rotation is reversed.

Montana Standards for Rangeland Health were assessed on the Beaver allotment in 2008 and findings were field verified in 2012. The upland, water quality, air quality, and habitat standards were met. The riparian standard was not applicable as there are no riparian areas identified within the allotment. Some small seeps, not evaluated as riparian areas, were determined to have acceptable water quality.

Table 6

<i>Summary of Beaver Allotment Monitoring Studies and Land Health Assessment Results</i>				
Study Plot	Study Type	Years Read	Changes Detected	Determination
T.008N R.001E Sec. 18	Rangeland Health Assessment	2006	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- Slight to Moderate Biotic Integrity- Slight to Moderate	Meeting Standards for Rangeland Health
T.008N R.001W Sec. 24	Rangeland Health Assessment	2006	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- Slight to Moderate	Meeting Standards for Rangeland Health
T.008N R.001W Sec. 13	Rangeland Health Assessment	2006	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- Slight to Moderate Biotic Integrity- Slight to Moderate	Meeting Standards for Rangeland Health
T.008N R.001E Sec. 20	Rangeland Health Assessment	2006	Departure from Expected Rating: Soil and Site Stability- Slight to Moderate Hydrologic function- Slight to Moderate Biotic Integrity- Slight to Moderate	Meeting Standards for Rangeland Health

Beaver Creek allotment: The Beaver Creek allotment contains about 559 federal acres and 6,570 private acres. Elevation on BLM land ranges from approximately 5,000 to 5,400 feet. Plant communities are primarily a mix of foothill/valley grassland, riparian, and Douglas-fir/mixed conifer forest.

The Beaver Creek allotment is grazed during the authorized dates in conjunction with a ranching operation that controls the private intermingled lands.

Montana Standards for Rangeland Health were assessed on the Beaver Creek Allotment in 2008. The upland, air quality, and habitat standards were met. The water quality standard was not met

because Beaver Creek is designated as impaired on the Montana 303(d) list. The riparian standard was not met but significant progress was being made as a result of the functioning-at-risk, upward trend, rating for Reach B-07 (Weasel Creek). Livestock grazing on the allotment was not considered a contributing factor for the water quality or riparian standards rating.

Table 7

<i>Summary of Beaver Creek Allotment Monitoring Studies and Land Health Assessment Results</i>				
Study Plot	Study Type	Years Read	Changes Detected	Determination
T.008N R.001W Sec. 15	Rangeland Health Assessment	2008	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- None to Slight	Meeting Standards for Rangeland Health

Dowdy Ditch allotment: The Dowdy Ditch allotment contains about 1,547 federal acres and 3,509 private acres. Elevation on BLM land ranges from approximately 4,600 to 5,800 feet. Plant communities consist primarily of juniper-encroached sagebrush-steppe.

This allotment is divided into six pastures and is grazed by two permittees. The BLM lands are grazed in conjunction with the permittees' intermingled private land during the authorized dates. The permittee with Authorization # 2504487 grazes the north two pastures of the allotment. These pastures total 4,073 acres, 2,810 of which are private and 1,263 are BLM. Compliance with the existing grazing dates of 5/1-6/15 on BFO land has been difficult for the permittee since BLM land is not fenced separately from private land in this allotment. The cattle tend to use the private land to a greater extent due to vegetation types and topography, however.

The permittee with Authorization # 2504527 uses the south four pastures. These pastures contain a total of 699 private acres and 284 BLM acres.

Montana Standards for Rangeland Health were assessed on the Dowdy Ditch allotment in 2006. The upland, air quality, and habitat standards were met. The riparian and water quality standards were not applicable because no riparian areas or water exist on public land within the allotment.

Table 8

<i>Summary of Dowdy Ditch Allotment Monitoring Studies and Land Health Assessment Results</i>				
Study Plot	Study Type	Years Read	Changes Detected	Determination
T.006N R.001E Sec. 17	Rangeland Health Assessment	2006	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- Slight to Moderate Biotic Integrity- Slight to Moderate	Meeting Standards for Rangeland Health
T.006N R.001E Sec. 29	Rangeland Health Assessment	2006	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- None to Slight	Meeting Standards for Rangeland Health
T.006N R.001E Sec. 30	Rangeland Health Assessment	2006	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- None to Slight	Meeting Standards for Rangeland Health

Kimber Diorite allotment: This allotment contains about 2,366 BLM acres, 1,920 USFS acres, and 2,069 State conservation easement acres. Elevation on BLM land ranges from approximately 3,900 to 5,200 feet. Plant communities consist primarily of big sagebrush-steppe and shrublands.

Grazing in the Kimber Diorite allotment is managed under a 2001 AMP. The AMP outlines a set 3-year rest rotation grazing schedule for six pastures; however there are actually 11 pastures associated with the allotment. However, the grazing schedule has never been followed to date because of problems with locoweed infestations in the spring, which prevent use of one or all of the lower elevation pastures. A provision in the AMP, though, allows for changes to the scheduled rotation due to locoweed. As a result, the grazing system has evolved into a variable pasture rotation with grazed pastures usually being rested or used at different times the following year until the locoweed issue is successfully addressed.

There are three established vegetation utilization monitoring transects located throughout Kimber Diorite Allotment. The transect data is from the 1980s through 2008. The primary forage species are bluebunch wheatgrass, western wheatgrass and needle-and-thread grass. Use has varied widely between years and species from 0-75%; however, the majority of use from year to year appears to average less than 40% for all species. The heaviest use was recorded on western wheatgrass at Lower Kimber Pasture with use averaging 64-75% from 1984 to 1991. Random vegetation utilization monitoring at Section 34 pasture recorded 5-32% use in 2005 and 44-75% use in 2008.

There are three vegetation trend monitoring transects (Daubenmire) at Kimber Diorite allotment, located in the Railroad, Section 34, and Lower Kimber pastures. The trend seems to be static, but the cover has increased since 1999. Some small shifts in vegetation, such as reduction in broom snakeweed in conjunction with an increase of bluebunch wheatgrass and blue grama has reduced the amount of bare ground. These are signs that the range is not being over-utilized.

Also, heavy grazing indicators such as fringed sagewort have declined. Climate change and other influences such as early spring use by elk are considerations but specific data is lacking to quantify their influence in the reduction of bluebunch wheatgrass.

A reclaimed gravel pit exists in the Section 34 West pasture of the allotment. The pit has not been used since 2008, and was reclaimed with available topsoil at the site.

Table 9

<i>Summary of Kimber Diorite Allotment Monitoring Studies and Land Health Assessment Results</i>				
Montana Standards for Rangeland Health were assessed on the Kimber Diorite allotment in 2012. The upland, riparian, water quality, air quality, and habitat standards were all met.				
Study Plot	Study Type	Years Read	Changes Detected	Determination
T.008N R.001E Sec. 15	Rangeland Health Assessment	2012	Departure from Expected Rating: Soil and Site Stability- Slight to Moderate Hydrologic function- Slight to Moderate Biotic Integrity- Slight to Moderate	Meeting Standards for Rangeland Health
T.008N R.001E Sec. 29	Rangeland Health Assessment	2012	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- Slight to Moderate	Meeting Standards for Rangeland Health

<i>Summary of Kimber Diorite Allotment Monitoring Studies and Land Health Assessment Results</i>				
Montana Standards for Rangeland Health were assessed on the Kimber Diorite allotment in 2012. The upland, riparian, water quality, air quality, and habitat standards were all met.				
Study Plot	Study Type	Years Read	Changes Detected	Determination
T.008N R.001E Sec. 30	Rangeland Health Assessment	2012	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- Slight to Moderate	Meeting Standards for Rangeland Health
T.008N R.001E Sec. 34	Rangeland Health Assessment	2012	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- Slight to Moderate Biotic Integrity- Moderate	Meeting Standards for Rangeland Health
T.008N R.001E Sec. 29	Rangeland Health Assessment	1999	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- Moderate	Meeting Standards for Rangeland Health
T.008N R.001E Sec. 28	KD Daub #1	1980,1984 1988,1999 2008,2012	Decrease in bare ground, static cool season grasses	Static to Slightly upward
T.008N R.001E Sec. 34	KD Daub #2	1980,1983 1987,1991 2008,2012	Static cool season grasses, increase in warm season, decrease in bare ground	Static
T.008N R.001E Sec. 29	KD Daub #3	1988,1999 2008,2012	Increase in cool season grasses, decrease in bare ground	Upward
T.008N R.001E Sec. 29	KD Util #3	1984,1985 1986,1988 1991,2009 2010	Use levels exceeded 40% once in 1985 for one species	Within grazing guidelines
T.008N R.001E Sec. 28	KD Util #4	1983,1984 1988,1994 2010	Use levels exceeded 40% once in 1988 for one species	Within grazing guidelines
T.008N R.001E Sec. 20	KD Util #5	1980,1981 1982,1983 1986,1993 , 2009	Use levels never exceeded 40%.	Within grazing guidelines

Limestone Hills Allotment: The Limestone Hills allotment consists of approximately 13,118 acres. These public lands are fenced in with approximately 640 acres of state land and 484 acres of private lands. Elevations on BLM lands range from 4,300 to 6,700 feet. Plant communities include grasslands, sagebrush steppes, conifer savannahs and rocky shrublands, all of which contain conifer colonization resulting from interrupted historic fire regimes.

Prior to 2012, four operators grazed this allotment in common with approximately 300 yearlings or dry cows from 05/15 to 09/30 for a combined total of 1,944 AUMS. In 2012, one operator relinquished their grazing preference for 579 AUMS on this allotment. The remaining three grazing permits expired February 28, 2013, but were re-issued under the Appropriations Act.

The current permitted AUMS are:

Authorization #s	Number of Livetock	Season of Use	% Public Land	Permitted AUMS
2500156	132	6/01 – 9/30	100	529
2500155	132	6/01 – 9/30	100	529
2507897	76	5/31 – 9/30	100	307
Total				1,365

The Limestone Hills allotment is managed with a rest rotational grazing system that was established in the mid-1980s and is comprised of six pastures: Whipcracker, Cold Springs, Iron Mask, Marble Quarry, Tank Range, and Compound. The Whipcracker, Iron Mask, and Cold Springs Pastures are not separated by fencing. (The allotment configuration can be seen in Map 4.) There is an approximate ¼ mile opening in the boundary fence between the Cold Springs and Whipcracker Pastures where private land lies along Indian Creek. Indian Creek is also a source of water for cattle when they are in the Cold Springs pasture. Currently, these two pastures are grazed together and rested together, though cattle are initially turned out into one or the other.

Three pastures (Whipcracker, Cold Springs and Iron Mask) lie within the Elkhorn ACEC.

Approximately 9,200 acres of BLM-administered land in this allotment lie within the LHTA. The Iron Mask and Cold Springs pastures lie outside the LHTA boundary. A portion of the Whipcracker pasture is within its boundaries, but most of the pasture lies outside the LHTA. The Tank Range, Compound and Marble Quarry pastures are all within the LHTA boundaries.

Actual use reports submitted annually by the permittees to the BLM indicate that most often, the rest rotation system has not been followed. This has been due, at least partially, to:

- Lack of sufficient dispersed water, especially in dry years;
- MTARNG’s intensive use of the LHTA during the grazing season;
- Recurring drought conditions;
- Lack of adequate fencing between the Iron Mask, Cold Springs, Tank Range and Whipcracker pastures.

For the past eight years, the grazing operators have not fully stocked the allotment with the authorized numbers of livestock on their authorizations. In fact, they have only used an 8-year average of 52% to 77% of their AUMS. To promote better cattle distribution, the operators also graze the allotment with yearlings and dry cows.

This allotment contains most of the flowing stream, or lotic, riparian habitat in the DA. Thirty-eight of 50 total lotic reaches, and 14.42 of 18.4 total lotic miles in the DA are within the Limestone Hills allotment. (For discussion of overall riparian habitat please refer to Section 3.4.5.) Although the riparian standard was not met for this allotment, there has been improvement. The table below shows the findings of riparian habitat PFC evaluation in 2010, and as compared to evaluations completed in 2002:

Limestone Hills Reaches 2010 Ratings						
	PFC	FAR up	FAR	NF up	NF	total
# reaches	17	7	9	3	3	38
miles	6.27	2.14	3.76	1.13	1.12	14.42
Comparison to 2002 Ratings						
	Improved	Same	Down	Not rated in 2002		
# reaches	18	10	3	7		
miles	7.68	4.31	0.86	2.27		
<i>PFC = Proper Functioning Condition; FAR up = FAR with an upward trend; FAR = Functioning at Risk; NF up = NF with an upward trend; NF = Non-functioning</i>						

The three of the six pastures in this allotment that were assessed in 2010 did not meet four out of the five Land Health Standards. The only Standard met was Air Quality. The lower elevation pastures (Tank Range, Compound, and Marble Quarry) were reassessed in 2010 because they did not meet the Upland Health Standard in a 2002 assessment. The upper elevation pastures, Iron Mask, Whipcracker and Cold Springs, were not assessed in 2010.

The 2010 Land Health Assessment conducted by the BLM on the Marble Quarry, Compound and Tank Range pastures states, “As compared to the past evaluation in 2002, study information, and observations, the uplands show signs of improvement”. The trend studies showed upland health to be either static or slightly improving in these pastures that did not meet the upland standard in 2010:

- In the Tank Range pasture, invasive species such as fringed sagewort and broom snakeweed were found to be decreasing in composition, while beneficial species like bluebunch wheatgrass and black sage were increasing in composition.
- In the Marble Quarry pasture, trend was found to be static to slightly upward as blue grama (which increases with overgrazing) and fringed sagewort are decreasing in composition and black sage is increasing.
- Land-healthy species such as needle and thread and bluebunch wheatgrass in the Compound pasture are increasing in composition. Both blue grama grass and fringed sagewort are decreasing in composition.

One contributing factor for not meeting the Upland Health Standards in both the 2002 and 2010 assessments was livestock grazing out of compliance with the current grazing schedule (which has been difficult to follow). Other factors include conifer colonization into sagebrush meadows and grasslands due to the approximate 100-year interruption of historic fire regimes and noxious weed infestations. Below is a table summarizing monitoring study and Rangeland Health Assessment results:

Table 10

<i>Summary of Limestone Hills Monitoring Studies and Land Health Assessment Results</i>				
Study Plot	Study Type	Years Read	Results of Study	Determination
Marble Quarry Pasture	Daubenmire	1979, 1983, 1989, 2009	Increase in cool-season grasses and ground cover	Slight Upward Trend
	Utilization #2	2007, 2008, 2010, 2011, 2013	Use Levels: Grass #1: 44%, 9%, 13%, 19%, 54% Grass #2: 27%, 19%, 10%, 10%, 40%	Near or Within grazing guidelines
	Rangeland Health Assessment	2010	Departure from Expected Rating: Soil and Site Stability-None to Slight Hydrologic function-None to Slight Biotic Integrity-Slight to Moderate	*Not Meeting Standards for Rangeland Health, but Improvement since 2002
Tank Range Pasture <i>(Location is in the Active MTARNG Firing Area)</i>	Daubenmire	1983, 1988, 2002, 2008, 2013	Cool season grasses static; increase in black sage	Static
	Utilization #7	2003	Use Level: 19%	Within grazing guidelines
	Utilization #8	2003	Use Level: 46%	Within grazing guidelines
	Utilization #9	2003	Use Level: 44%	Within grazing guidelines
	Rangeland Health Assessment	2010	Departure from Expected Rating: Soil and Site Stability-Slight to Moderate Hydrologic function-Slight to Moderate Biotic Integrity-Slight to Moderate	*Not Meeting Standards for Rangeland Health, but Improvement since 2002
Compound Pasture	Utilization #6	2006, 2007, 2008, 2009, 2010	Use levels: 52%, 40%, 6%, 8%, and 15%	Within grazing guidelines
	Utilization #10	2007, 2008, 2010	Use levels: Grass #1 - 7%, 0%, 10% Grass #2 - 13%, 0%, 6%	Within grazing guidelines
	Rangeland Health Assessment	2010	Departure from Expected Rating: Soil and Site Stability- Slight to Moderate Hydrologic function-Slight to Moderate Biotic Integrity-Slight to Moderate	*Not Meeting Standards for Rangeland Health, but Improvement since 2002

* The factors contributing to not meeting Standards for Land Health are stated in the 2010 Land Health Evaluation Report: Munitions Firing, Historic Mining, Historic Livestock Management, and Current Livestock out of Compliance with Annual Grazing Schedules. The first three factors are beyond the control of the BLM. The fourth factor has been addressed in this EA by proposing to: 1) not reallocate 579 cattle grazing AUMs, 2) establish a more workable grazing schedule, and 3) build pasture boundary fences and constructing a new water development. The 2010 Land Health Evaluation Report is available at: http://www.blm.gov/mt/st/en/fo/butte_field_office/landhealth.html

Whitehorse allotment: This allotment contains about 547 federal acres and 970 private acres. Elevation on BLM land ranges from approximately 4,100 to 4,500 feet. The plant community consists primarily of big sagebrush-steppe.

The Whitehorse allotment is grazed during the authorized dates in conjunction with a ranching operation that controls the private intermingled lands. This allotment is generally grazed in conjunction with the Beaver allotment, and allotments on the HNF. One year, Whitehorse is used in mid-June as cattle are being moved from private lands up to the HNF, then cattle are moved down from the HNF to the Beaver allotment in early October. The next year the rotation is reversed.

Montana Standards for Rangeland Health were assessed on the Whitehorse allotment in 2012. The upland, air quality, and habitat standards were met. The riparian and water quality standards were not applicable as there are no riparian areas or surface water identified within the allotment on public land.

Table 11

<i>Summary of Whitehorse Allotment Monitoring Studies and Land Health Assessment Results</i>				
Study Plot	Study Type	Years Read	Changes Detected	Determination
T.008N R.001E Sec. 32	Rangeland Health Assessment	2012	Departure from Expected Rating: Soil and Site Stability- None to Slight Hydrologic function- None to Slight Biotic Integrity- None to Slight	Meeting Standards for Rangeland Health
T.008N R.001E Sec. 32	Standards Checklist	1999	Met all applicable standards	Meeting Standards for Rangeland Health

Alternative A Direct & Indirect Effects

Beaver, Beaver Creek, Dowdy Ditch, Kimber Diorite, and Whitehorse allotments: All applicable Standards for Rangeland Health were met on these allotments, except for the riparian and water quality standards on Beaver Creek. Those Standards not being met were not due to livestock grazing; Beaver Creek is designated as impaired on the Montana 303(d) list, and the FAR determination for Weasel Creek was determined to be due to historic mining activity and sedimentation from an access road. Existing conditions in these allotments have been fostered by current grazing management; therefore livestock utilization at current levels would likely continue to display the characteristics and provide the same environmental quality as were observed during Land Health Evaluations. On the Dowdy Ditch allotment under this alternative, the permittee with Authorization # 2504487, who uses the north two pastures, would likely need to construct approximately 2.5 miles of fence to comply with the grazing dates on BLM land.

Limestone Hills allotment: The current livestock grazing schedule does not take into consideration that moving cattle from a lower-elevation pasture to a higher-elevation pasture and then back down to a lower elevation pasture through the rugged terrain is difficult at best. Such long-distance pasture rotations (some as long as 6 miles) are also hard on the cattle on summer days when the temperatures get above 90° F.

If the existing grazing schedule is not modified to improve pasture rotations, noncompliance with the schedule would continue and upland health would either not improve, or would improve at a

much slower rate. Livestock utilization levels would be expected to continue to contribute to negative impacts on native vegetation.

Another cause of noncompliance with the grazing schedule is that there is inadequate fencing between the pastures. If adequate pasture fencing is not built, cattle would continue to leak into other pastures, furthering the risk of overgrazing on native vegetation and reduction of forage for wildlife.

If the 579 relinquished AUMS were permitted to another operator, upland health may stop improving altogether from the extra grazing pressure on native grasses. In previous years, the remaining three operators have reduced their cattle numbers to match the native vegetation growth of that year. Permitting the 579 AUMS to another operator would not ensure that operator would reduce their cattle numbers to correspond to yearly vegetation availability. Such a situation would pose a risk for upland health to halt improvement and/or begin degrading from additional cattle utilization on native vegetation.

Alternative B Direct & Indirect Effects

Beaver, Beaver Creek, Kimber Diorite and Whitehorse allotments: Effects to these allotments would be similar to Alternative A. Under Alternative B a Term and Condition is added that would allow seven days flexibility of the On and Off dates due to annual weather variability and plant phenology. Another Term and Condition that would be added allows for flexibility of the number of cattle to fluctuate from what is on the permit so long as the use does not exceed the available AUMs identified on the permit/lease. Both of the stipulations require BLM coordination and approval prior to turnout and would only be utilized to tailor annual grazing with annual plant phenology and permittees' livestock operations.

Building in seven days of flexibility would enable the authorized officer to tailor grazing times to the annual phenological stages of the desired plant populations. A BLM vegetation monitoring study within the PA showed that over a 14-year span the flowering stage of bluebunch wheatgrass varied from May 26 to June 21. At that same site the seed dissemination varied from July 5 to August 18. Use dates have been previously identified and allotments have been managed under these steadfast dates and have met Land Health Standards. Building in flexibility would allow greater specific tailoring of grazing within an allotment to current year phenology and more consistently achieving the desired grazing effect. Total grazing time would not be greater than that identified on the permit/lease.

Allowing for fluctuation of cattle numbers would aid in tailoring grazing use of BLM lands with annual variations and the permittees' livestock operation while achieving Land Health Standards and the desired condition of the BLM lands. Applying this principal would allow for variation of cattle numbers within a range of use dates with the same effects as initially analyzed so long as stocking rates are not exceeded. Many studies have shown that stocking rate as opposed to grazing system have the greatest effect on vegetation responses (Derner and Hart 2007). This would also allow for BLM lands to be more effectively utilized within a livestock operation.

Dowdy Ditch allotment: Changing the use dates on Authorization #2504487 from 5/1-6/15 to 6/1 - 8/15 would not be expected to have effects on BLM lands as grazing use of these lands is minimal in comparison to use of private land in the pastures used by this permittee. This is due

to distance from water, topography, and vegetation types on BLM land in these pastures. This permittee would use their private and BLM lands during these dates with approximately 80 cow/calf pairs or yearlings. By adjusting the use dates on this allotment approximately 2.5 miles of fence would not need to be built on private land to fence cows off of BLM and keep them on private portions of the allotment, and overall management conflicts will be reduced. Additionally, moving the Turn Out date to one month later would give plants on the range more time to establish and reach initial range readiness before grazing. It is expected that the allotment would continue to meet Land Health Standards with the new dates. The adjustment from 100% to 10% Public Land is based off of original range adjudications, historic use, and data from the NRCS.

No changes are proposed for Authorization # 2504527 in this allotment. Therefore effects would be the same as Alternative A for the south four pastures of the allotment.

Limestone Hills allotment:

Grazing Schedule: Modifying the existing pasture rotation schedule as proposed under Alternative B in Section 2.4.3 would aid the permittees' ability to comply with the schedule. With better compliance to a workable pasture rotation schedule, it is expected that upland health would continue to improve as livestock utilization would be better controlled.

Prior to 2012 there were 1944 active AUMS on the allotment. BLM proposal to not reallocate the 579 relinquished AUMS would also provide a decrease in cattle grazing pressure on native plant species and lessen other possible cattle impacts such as trampling in riparian areas. Not reallocating the 579 AUMs to grazing would provide an opportunity for the three pastures not meeting Land Health Standards to possibly improve at a faster rate.

Fences: The proposed new pasture fences would assist the grazing operators in following the proposed grazing schedule. The fences would better ensure that cattle would not leak into pastures that are to be rested or used during a different time period, resulting in less grazing use.

The let-down sections of the Shep's Ridge and Whipcracker fences would allow easier wildlife movement during the fall, winter, and spring, when cattle grazing is not present. If the proposed Whipcracker fence was built, approximately 400 fenced-out acres of the Whipcracker Pasture south of Indian Creek would be designated for trailing purposes only. This fenced-out area would allow transient grazing to occur predominantly along the Mud Springs Road. Such "pass-through" livestock grazing during cattle movement would not pose more than minimal, short-term, negative impacts on native vegetation.

Springs: Digging up headboxes, old pipelines, and drain lines disturbs grasses, shrubs and small trees that have grown over the original footprint of a spring development. Care would be used to disturb only the amount of vegetation necessary to accomplish the reworking of the development. Native seed mix would be applied after the rework is complete to assist the restoration of grasses and reduce the opportunity of noxious weeds establishing thereafter.

Replacing water tanks could include installing new bases, larger tanks and replacement of the protective posts and rails. Replacing a tank with a larger one would mean an expansion of a maximum of five feet in one direction or another, resulting in a small area of disturbance to

grasses and small shrubs. The loss of vegetation associated with installing a larger tank would be minimal; about five to eight square feet at each location.

The disturbance of native vegetation to rework these springs would be temporary. The long-term benefit of reworking these springs would be to provide water for cattle and many species of wildlife that thrive in the nearby areas, and promote more even distribution of herbivore use.

Once the Whipcracker fence is constructed and the Whipcracker pasture becomes a truly separate pasture, the proposed Iron Mask pipeline and tank would provide another important water supply for both cattle and wildlife. Its' location in the north end of the pasture would promote better distribution of cattle, thereby reducing concentrated impacts to vegetation in preferred areas. The Whipcracker fence project also proposes to install let-down fence near its western edge to provide easier movement of wildlife during the months of October through May of each year.

Alternative C Direct & Indirect Effects

Beaver, Beaver Creek, Dowdy Ditch, Kimber Diorite, and Whitehorse allotments:

No grazing on these allotments could result in desired plant communities becoming decadent and reproductively stagnant. With little to no disturbance large perennial bunch grasses would place more resources into vegetative material as opposed to reproductive material. With a reduction in reproductive material, microsites in which desired native seeds could have been deposited to germinate under an annual or biennial disturbance regime, may become occupied by undesirable and non-native species.

The potential increase in the amount of decadent above-ground biomass could alter the wildfire occurrence rate and behavior.

Limestone Hills allotment: Under Alternative C, no livestock grazing would be authorized on the Limestone Hills allotment.

The existing range improvements (water developments and pasture fences outside of the LHTA) would be abandoned and removed, with the exception of fencing necessary for management of the LHTA, the Indian Creek Limestone Mine permit area, and adjacent land ownership. Abandonment and removal of the water developments would eliminate some readily available water sources for wildlife. These water developments are currently being maintained by the grazing permittees and do provide water to wildlife as well as cattle.

Eliminating cattle grazing on the Limestone Hills allotment may have the long-term adverse effect of grasses becoming “wooly” (many cured stems from past years’ growth) and thus less palatable to wildlife ungulates. Currently the composition of less desirable species (fringed sagewort, blue grama and broom snakeweed) is on a slightly downward trend. Key species for upland health (bluebunch wheatgrass and black sage) are either trending static or on an upward trend.

3.4.4 Vegetation

The existing condition and effects of proposed actions on special status plants, invasive non-native species, fire and fuels, forests, and grassland/shrubland are described in this section. Generally, the EA analyses effects of proposed burns and treatments on overall habitat. For effects of fire on individual species please refer to the USFS Fire Effects Information System, available at: <http://www.feis-crs.org/beta/>.

3.4.4.1 Special Status Plants

Existing condition

Ute ladies' tresses are listed as Threatened under the ESA. The only known plants of this species in the vicinity of the PA is a population of 34 individuals occupying one acre along Highway 287 south of Townsend. This population was found in a subirrigated wet meadow and borrow pit between Highway 287 and the railroad tracks in an old river oxbow at 3,860' elevation (Fertig et al. 2005). Ute ladies' tresses occupy alkaline wetlands, swales and old meander channels, often on the edge of the wetland or in areas that are dry by mid-summer. Habitat is limited to areas within major river drainages. While some of these landforms occur in the PA, no populations or occurrences of Ute ladies' tresses are known or suspected to exist within the PA.

Three plant species listed as Sensitive by the BLM in Montana are known or suspected to occur on BFO lands: whitebark pine (also a Candidate ESA species), Idaho sedge, and sapphire rockcress. Montana Natural Heritage Program data (2015) indicates that none of these species occur near the PA. The elevation required for whitebark pine does not occur in the DA. The known ranges of Idaho sedge and sapphire rockcress do not extend to the Elkhorn Mountains.

Alternatives A, B, and C Direct & Indirect Effects

There would be no effects to special status plant species under any alternative since none occur in the PA.

3.4.4.2 Invasive, Non-native Species

Existing Condition

Invasive plants are defined by the Federal Interagency Committee for Management of Noxious and Exotic Weeds as "plants that have been introduced into an environment in which they did not evolve and thus usually have no natural enemies to limit their reproduction and spread." Currently there are 35 weeds on the statewide noxious weed list and of these 35, many are found in the Iron Mask PA. The Iron Mask PA was surveyed for noxious weeds and non-native invasive species in 2005, 2009, 2010, and 2011. Montana State Noxious Weed species known to occur in the PA are dalmatian toadflax, spotted knapweed, hoary alyssum, leafy spurge, and houndstongue. Canada thistle, another state declared noxious weed, is also found along riparian areas in the Iron Mask PA. Due to its location in riparian areas, it is difficult to effectively treat. Some of the non-native invasive species present are common mullein, musk and bull thistle, cheatgrass, locoweed, black henbane, Russian olive, and kochia. Cheatgrass and Russian olive, which are present in the area, are regulated plants on the Montana Noxious Weed List. This

means these regulated plants have the potential to have negative impacts on native vegetation productivity in the PA. The plant may not be intentionally spread or sold other than as a contaminant in agricultural products. The state recommends research, education and prevention to minimize the spread of the regulated plant.

Spotted knapweed, a biennial or short lived perennial, is found scattered throughout the Iron Mask PA. Most infestations are found along roads and trails but the larger infestations are found around past disturbance sites and old mining claims. The Indian Creek and Limestone Hills allotments have the most noxious weed infestations, largely because of past mining disturbances on private and federal lands, and the difficult terrain, which makes chemical treatments of those infestations challenging. Noxious weeds were a contributing factor for Limestone Hills and Indian Creek not meeting Land Health Standards. The MTARNG conducts spraying/inventory/monitoring in the LHTA.

Alternative A Direct & Indirect Effects, and Effects Common to All Alternatives

Human activities, such as road maintenance activities, recreation, mining, and other disturbances, as well as livestock, wildlife, wind, water and fire will continue to spread weeds into and within the planning area. Targeting new noxious weed infestations would help stop the spread of existing populations within and out of the planning area as well as stop any new species from becoming established.

Noxious weeds will continue to be treated as resources allow through the existing cooperative effort between the BLM, Broadwater County, private landowners and other partners. Spread of noxious and invasive species outside of known infestations would be prevented or mitigated to the degree that resources allow. This will likely maintain noxious weed infestations at current levels or result in a slow decrease in plant densities. If there are resource constraints, density and/or size of current infestations may not be reduced. Noxious and invasive species would continue to affect vegetative composition and cover, causing increased run-off and soil erosion, reducing forage and affecting upland and riparian health in localized areas within the PA.

Biological control insects that feed exclusively on the target species are expected to reduce the seed production, vigor and competitiveness of existing populations of these species. There would be fewer seeds to expand the infestation and reduced vigor would allow native vegetation to compete better with these aggressive invaders and mitigate further spread within and adjacent to existing infestations.

The Limestone Hills and Indian Creek allotments did not meet land health standards partially as the result of noxious weed expansion. Treatments will be implemented to reduce the spread of weeds within these allotments independent of Decisions made based on this EA. Over time, treatments would reduce or eliminate weeds within these allotments and allow progress to be made towards meeting standards.

Alternative B Direct & Indirect Effects

Design features for conifer treatments and construction of structural projects are expected to mitigate cheatgrass and noxious weed spread resulting from soil disturbance during treatment/project implementation. All BLM ground disturbing projects would be pretreated, post

treated, and reseeded with a suitable native seed mix decided on by the BLM. Areas where Land Health Standards are not being met because of invasive and non-native species would be treated until an upward trend is noticed during monitoring, and then be subject to yearly maintenance treatments.

Enhanced grazing management that maintains and promotes healthy upland and riparian habitats, or improves the vigor, cover and composition of upland and riparian habitats in areas that are not meeting standards would increase the resilience of these habitats and reduce the invasion and/or expansion of noxious weeds.

Alternative C Direct & Indirect Effects

Approximately two miles of routes in the north end of the acquisition area would be open from 5/16-12/2, and may pose the risk of being a vector for transport and spread of noxious weeds.

The allotments being considered for authorization renewal would not be grazed by livestock, which would eliminate one vector known to transport some species of noxious weeds in fur and waste. By not allowing livestock grazing under this alternative, one of the vectors for transporting weed seeds would be removed; however wildlife would still remain a vector for seed transport in addition to human-related vectors previously mentioned.

3.4.4.3 Fire & Fuels

Existing Condition

The analysis for vegetation pertaining to fire and fuels focuses on Fire Regime Condition Class (FRCC). FRCC is determined for the existing condition and the effects of each alternative are analyzed in terms of percentage change of FRCC to determine if project objectives are being met.

Following coarse scale definitions developed by Hardy et al. (2001) and Schmidt et al. (2002), the natural (historic) fire regimes of these major vegetative communities have been classified based on average number of years between fires (fire frequency) as well fire severity (amount of replacement) on dominant overstory vegetation.

The five fire regime classifications commonly interpreted for fire and fuels management purposes include:

I – 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75 percent of the dominant overstory vegetation replaced);

II – 0-35 year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced);

III – 35-100+ year frequency and mixed severity (less than 75 percent of the dominant overstory vegetation replaced);

IV – 35-100+ year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced);

V – 200+ year frequency and high (stand replacement) severity.

The FRCC is a classification of the amount of departure from the natural fire regime (Hann and Bunnell 2001; Hardy et al. 2001). Coarse-Scale FRCC classes have been defined and mapped by Schmidt et al. (2002). They include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the historic natural fire regime.

This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g., insect and disease mortality, grazing, and drought). There are no wildland vegetation and fuel conditions that do not fit within one of the three classes.

A simplified description of the FRCCs and associated potential risks is presented below.

Table 12

<i>Fire Regime Condition Classes (from Hann and Bunnell 2001)</i>		
FRCC	DESCRIPTION	POTENTIAL RISKS
Condition Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. Composition and structure of vegetation and fuels are similar to the natural (historical) regime.
Condition Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	Risk of loss of key ecosystem components (e.g., native species, large trees, and soil) are low. Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Uncharacteristic conditions range from low to moderate; risk of loss of key ecosystem components is moderate.
Condition Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). Composition and structure of vegetation and fuel are highly altered. Uncharacteristic conditions range from moderate to high. Risk of loss of key ecosystem components are high.

To determine the current FRCC, the PA and DA landscapes were delineated using both BLM Forest Vegetation Information System (FORVIS) stand data and USFS Region One Vegetation Classification Mapping (USDA 2011).

The BLM did not have any current vegetation data on the Iron Mask acquisition area. Therefore, the BLM borrowed the USFS Region One Vegetation Classification Mapping, which had not yet

been ground-truthed. In 2012, the BLM conducted ground-truthing in a 2548-acre sample of the acquisition area that included lower and upper elevations. To begin, 200 random GPS points were generated within the sample area. BLM personnel conducted 100 vegetation samplings of the random GPS points to determine the accuracy of the USFS Region One Vegetation Classification Mapping. The ground-truthing results showed an accuracy level of 81% to the USFS mapping, as follows:

Table 13

No. of BLM Ground - Truthing Samples		No. of Matches to USFS Veg. Classification Map	
Conifer	15	Conifer	11
High Sage	9	High Sage	2
Juniper	4	Juniper	4
Low Sage	2	Low Sage	0
Grass	70	Grass	64
Total:	100	Total:	81

A potential/historical reference condition was determined for the landscape by using FRCC Guidebook Biophysical Setting (BpS) Descriptions (USGS 2007). It is important to determine reference condition for the landscape, to see if the treatments are effective in moving the current condition toward the reference condition following implementation and monitoring that would occur under proposed actions. The PA is divided into nine major BpSs for analysis of FRCC.

Summary

Departure of the historical/reference conditions was determined by comparing the current condition to the historical/ reference condition for both the analysis and project areas.

Table 14

<i>Current Departure from Historical/Reference Conditions</i>							
BpS		Planning Area		Departure	Decision Area		Departure
		Current	Reference		Current	Reference	
Douglas-fir Interior (DFIR2)	%	17	6	+11	24	7	+17
	acres	20,860	7,843	+13,017	3,856	1,075	+2,781
Ponderosa Pine Douglas-fir Inland Northwest (PPDF1)	%	5	4	+1	11	12	-1
	acres	6,266	4,923	+1,343	1,675	1,865	-190
Mountain Grassland with Shrubs (MGRA3)	%	57	65	-8	58	69	-11
	acres	70,246	80,445	-10,199	9,046	10,877	-1,831
Sagebrush Cool (SCAG1)	%	10	14	-4	5	10	-5
	acres	12,933	17,094	-4,161	868	1,628	-760
Riparian (RIPA)	%	1	1	0	1	1	-0
	acres	1,429	1,429	0	158	158	-0
Interior Lower Subalpine Forest #1	%	6	6	0	0	0	0
	acres	7,614	7,614	0	0	0	0

<i>Current Departure from Historical/Reference Conditions</i>							
BpS		Planning Area		Departure	Decision Area		Departure
		Current	Reference		Current	Reference	
(SPFI1)							
Deciduous woodland-Oak/Aspen (DWOA)	%	1	1	0	0	0	0
	acres	834	834	0	0	0	0
Interior West Upper Subalpine Forest (SPFI2)	%	1	1	0	0	0	0
	acres	1,502	1,502	0	0	0	0
Barren, Water, and Urban	%	2	2	0	0	0	0
	acres	3,249	3,249	0	58	58	0
Total Departure	%			12			17
Total Departure	acres			14,360			2,781

**A negative % represents a shortage of the BpS on the landscape. A positive % represents an abundance of the BpS on the Landscape % were rounded to the nearest whole percent so they will not match acres verbatim.*

The Iron Mask PA has more acres of DFIR2 and PPDF1 BpS across the area than the reference conditions would have had, which leaves a shortage of acres in the MGRA3 and CSAG1 BpS. The Iron Mask PA consists of fire regime one, two, three and four and with the use of the LANDFIRE FRCC Software Application, 3.0, the current vegetation condition was compared to the reference condition of the landscape. The PA landscape was calculated to have an overall landscape departure equating to a rating of Condition Class 2, a condition that is moderately departed from historic reference values. A complete FRCC report can be found in the Project Administration Record.

Alternative A Direct & Indirect Effects

With the No Action Alternative, no vegetative treatments would occur on the Iron Mask DA landscape. Sagebrush meadows and open grasslands would continue to be colonized by conifers and/or sagebrush, and the acres of sagebrush meadows and open grasslands could continue to decline in the absence of disturbance. This alternative would not treat any of the eight vegetated BpSs identified in Chapter 3. The FRCC on this landscape was rated at Condition Class 2; a condition moderately departed from historic reference values. With the No Action Alternative, these conditions would continue to degrade and could potentially reach a Condition Class 3, indicating the land is not very similar to its' natural regime in terms of vegetation, disturbance or both.

Alternatives B and C Direct & Indirect Effects

Effects to fire and fuels would be the same for both Alternatives B and C.

Vegetation treatment in five of the eleven identified BpS's would occur under Alternatives B and C. The proposed action would treat approximately 5,397 acres of vegetation in the DA; approximately 978 of those acres could include prescribed fire, and all of the acres could include mechanical or hand vegetation treatment (pre-treatment slashing would occur in prescribed burn units). Approximately 2,068 acres of the total treatments acres would treat the overabundance acres in the DFIR2, thus restoring the under-abundance of acres in MGRA3 and SCAG1 BpS (see current condition Table 6). Treatment on approximately 90 acres would occur in the RIPA

BpS to maintain and move it towards the reference condition. Approximately 475 acres of DFIR2, 291 acres of PPDF1, 1,000 acres of SCAG1 and 1,869 of MGRA3 would be treated to move these BPS's toward reference condition.

Summary. Departure from the historical/reference was determined by comparing the expected outcome of condition after treatment implementation of Alternative B to the historical/reference condition for both the DA and PA.

Table 15

<i>Departure From Historical/Reference Conditions With Implementation of Alternatives B and C</i>							
BpS		Planning Area		Departure	Decision Area		Departure
		Alternative B	Reference		Alternative B	Reference	
Douglas-fir Interior (DFIR2)	%	15	6	+9	11	7	+4
	acres	18,792	7,843	+10,949	1,788	1,075	+713
Ponderosa Pine Douglas-fir Inland Northwest (PPDF1)	%	5	4	+1	12	12	0
	acres	6,456	4,923	+1,533	1,865	1,865	0
Mountain Grassland with Shrubs (MGRA3)	%	58	65	-7	69	70	-1
	acres	71,924	80,445	-8,521	10,724	10,877	-153
Sagebrush Cool (SCAG1)	%	11	14	-3	7	10	-3
	acres	13,133	17,094	-3,961	1,068	1,628	-560
Riparian (RIPA)	%	1	1	0	1	1	0
	acres	1,429	1,429	0	158	158	0
Interior Lower Subalpine Forest #1 (SPFI1)	%	6	6	0	0	0	0
	acres	7,614	7,614	0	0	0	0
Deciduous woodland-Oak/Aspen (DWOA)	%	1	1	0	0	0	0
	acres	834	834	0	0	0	0
Interior West Upper Subalpine Forest (SPFI2)	%	1	1	0	0	0	0
	acres	1,502	1,502	0	0	0	0
Barren, Water, and Urban	%	2	2	0	0	0	0
	acres	3,249	3,249	0	58	58	0
Total Departure	%			10			4
Total Departure	acres			12,482			713

**A negative % represents a shortage of the BpS on the landscape. A positive % represents an abundance of the BpS on the Landscape % were rounded to the nearest whole percent so they will not match acres verbatim.*

Alternatives B and C would treat up to approximately 5,397 acres of vegetation and move the BpSs toward the reference condition which would change the overall FRCC rating for the PA. By using LANDFIRE FRCC Software Application 3.0, the expected vegetation condition from implementation of Alternative B or C was compared to the reference condition of the landscape. The landscape was calculated to have an overall departure equating to a rating of Condition Class 1, a condition that is within the natural (historical) range of variability for vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated

disturbances. A complete FRCC report can be found in the Project Administration Record. By treating the acres and changing the landscape from Condition Class 1 to Condition Class 2 it would have direct effects on fire behavior, fire effects and other disturbance (e.g., insects or disease). In the event of a wildland fire, fire behavior and effects would be less severe across the landscape, allowing for more rapid regeneration of vegetation. The wildland fire would be more easily controlled due to less accumulation of woody debris across the landscape. The landscape overall would be more resistant to other disturbances due to less competition in forested areas.

3.4.4.4 Forestry

Existing Condition

In broad terms, a healthy forest is one that maintains desirable ecosystem functions and processes. Aspects of forest health include biological diversity, soil productivity, air and water quality, ability to withstand natural disturbances, and the capacity of the forest to provide a sustaining flow of goods and services for people. Due to the slow growth and limited productivity of the forest types within the BLM portions of the Iron Mask PA, the BLM forests are unable to provide what some describe as traditional forest resources, such as lumber and other wood products, but they do provide critical habitat and structure that support many ecosystem functions and processes.

The Butte RMP separates forests and woodlands into two main types, Dry Forest Types and Cool and Moist Forest Types. Both types occur throughout the Iron Mask PA, but the Dry Forest Types are the most prevalent. For this assessment, the forest and woodland types were further divided into five BpSs (see Fire/Fuels Section 3.4.4.3 for more clarification). These five BpSs comprise approximately 30% of current vegetation in the PA, and would comprise approximately 18% of the PA in reference conditions. Only two of these BpSs are found within the DA, DFIR2 and PPDF1. These BpSs comprise approximately 35% of the current vegetation in the DA and would comprise only 19% of the DA in reference conditions.

The DFIR2 and PPDF1 BpSs found within the Iron Mask PA generally are composed of the low-elevation and mid-elevation forest/woodlands which contain predominately Douglas-fir, limber pine, ponderosa pine, and Rocky Mountain juniper. There has been a large amount of departure within the DFIR2 and PPDF1 BpSs. Departures are mainly attributed to conifer expansion into openings and sagebrush/grassland which is most evident at the low to mid-elevations of the assessment area. Douglas-fir and Rocky Mountain juniper colonization has affected much of the PA.

At higher elevations, the Dry Forest Types transition into more Cool and Moist Forest Types (SPFI1 and SPFI2 BpSs). These forested habitats are limited within the PA and mainly found on USFS ground. They contain mixed conifer communities of subalpine fir, Engelmann spruce, Douglas-fir, and lodgepole pine.

Most of the forest stands within the PA are uneven-aged and multi-layered with individual and small groups of old growth trees scattered throughout. Trees with “old growth” characteristics are limited throughout the PA and most commonly found in rock outcrops or along riparian areas, due to the historic mixed-severity fire regime of the area.

As a result of fire exclusion, conifer expansion and stand density have increased within forested stands. The recent drought and increased densities have resulted in forest susceptibility to insect and/or disease infestations and subsequent mortality.

Spruce budworm activity is present throughout most areas of the Iron Mask PA. Defoliation caused by spruce budworm is most evident on Douglas-fir, but also affects subalpine fir and spruce species. While spruce budworm does not usually cause direct tree mortality, it will predispose trees to attacks by other insects or diseases. Budworms grow more vigorously in stressed trees, and budworm populations can increase dramatically during drought conditions. Densely stocked and/or multi-storied stands with predominantly Douglas-fir or subalpine fir are at high risk to budworm infestation (Bulaon and Sturdevant 2006). Defoliation from spruce budworm was noted throughout the PA, but is at endemic levels.

Mountain pine beetle is present throughout the watershed and is causing mortality in lodgepole, ponderosa, and limber pine. During low beetle population levels, attacks are primarily on trees under stress due to injury, drought, overcrowding, etc. However, as beetle populations increase, attacks may involve most trees 8" DBH or greater, regardless of their apparent health (Bulaon and Sturdevant 2006). Mountain pine beetle activity is highly variable throughout the Iron Mask PA due to a wide range of suitability in stand conditions. Nearly all of the conifer stands within the PA that have a pine component are experiencing some level of mortality.

Alternative A Direct & Indirect Effects

This alternative would not reduce the conifer colonization or stand densities throughout the PA. Forests would continue to expand and stand densities would continue increasing. Forest susceptibility to insects and/or disease would also continue to increase. As colonization and stands densities increase, trees with "old growth" characteristics would continue to be at risk of mortality from insects, disease, and severe wildland fire. This is due to a number of factors, most notably, more competition for resources, resulting in decreasing stand health. Also, the accumulation of fuels and an increase of ladder fuels puts stands at risk for high severity wildland fire.

Alternative B and C Direct & Indirect Effects

Fire, hand thinning, and mastication would reduce conifer colonization and forest stand densities throughout the DA. By reducing conifer expansion and stand densities, forest susceptibility to insects and/or disease would be reduced and trees with "old growth" characteristics would be protected.

3.4.4.5 Grasslands & Shrublands

Existing Condition

Most of the PA (79%) and DA (79%) would be categorized as grassland/shrubland under historical reference conditions. Currently, only 67% of the PA and 63% of the DA are considered grassland/shrubland. Common native grasses in the area include bluebunch wheatgrass, Idaho fescue, needle-and-thread grass, and blue grama. The most common native shrub is big sagebrush.

Much of the grassland/shrubland habitat type in the DA has been undergoing conversion to woodland/coniferous habitat due to fire intervals that have lengthened considerably since European settlement. The historical mean fire intervals (MFI) for the Mountain Grassland and Sagebrush Cool BpS types are 16 and 17 years, respectively. The current MFIs for these types are 251 and 302 years, respectively (Barrett 2005). These BpS types are currently reduced in the DA by a combined 20% from what would be expected under reference condition. And these figures only represent the areas in which conversion has already crossed the threshold of being classified as a different BpS type. Much of the area still classified in the grassland/shrubland BpS types is in the process of undergoing conversion due to conifer colonization. The Elkhorn Implementation Group (2011) defined conifer colonization as:

- Conifers that occupy areas where they are not desirable from a wildlife habitat management objective;
- Conifers that exist where they historically were not present in grass and/or shrublands under stand-replacing, mixed-severity fire regimes, or low-severity fire regimes;
- Where natural disturbance processes such as fire have been altered from the historic (pre-1900) disturbance regime (e.g. interrupted by grazing pressure or suppression activities or intensified by increased fuel loads that result from increased stem densities).
- Where trees exist in an area that compromises non-forested landscapes.

Grassland-dependent wildlife species such as pronghorn antelope and long-billed curlew have already lost much habitat locally and across their range to human development and agriculture on private lands, and are losing more to conifer colonization. Other threats to grassland/shrubland habitat are increased club moss which prevents infiltration of precipitation, and increased nonnative species such as cheatgrass.

Alternative A Direct & Indirect Effects

The No Action Alternative would not remove conifer colonization from grassland and sagebrush habitats. These habitats would continue to be colonized by conifers and the acres of sagebrush meadows and grassland would continue to decline in the absence of conifer treatments. Declines in these habitats would reduce food, cover, and nesting sites for wildlife species dependent on sagebrush and grasslands.

Alternatives B and C Direct & Indirect Effects

Effects to grasslands and shrublands from vegetation treatments would be the same under Alternatives B and C.

Alternatives B and C would remove conifer colonization from grassland and sagebrush habitats and allow for increases in grasses, forbs and shrubs that are currently being replaced by conifers. Several methods of conifer reduction are proposed which include: prescribed fire, mastication, terra-torching, and hand cutting. Ideally, a combination of all these methods could be used, which would provide BLM with an opportunity to monitor successful conifer kill rates and sagebrush/grass regeneration among the different methods of treatment.

The photo below, EA document cover photo, and photos 1 & 2 in Section 2.4.4 depict conifer colonization that can be found in grassland/shrublands in the Iron Mask PA.

Photo 7: Progression of conifer colonization into open grassland/shrublands in the DA



Prescribed fire can be the most efficient way to remove conifers, especially small seedlings. Unlike mechanical treatments, prescribed fire also removes a portion of the conifer seed source, ensuring less time between re-treatments. Some sagebrush would be lost with prescribed burning, and could take over 10 years to recover. However, sagebrush is not a major component of the proposed burn areas. Burns would be conducted in a mosaic pattern to preserve sagebrush. Barret (2005) found that sagebrush cover on the east side of the Elkhorns as increased by at least 50% since 1922, and that the vegetation-fuel departure is about 60% for the sagebrush type. Thus, if up to 60% of sagebrush in a burn unit is lost due to burning in the short-term, that would go towards restoring a more natural vegetation state for the PA.

Prescribed fire has been effectively used in the past on the Iron Mask and Whipcracker pastures of the Limestone Hills allotment to reduce conifer colonization, increase herbaceous cover, and enhance wildlife habitat.

Mastication would be applied in areas where the conifer cover is 10-30%. A study done on conifer colonization reduction through mastication in Utah (Roundy 2013) indicates that to best maintain shrub cover, trees should be masticated before tree cover exceeds 20 percent. This study was conducted on pinyon pine and juniper colonization using “extensive and detailed controlled experiments and measured soil and plant responses for tree and interspace microsites on three sites in 2007 through 2011.” By using mastication in areas of less conifer density, less woody debris would remain on the ground. A solid mat of woody debris would inhibit the regeneration of sagebrush and herbaceous species. Mastication in less dense conifer colonization areas would be lower in cost than in a densely conifer-populated area. Some short-term damage to sagebrush and grasses may occur from the mastication machinery’s movement. Roundy’s study suggests that tree mortality and woody debris can increase soil water and nutrient availability to plants both in the interspaces and understories of masticated trees. An additional finding from that study is that shredding can maintain shrubs and increase herbaceous cover on colonized sites.

The same study also indicates that a risk exists for weedy species to become dominant in masticated areas where few perennial grasses exist or where weedy species are prevalent due to increased soil water and nutrient availability. Any method of conifer removal would allow for a short-term increase in noxious weeds that are already present in some of the treatment areas. Weed-spraying prior to and after treatments would be conducted by the BLM. Successful weed spraying has greatly reduced the occurrence of noxious species in the Whipcracker Pasture after past prescribed burns.

Hand-thinning (sawing, lopping) of conifers in grassland/shrublands and riparian areas would have less immediate impacts on vegetation than mastication as no large vehicles would be moving over the landscape. Impacts of hand-thinning would include opening the conifer overstory to permit more light to the understory grasses, forbs and shrubs, as well as lessen the competition for water and nutrients these species vie for with conifers.

Tree stump-inhibitor chemicals such as Garlon would have an impact on understory grass and shrubs by ensuring complete conifer kill after mastication. Sometimes these removal methods leave the lowest branches which can then resprout. Garlon can be toxic to fish and would not be used near fish-bearing streams or aquatic areas.

Garlon, undiluted, can be toxic to birds. Dilution of the stump-inhibitor would be done according to the manufacturer's directions, which would reduce the risk of impacts to birds. A stump-inhibitor chemical would be applied during time periods when moisture stress is the least, i.e. winter, and it can be used when snow is present. Spraying conifer stumps in the winter when migratory birds are not present would reduce the risk of accidental ingestion.

Terra-torching of individual colonizing conifers would be selective, allowing for selective conservation of limber and ponderosa pine trees that have been threatened on a regional level by disease and insects. Terra-torching could also be accomplished during the winter months in some of the lower-elevation treatment areas, as the snow cover is minimal in these areas. Winter terra-torching would limit the short-term damage that would occur to dormant grass and sagebrush from the cross-country movement of a terra-torch machine. The long-term effect of conifer removal would enhance these life forms.

Removing conifer from uplands could result in an increase in the water production that supplies the many springs used by wildlife and livestock. This effect is not certain to occur, but water yield inspections would help determine if removal of the colonizing conifers has any effect on water production. Increased water yield would also be dependent on a myriad of other factors at different sites; factors such as types of soils, depth of bedrock, re-emergence and/or increase in wetland/riparian species, decreased annual precipitation/drought, etc.

The possible inclusion of approximately 200 acres of DNRC land to proposed treatments would have no additional effects, other than to slightly increase the acreage moved toward a more natural state.

Test plots of up to 10 acres to treat prickly pear, if successful, would slightly increase forage by the amount treated as available to wildlife and cattle. If these test treatments are successful they could be expanded in the future under a separate action subject to NEPA analysis.

3.4.5 Riparian Habitat

Existing Condition

The condition of riparian areas on BLM land is primarily evaluated by PFC Assessment Methodologies (Prichard et al. 1998, 2003). PFC is a methodology for assessing the physical functioning of riparian-wetland areas. The term PFC is used to describe both the assessment process, and a defined, on the ground condition of the riparian-wetland area. In either case, PFC defines a minimum level or starting point for assessing riparian-wetland areas.

The PFC assessment provides a consistent approach for assessing the physical functioning of riparian-wetland areas through consideration of hydrology, vegetation, and soil/landform attributes. The PFC assessment synthesizes information that is foundational to determining the overall health of a riparian-wetland area.

The on-the-ground condition term “PFC” refers to how well the physical processes are functioning. PFC is a state of resiliency that will allow a riparian-wetland area to hold together during a high flow event, sustaining that system’s ability to produce values related to both physical and biological attributes.

BLM personnel reviewed existing data, re-read established transects, and established monitoring in several areas that were identified prior to and during the 2010 and 2012 evaluations. All available data were evaluated and considered by the BLM IDT prior to a functionality call being made on each reach.

The planning area contains primarily lotic (e.g., streams) systems. However there was one lentic (e.g., wet meadow) system inventoried and assessed during a portion of the 2012 land health assessment.

Riparian condition of streams, springs, ponds, potholes and wet meadows were placed into one of five categories: Proper Functioning Condition (PFC), Functioning At Risk with an upward trend (FAR Up), Functioning At Risk with a static trend or no apparent trend (FAR), Functioning At Risk with a downward trend (FAR Down), or Non Functional (NF) using the lentic and lotic methodologies described above. Standards are met when conditions are at PFC or FAR with an upward trend.

There were approximately 17.4 miles of perennial, intermittent and ephemeral stream reaches identified and inventoried during the 2010 and 2012 land health assessments. These reaches are identified in the table below. In addition to the name and unique identification number associated with each reach, the table includes which BLM grazing allotment the reach is located in; approximate length; most recent PFC rating; and the previous rating if there was one.

Table 16

<i>Riparian (lotic) Resources in the Iron Mask DA</i>						
Reach ID	Reach Name	Allotment	Approx. Length (miles)	Flow	Most Recent Rating	Previous Rating
MICC-2	unnamed	Limestone Hills	0.51	<i>ephemeral</i>	<i>PFC</i>	<i>NF</i>

<i>Riparian (lotic) Resources in the Iron Mask DA</i>						
Reach ID	Reach Name	Allotment	Approx. Length (miles)	Flow	Most Recent Rating	Previous Rating
MICC-16	Cold Springs	Limestone Hills	0.14	<i>perennial</i>	<i>FAR up</i>	*
MIDR-13	unnamed	Limestone Hills	0.46	<i>ephemeral</i>	<i>PFC</i>	<i>NF up</i>
MIDR-14	unnamed	Limestone Hills	0.34	<i>ephemeral</i>	<i>PFC</i>	<i>NF up</i>
MIDR-15	unnamed	Limestone Hills	0.61	<i>ephemeral</i>	<i>PFC</i>	<i>FAR</i>
MIDR-16	unnamed	Limestone Hills	0.46	<i>ephemeral</i>	<i>PFC</i>	<i>NF up</i>
MIDR-17	Limestone Spring	Limestone Hills	0.71	<i>intermittent</i>	<i>PFC</i>	<i>NF up</i>
MIDR-18	Limestone Spring	Limestone Hills	0.10	<i>intermittent</i>	<i>PFC</i>	<i>FAR</i>
MIDR-19	Tank Range Spring	Limestone Hills	0.19	<i>intermittent</i>	<i>NF</i>	<i>FAR</i>
MIDR-20	Indian Creek	Limestone Hills	0.46	<i>ephemeral</i>	<i>NF up</i>	*
MIDR-21	Indian Creek	Limestone Hills	0.38	<i>ephemeral</i>	<i>NF up</i>	*
MIDR-22	Indian Creek	Limestone Hills	0.29	<i>ephemeral</i>	<i>NF up</i>	*
MIDR-23	Indian Creek	Limestone Hills	0.46	<i>ephemeral</i>	<i>FAR</i>	<i>FAR</i>
MIDR-24	Indian Creek	Limestone Hills	0.92	<i>perennial</i>	<i>FAR</i>	<i>FAR</i>
MIDR-25	Indian Creek	Limestone Hills	0.80	<i>intermittent</i>	<i>PFC</i>	*
MIDR-26	unnamed Whipcracker trib.	Limestone Hills	0.34	<i>intermittent</i>	<i>PFC</i>	<i>PFC</i>
MIDR-27	unnamed	Limestone Hills	0.15	<i>intermittent</i>	<i>PFC</i>	<i>NF</i>
MIDR-28	unnamed	Limestone Hills	0.47	<i>intermittent</i>	<i>FAR</i>	<i>FAR</i>
MIDR-29	unnamed	Limestone Hills	0.45	<i>intermittent</i>	<i>FAR</i>	<i>NF</i>
MIDR-31	Whiplash	Limestone Hills	0.37	<i>intermittent</i>	<i>FAR up</i>	<i>NF up</i>
MIDR-32	Whiplash	Limestone Hills	0.29	<i>intermittent</i>	<i>FAR up</i>	<i>FAR</i>
MIDR-33	Whiplash	Limestone Hills	0.17	<i>intermittent</i>	<i>FAR up</i>	<i>NF up</i>
MIDR-34	Whiplash	Limestone Hills	0.40	<i>intermittent</i>	<i>PFC</i>	<i>PFC</i>
MIDR-36	Hassel	Limestone Hills	0.14	<i>perennial</i>	<i>PFC</i>	*
MIDR-38	Indian Creek	Limestone Hills	0.49	<i>perennial</i>	<i>NF</i>	<i>NF</i>
MIDR-39	Indian Creek	Limestone Hills	0.44	<i>perennial</i>	<i>NF</i>	<i>NF</i>

<i>Riparian (lotic) Resources in the Iron Mask DA</i>						
Reach ID	Reach Name	Allotment	Approx. Length (miles)	Flow	Most Recent Rating	Previous Rating
MIDR-40	Indian Creek trib.	Limestone Hills	0.50	<i>perennial</i>	<i>PFC</i>	<i>NF</i>
MIDR-41	Indian Creek trib.	Limestone Hills	0.39	<i>intermittent</i>	<i>PFC</i>	<i>NF</i>
MIDR-42	Indian Creek trib.	Limestone Hills	0.30	<i>intermittent</i>	<i>PFC</i>	<i>NF</i>
MIDR-43	Indian Creek	Limestone Hills	0.49	<i>perennial</i>	<i>FAR up</i>	<i>FAR</i>
MIDR-44	Indian Creek	Limestone Hills	0.49	<i>perennial</i>	<i>FAR up</i>	<i>NF up</i>
MIDR-45	Indian Creek	Limestone Hills	0.19	<i>perennial</i>	<i>FAR up</i>	<i>FAR</i>
MIDR-46	Badger Gulch	Limestone Hills	0.38	<i>perennial</i>	<i>FAR</i>	<i>FAR</i>
MIDR-48	W.F. Indian Creek	Limestone Hills	0.20	<i>perennial</i>	<i>FAR</i>	<i>FAR</i>
MIDR-49	W.F. Indian Creek	Limestone Hills	0.21	<i>perennial</i>	<i>FAR</i>	<i>FAR</i>
MIMC-3	Kelly Spring Gulch Trib.	Kimber Diorite	0.33	<i>intermittent</i>	<i>PFC</i>	<i>FAR</i>
MIMC-4	Kelly Spring Gulch	Kimber Diorite	0.37	<i>perennial</i>	<i>PFC</i>	<i>FAR</i>
MIMC-5	Chartum Gulch	Beaver	0.31	<i>intermittent</i>	<i>FAR</i>	*
MIMC-6	Chartum Side Draw	Beaver	0.22	<i>intermittent</i>	<i>FAR</i>	*
MIMC-21	Weasel Creek	Beaver	0.26	<i>perennial</i>	<i>PFC</i>	<i>FAR up</i>
MIMC-22	Beaver Creek	Beaver Creek	0.24	<i>perennial</i>	<i>PFC</i>	<i>PFC</i>
MIUC-1	Whipcracker Gulch	Limestone Hills	0.37	<i>intermittent</i>	<i>FAR</i>	<i>PFC</i>
MIUC-2	Whipcracker Gulch	Limestone Hills	0.30	<i>intermittent</i>	<i>FAR</i>	<i>PFC</i>
MIUC-3	Fesida Spring	Limestone Hills	0.06	<i>intermittent</i>	<i>PFC</i>	*
MIUC-4	unnamed	Indian Creek	0.18	<i>perennial</i>	<i>FAR</i>	<i>PFC</i>
MIUC-5	unnamed	Indian Creek	0.37	<i>intermittent</i>	<i>FAR</i>	<i>PFC</i>
MIUC-6	unnamed	Indian Creek	0.20	<i>intermittent</i>	<i>FAR</i>	<i>NF up</i>
MIUC-7	unnamed	Indian Creek	0.25	<i>ephemeral</i>	<i>FAR up</i>	<i>PFC</i>
MIUC-8	unnamed	Indian Creek	0.25	<i>ephemeral</i>	<i>FAR</i>	<i>FAR</i>

*PFC = Proper Functioning Condition; FAR = Functioning at Risk; FAR up = FAR with an upward trend; NF = Non-functioning; NF up = NF with an upward trend; * = No rating is available*
(NOTE: *NF up* designates that although the reach was determined by the ID team to be non-functioning; indicators such as riparian plant communities and stream morphology show that the overall health of the reach may be improving.)

One lentic (e.g. wetland) system was identified and assessed in 2012. The PFC rating as well as the location and size of the wetland is listed in the table below.

Table 17

<i>Riparian (lentic) Resources in the Iron Mask DA</i>					
Reach ID	Reach Name	Allotment	Approx. Size (acres)	Most Recent Rating	Previous Rating
MIMC-2	Kimber Gulch	Kimber Diorite	1.00	<i>PFC</i>	*
<i>PFC = Proper Functioning Condition; * = No rating is available</i>					

MIMC-2 is a series of three small lentic areas that are adjacent to one another. The area appears to be a relict beaver dam complex. The three areas were grouped together as one unit and rated accordingly.

Across the PA, 43% (7.47 miles) of the lotic resources were rated PFC, 30% (5.29 miles) were rated FAR, 14% (2.39 miles) were rated FAR up, 5% (0.93 miles) were rated NF, and 8% (1.32 miles) were rated NF up.

100% of the lentic resources that were assessed were rated PFC.

Many of the reaches within the planning area have been directly and/or indirectly affected by placer and/or hardrock mining. Portions of Indian Creek and its' tributaries lie within the LHTA. Gold was discovered in Indian Creek in 1870 near the Hassel townsite at the junction of the West and North Forks of Indian Creek. The lower portions of the creek were dredged from 1937 through the early 1950s, with a pause during the war years from 1942-1946.

In 1998 the BLM undertook reclamation of a 2,400 foot stretch of Indian Creek just east of the limestone canyon known as the Willison site. Reclamation involved reconstruction of a stream channel and revegetation of approximately five acres. In 2011 high streamflows started a headcut at the east end of the project area where it joined the unreclaimed valley. This headcut extends back into the reclaimed area approximately 25 feet with banks as much as four feet high.

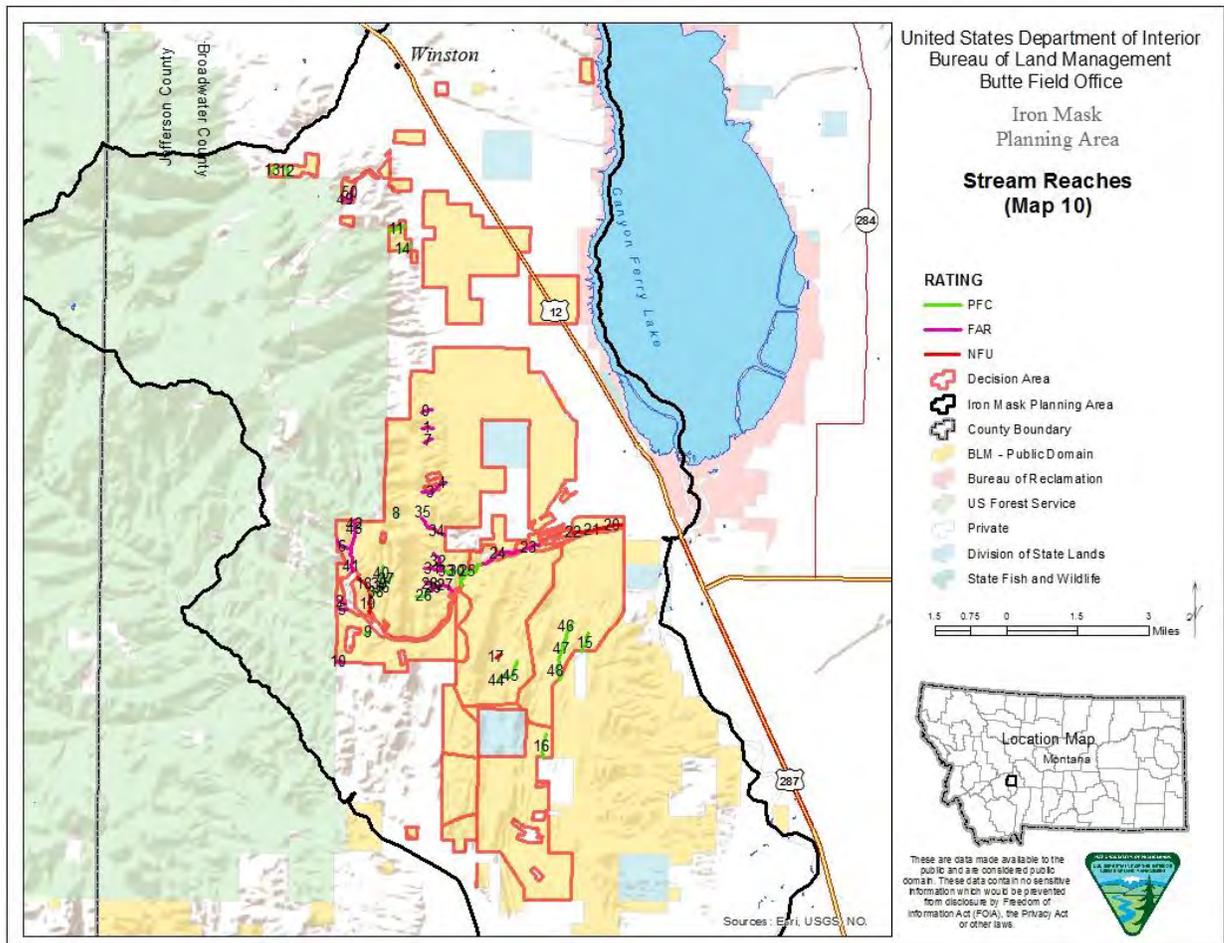
Tank Range Spring was rated NF, due to heavy bank disturbance partially associated with the firing range along the banks and within the reach. A road crossing occurs in the middle of the reach that had a plugged culvert. The spring had limited water in the system, which is not sufficient enough to maintain hydric soils. Limited water capacity further limits riparian vegetation vigor and composition.

The following is not an all-encompassing list of conditions found by the IDT during the assessments, but describes some of the issues and general resource concerns that prevented certain reaches from meeting Western Montana Standard #2.

- Alteration of stream morphology which includes; channel shape, gradient, sinuosity and width-to-depth ratio.
- Excessive erosion or deposition in at least a portion of the reach.
- Composition, cover, structure and vigor of riparian vegetation differing from what is expected for the reach.
- Noxious weeds present throughout at least a portion of the reach.

Many of the resources within the BFO stream and wetland database have been identified based upon mapped information, aerial photos, and USGS quadrangle maps. As part of the planning area assessment process, the resource inventory has been updated based upon field notes, photographs and ground surveys.

Map 10: Stream Reaches



Alternative A Direct & Indirect Effects

Riparian reaches that were assessed in 2010 and 2012, and determined to be PFC, would be expected to remain PFC under current management. Existing conditions on reaches that were determined to be FAR or NF would not be expected to improve without some change(s) in management and/or the implementation of management action(s).

Alternative B Direct & Indirect Effects

Thinning conifers could lead to an expansion of riparian vegetation across the landscape, and increase desired riparian species and vigor of plants. More favorable growing conditions would be created to allow for recruitment of early seral aspen, willow and other desired riparian species. Thinning conifers would increase the opportunity for precipitation to reach the soil

surface. This may lead to an increase in available water if the soil surface is protected and infiltration occurs. An increase in plant available water would be expected to help improve riparian reaches if net gains occur.

Vegetation management activities may affect vegetation stand age, structure, or species composition. Actions with potential for direct effects on riparian habitat include thinning and/or burning of conifers from riparian areas. Indirect effects after project implementation include changes in vegetation structure over time.

Burning and ground-based thinning of conifers could expose mineral soil and create localized surface erosion. There would be potential for sediment generated from management actions to reach streams. This could be especially true if a prescribed fire is lost and more acres are burned during implementation. Adequate buffers, however, would be retained on perennial streams to prevent excess sediment from reaching streams.

Although thinning of conifers would occur in riparian zones, it would be done to release desired riparian species and promote an increase in riparian vegetation. No bank rooted trees would be removed and no trees would be removed from the area unless adequate in-stream and down woody material in the riparian zone was available. Mechanical treatments in riparian zones would only be allowed if the protection of the stream and riparian structure could be guaranteed.

Prescribed fire is often recommended as an alternative for ungulate (both wildlife and livestock) control because it stimulates prolific suckering and provides optimal growing conditions for young aspen (Shepperd 2001). Aspen stand vigor, soil, fuel loads, and fire severity must be taken into account before using prescribed fire for aspen restoration (Kilpatrick and Abendroth 2001).

In some situations the combination of fire and severe ungulate use has eliminated stands, prompting researchers to suggest that in some areas of the west prescribed fire could hasten aspen decline (White et al. 1998, Kay 2001, Durham et al. 2010). However, the Whitetail Watershed Restoration Project on BFO lands, which used prescribed fire in 2005 and 2006, showed that fire can effectively restore aspen when livestock/wildlife management goals produce low to moderate browsing pressures (Durham and Marlow 2010).

Vegetation treatments for riparian areas within Indian Creek, Kimber Diorite and Limestone Hills allotments would be expected to promote riparian health as stated in Section 2.4.4.

Indian Creek Forage Reserve Allotment: Implementing the proposed minimum stubble height of 6” (approx. 15 cm) on key riparian species within the West pasture of the Indian Creek forage reserve allotment would provide an easily communicated management benchmark.

When stubble heights are reduced to less than 10 cm (approx. 4”), the ability of cattle to forage becomes less effective and efficient. This can result in increased livestock trailing and increased browsing of woody species such as willows. Data indicates that when considering a number of riparian issues such as: maintaining forage vigor; entrapping and stabilizing sediment under inundated flow; trampling of stream banks; sustaining forage intake and cattle gain; and

diversion of willow browsing; that a stubble height of 10 cm on streamside graminoids may be the best compromise in many situations (Clary et al. 2000).

The construction of exclosures around spring sources for stock water developments would help to reduce the amount of livestock trailing and trampling in and around the springs. Constructing exclosures around spring sources may also help to reduce the amount of browsing on desirable woody species such as willows and aspen where present. The use of a let-down fence around the wet meadow in the West pasture of the Indian Creek forage reserve allotment would help to reduce livestock trailing and trampling within the wet meadow.

Limestone Hills allotment: Proposed vegetation treatments, fencing to better manage cattle, spring developments, the new pipeline and tank, and the reduction of 579 AUMs in this allotment would be expected to enhance and hasten the riparian improvement trend discussed in Section 3.4.3.

Kelly Gulch: Hand thinning of conifers in the area of the Kelly Spring Gulch exclosure could improve up to 21 acres of riparian habitat within the Kimber Diorite allotment. Thinning conifers would be expected to create more favorable growing conditions which would allow for recruitment of early seral aspen, willow and other desired riparian species.

Indian Creek: Stabilizing the Indian Creek headcut would help to reduce stream bank erosion and allow for the recruitment and recovery of desirable riparian species.

Approximately 69 acres of riparian habitat adjacent to Indian Creek could be improved through the hand thinning of conifers and Russian olive. Conifer treatments elsewhere throughout the Limestone Hills allotment could improve up to an additional 291 acres of riparian habitat.

Russian olive treatment along Indian Creek and its tributaries may help reduce the competition for available resources between Russian olive and desirable riparian species such as aspen, willow and cottonwood. The resulting effect that removing Russian olive would have on increased water flow within Indian Creek is not known.

When existing dense stands of nonnative vegetation are replaced with other vegetation, soil shading may be reduced and hence direct evaporation from the ground may increase, partly or completely offsetting any reduction in vegetation transpiration. Consequently, expected increases in stream flow or groundwater following removal of Russian olive from the flood plain may not be realized (Shafroth et al. 2009).

Cut-stump methods are an effective way to control Russian olive. Wilson (2008) reported 95-100% control of Russian olive using cut-stump methods with herbicides at Scottsbluff, Neb., during 2006–2008 (Shafroth et al. 2009). However, even with a successful kill of live trees, a seed bank remains in the soil. Research has shown that Russian olive seeds may stay viable for up to three years. Russian olives within Indian Creek would not be eliminated by a single treatment. Annual follow-up treatments would be necessary to ensure that Russian olive trees that were not successfully killed in previous attempts are subsequently treated.

Alternative C Direct & Indirect Effects

Riparian reaches in the Limestone Hills allotment are the only reaches in the DA documented to not meet the riparian standard with livestock as a causal factor, although improvement in recent years has been noted. In general, the removal of livestock grazing under this alternative would eliminate the potential for riparian reaches to be impacted by cattle.

3.4.6 Wildlife & Fish

Existing Condition

Wildlife in the PA is typical of southwestern Montana. Basic life history and habitat requirement information on all species mentioned in this document can be found in the Montana Field Guide (<http://fieldguide.mt.gov/>), and numerous other sources.

Mammals: The planning area provides important big game habitat. Antelope are common in the lower elevation, grassy habitat in summer. Elk winter in the upper and middle elevations, and generally move to upper elevations in summer. A state regulation requiring a special permit to hunt mature elk bulls or cows in the Elkhorns has resulted in a healthy age class mix of males and highly regarded hunting opportunities. Mule deer are common, and whitetail deer mostly occupy the Missouri River, Crow Creek, and Beaver Creek corridor areas. Bighorn sheep were reintroduced to the area in 1996 and reached a population near 200 individuals but experienced a pneumonia die-off in 2008. Their current population is about 30-40 individuals.

Grey wolves have moved into the area in recent years. Other predators include coyote, mountain lion, bobcat, black bear, and badger. Numerous small mammals are present in the area as well, including shrew species, many rodent species, and several bat species.

Birds: Many species of migratory and non-migratory birds are found in the project area. Species commonly seen in the lower elevation grassy habitats include horned lark, vesper sparrow, western meadowlark. Many birds are more general in habitat preferences and may be found in shrub and coniferous habitats including the American robin, chipping sparrow, dark-eyed junco, mountain chickadee, pine siskin, Clark's nutcracker, and quite a few others. Raptors recorded in the area include bald eagle, kestrel, prairie falcon, red-tailed hawk, northern harrier. Several species designated "sensitive" by BLM may occur in the area (see table below). Species requiring special management consideration to promote their conservation and reduce the likelihood of future Endangered Species Act (ESA) listing are designated "sensitive" by BLM State Directors.

Reptiles and Amphibians: Reptiles that could occur in the project area include the gopher snake, terrestrial and common garter snakes, eastern racer, rubber boa, and western rattlesnake. Amphibians that could occur in the project area are Columbia spotted frog, western toad, and plains spadefoot. Other reptiles and amphibians are unlikely to occupy the area, although the northern leopard frog and painted turtle could occur on one 80-acre BLM parcel with a small riparian area connected to Canyon Ferry Lake.

Fish: Perennial streams known to support fish are Beaver Creek, Weasel Creek, Indian Creek and its' tributaries, and Crow Creek. Other intermittent or ephemeral water bodies in the area do not support fish. Westslope cutthroat trout are the only special status fish species that may occur in the area. Westslope cutthroat trout are a BLM sensitive species and a Montana species of

concern. They occur only in Beaver Creek and have mostly hybridized with rainbow trout where the creek runs through BLM land (Montana Fisheries Information System 2012).

Table 18

<i>Fish Species Present on PA Stream Segments</i>		
Waterbody name	Length on BLM	Fish species present on project area segments
Beaver Creek	0.24 mi.	brook trout - common brown trout - rare mottled sculpin - common rainbow trout - common westslope cutthroat trout - unknown westslope-rainbow trout hybrid - common
Weasel Creek	0.26 mi.	No surveys have been conducted. This is a tributary to Beaver Creek and fish species are likely to be similar.
Indian Creek	3.18 mi. (includes tributaries)	brook trout - abundant
Crow Creek	1.05 mi.	brook trout - common brown trout - rare mottled sculpin - abundant rainbow trout - abundant

Table 19

<i>Endangered Species Act Listed Species With Potential to Occur in the PA.</i>		
Species	Status	Notes
Grizzly bear	Threatened	Unlikely to occur; may occasionally disperse through the area. The planning area is between the Yellowstone and Northern Continental Divide populations.
Canada lynx	Threatened	BLM land in the planning area is not considered suitable habitat for lynx. There is suitable habitat on National Forest lands adjacent to the west but surveys have not found lynx in the Elkhorns to date.
Sprague's Pipit	Candidate	Could occur but has not been documented in the area. MT NHP habitat suitability mapping shows some areas of moderate habitat for this species in the planning area. Planning area is at the western edge of the range for this species.

Table 20

<i>BLM-listed Sensitive Species With Potential to Occur in the PA.</i>		
Species	Documented in area?	Notes
Fringed myotis	no	Roosts in caves, mines and rock crevices. Undocumented but could occur in the area.
Gray wolf	yes	Wolves are known to now occur in the Elkhorn Mountains.
Long-eared myotis	no	Undocumented in the area but could occur. Associated with forested stands with old-growth characteristics.
Long-legged myotis	no	Uses tree bark or caves for summer roost sites. Could occur in the area. Occurs in aspen and mixed conifer forests.
Townsend's big-eared bat	yes	Prefers caves and abandoned mines for roosting. Known to overwinter in one gated abandoned mine in the area.
Bald eagle	yes	Typically stays near the Missouri River and Canyon Ferry Lake.

Black-backed woodpecker	no	Unlikely to occur in project area. Prefers recently burned forests.
Bobolink	no	Prefers tall and mixed prairie grass.
Brewer's sparrow	yes	Has been documented in sage habitat in the LHTA.
Ferruginous Hawk	no	Likely to occur in open country in the PA.
Flammulated owl	no	Nests in cavities excavated by woodpeckers. Could occur in mature forest habitat.
Golden eagle	yes	Hunts over open country.
Great gray owl	no	Has not been documented but could occur in the area. Prefers dense forest and has large home range.
Long-billed curlew	yes	Frequently seen in lower grassland portions of the PA.
McCown's longspur	yes	Documented in the northern part of the PA. Prefers short grass habitat.
Mountain plover	no	Usually associated with prairie dog towns. There are no prairie dog towns in the PA.
Sage sparrow	no	Could occur but the area is at the northern end of the range of this species.
Sage thrasher	yes	Has been documented in the LHTA.
Swainson's hawk	no	Has not been documented but is likely to occur. Hunts primarily in agricultural land and grasslands.
Three-toed woodpecker	no	Could occur in the area. Nests in cavities, often near water.
Milksnake	no	Area is on the western edge of species' range, preferred grassland habitat is present.
Northern Leopard frog	yes	Has been documented on the Missouri River and Canyon Ferry Lake.
Plains spadefoot toad	no	Could occur in riparian areas with soft or gravelly soils.
Western toad	no	Likely to occur in or near riparian areas.
Westslope cutthroat trout	yes	Known to occur in Beaver Creek and may occur in Weasel Creek but have hybridized with rainbow trout. Genetically pure individuals may not exist in the PA.

Alternative A Direct & Indirect Effects

Travel: Effects of roads on vertebrate wildlife populations act along three lines: Direct effects such as habitat loss and fragmentation; road use effects, such as traffic causing vertebrate avoidance or road kill; and additional facilitation effects, such as overhunting or overtrapping, which can increase with road access (Gucinski et al. 2001). High speed, high traffic, wide roads such as highways do have more effect on wildlife and ecosystems than low speed, low traffic, narrow roads. Highways can have impacts on wildlife up to a half mile or more from the actual roadway. Alternatives in this EA cover only roads in the Iron Mask acquisition area, and these roads are low-speed, two-track roads. One objective in the Butte RMP is, "Open road densities in big game winter and calving ranges, and within the current distribution of grizzly bear will be reduced where they currently exceed 1 mi./square mi. (*Goals WF2, WF4, WF5, SE4*)". The PA is not within the current grizzly bear distribution area but elk and mule deer winter range cover the majority of the acquisition area.

Under all travel alternatives there would be no new road construction, although spring developments would involve cross country travel, additional habitat loss and fragmentation would not occur. Road kills would not be expected to occur due to the low-speed nature of

routes. The road density objective would be met. Other historic roads in the area would continue to re-vegetate by natural processes.

Under Alternative A, no travel improvements or facilities would be constructed. No additional impacts to wildlife beyond current conditions would occur.

Indian Creek Forage Reserve allotment: The availability of grazing proposed for the allotment would not occur due to lack of infrastructure. Use levels of the allotment by wildlife would be expected to remain the same as recent use levels.

Grazing authorizations: For the Beaver, Beaver Creek, Dowdy Ditch, Kimber Diorite, and Whitehorse allotments, no changes to existing grazing would occur. These allotments have met land health standards (except for riparian and water quality on Beaver Creek; grazing was not determined to be a causal factor). Current grazing regimes on these allotments have been in place for many years, and wildlife in the area has become habituated to it. No effects to wildlife are foreseen by renewing authorizations on these allotments.

On the Limestone Hills allotment, the 579 relinquished AUMs would be reallocated to cattle. Livestock was one causal factor in this allotment not meeting land health standards, and this causal factor would remain as is. Improvement in land health and wildlife habitat conditions would not be expected to occur.

Upland vegetation treatments: Conifer colonization of grassland/shrubland areas would continue. This would result in further loss of habitat for species preferring open areas such as pronghorn antelope, and further distancing of the DA from reference or historical habitat conditions. Forested stands would continue to thicken and lose important understory plants. Successional stages of the DA would continue to advance beyond what would occur under a natural fire disturbance regime. In their current state, most areas proposed for treatments provide some additional hiding and thermal cover for elk and deer; however, if colonization continues, these areas would eventually grow too thick with juniper and Douglas-fir to be optimal habitat for these species.

Riparian treatments: Waterflow and channel morphology of Whipcracker Gulch could be restored under a separate CERCLA action. However, if funding is not obtained for this work under the CERCLA action, the loss of riparian habitat would not be given a chance to reverse.

The Indian Creek headcut would continue to grow and deteriorate the stream channel habitat characteristics of the site.

Indian Creek and Kelly Spring Gulch riparian vegetation treatments would not occur. Conifer colonization of the riparian zone would continue. Russian olive trees would continue to increase in density and move upstream on Indian Creek. Native willow, aspen, and cottonwood would continue to diminish, and habitat for native wildlife species that depend on or prefer these types would continue to decrease.

Fencing: Fence modifications could be considered under separate later actions on a case by case basis. However, until such approvals are in place, the modifications would not be implemented and current impacts to wildlife would continue.

Alternative B Direct & Indirect Effects

Travel: Trailheads and parking would be constructed and improved. This could remove up to two acres of wildlife habitat. It would also likely facilitate greater public use of the area and result in some increased disturbance to wildlife from increased non-motorized recreational use.

Indian Creek Forage Reserve allotment: Other than two miles of seasonally open road tied to the forage reserve proposals (discussed below under Alternative C Travel), the only difference between Alternatives B and C is placement of one fence and one water tank, so these alternatives would have identical effects on wildlife. One effect could be that some level of competition for forage would be expected to occur between cattle and big game, if and when livestock are authorized on temporary annual authorizations. A recent study concluded that spring grazing by cattle in a bluebunch wheatgrass community reduced plant biomass available to mule deer but did not increase the nutritional value of remaining plant biomass as was expected (Wagoner et al. 2013). So there is potential for forage available to wildlife to be reduced. Monitoring over time would show if this reduction occurs. Also there is potential for antelope, deer, and elk to be displaced by avoidance of cattle. If monitoring shows this displacement to occur, the two pastures would be divided into four pastures to reduce this displacement.

A beneficial effect would be increased water availability to big game from the construction of water developments. These water developments would help disperse use by cattle and big game across the allotment, and partially compensate for lack of access to the Missouri River for big game that has been largely cut off by human development on private lands.

Grazing authorizations: For the Beaver, Beaver Creek, Kimber Diorite, and Whitehorse allotments, no changes to existing management are proposed other than four additional Terms and Conditions on the authorizations allowing for some minor flexibility in grazing dates. Current grazing regimes on these allotments have been in place for many years, and wildlife in the area has become habituated to it. The utilization objective of 45% use on native herbaceous forage and 55% on nonnative seedlings includes a combination of use by cattle and herbivorous wildlife, ensuring adequate forage for wildlife. No detrimental impacts to current conditions for wildlife are foreseen by renewing authorizations with the additional Terms and Conditions on these allotments.

On the Dowdy Ditch allotment, there would be no change to authorization #2504527. This permittee uses the south pastures in the allotment and effects to this area would be the same as Alternative A. In the northern portion of the allotment, authorization # 2504487 use dates would be changed from 5/1-6/15 to 6/1-8/15. This change effectively lengthens grazing use in the north portion of the allotment by one month and shifts it to two months later in the year. It is not anticipated that this change would have effects to upland health or result in increased forage competition between cattle and wildlife. Monitoring of forage use would be performed to detect adverse effects of the change and corrective actions would be taken if necessary.

On the Limestone Hills allotment, the non-reallocation of 579 AUMs would result in 30% less cattle being on the allotment. This would result in less competition for forage between livestock and wildlife. Livestock was one causal factor in this allotment not meeting land health standards, and the allotment could move toward meeting standards. Under Alternative B,

construction of fences and improvements to springs and water developments would enhance management and distribution of cattle, resulting in improved land health and water availability for wildlife.

Upland vegetation treatments: Under Alternatives B and C, conifer colonization of grasslands/shrublands would be reduced, increasing habitat for grassland-dependent species. Species such as pronghorn antelope could return to using habitat areas that they currently avoid. The successional stage of these treatment areas would be pushed back toward reference conditions.

Riparian treatments: Under Alternatives B and C, restoration of Whipcracker Gulch would likely improve water flow, resulting in increased quality of riparian habitat, wildlife and plant diversity, and water availability to wildlife. The Indian Creek headcut would be stabilized and stream channel habitat characteristics would improve. Indian Creek vegetation treatments would reverse or at a minimum set back the trend of Russian olive and conifer replacing native riparian species such as willow, aspen and cottonwood. Native wildlife species that depend on or prefer these types would have an increase in habitat quality.

Fencing: Fence modifications, where necessary to meet BLM fencing standards, would reduce the chances of individual animals getting entangled in wires and perishing. It would also increase the ability of wildlife, especially ungulates, to move freely on the landscape to access forage, water, and seasonal habitat areas.

Alternative C Direct & Indirect Effects

Travel: Under Alternative C, the two miles of seasonally open road from May 16-Dec. 2 could cause wildlife avoidance of the northern part of the acquisition area, depending on frequency and volume of use. Hunting season pressure would be expected to increase slightly in the vicinity of this road and cause some additional wildlife avoidance.

Indian Creek Forage Reserve allotment: The repositioning of one fence and water tank to coincide with the endpoint of the two miles of seasonally open road described above would have no additional effects on wildlife.

Grazing authorizations: Livestock grazing would no longer be a factor in land health standards or in competition with wildlife. Monitoring over time would be required to determine if forage availability were increased for herbivorous wildlife or if plants would become “wolfy” without cattle grazing. Other causal factors in allotments not meeting standards such as historic mining and munitions firing would remain the same as Alternatives A and B.

Riparian treatments, upland vegetation treatments, fencing: Effects to wildlife would be the same as Alternative B.

Under all alternatives, adverse impacts to species listed under the ESA are not anticipated.

3.4.7 Area of Critical Environmental Concern

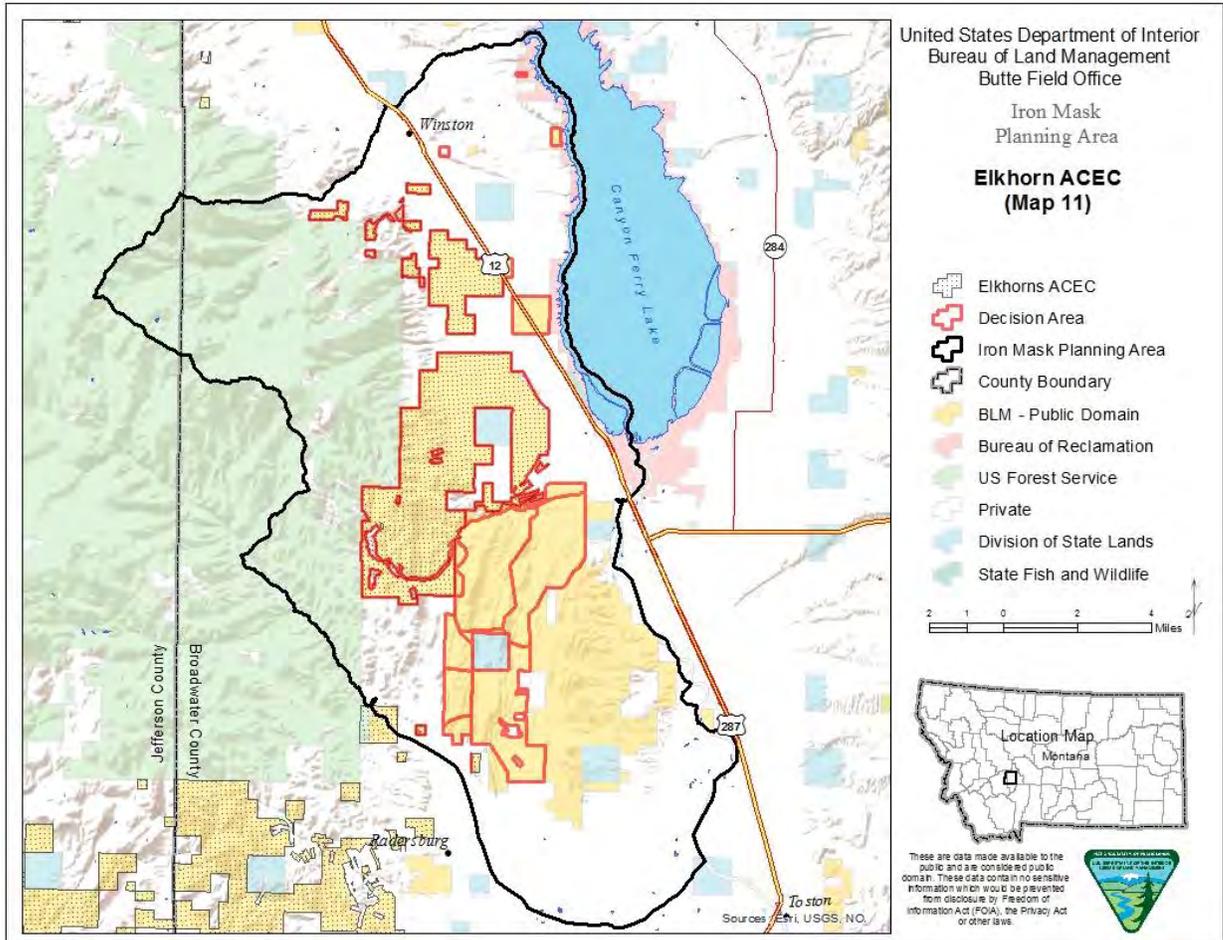
Existing Condition

Within the PA, approximately 15,019 acres are designated as the Elkhorn Mountains ACEC. The parcels not included in the ACEC are those east of Highway 287, the LHTA, and the Section 34 pasture of the Kimber Diorite allotment adjacent to Highway 287. As stated in the General Setting Section 3.2, ACEC designations highlight areas where special management attention is needed to protect important historic, cultural, and scenic values, fish or wildlife resources or other natural systems or processes. Management of the Elkhorn Mountains ACEC is focused primarily on the following values as described on pages 54-55 of the Butte RMP:

- Important cultural/historic sites
- Diverse upland and aquatic habitat for wildlife and fish
- Unique national management area (referring to USFS lands being designated as a Wildlife Management Unit and cooperative management of the area with BLM, USFS, and FWP).

For the Iron Mask DA, wildlife, habitat, and unique management area are the primary values; most important cultural sites occur in other areas of the ACEC. The ACEC designation dovetails with ECMA designation. The MOU with the USFS and FWP emphasizes management as an ecological unit across political boundaries. Within the agencies, there is an Elkhorn Steering Committee made up of USFS Regional Supervisors, the BFO Manager, and the FWP Regional Supervisor. There is an Elkhorn Implementation Group composed of agency specialists. And there are two citizen's groups, the Elkhorn Working Group and the Elkhorn Restoration Committee, dedicated to the ecological health of this mountain range.

Map 11: Elkhorn ACEC



No Action Direct & Indirect Effects

The ACEC portion of the DA would continue to be managed as it is currently. Visitor use would likely remain the same. Cattle grazing on the Indian Creek forage reserve allotment would not occur due to lack of infrastructure. Grazing management on other allotments would also remain as is.

The primary effect of this alternative on the ACEC would be that no vegetation treatments would take place other than ongoing noxious weed eradication efforts. Conifer colonization of shrublands and grasslands would continue, and the ACEC would slowly become further removed from what would be its’ vegetative state under a natural fire regime.

Alternatives B and C Direct & Indirect Effects

Under both action alternatives, visitor use would be expected to increase due to improved parking, trailheads, and signage. This use would be non-motorized, however, with the exception of the seasonally open road segments in Alternative C. The additional use would result in some disturbance to wildlife, but would not be expected to displace any species from the area.

Cattle grazing could occur on the Indian Creek forage reserve allotment. This could result in some competition for forage between cows and herbivorous wildlife. However, water developments would improve water availability for wildlife and increase dispersal throughout the allotment of wildlife and cows.

On other allotments being considered for authorization renewal, grazing would be permitted under Alternative B but not Alternative C. Grazing across the PA has been permitted for many years. Monitoring over time would be required to determine the effects of grazing elimination under Alternative C on the ACEC value of diverse upland and aquatic habitat for wildlife and fish.

Vegetation treatments proposed under the action alternatives would restore those areas to a more natural state and improve habitat for grassland and shrubland dependent species.

The relevance and importance criteria for which the ACEC was designated are not anticipated to be adversely impacted by either alternative.

3.4.8 Water Quality

Existing Condition

The State of Montana Department of Environmental Quality (DEQ) has responsibility for implementing the Federal Clean Water Act and the Montana Water Quality Act. This responsibility includes establishing Total Maximum Daily Loads (TMDL) of sediment and contaminants affecting water quality for beneficial uses.

The DEQ is responsible for making Beneficial Use Support determinations through a formal process known as Sufficient Credible Data. The BLM does not make Beneficial Use determinations. BLM watershed assessment data and information is routinely shared with the DEQ.

All Montana streams and wetlands are covered under the Clean Water Act and the Montana Water Quality Act. Streams and wetlands that are considered impaired by the DEQ are covered under section 303(d) of the Federal Clean Water Act. All other streams and wetlands are covered under the anti-degradation provisions of both the Clean Water Act and the Montana Water Quality Act. Federal and State legislation passed for water quality protection and restoration require the use of BMPs. BMPs are intended to conserve and restore riparian, wetland, aquatic, upland, forest and woodland health; and meet the 303(d) and anti-degradation provisions of State and Federal water quality legislation. The alternatives developed in Chapter 2 include implementation and/or maintenance of a variety of BMPs.

The following table lists the stream reaches located within the planning area that are listed as impaired by the State of Montana and are on the EPA's 303(d) list

Table 21

<i>Stream Reaches Listed as Impaired by Montana</i>		
Reach ID	Reach Name	303(d) listed
MIDR-20	Indian Creek	Yes
MIDR-21	Indian Creek	Yes
MIDR-22	Indian Creek	Yes
MIDR-23	Indian Creek	Yes
MIDR-24	Indian Creek	Yes
MIDR-25	Indian Creek	Yes
MIDR-38	Indian Creek	Yes
MIDR-39	Indian Creek	Yes
MIDR-43	Indian Creek	Yes
MIDR-44	Indian Creek	Yes
MIDR-45	Indian Creek	Yes
MIMC-22	Beaver Creek	Yes

The following reaches are not considered impaired by the State of Montana, but were determined by the IDT to not be meeting BLM's water quality standard for land health due to the presence of excessive amounts of sediment.

Table 22

<i>Stream Reaches Not Meeting Water Quality Standard</i>		
Reach ID	Reach Name	303(d) listed
MIDR-17	Limestone Spring	No
MIDR-18	Limestone Spring	No
MIDR-19	Tank Range Spring	No
MIUC-3	Fesida Spring	No
MIUC-8	unnamed	No

Beaver Creek allotment:

Finding: Standard is not met.

Rationale: Beaver Creek (MIMC-22) is on the 303(d) list due to; cadmium, lead, low flow alterations, nitrate/nitrite, phosphorus, silver, and zinc. The point source has not been identified, because the Total Maximum Daily Load (TMDL) assessment has not been completed for the area. Beaver Creek does not meet state water quality standards, and therefore the allotment does not meet the BLM water quality standard.

Indian Creek allotment:

Finding: Standard is not met.

Rationale: No streams within the allotment are on the 303(d) list. Streams within the allotment are interrupted and do not flow to the Missouri River. Two reaches were determined to not be meeting water quality standards by the IDT during the field portions of this planning process.

Reach MIUC-3 (*known as Whipcracker Gulch*), flows out of an adit at the Iron Mask abandoned mine site. Water flows over waste rock and mine tailings. Water quality was tested as part of a

toxicology risk assessment in the characterization study and draft Iron Mask Mine and Mill Site EEE/CA, and found to be exceeding Montana DEQ drinking water standards. Sediment in the stream bed was found to contain high metal content.

Reach MIUC-8 which flows onto and down an unimproved road, was determined by the IDT to contain excessive amounts of sediments associated with run-off from the road.

Kimber Diorite allotment:

Finding: Standard is met.

Rationale: Kelly Spring Gulch and Kimber Gulch are not currently listed as impaired water bodies.

Within the Kimber Diorite allotment there are no known mines (abandoned or active) on BLM lands which may contribute sediment or metals to streams. The only known mine within the allotment is the abandoned Kelly Mine. The Kelly Mine is located approximately 400 feet north of Kelly Spring Gulch, but does not discharge water to a water body.

Livestock grazing occurs on the allotment, but is not contributing to erosion or sedimentation of Kelly Spring Gulch, Kimber Gulch, or any of their tributaries. All stream banks within the allotment are stable and well-vegetated with plant communities that have root masses capable of withstanding high flow events. Erosion is not apparent on the roads within the allotment.

Limestone Hills allotment:

Finding: Standard is not met.

Rationale: Within the allotment, Indian Creek is on the State of Montana's 303(d). Water quality in Indian Creek is impaired due to the amount of arsenic, cadmium, lead, and mercury found in the stream. A TMDL assessment has not been completed for the area and a point source has not been identified. Indian Creek does not meet state water quality standards, and therefore the allotment does not meet the BLM water quality standard.

The stream morphology of Indian Creek is extremely altered from historic placer mining. The BLM AML program has reclaimed and restored as much of the channel as possible and monitors reclamation efforts towards meeting PFC. Indian Creek historically flowed to the Missouri River, but flow is presently interrupted with water flowing subsurface.

The AML program has tried to for several years to restore the historic flow. In 2010, another phase of reclamation was initiated. The intent was to install a ground water sill to force subsurface flow back to the surface. Subsequent investigations into the creek bed revealed that deep, cobbly alluvium associated with historic placer operations prohibited the successful installation of a ground water sill. The reclamation project was abandoned.

Groundwater wells which are located downslope of Graymont's Indian Creek Mine are monitored and sampled for nitrates associated with blasting. This testing is required as part of the mine operations. Testing is overseen by the state Department of Environmental Quality (DEQ), the state regulatory agency. To date, excessive nitrates have not been reported.

MIDR-17, 18, and 19 are located within the active portion of the firing range. Limestone Spring (MIDR-17 & 18) and Tank Range Spring (MIDR-19) are categorized as

intermittent streams and determined by the IDT to have excessive amounts of sediments. Tank Range Spring was rated NF, due to heavy bank disturbance partially associated with the firing range. A road crossing is located near the middle of the reach. A culvert located at that crossing was determined to be plugged which prevented the culvert from working properly.

Whitehorse allotment:

Finding: Not Applicable.

Rationale: No surface water is present on BLM land within the allotment.

Alternative A Direct & Indirect Effects

Under this alternative no changes in water quality would be expected. Streams that are currently considered to be impaired would remain as such.

Alternative B Direct & Indirect Effects

Water quality under this alternative would be expected to improve. Proposed vegetation treatments and projects designed to promote healthy upland and riparian habitats would be expected to help increase water infiltration, and reduce run-off and erosion. Water quality on the following reaches; MIDR 17, 18, 19, MIUC 3 and 8, would be expected to improve with the implementation of the management actions.

While water quality within the planning area may be improved, the water quality of Indian Creek would be not improved enough to be removed from the 303(d) list.

Alternative C Direct & Indirect Effects

This alternative would be expected to have similar direct and indirect effects on water quality as those that were identified under Alternative B. The reduction of sediment contributed by livestock disturbance would be only minimal.

3.4.9 Air Quality

Existing Condition

The state of Montana is divided into ten airsheds by the Montana Air Quality Bureau (<http://www.smokemu.org/map.cfm>) and monitored by the Idaho/Montana Airshed Group. Each airshed in Montana is designated with a “Class 1” or a “Class 2” depending on air quality standards for the particular airshed. “Class 1” designations are the strictest. Air Quality Standards are set by the state.

The PA lies within Airshed 6, having a “Class 2” air quality designation. The Gates of The Mountains Wilderness Area, which has a “Class 1” designation, is located approximately 35 miles north-northwest of the Iron Mask area. In addition to monitoring, the ID/MT Airshed Group has established Smoke Impact Zones. These zones surround cities where prescribed burning emissions could adversely affect air quality. Butte is the closest Smoke Impact Zone and is located approximately 52 miles southwest of the PA. This Smoke Impact Zone coincides

with a State and Environmental Protection Agency (EPA) designation for Butte as a particulate nonattainment zone.

Mining-related activities at the Indian Creek Mine are a source of particulate and gaseous air pollutants. These emissions are minimized by proper equipment maintenance and operation and are covered under an existing air quality permit. They do not generally impact air quality to the north and west of the mine due to the prevailing winds.

Existing air quality within the airshed and project area is affected by smoke, dust and motor vehicle exhaust. Smoke is produced from wildland fires, prescribed burning, residential wood burning and agricultural field burning. Additional smoke is blown into the area from wildland fires outside the area, including western Montana, Idaho, the Pacific Northwest, and Canada. Sources of dust primarily result from wind erosion of cropland and vehicle traffic on gravel roads. Land Health Assessments found no adverse impacts to air quality. Dust from roads is localized and temporary.

Alternative A Direct & Indirect Effects

Current uses would continue, and undisturbed sites would continue to function as they are presently. Current trends and processes would continue. Open road mileage would be the same under Alternatives A and B; the acquisition area roads would not be open to public use. Therefore fugitive dust from roads would be minimal.

Alternative B Direct & Indirect Effects

Mechanical and burn treatments would expose the soil surface, subjecting it to wind erosion. Fugitive dust would be temporary, lasting for the duration of operations and ceasing upon reclamation of roads and natural recovery of burned areas. Exhaust from equipment would also be temporary. Prescribed burning would release carbon dioxide (CO₂) into the atmosphere; this gas is considered by the BLM and State of Montana, among other agencies, to be a greenhouse gas. CO₂ emissions from exhaust and prescribed burning resulting from treatment implementation would be temporary. Open road mileage would be the same under Alternatives A and B; the acquisition area roads would not be open to public use. Therefore fugitive dust from roads would be minimal under both Alternatives A and B.

Alternative C Direct & Indirect Effects

Dust and CO₂ emissions from treatments would be similar to Alternative B. Fugitive dust from open roads would be slightly more than Alternatives A and B, corresponding to the additional two miles of open road.

3.4.10 Climate Change

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and persist for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity.” (IPCC 2007). Climate change and climate science are

discussed in detail in the Climate Change Supplementary Information Report for Montana, North Dakota, and South Dakota, Bureau of Land Management (USDI-BLM 2010). That document is incorporated by reference into this EA.

Global average temperature has increased approximately 1.4°F since the early 20th century (USDI-BLM 2010). Warming has occurred on land surfaces, oceans and other water bodies, and in the troposphere (lowest layer of earth's atmosphere, up to 4-12 miles above the earth). Other indications of global climate change described by IPCC 2007 include:

- Rates of surface warming increased in the mid-1970s and the global land surface has been warming at about double the rate of ocean surface warming since then;
- Eleven of the last 12 years rank among the 12 warmest years on record since 1850;
- Lower-tropospheric temperatures have slightly greater warming rates than the earth's surface from 1958-2005.

A number of activities contribute to the phenomenon of climate change, including large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity, or albedo.

Montana ranks as the 42nd highest greenhouse gas (GHG)-emitting state by volume (Ramseur 2007). Montana's GHG inventory shows that activities within the state contribute 0.6 percent of U.S and 0.076 percent of global GHG emissions (based on 2004 global GHG emission data from the IPCC, summarized in USDI-BLM 2010).

Potential effects of climate change in Montana (USDI-BLM 2010) include:

- Temperature increases between 3 to 5°F at mid-21st century and between 5 to 9°F at the end of the 21st century, resulting in more heat waves.
- Precipitation increases in winter and spring up to 25 percent in some areas. Precipitation decreases of up to 20 percent may occur during summer, with potential increases or decreases in the fall. In the fall western Montana may see little change in precipitation while the northwestern portion of the state may experience 5 to 10 percent increases.
- Annual median runoff is expected to decrease between 2 and 5 percent, but northwestern Montana may see little change in annual runoff. Mountain snowpack is expected to decline, reducing water availability in localities supplied by meltwater.
- Conditions in Montana wetlands across much of the northern part of the state are predicted to remain relatively stable.
- Water temperatures are expected to increase in lakes, reservoirs, rivers, and streams. Fish populations are expected to decline due to warmer temperatures.
- Wildland fire risk is predicted to continue to increase due to climate change effects on temperature, precipitation, and wind.

Climate Change Impacts/Effects: Determining the effect on climate change from alternatives considered is difficult at the project scale. Currently, regional climate models are not sufficiently advanced to be able to analyze effects of management actions on climate change at a local scale. Should such models or tools become available, they would be adopted. However, improving/restoring riparian and wetland areas, improving age class diversity, health and resiliency of forests, mitigating the size and intensity of wildfires, and maintaining/improving

livestock grazing management increase the ability of vegetation and soil to sequester carbon and can help to mitigate the effects of climate change (USDI-BLM 2010).

While it is not possible to quantify the specific differences between the alternatives, it is nonetheless possible to compare the various alternatives. Those alternatives that maximize a diverse vegetative cover and limit areas susceptible to erosion would be more capable of maintaining a stable and diverse vegetative cover that would be both more adaptable to changes and more resistant to erosion in more intense precipitation events.

Travel Management (as it relates to Climate Change): Changes in the quantity and type of route designations do not necessarily correlate to changes in GHG emissions from vehicles because use can shift to other routes. It cannot be assumed that route closures equate to fewer vehicle hours used, and lower GHG emissions. However, to the extent travel routes are selected that either eliminate or limit routes in steeper or more erosive soils, this would increase and maintain the ability of soil and vegetation to sequester carbon as noted above.

Alternative A Direct & Indirect Effects

There would be no change in the current conditions.

Alternative B Direct & Indirect Effects

There would a temporary increase in greenhouse gas emissions during any proposed treatments involving prescribed fire as also noted under air quality. This can be expected to be offset by longer term improved habitat restoration. To the extent this alternative eliminates travel in areas that may be susceptible to erosion this alternative would be the most likely to increase and maintain the ability of soil and vegetation to sequester carbon.

Alternative C Direct & Indirect Effects

There would a temporary increase in greenhouse gas emissions during any proposed treatments involving prescribed fire as also noted under air quality. This can be expected to be offset by longer term improved habitat restoration. This alternative is less likely to increase and maintain the ability of soil and vegetation to sequester carbon compared to the Proposed Action.

3.4.11 Soils

Existing Condition

Predominantly, soils on BLM lands within the Iron Mask Planning area range from cobbly loams on the lower, eastern portions with relatively flat slopes to very-stony rock outcrops in the south and western portions with slopes up to 60%. The precipitation zones generally coincide with changes in elevation. The lower elevations lie within the 10-14" zone and the higher elevations generally lie within 15-19" zone. Annual production on cobbly-loams within the planning area ranges from 600 lbs/acre on dry years up to 1,300 lbs/acre in favorable years. Risk of erosion is low to moderate and increases with increased slopes.

Land Health Assessments made throughout the PA indicated that Soil and Site Disturbance ranges from a moderate departure from expected to no departure. The majority of the area was identified to have “None to Slight” departure from expected, which means that overall the soil loss/accumulation and other soil factors are close to what would be expected under a normal disturbance regime.

Soils along the east edge of the Indian Creek allotment, in the “Musselshell gravelly loam, 2 to 5 percent slopes” map unit are classified as Farmlands of Statewide Importance. These Prime Farmlands are valued for their ability to produce feed and fiber (NRCS 2013) at the statewide level. As such, an objective of proposed actions is to avoid altering the chemical and physical properties of Farmland soils to a degree that they lose their designations.

Alternative A Direct & Indirect Effects

The No Action Alternative could have negative impacts on some soil resources. Existing areas of erosion would go uncontrolled and continue to degrade. Soil could still enter streams at a rate greater than the capacity of that stream. Also in areas where it was identified that past livestock management was a causal factor in not meeting the upland health standards, and Soil Loss or Degradation was a reason for that, the conditions could reoccur if no actions are taken to reassure those practices are not resumed. Increase of conifer in sage/grass areas could reduce the soil surface resistance to erosion in the un-vegetated under spaces of those conifers.

In areas that met standards, or if soil site stability was not a factor, conditions are expected to stay the same as observed during Land Health Evaluations. An increasing presence of conifers in grass/shrub lands would not generate the same level of organic matter in the soil as grasses would, thereby reducing soil productivity and the aggregate stability of the soil and resultant resistance to erosion from overland flow. Should conifer reduction treatments not be implemented, susceptibility to large scale wildfire and subsequent erosion and sedimentation could result.

Alternative B Direct & Indirect Effects

Alternative B would ensure that grazing practices stayed within allowable disturbances to meet the MT/DAK Standards and Guidelines for Rangeland Health. This would conserve the soil in its current state and reduce loss or degradation. The proper management of livestock grazing would create small disturbances and microsites for water infiltration and seed germination. The increase in vegetation could increase the organic matter within the soil and protect it from wind loss or overland flow, erosion and sedimentation.

Implementing treatments to reduce conifers could create a short duration of susceptibility to overland flow which could result in erosion. BMPs and design features would be employed to mitigate these effects.

Alternative C Direct & Indirect Effects

Alternative C would be very similar to Alternative B. The only difference is that no livestock grazing would be authorized; the vegetative cover would increase resulting in a larger increase in organic matter than Alternatives A and B. Livestock hoof action would not be a disturbance to create microsites for plant germination. So long as vegetative cover is sufficient enough to guard

from wind scour, the loss in microsites for seed germination would be negligible for soil and site stability. Also forage plants would become decadent or “wolfy” and eventually exist in an unhealthy state as many of these grasses evolved with large ungulate use.

3.4.12 Geology & Abandoned Mine Lands

Existing Condition – Geology

The east side of the Elkhorn Mountains, including the Limestone Hills, consists of sedimentary rocks ranging in age from Precambrian through Cretaceous. In the Limestone Hills and to the north of Indian Creek these rocks form an anticline with the west limb of the anticline overlain by the Cretaceous Elkhorn Mountain Volcanics. Dikes and small sills related to the Elkhorn Mountain Volcanics and possibly to younger Tertiary intrusive rocks are common throughout the west limb of the anticline. The east flank of the Elkhorn Mountains has produced approximately \$17 million in metals, chiefly gold with lesser amounts of silver, lead copper and zinc. The Limestone Hills are an important source of chemical grade calcium carbonate (CaCO₃) and mining is likely to continue there for several decades. The Park-Winston Mining Districts, north and west of the Iron Mask mine, noted below, had several small mine producers including the Park-Marietta, Vossburg, Kleinschmidt and East Pacific mines. Potential for continued exploration for mineral resources, mostly metals, is high to moderate throughout the east flank of the Elkhorn Mountains.

Under federal mining laws mineral activity is allowed on all lands which have not been withdrawn from mineral entry, there are no withdrawn lands in this planning area other than those in the LHTA. Because the Iron Mask PA contains existing mines and areas of high to moderate mineral potential, future exploration and mining activity may continue on a small scale basis; however this likelihood is low due to the narrow limited vein style mineralization in the area. Casual use for mineral exploration and mining is defined as activities ordinarily resulting in negligible surface disturbance. This includes any disturbance associated with establishing a claim. Actions are considered casual use if they do not involve the use of explosives, mechanized earthmoving equipment, or motorized vehicles in areas designated as closed to off-road vehicles. At this time, public lands within the planning area are limited or closed and miners are not allowed to travel cross-country for mineral exploration with vehicles. A variance to this travel restriction may be issued, or travel allowed under an approved plan of operations or notice.

Existing Condition – Abandoned Mine Lands

Due to the presence of mineralization in the Elkhorn Mountains and Limestone Hills, the area has experienced a considerable amount of mining and exploration. Because reclamation was not required until 1979 there remain a fair number of abandoned mines throughout the area. Evaluation and closures of these abandoned mines has been ongoing since the late 1990's. Several of the mines in the Park-Winston Mining districts have had remediation work done in the past several years.

The Iron Mask mine is the most notable abandoned mine in the area because it contains elevated metals in related mine dumps and tailings. Environmental and safety issues associated with the Iron Mask Mine have been addressed with the help of the USACE and a private contractor. Reclamation under BLM's CERCLA authority is scheduled to begin in 2016 and should be

completed by 2017. Reclamation will consist of consolidating the tailings in a repository near the minesite and capping the repository with nonmineralized soil.

A relatively large adit, north and east of the Iron Mask site, locally known as the Light Bulb adit, was gated to protect the Townsend's big-eared bat, which has been found to hibernate within it.

Several other small open adits and pits have been identified to date. These mines, as well as any additional mines discovered, would be evaluated for their resource significance. Closure methods would be designed to maximize safety while minimizing or mitigating impacts to their existing resources.

The objectives of the BLM AML program are to:

- Mitigate environmental and physical safety issues associated with abandoned mines through inventorying, assessing, and reclaiming mines on a prioritized basis.
- Continue the inventory and closure of abandoned mines on BLM lands, including the Iron Mask DA.

Reclamation of many known physical safety sites have been completed in the Iron Mask PA, and several more would be addressed in the near future.

Alternatives A, B, and C Direct & Indirect Effects

There would be no direct or indirect effects to geology and AML under any of the alternatives.

3.4.13 Cultural & Native American Resources

Existing Condition

Prehistoric sites are present in the DA, and consist mainly of small scatters of rock chips flaked off from small tool manufacturing. One Old Woman's phase (1300-250 years ago) projectile point has been reported in the PA. Larger camp locations, game spotting sites and other specialized prehistoric sites are located in the eastern slopes of the Elkhorn range, but none have been recorded within the planning area itself.

The close proximity of the Iron Mask DA to the Missouri River suggests that the location was important in prehistory. This is mainly due to the fact that the land under consideration occupies the first benches above the river corridor and riparian area, and would provide excellent opportunities to view and hunt big game. Private land near the acquisition area has exhibited evidence of bison hunting, utilizing the natural outcrops lining the smaller drainages. The animals would have been driven into these drainages, presumably where there was deeper snow, and killed by hunters concealed behind these outcrops. However, the Class III inventories conducted so far have failed to yield positive results with regard to prehistoric use in the acquisition area. The reason for this might have something to do with the proximity to historic mining. The process of mining, especially in the 19th century, would have erased prehistoric features and most of the artifacts would have been collected, or destroyed.

A Class III cultural resource inventory on all roads in the acquisition area was conducted by the BLM archeologist in August and September of 2013. No prehistoric sites were recorded during

this survey. This coverage was determined necessary, as the acquisition area is immediately adjacent to Indian Creek on the south side, where numerous historic mining sites are located.

The known historic sites in the PA are mostly related to historic mining. Several remnant domiciles have been recorded within the acquisition area. Some of these have standing structures, and two others have open cisterns.

The upper regions of the Indian Creek system (located farther west on the HNF) were manipulated by placer miners who dug out a series of ponds and ditches which fed into one large water-gathering system which, when released, would send a single rush of water downhill to the miners waiting at the end of the flume. The Indian Creek flume does not exist anymore, but a few shreds still cling to the canyon wall west of Graymont's Indian Creek mine. Evidence of these "runs" (as the releases were called by the miners) is present in the Iron Mask acquisition area along Kalamazoo and lower Whipcracker creeks (MT DEQ Historic Mine Narrative). Artifacts in these areas consist of a few scattered pieces of broken glass, center-solder cans (most likely containing milk), and scrap metal. There are two depressions on the benches above Kalamazoo Creek, but the presence of a modern, poured concrete-lined cistern suggest that the domicile was occupied in the 1930's, and not associated with the significant period of historic mining. There are purple glass shards at the site, but they are quite dark, suggesting that the color is manufactured, rather than a patina acquired with aging.

On the north end of the acquisition, there are three lode mining features - the Iron Mask mine and mill site, the Look Out, and the Light Bulb adit. These historic mining sites were opened in the late 1880's after the placer mines in the Indian Creek drainage gave out. The Iron Mask mine itself was first owned by two men, J.N. Thompson and George Kerwin. They soon sold out to a third party, and shipped only a few tons of silver-lead ore between 1887 and 1888. It was sold again and reopened in 1895 and worked intermittently for the next three years. From there, the mine was in production in 1906, 1917, and sporadically until 1929, when it was closed for good (Rossillon, 2008).

The Look Out mine was opened in 1887 by three men: L.A. Vawter, John Neville and Oscar A. Sparta. There are no reliable sources for production information. The mine was sold to Frank Wells, who sold it again 1904 to two men, Edward Ryan and William V. Myers, after making several improvements. Mr. Ryan and Mr. Myers patented the claim in 1904. There is no production information. At some point, the claim was sold to a Dr. Bayliss, who had acquired several claims in the area. Dr. Bayliss and a few investors attempted to open a shallow shaft during World War II, but the results must not have been adequate, since there was no further work done at the site (Rossillon, 2008).

There is no ownership or production information for the Light Bulb (Rossillon, 2008).

The Elkhorn Mountains and the Missouri River have been, and continue to be, very important landscape features. However, no specific sites in the PA have been identified as important by tribal governments.

The Section 106 process under the National Historic Preservation Act, is currently underway regarding the Iron Mask mine and mill site reclamation as part of a CERCLA action.

Alternatives A, B, and C Direct & Indirect Effects

It is the determination of BLM that known sites in the DA are not eligible for listing on the National Register of Historic Places. Therefore, there would be no effects to cultural resources under any alternative, other than normal passage-of-time-related deterioration.

Known relict domiciles or other structures can be easily marked for avoidance in advance of every project considered in this EA. Vegetation treatments and grazing management projects would be designed to avoid all known cultural resources. Therefore, the most likely “effect” would be continuing visitor use of these structures, as well as the possibility of some type of accident; either inside one of the structures, or in one of the cisterns. (Cistern hazard mitigation is discussed in the recreation section.) While none of these sites is located near the seasonally open road proposed in Alternative C, hiking and other types of non-motorized recreation would likely increase and have the potential to attract curious visitors to these sites.

3.5 Cumulative Effects

Cumulative effects are those effects resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. The cumulative effects area is defined as all land, regardless of ownership, in the PA for all issues and resource concerns except socioeconomics, for which the cumulative impacts area is Broadwater County.

Cumulative Effects Common to all Alternatives

Iron Mask Mine Reclamation: The highest risk at the abandoned mine site is posed by sediments in the bed of Whipcracker Gulch, to animals and people who disturb the sediment and drink the water. Lesser risk is posed by tailings, should they be disturbed.

Reclamation of the mine, conducted under a separate action, would remove heavy metal contaminants from the Iron Mask site, thereby protecting the environment and the health of people and animals that use the site. Should mine reclamation not occur, risk posed to the environment, animals and people would remain. A range of risk reduction alternatives, including a no action alternative, is conducted in a separate action under the CERCLA.

Limestone Hills Training Area: The new wells and water tanks would provide a quick and available water source for MTARNG to suppress fires started by frequent live firing exercises; improve livestock distribution within the pastures that did not meet upland health due, in part, to livestock grazing; and provide better water availability for both wildlife and cattle. Not drilling the wells to provide on-site water would pose a greater risk of uncontrollable wildfires started by yearly MTARNG firing exercises.

The construction of fences would prevent drift in or out of the Tank Range pasture, and would enable the grazing operators to more closely follow the proposed grazing system, thereby reducing the risk of future overuse in the Tank Range, Compound and Marble Quarry pastures. Preventing drift would promote improvement or maintenance of rangeland health.

Removing unneeded fences would eliminate what basically amounts to litter from the landscape and prevent wildlife from becoming entangled in unmaintained fencelines.

Vegetation treatments in the Tank Range and Marble Quarry areas would primarily reduce the risk of uncontrolled wildfire that could result from live firing exercises and the use of tracers. The treatments would also go towards meeting BLM VTOs 1, 2, 3, 4, and 6.

Development: Comparison of 1955 and 2011 aerial photography shows over 2000 acres of road and building development along the Highway 287 corridor within the PA during that time period. Development on private land is likely to continue, which would remove habitat for wildlife and possibly impede movement and migration routes.

Recreation: As the human population of the area increases, all forms of outdoor recreation and pressure on the ecosystem to accommodate recreation increase.

Economics: The economic situation of the permittees is affected by changes in cattle prices, hay prices, fuel prices, interest rates, land prices, labor costs, labor inputs, equipment costs, equipment maintenance costs, facilities maintenance costs, costs of feed supplements, irrigation costs and availability of irrigation water, livestock loss, private land lease rates, veterinary costs, local weather and other miscellaneous factors. Cumulative economic impacts to permittees could add pressure to permittees to subdivide private land to maintain a cash flow.

Invasive species: Invasive and non-native weed treatments are likely to continue to occur within the PA by the Helena National Forest, Broadwater County Weed District, Montana Department of Transportation, and private land owners. Ground disturbing activities that happen on private land in Broadwater County may not have weed control activities or may not be reseeded with weed-free certified seed mix. Weed spread would likely occur along roadways if left untreated along all roadways in Broadwater County. The incremental effect of weeds treatments throughout the PA would continue to reduce the spread and rate of spread of noxious weeds across all ownerships.

Cumulative Effects of Alternative A

Without travel management implementation in the acquisition area, pressure for motorized use of the area would be likely to increase. Some recreationists would likely shift use to other areas, concentrating use in those areas presently open.

Without implementation of vegetation and riparian treatments, the advancing successional stage across the PA beyond what would occur under a natural fire regime would continue to increase. This would be detrimental to overall wildlife habitat and increase the probability of catastrophic or stand-replacing fire events.

Without modification of the Limestone Hills grazing authorization, land health in this allotment would not be expected to improve, and be an additive environmental impact to other locations in various land ownerships across the PA that are not currently functioning properly.

Cumulative Effects of Alternative B

Establishment of infrastructure to operate the proposed allotment would aid the local livestock operators by providing a place for permittees of other ECMA allotments to place their cattle if their own allotment was not useable due to drought, wildfire, or other reasons. Also, under the

RMP, when a prescribed burn is implemented, the area of the burn is to be rested from grazing for up to one growing season prior to treatment and a minimum of two growing seasons following treatment. Therefore, the forage reserve allotment would benefit overall ecosystem health by increasing the feasibility of implementing prescribed burns on other allotments in the ECMA, by minimizing the complication of having to remove those cattle from public lands entirely.

Vegetation and riparian restoration treatments on BLM lands would complement and increase the overall landscape health when combined with past and future treatments on non-BLM land.

Fencing in need of modification or maintenance on other land ownerships may lessen the benefit of fence modification efforts on DA lands to improve wildlife movements.

Reduction of AUMs and project work in the Limestone Hills allotment are expected to improve land health and be incremental to overall ecosystem health in the PA.

Cumulative Effects of Alternative C

Eliminating livestock grazing in allotments being considered for authorization renewal could lessen the risk of weed distribution in these areas; however, wildlife and other forces such as wind would continue to transport weeds. Also permittees are required to report weeds, without the authorizations detection of new weed locations would be reduced and thus may not be treated in a timely manner.

The additional two miles of road that would be open seasonally and the adjusted allotment fence under this alternative are not anticipated to have effects cumulative to other actions.

Other cumulative impacts under Alternative C would be the same as Alternative B.

3.6 Effects Summary Comparison

Table 23 contains a summary of the existing conditions and compares the key effects by alternative for each resource or issue.

Table 23

Resource/Issue	Existing Condition	Alternative A (No Action)	Alternative B (Proposed Action)	Alternative C
Travel & Recreation	Acquisition area closed to motorized use; no designated parking, trailhead, or information kiosks. Remainder of the PA is under Elkhorns Travel Plan.	In the acquisition area, no parking areas, trailheads, or information would be provided. In the remainder of the PA there would be no changes to current visitor uses.	<p>In the Iron Mask acquisition area, parking areas, trailheads, and information would be provided, likely increasing visitor use.</p> <p>Periodic grazing in the forage reserve allotment and associated authorized vehicle uses in the acquisition area may impact natural setting experiences.</p> <p>In the remainder of the PA there would be no changes to current visitor uses.</p> <p>Vegetation treatments could have short-term impacts to visitors.</p>	<p>Greatest access for motorized users. Two additional miles of route open to access from 5/16 to 12/1. Higher areas in the acquisition area are more easily accessed.</p> <p>Periodic grazing in the forage reserve allotment and associated authorized vehicle uses in the Iron Mask acquisition area may impact natural setting experiences.</p> <p>In the remainder of the PA there would be no changes to current visitor uses.</p> <p>Vegetation treatments could have short-term impacts to visitors.</p>
Forage Reserve	Four of five Land Health Standards are not being met. Infrastructure to operate the allotment as a forage reserve does not exist.	<p>The forage reserve would not be available when needed by permittees of other Elkhorn allotments.</p> <p>Vegetation would likely persist in an unfavorable condition.</p>	<p>The forage reserve would provide a place for permittees of other Elkhorn allotments to graze cattle when needed due to drought, fire, or treatments on their own allotment.</p> <p>Condition of vegetation could improve with grazing.</p>	Same as Alt. B; the change in configuration of the pastures would not change overall impacts from Alt. B.

Resource/Issue	Existing Condition	Alternative A (No Action)	Alternative B (Proposed Action)	Alternative C
Livestock Grazing	<p>Beaver, Beaver Ck., Dowdy Ditch, Kimber Diorite, Whitehorse allotments meet Land Health Standards, except for two standards on Beaver Ck. that were not due to grazing.</p> <p>Three pastures in the Limestone Hills allotment do not meet four of the standards but improved between 2002 and 2010.</p>	<p>Beaver, Beaver Ck., Dowdy Ditch, Kimber Diorite, Whitehorse allotments would likely continue to meet standards.</p> <p>Limestone Hills allotment could reverse its' improvement trend if relinquished AUMs were permitted to another operator.</p>	<p>Added flexibility in Terms and Conditions for Beaver. Beaver Ck., Dowdy Ditch, Kimber Diorite, Whitehorse allotments would allow tailoring of grazing times to annual weather and plant development. Changing one permittee's grazing dates on the Dowdy Ditch allotment would eliminate the need for extra fencing and allow plants more time to develop in the early season.</p> <p>Proposals for the Limestone Hills allotment would aid the permittees' ability to comply with the schedule; not reallocate 579 relinquished AUMs; better control cattle use and aid wildlife movement; result in better distribution across the allotment for cattle and wildlife.</p>	<p>Elimination of grazing from allotments considered for authorization renewal could alter current vegetation trends. Grasses could become "wolfy", but more forage could become available for wildlife.</p> <p>Monitoring over time would be required to determine trends in wildlife habitat conditions.</p>

Resource/Issue	Existing Condition	Alternative A (No Action)	Alternative B (Proposed Action)	Alternative C
Vegetation	<p>Lack of fire has resulted in conifer colonization and density that would not occur under a natural disturbance regime.</p> <p>Nonnative plants have colonized the area.</p> <p>Under all alternatives, current weed treatments would continue.</p> <p>Special status plant populations are unlikely to be affected.</p>	<p>Conifer colonization and density would continue to increase, resulting in a decrease in the natural vegetative composition in the DA.</p> <p>Susceptibility to large scale wildfire and subsequent erosion and sedimentation could result.</p>	<p>Conifer colonization and density would be reduced, resulting in increased shrub/grassland habitat and land health.</p> <p>Ground-disturbing projects would be treated for weeds.</p>	<p>The two miles of additional open road could be a vector for spread of weeds.</p> <p>Elimination of grazing on six allotments would require monitoring over time to determine effects to vegetation.</p>

Resource/Issue	Existing Condition	Alternative A (No Action)	Alternative B (Proposed Action)	Alternative C
Riparian Habitat	<p>Of riparian reaches that were assessed in 2010 and 2012, 43% (7.47 miles) of the lotic resources were rated PFC, 30% (5.29 miles) were rated FAR, 14% (2.39 miles) were rated FAR up, 5% (0.93 miles) were rated NF, and 8% (1.32 miles) were rated NF up. Factors that caused reaches to not be in PFC included: alteration of stream morphology, excessive erosion, vegetation composition not as expected, and weeds.</p> <p>All three of the lentic sites that were assessed were rated PFC.</p>	<p>Reaches in PFC condition would likely remain PFC. Reaches that were FAR or NF would not be expected to improve.</p>	<p>Thinning conifers and removing Russian olive in riparian areas would promote an increase in riparian vegetation and vigor of riparian plants.</p> <p>Implementing a minimum stubble height of 6" and constructing exclosures in the West pasture of the forage reserve allotment would protect wetland vegetation.</p> <p>Stabilizing the Indian Creek headcut would help to reduce stream bank erosion and allow for the recruitment and recovery of desirable riparian species.</p>	<p>Same as B, except that elimination of grazing in the Limestone Hills allotment could improve reaches that were identified as being negatively impacted by cattle.</p> <p>In other allotments where grazing would be eliminated, grazing was not a causal factor in riparian reaches not meeting the standard, therefore conditions are unlikely to change appreciably.</p>

Resource/Issue	Existing Condition	Alternative A (No Action)	Alternative B (Proposed Action)	Alternative C
<p>Wildlife & Fish</p>	<p>Numerous native wildlife species occur in the PA. Wolves have recently returned in small numbers to the Elkhorns. Native cutthroat trout have decreased due to introduction of nonnative trout species.</p>	<p>Wildlife use of the acquisition area would not be affected by travel or the forage reserve allotment.</p> <p>Grazing authorization renewal would not be expected to affect wildlife, except in the Limestone Hills allotment, where AUMs would not be reduced, and habitat conditions would not improve.</p> <p>Without vegetation and riparian treatments, species dependent on grassland/shrubland and riparian habitats would decline.</p> <p>Fences currently hindering wildlife movement or creating entanglement hazards would continue to do so.</p>	<p>In the acquisition area, wildlife could experience added disturbance by increased visitation and forage competition with cattle. Monitoring would determine if four pastures would reduce wildlife avoidance of cattle. Water developments could benefit wildlife in this area.</p> <p>Grazing authorization renewal would not be expected to change current conditions for wildlife, except in the Limestone Hills allotment, where the non-reallocation of 579 AUMs and proposed projects are expected to improve habitat conditions.</p> <p>Vegetation and riparian treatments would improve conditions for species that prefer grassland/shrubland and riparian habitats.</p> <p>Fences currently hindering wildlife movement or creating hazards would be reconfigured to wildlife-friendly specifications.</p>	<p>The two miles of seasonally open road in the acquisition area could cause some additional disturbance to wildlife and avoidance of the road vicinity.</p> <p>Elimination of grazing on six allotments would require monitoring to determine if forage conditions improve for wildlife or if plants become “wolfy” without livestock grazing.</p> <p>Vegetation treatment effects would be the same as B.</p> <p>Fences currently hindering wildlife movement or creating hazards would be reconfigured to wildlife-friendly specifications.</p>

Resource/Issue	Existing Condition	Alternative A (No Action)	Alternative B (Proposed Action)	Alternative C
Area of Critical Environmental Concern	15,019 acres of the PA are included in the Elkhorns ACEC. Wildlife, habitat quality, and the unique management of the area are the primary values.	Vegetation treatments would not occur, and habitat would continue to become further removed from the natural disturbance regime.	Vegetation treatments would occur, and habitat would be restored to a more natural state.	Same as B for vegetation treatments. Future monitoring would be required to determine the effects to upland and aquatic habitat from elimination of grazing.
Water Quality	Twelve reaches within the DA are on the MT 303(d) list. Five other reaches do not meet the water quality standard due to excessive sediment.	No changes to water quality would be expected. Streams that are currently impaired would remain so.	Proposed vegetation treatments and projects designed to promote healthy upland and riparian habitats would be expected to increase water infiltration, and reduce run-off and erosion.	Same as B for vegetation treatments. Elimination of grazing on six allotments would not be expected to affect sediment levels and water quality.
Air Quality	The PA is in a "Class 2" air quality designated area. Sources of pollutants include the Indian Creek mine, smoke, dust, and vehicle exhaust.	No change to air quality is anticipated.	Temporary smoke and dust would occur from vegetation treatments.	Same as B, plus fugitive dust from open roads would increase correspondingly to the additional two miles of open road.
Climate Change	Global average temperature has increased and continues to do so.	No change to climate is anticipated.	There would a temporary increase in greenhouse gas emissions during any proposed treatments involving prescribed fire. However, this would be offset in the long term by improved habitat conditions.	Same as B.
Soils	Soils consist primarily of cobbly loams in lower elevations to very-stony rock outcrops in higher elevations.	Current areas where erosion is occurring would continue to degrade. Continued increase of conifers in sage/grass areas could reduce resistance to erosion.	Vegetation treatments could result in an increase in short term erosion; in the long term, however, susceptibility to erosion would decrease.	Same as B, except that removal of livestock could result in increased vegetative soil cover.

Resource/Issue	Existing Condition	Alternative A (No Action)	Alternative B (Proposed Action)	Alternative C
Geology & Abandoned Mine Lands	<p>The Limestone Hills are an important source of chemical grade calcium carbonate. Potential for mineral resources is high throughout the east flank of the Elkhorns.</p> <p>The Iron Mask mine is the most notable AML in the area. Other small adits and pits have been discovered.</p>	There would be no direct or indirect effects to geology and AML under any of the alternatives.	Same as A.	Same as A.
Cultural & Native American Resources	<p>Prehistoric sites in the DA mainly consist of small scatters of rock chips from tool manufacturing.</p> <p>Known historic sites are mostly related to historic mining.</p>	There would be no effects to cultural resources under any alternative, other than normal passage-of-time-related deterioration.	Same as A.	Same as A.

4.0 CONSULTATION AND COORDINATION

4.1 Introduction

In December 2012, a scoping letter and maps of the PA were sent to the recipients listed in Section 4.2. A press release was also issued announcing scoping for the Iron Mask planning effort. Ten responses to the scoping letter were received that included comments on: travel and access; public involvement; recreation; wildlife, habitat, and vegetation restoration; noxious weeds; livestock and forage reserve allotment; cultural resources; and the local economy. These scoping comments were then used to help BLM identify issues and alternatives when preparing the June 2014 EA for public comment.

Informational public presentations were given for the Rocky Mountain Elk Foundation, the Elkhorns Restoration Committee, and the Townsend Rod and Gun Club.

On June 6, 2014, the BLM released the June 2014 Iron Mask Planning Area EA for public comment, along with an unsigned Finding of No Significant Impact (FONSI). The Draft EA and unsigned FONSI were available for public comment until August 6, 2014.

Following release of the Draft EA and unsigned FONSI, an open house was held in Townsend to collect public comments and answer questions about the EA.

The BLM received 12 comment letters on the Draft EA/unsigned FONSI. The BLM considered the comments received on the draft when completing this EA. A summary of the comments received and BLM's responses are included in Appendix A.

4.2 Persons, Groups, & Agencies Consulted

Alliance for the Wild Rockies – Mike Garrity
Broadwater County Commissioners
Broadwater County Museum
Elkhorn Restoration Committee – Tom Williams
Elkhorn Working Group – David Brown
Grazing permittees who utilize grazing allotments in the Decision Area
Indian Creek Mine – Jason Ellis
MT Army National Guard – Sundi West, John Wheeler
MT Department of Environmental Quality
MT Department of Fish, Wildlife, and Parks – Pat Flowers, Ron Spoon
MT Department of Natural Resources and Conservation – Andy Burgoyne
MT Fish & Wildlife Conservation Trust – Deb Lane
Native Ecosystems Council – Sara Johnson
Rocky Mountain Elk Foundation – Scott Westphal
The Independent Record (Helena newspaper)
The Townsend Star
Western Watersheds Project – Summer Nelson
USDA Natural Resources Conservation Service – Justin Meiser
U.S. Forest Service – Kevin Reardon, Heather DeGeest, Denise Pengeroth

4.3 List of Preparers

Vickie Anderson	Range
Eric Broeder	Riparian, Water Quality
Brad Colin	Travel Management, Recreation, VRM
Lacy Decker	Noxious Weeds
Scot Franklin	Wildlife, Fish, Team Lead
Joan Gabelman	Abandoned Mines
Carrie Kiely	Cultural, Native American
Bradlee Matthews	Geographic Information System
Michael O'Brien	Forestry
Roger Olsen	Range, Soils
Brad Rixford	Travel Management, Recreation, VRM
Charles Tuss	Fuels
Dave Williams	Geology, Air Quality, Climate Change
Mike Wyatt	Realty

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5.2 List of Acronyms

ACEC: Area of Critical Environmental Concern
AML: Abandoned Mine Lands
AMP: Allotment Management Plan
AUM: Animal Unit Month
BFO: Butte Field Office
BMP: Best Management Practice
BpS: Biophysical Setting
BOR: Bureau of Reclamation
CEQ: Council on Environmental Quality
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act
CFR: Code of Federal Regulations
CWPP: Community Wildfire Protection Plan
DA: Decision Area
DBH: Diameter at Breast Height
DEQ: Department of Environmental Quality
DNRC: Montana Department of Natural Resources
DR: Decision Record
EA: Environmental Analysis
ECMA: Elkhorn Cooperative Management Area
EEE/CA: Expanded Engineering Evaluation/Cost Analysis
EIS: Environmental Impact Statement
EPA: Environmental Protection Agency
ESA: Endangered Species Act
FAR: Functioning at Risk
FONSI: Finding of No Significant Impact
FORVIS: Forest Vegetation Information System
FRCC: Fire Regime Condition Class
FWP: Montana Fish, Wildlife, and Parks Department
GHG: Greenhouse Gas
HNF: Helena National Forest
HUC: Hydrologic Unit Code
IDT: Interdisciplinary Team
INRMP: Integrated Natural Resources Management Plan
IPCC: Intergovernmental Panel on Climate Change
LHTA: Limestone Hills Training Area
LWCF: Land and Water Conservation Fund
MFI: Mean Fire Interval
MOU: Memorandum of Understanding
MTARNG: Montana Army National Guard
NEPA: National Environmental Policy Act
NF: Nonfunctioning
NHP: Natural Heritage Program
PA: Planning Area
PFC: Proper Functioning Condition
RMEF: Rocky Mountain Elk Foundation
RMP: Resource Management Plan

RMZ: Riparian Management Zone
ROD: Record of Decision
ROS: Recreational Opportunity Spectrum
SMZ: Streamside Management Zone
SRMA: Special Recreation Management Area
TCF: The Conservation Fund
TMDL: Total Maximum Daily Load
TMP: Travel Management Plan
USACE: U.S. Army Corps of Engineers
USDI: United States Department of Interior
USFS: United States Forest Service
USGS: United States Geological Survey
UXO: Unexploded Ordinance
VRM: Visual Resources Management
WUI: Wildland-Urban Interface

Appendix A Comments and Responses

This appendix contains the substantive public comments received on the Draft Iron Mask Planning Area EA of June 2014, and the BLM responses to those comments. The BLM considered and responded to all substantive comments in preparing the complete July 1, 2015 EA, Finding of No Significant Impact, and Decision Record. A substantive comment requests clarification or more discussion on a relevant topic, gives new information affecting the analysis, questions analytical techniques, or suggests new alternatives. BLM did not prepare responses to comments that simply expressed a preference for a particular alternative or action, but we did consider those comments when completing the analysis and preparing the Decision Record.

The responses to substantive comments are presented below and may also be reflected by changes made to the initial EA. Comments have been grouped together by similar subject matter, edited for brevity or clarity, and combined with other similar comments; therefore comment statements may not be exact quotes of any one person or organization.

The following table is a list of commenters and their corresponding comment letter designation. This number is shown at the end of the comment statement in parenthesis to identify the individual(s) or group(s) who made the comment.

Table A.1 – Log of Comment Letters

Letter No.	Name
1	Derek Bell
2	Pat Helvey
3	Tom Kilmer
4	Doug Abelin, Don Gordon, Ken Salo, and George Wirt, Capital Trail Vehicle Association
5	Sara Jane Johnson, Native Ecosystems Council; and Michael Garrity, Alliance for the Wild Rockies
6	Jim Crichton
7	Pat Flowers, Montana Dept. of Fish, Wildlife, and Parks
8	Al Christofferson
9	Tom Williams and Al Christofferson, Elkhorn Restoration Committee
10	Josh Osher, Western Watersheds Project
11	G. B. Carson
12	Hugh Kimberly

Proposed Action

1. **Comment:** Over 8000 acres of habitat will be treated (and as a result, degraded). (5)

Response: Restoration ecology, or ecological restoration, is one of the fastest growing areas of focus and employment in natural resource management. Natural vegetation communities, including those in the PA, have been altered since European settlement by a combination of management activities including livestock grazing and fire suppression. Vegetation treatments are intended to restore natural vegetation composition characteristics to the habitat that would have occurred under a natural disturbance regime, not degrade the habitat.

2. **Comment:** The acquisition property is never identified on any map. There is no information as to how this newly acquired land is to be managed. (5)

Response: The Iron Mask acquisition property is shown on Map 2, General Setting; and Map 8, Travel Alternatives. Management actions for this property are described throughout the EA; most of this property would be included in the forage reserve allotment, vegetation restoration treatments would take place on it, and implementation of travel planning would occur.

3. **Comment:** There needs to be an alternative that emphasizes control of the existing weed problem rather than increasing this problem with the current alternatives. It appears that an increase in noxious weeds will occur from increased livestock grazing and vegetation treatments. (5)

Response: Management of noxious weeds would continue in cooperation with Broadwater County, federal and state agencies, private landowners, and other partners under the current Butte Field Office Weed Plan Revision (2009), which allows an integrated management approach to noxious and invasive species. All invasive species on the Montana state noxious weed list will be treated to the degree financial resources allow. Areas where private landowners cooperate, participate, and support the BLM's weed management strategies are given a higher priority for treatment (EA section 2.2.1).

4. **Comment:** We request that the final EA include a breakdown of all proposed costs for these projects, as well as income that would occur. The expense for fencing and water development should be provided to the public. Please break down the costs in regards to vegetation treatments, water developments, and fencing. Please define the financial benefits that will be produced. (5)

Response: The intent of the NEPA analysis is to make environmental information available to the public and decision-maker before decisions are made and before actions are taken. Typically the costs and income of projects are not required and not analyzed in NEPA documents. CEQ regulations indicate that quantitative economic analysis should not be applied to qualitative factors such as environmental quality or land health where

economic values cannot be assigned. That said, there is little doubt the initial cost for project implementation would not be offset by any change in revenue; however, making a profit, or even being cost neutral, is not the objective of the vegetation treatment or range improvement projects. Rather, the purpose and need for the proposed action and alternatives is to improve long-term land health conditions.

5. **Comment:** Fire suppression is given as the cause of encroachment but historic overgrazing is also a major factor. (7)

Response: Grazing is mentioned as a cause of vegetation alteration in the Purpose and Need section. Post-settlement, grazing was probably the major factor in landscape change and facilitated lack of fire by removing fine fuels. In more recent times, grazing practices have improved and fire suppression is likely the more dominant factor in unnatural alterations of vegetation types.

6. **Comment:** There is a discrepancy between total acres proposed for treatments and individual treatments. (7)

Response: The discrepancy is because treatments originally proposed for the Limestone Hills Training Area (LHTA) withdrawal were dropped as a BLM action when the withdrawal was finalized and the total was not adjusted in the draft EA. That discrepancy is corrected in the final EA.

7. **Comment:** There is no fire effects analysis on the various primary tree, shrub, grass and forb species that are being proposed to burn. This analysis should be added to the effects analysis. (7)

Response: The EA analyzes effects of proposed burns and treatments on overall habitat. For effects of fire on individual species please refer to the USFS Fire Effects Information System, available at: <http://www.feis-crs.org/beta/>.

8. **Comment:** The EA states that sagebrush cover could be lower than preferred for up to 10 years after burning. Research indicates it may take longer. (7)

Response: Sagebrush can take longer than 10 years to recover from a burn, and the final EA has been modified to state that. However, sagebrush is not a major component of the areas proposed for prescribed burning; grasses and conifer colonization are the major components. In *Role of Fire in the Elkhorn Mountains* (Barrett 2005), it is stated that sagebrush cover on the east side of the Elkhorns has increased by at least 50% since 1922, and that the vegetation-fuel departure is about 60% for the sagebrush type. Thus, any sagebrush included in the prescribed burn areas would go towards restoring a more natural vegetation state for the PA.

9. **Comment:** This should not be a one shot project. It should be the first step in a long-term effort. There should be adaptive management discussion on how ecological processes will be used in the future to enhance restoration goals. Monitoring should evaluate effectiveness of actions and when triggers would cause an alternative action to be taken. (9)

Response: The BLM mission is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. The BFO endeavors to uphold this mission for the long term. Monitoring (please refer to Comment 71 for more details on monitoring) will be conducted on BLM lands regardless of the Alternative(s) chosen. Land Health Assessments will continue to be conducted on a rotational basis. Future actions will undoubtedly occur based on monitoring, assessments, and response to public comment. However, these future actions cannot be completely foreseen and will likely require future NEPA analysis.

Travel, Recreation

10. **Comment:** Wildlife habitat should be #1 in all management decisions. So:
A) No new roads. B) Close existing roads or keep to a minimum. C) Patrol it. (2)

Response: The Bureau of Land Management is required to manage lands for multiple uses under the Federal Lands Policy and Management Act (FLPMA) of 1976.

A) No new roads would be constructed for the purposes of recreational access under the proposed action, only trailheads.

B) The majority of existing travel routes in the Iron Mask planning unit would be closed to public motorized uses, yearlong. However, roads in the acquisition area deemed necessary for administrative and authorized uses of the forage reserve allotment would be maintained in primitive condition.

C) Routine and Law Enforcement patrols of the area would be conducted as time and resources allow.

11. **Comment:** BLM should develop and select a pro-recreation alternative that would convert roads to OHV trails and allocate at least 50% of the trails to motorized use. OHV routes should be included in the EA analysis. Include provisions for an OHV route that circles the Elkhorn Range. Because of cumulative effect of closures in the Butte and Helena area all existing motorized routes in the Project Area must be kept open. There is no need for de facto Wilderness areas such as proposed in the Iron Mask Plan. (4)

Response: Opening additional motorized travel routes to the public was an alternative considered but dropped since it would not conform to RMP guidance mandates for the Iron Mask Acquisition area, which says: Non-motorized recreation will be promoted and emphasized; and Management activities will have long-term benefits to wildlife and will minimize short-term impacts. Opening additional routes to motorized use for the public would not be beneficial to wildlife, nor would it promote non-motorized recreational uses. Creating a motorized travel route that encircles the entire Elkhorn Range is outside

of the scope of this analysis, which is to consider management actions for BLM lands in the Iron Mask Planning Area.

12. **Comment:** Do not open the road between Indian Creek and Kimber Gulch. (8)

Response: There is no proposal in the EA to open this road.

13. **Comment:** BLM should evaluate what roads we need for administration. Those roads should have proper drainage and stabilization. Roads left for administrative use will be a constant enforcement problem. Two-tracks we don't need should be ripped, scarified, seeded, and closed effectively. (8)

Response: Motorized access to roads in the acquisition area is necessary for administrative and authorized uses of the forage reserve allotment and would be maintained in primitive condition. Areas where roads could be causing stream channel alteration, erosion, or other resource damage would be improved to mitigate the damage. Culverts would be installed on two spots on road 008 where stream flows are currently diverted and run down the road. At this time BLM has not identified administrative use routes that present enforcement difficulties. If such a situation arose, and the route wasn't determined to be essential to administrative use, BLM could physically close and reclaim the route.

14. **Comment:** Recommends three trailheads at end of Whitehorse Road, end of 008 road where gate is, and at Iron Mask mine site. Trailheads should be large enough for vehicles with trailers. Kiosks should provide information on restoration needs, wildlife value, rules and regulations. Gates should allow horses, bicycles, and hikers. Suggests groups may adopt trailheads. (8)

Response: Given the proximity of the end of the 008 road and the Iron Mask mine (approximately ¼ mile apart), the BLM did not consider 3 trailheads to be economically feasible or necessary to provide public access. Where trailheads are proposed to be constructed they would be of sufficient size to accommodate vehicles with trailers. Besides area restrictions (including any related regulations) BLM would coordinate with local groups (including the Elkhorn Restoration Committee) to determine what information would be displayed on kiosks. Provisions for various user groups would be incorporated at the trailheads (i.e. pass-throughs for equestrians, bicycles and hikers). Trailhead adoption by public user groups is always appreciated by BLM. Proposals for trailhead adoption, or other forms of volunteer assistance, would be welcomed for the Iron Mask Acquisition area.

15. **Comment:** The Elkhorn Restoration Committee would like to see a display or discussion of information to be displayed at trailheads and other locations. They would like information to explain restoration efforts, grazing and wildlife management, weed and other resource management actions, recreational opportunities, the uniqueness of the

ECMA and ACEC, and outreach opportunities for local schools or organizations to help conduct activities and monitoring. Also there should be appropriate signage at road junctions to inform users of where it goes. (9)

Response: Determining what information would be displayed at trailheads and other locations typically occurs during the implementation phase of a project. Besides area restrictions or regulations, the BLM would coordinate with local groups such as the Elkhorn Restoration Committee to determine what information would be appropriate to be displayed on kiosks.

16. **Comment:** Trailheads should be large enough to accommodate appropriate parking and have a level graveled surface. Passage structures should allow for horse, hikers, or bicycles to pass. (9)

Response: Approved trailheads would be constructed using appropriate materials (such as compacted soil and/or gravel) and to sufficient size to accommodate vehicles with trailers. Provisions for various user groups would be incorporated at trailheads (i.e. pass-throughs for equestrians, bicycles and hikers).

Forage Reserve

17. **Comment:** The economic value of having AUMs in the acquisition is negative compared to the value of wildlife. There is no inherent reason the acquisition needs to be managed for grazing. The citation from Zlatnik in section 3.4.2 of the EA does not support the conclusion. The area is nice with no cattle, leave vegetation for wildlife. Support for no action on the forage reserve. (3, 6)

Response: The available use within the forage reserve would only be utilized when another grazing allotment is in non-use. This would allow both BLM and Forest Service permittees, along with private land ranchers within the ECMA to substitute use on the actively grazed parcels. There would be no net increase of livestock usage within the ECMA. Zlatnik's paper outlines the effects of removal of decadent plant material and supports the statement that proper level and timing of grazing could increase plant vigor.

18. **Comment:** The area should not be developed for livestock grazing. The area has not been grazed since 2003 so grazing would be a new adverse impact on wildlife and riparian areas. (5)

Response: Prior to 1986 grazing use was typically very heavy in this allotment area. From 1986-2005 nonuse was taken on the BLM portion of the allotment in 11 of those 19 years. Since acquisition of private lands in 2005 the allotment has not been permitted for use. It is anticipated that grazing levels adhering to MT Standards and Guidelines would not adversely impact wildlife, and would, in fact, allow for habitat improvements in other areas of the Elkhorns.

19. **Comment:** The EA notes that livestock compete with big game for forage. It also notes that 45% utilization by livestock ensures adequate forage for wildlife. There is no information on how this is being verified. What about quality of forage for wildlife? If big game prefer to use areas not grazed by cattle why wouldn't livestock be an adverse impact on big game? (5)

Response: The utilization objectives of 45% use on native herbaceous forage and 55% on nonnative seedlings include use by both livestock and wildlife, as measured at the end of the grazing season. So this objective is designed to leave 55% of native herbaceous forage and 45% of nonnative seedlings unused by either livestock or wildlife.

20. **Comment:** The EA notes that water development is needed so that a good distribution of livestock can be attained in this allotment. Why is good distribution of livestock good for wildlife? (5)

Response: If livestock is widely distributed and using a landscape evenly they will not be concentrated in preferred areas, such as moist or shady spots, and cause degradation of those areas while barely using other areas.

21. **Comment:** The proposed degradation of wildlife habitat for livestock grazing is a violation of the reason for which the acquisition was purchased. (5)

Response: According to the DR/FONSI and EA for the Iron Mask acquisition (2005), reasons for acquiring the property were to prevent subdivision, consolidate adjoining BLM lands, acquire and improve wildlife habitat, enhance public recreation opportunities, and manage under multiple-use principles. The EA stated that grazing alternatives to be explored would be forage reserve allotment, normal grazing allotment, and no grazing. The Butte RMP (2009) made a determination that the acquisition would be managed as a forage reserve. This forage reserve would be used to increase the ability of BLM and USFS to implement habitat restoration projects in other areas of the ECMA. For example, outside of this PA, the Spokane Hills Forage Reserve allotment has been used in 2013 and 2014 to allow a prescribed burn to be implemented on the Bull Mountain allotment.

22. **Comment:** The EA notes that development of this allotment is needed so cattle from other allotments will have a place to go when those allotments are being burned and treated to increase forage for cattle. Grazing should not be increased in this allotment so destruction of wildlife habitat on other allotments will be easier to implement. (5)

Response: Vegetation treatments are intended to restore natural vegetation composition characteristics to the habitat that would have occurred under a natural disturbance regime over the last 100-150 years, not destroy the habitat, using principles and practices of restoration ecology. Grazing on the forage reserve allotment may have some negative impacts on this allotment but is expected to facilitate improvements to overall ECMA

habitat. For example, outside of this PA, the Spokane Hills Forage Reserve allotment has been used in 2013 and 2014 to allow a prescribed burn to be implemented on the Bull Mountain allotment.

23. **Comment:** Ungrazed reserves for wildlife intolerant of, or harmed by grazing, should be provided on the Indian Creek allotment. (5)

Response: The Indian Creek Forage Reserve allotment is not anticipated to be used every year. For example, two other forage reserve allotments have been established in the BFO since 2009. Combined, those allotments have been in existence 12 years and have been used three years. The option and ability to use these forage reserve allotments is expected to result in overall benefits to the ecosystem. If monitoring showed displacement of wildlife, a four-pasture rotation system would be developed to reduce that displacement. The ECMA allotment where cattle using the Indian Creek Forage Reserve allotment came from would be vacated by livestock for the time period the forage reserve was in use.

24. **Comment:** If this allotment is used in consecutive years the pastures should be alternated in order of use. The allotment should be rested at least one year every 3-5 years. (7)

Response: As described in Section 2.4.2 the proposed action does not require alternating order of use. Utilizing the west pasture early could pose some problems with range readiness and snow. If the grass at the higher elevations is not mature enough to withstand grazing, plants may be pulled out of the wet soil or not have enough photosynthetic material above ground to harbor healthy growth. Due to this it would not be beneficial to arbitrarily mandate use on the west pasture prior to the proper growth stage. In years that conditions allow, use would be alternated between the two pastures along with duration dependent on the amount authorized for that year. Because this is a forage reserve allotment, rest would be inherent and addressed on an annual basis dependent upon previous use and weather.

25. **Comment:** Disagrees with the EA statement that grazing would not impact hunting. Archery season starts mid-August for antelope. Regular archery and grouse season opens Labor Day. Bear and wolf season start mid-September. Livestock should be removed from the upper pasture by Sept. 1 to allow elk rut and archery hunting to not be impacted. (8)

Response: The EA has been corrected to acknowledge archery hunting. If this suggestion were implemented, the upper pasture would be more prone to a repeated season of use, as opposed to a deferred system, which is what is being proposed. To make the allotted number of AUMs available, more cattle would be allowed than currently analyzed within the shorter timeframe. The reduction in grazing period would

limit the BLM's ability to simulate the use of other allotments from which the use is being exchanged.

The West pasture is not expected to be in use during archery season most years. The allotment is not expected to be used every year, and in some years with proper conditions the West pasture would be used first, thereby reducing the impacts to archery hunting. Impacts to general season rifle hunters would be non-existent since grazing would not occur during that time period.

26. **Comment:** The earliest turn on date should not be before the date for their normal allotment. The earliest date for use should be predicated on forage condition of the lower pasture. The upper pasture should not be used until the middle of June to allow time for elk calves to gain strength. (8)

Response: The Final EA has been clarified to state: "The season of use for the Indian Creek allotment would be from 5/15-10/15 or within the dates of the permittees' normal allotment, whichever is more restrictive" (EA section 2.4.2). Features in section 2.2.2 provide for a seven-day period of flexibility in turnout based on forage conditions. The upper pasture would not be utilized until thresholds in the lower pasture were met or when plants are no longer susceptible to wet soils or inadequate stage of growth, which would most likely be mid-June or later.

27. **Comment:** Only livestock from ECMA permittees should be allowed, and only when a prescribed management activity causes them to relocate from their own allotment. (8)

Response: The EA follows guidelines from the RMP, which do allow for permittees outside the ECMA and those displaced by natural causes to use the allotment. However, being an ECMA permittee or landowner is the first criteria for using the allotment. The RMP also designates two other allotments outside the ECMA as forage reserve allotments which could be used by permittees from outside the ECMA.

28. **Comment:** Recommends one more tank at the junction of road segments 005 and 006 to keep livestock in that part of the allotment. (8)

Response: Livestock travel 1 to 2 miles for water dependent on terrain. The available water sources within this pasture would be less than 1.5 miles away for any given point which is adequate giving the minimal topographic relief.

29. **Comment:** Four smaller pastures for the forage reserve would reduce distance displacement impacts the antelope, deer, and elk would be subjected to by cattle. Antelope drop fawns in mid-May so a smaller pasture that allows them to escape cattle pressure would be beneficial. (8)

Response: The EA has been modified to include this option. Monitoring would occur and if wild ungulate displacement was observed a four-pasture rotation would be developed and implemented.

30. **Comment:** Recommends drop down electric fences like used on Wall Creek Game Range in Madison County. Fence off aspen stands, springs, and streams from cattle before allowing grazing. Remove old fences, structures, and pipelines before installing new ones. (8)

Response: “All new fence construction would meet wildlife-friendly standards, and let-down fence would be utilized where possible.” (EA section 2.4.2.) Additional fencing along aspen stands, spring, and streams would be performed on an as needed basis. Arbitrarily fencing all features could create an unnecessary point of conflict with wildlife. Unnecessary fences would be removed.

Most of the proposed vegetation treatment units contain aspen stands. The following feature is included in the EA and would apply to any treatment unit: Native materials or manufactured fencing would be utilized to create exclosure barriers to wildlife and livestock, when necessary, to allow for regeneration of riparian habitats or aspen stands.

31. **Comment:** There is a need for a concerted effort to get weeds out of the Iron Mask acquisition property. Grazing may exacerbate the problem. (8)

Response: Weeds are treated in the acquisition area under the BFO Weed Management Plan Revision (2009). Annual spraying occurs and would continue to occur in this area. Additional efforts have also been made in this area with inventorying, biological control, and it is an area of focus for spray crews. Additional efforts such as spray days are always a possibility. Grazing in conformance with the MT Standards and Guidelines is not expected to exacerbate the weed problem.

32. **Comment:** WWP opposes livestock grazing in the proposed forage reserve, at least until the allotment meets standards. WWP opposes new water developments. It appears the reserve will be used almost continuously. The EA makes the claim that livestock will benefit vigor and productivity of plants. This is a dubious claim that cites only one study from 1999. Even more dubious is the claim that livestock can reduce cheatgrass, citing only one study from 2003. More recent studies, in particular Reisner, et al., 2013 find that livestock increases cheatgrass. (10)

Response: The large perennial bunchgrasses that are present in this area evolved with natural grazing disturbance from large ungulates. Without some source of disturbance individual plants begin to reduce the amount of seed produced. With proper grazing timing and amount, livestock would act as a controlled disturbance to stimulate more seed production. Livestock could increase cheatgrass if not properly managed. The use thresholds would reduce the probability of areas being grazed to the point that would favor cheatgrass. Also, grazing cheatgrass at the proper time, prior to seed ripening,

could reduce the amount of seeds produced and over time reduce the amount of dormant seeds in the soil (Hempy-Mayer and Pyke 2008). BLM regulations state that grazing may occur if meeting standards or management allows for making significant progress towards meeting standards. The current condition seems to be stagnant and the BLM believes that proper grazing management in conjunction with vegetation treatments would aid in this forage reserve to make significant progress towards meeting Land Health Standards.

33. **Comment:** There are numerous reasons to not allow grazing in the proposed forage reserve allotment:

1. The soil/grass in this area is of a nature that 700 AUMs would further reduce what is left for wildlife.
2. The area was purchased for the purpose of sportsmen/hunters and wildlife.
3. This is a well-known winter range for a portion of the elk herd of the Elkhorns.
4. The economics of 700 AUMs and the cost of fencing doesn't add up. (12)

Response:

1. The AUMs available from the acquired land is greatly reduced from the previous stocking rate when this land was in private ownership and was grazed. The guidelines of 40% utilization in the east pasture and 6" stubble height in the west pasture would ensure there is enough forage remaining for wildlife.
2. This area was purchased to be utilized as a forage reserve and was specifically outlined to be done in the April 2009 Butte RMP and EIS. According to the DR/FONSI and EA for the acquisition (2005), reasons for acquiring the property were to prevent subdivision, consolidate adjoining BLM lands, acquire and improve wildlife habitat, enhance public recreation opportunities, and manage under multiple-use principles. The EA stated that grazing alternatives to be explored would be forage reserve allotment, normal grazing allotment, and no grazing. The Butte RMP (2009) made a determination that the acquisition would be managed as a forage reserve. This forage reserve would be used to increase the ability of BLM and USFS to implement habitat restoration projects in other areas of the ECMA. For example, outside of this PA, the Spokane Hills forage reserve allotment has been used in 2013 and 2014 to allow a prescribed burn to be implemented on the Bull Mountain allotment.
3. The conservative guideline of 40% utilization in the east pasture and 6" stubble height in the west pasture would ensure there is enough forage remaining for the winter elk herds.
4. CEQ regulations indicate that quantitative economic analysis should not be applied to qualitative factors such as environmental quality or land health where economic

values cannot be assigned. The economic value of the ability to conduct restoration treatments on other portions of ECMA provided by the forage reserve cannot be quantified at this time.

Grazing

34. **Comment:** EA section 3.4.3 claims that if there is no grazing plants will become decadent and reproductively stagnant. Published science that this is based on should be provided. (5)

Response: Ganskopp and Bohnert (2003) asserted that wolfy bunchgrasses, including bluebunch wheatgrass, have less nutritional value than moderately grazed plants and that these decreased dietary values affect the plant selections made by wildlife and cattle alike. Ganskopp and Bohnert found that wolfy plants had lower levels of crude protein and digestibility than plants that had had the older leaves and stems removed.

Willms et al. (1980), Gordon (1988), Ryle and Rice (1991), Ganskopp et al. (1992), Pfeiffer and Hartnett (1995), have all reported that both wild and domestic animals have shown preference for grasses and plants that have had old growth material removed (cited by: Ganskopp and Bohnert, 2003).

Similar observations have been made by BLM employees on established utilization studies: one example being fescue grass plants that had been grazed and re-grazed by elk during the winter/spring season; whereas ungrazed plants more often went untouched (BLM's Confederate Gulch Cow/Elk Utilization Study #1 east of Canyon Ferry Reservoir.)

35. **Comment:** There is no analysis as to the impacts of livestock grazing on songbirds, including cowbird parasitism and grazing season occurring during nesting season. (5)

Response: The Butte RMP allocated forage for livestock at levels that also leave adequate forage and ground cover for wildlife. Songbird nesting occurs during most of the season when grass grows and this is also the logical time to graze livestock. With proper grazing management there is adequate forage for livestock and wildlife, and cover for ground-nesting birds. Cowbird range has expanded from the central plains due to human activities and fragmentation of forested habitat. Cowbirds show preference for open conifer forests, open grassland/shrubland, and riparian habitat types. Two studies have shown a cowbird parasitism rate of less than 3% in the north-central Rocky Mountains, and a less than 1% parasitism rate on yellow warblers along the Missouri and Madison River corridors (Hejl et al. 2002, Fletcher et al. 2005). There is no data on cowbird parasitism rates within the PA. However, cowbird parasitism does not appear to be a large impact in the PA; some of the most commonly parasitized species such as yellow warbler, song sparrow, chipping sparrow, and spotted towhee were noted during land health assessments and PFC surveys more frequently than brown-headed cowbirds.

36. **Comment:** There is no analysis of grazing impacts on wildlife as part of permit renewal evaluation. The EA notes a number of times that there are no impacts of livestock grazing on wildlife. No scientific references or monitoring reports are provided as support. (5)

Response: Impacts to wildlife are weighed against current conditions, not historical pre-settlement conditions. Overall, wildlife populations in the PA are in good condition.

The EA is informed by the Land Health Evaluation Reports. The Beaver, Beaver Creek, Dowdy Ditch, Kimber Diorite, and Whitehorse allotments have met Land Health Standards (except for riparian and water quality on Beaver Creek; grazing was not determined to be a causal factor). Meeting Land Health Standards does not necessarily mean there is no room for improvement, but does mean wildlife populations should not be negatively impacted. The Limestone Hills allotment did not meet standards (except for air quality), and the Alternative B reduction in AUMs and proposed fencing and water development projects are expected to improve conditions on this allotment.

37. **Comment:** The amount of time livestock graze during the period of allotted use should be 30-40 days maximum to avoid individual plants being re-grazed. Use rotational grazing. (7)

Response: The Limestone Hills pasture rotation schedule proposed in Alternative B provides for a 30-day use period for each pasture. The schedule provides for rotations between early, mid and late season uses by pasture, as well as two rest years in every six years for each pasture.

Conditions meeting the MT Standards and Guidelines were either met, or if not met, not caused by cattle grazing under existing management on the Beaver, Beaver Creek, Dowdy Ditch, Kimber-Diorite, and Whitehorse allotments; therefore the interdisciplinary team did not conclude that adjusting grazing schedules would result in an improvement on these allotments. As for the Indian Creek Forage Reserve allotment, re-grazing of individual plants could occur but routine riding and inspections would limit this and if established use thresholds are met the livestock would be moved or removed from the pasture.

38. **Comment:** The proposed non-reallocation of 579 AUMs is not a real reduction if one looks at actual use. The failure of the allotment to meet standards is due in part to cattle that actually graze the allotment. BLM must analyze an alternative that reduces actual AUMs. (10)

Response: In 2012, 579 AUMs were relinquished to the BLM. This equates to a 30% reduction in permitted AUMs on the Limestone allotment. Since 2012, there have been 146 fewer cattle on the allotment. This reduction was not in place when the 2010 assessment was conducted. Analysis of Alternatives B and C both reduce the actual permitted AUMs on this allotment.

Vegetation Treatments

39. **Comment:** It's difficult to determine exactly what treatments are planned per acreage. Clearly identify how many acres of each particular treatment are planned in tabular form. The EA should include satellite imagery of each treatment area and detailed description of the proposed action for that area. (5, 10)

Response: In the draft EA, treatments that were originally proposed for the LHTA withdrawal area were dropped but the total acreages were not adjusted to reflect this. Acreages for each treatment area are included in the Proposed Action descriptions in the final EA. Specific prescriptions for treatment units to meet objectives would be developed prior to implementation.

40. **Comment:** There is no body of science we are aware of that indicates the PA is in an "unnatural state" due to lack of fire. Destroying trees via vegetation treatments is a severe adverse impact on wildlife. Proposed vegetation treatments are in direct conflict with wildlife. EA section 3.4.6 notes that if there is no treatment of vegetation areas will become too thick for optimal wildlife habitat. EA section 3.6 states that treatments are needed to prevent decline of grass and shrubland species. Published science that this is based on should be provided. (5)

Response: As discussed in section 3.4.4.3 Fire & Fuels: The analysis for vegetation pertaining to fire and fuels focuses on Fire Regime Condition Class (FRCC). The FRCC is a classification of the amount of departure from the natural fire regime (Hann and Bunnell 2001, Hardy et al. 2001). The landscape was calculated to have an overall departure of 34 percent which equated to a rating of Condition Class 2, Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances. Vegetation treatments are intended to restore natural vegetation composition characteristics to the habitat that would have occurred under a natural disturbance regime, not degrade the habitat, using principles and practices of ecological restoration. A few published references on this subject which are applicable to the PA include:

Arno, S.F, Gruell, G.E. 1983. Fire history at the forest-grassland ecotone in southwestern Montana. *J. Range Manage.* 36, 332-336.

Arno, S. F., & Gruell, G. E. (1986). Douglas-fir encroachment into mountain grasslands in southwestern Montana. *J. Range Manage.* 39(3), 272-276.

Belsky, A. J., & Blumenthal, D. M. (1997). Effects of Livestock Grazing on Stand Dynamics and Soils in Upland Forests of the Interior West. *Conservation Biology.* 10(5), 315-327.

Heyerdahl, E. K., Miller, R. F., & Parson, R. A. (2006). History of fire and Douglas-fir Establishment in a Savanna and Sagebrush-Grassland Mosaic, Southwestern Montana, USA. *Forest Ecology and Management.* 230, 107-118.

Van Dyke, F., Darragh, J.A. 2007. Response of elk to changes in plant production and nutrition following prescribed burning. *J. Wildl. Manage.* 71(1): 23-29.

Additionally, as discussed in section 3.4.4.3 in the EA, the analysis for vegetation pertaining to fire and fuels focuses on Fire Regime Condition Class (FRCC). The FRCC is a classification of the amount of departure from the natural fire regime (Hann and Bunnell 2001, Hardy et al. 2001).

Hann, W.J.; Bunnell, D.L. 2001. Fire and land management planning and implementation across multiple scales. *International Journal of Wildland Fire.* 10:389-403.

Hardy, C.C., Schmidt, K.M., Menakis, J.M., Samson, N.R. 2001. Spatial data for national fire planning and fuel management. *International Journal of Wildland Fire* 10:353-372.

41. **Comment:** The EA basically notes that burning will remove sagebrush permanently, as it takes 10 years (a huge underestimate) for sagebrush to reestablish, and then the areas will be retreated. This is a plan to remove sagebrush, not manage sagebrush. It is being targeted for removal since cows don't eat it. Why will slashing of junipers and small trees be required in order to get the proposed treatment areas to burn? Please provide the current science that supports destruction of sagebrush for wildlife benefits. (5)

Response: Sagebrush can take longer than 10 years to recover from a burn, and the final EA has been modified to reflect this. There is no statement in the EA that retreatment would occur after reestablishment of sagebrush. Sagebrush is not a major component of the areas proposed for prescribed burning, nor is sagebrush being targeted; grasses and conifer colonization are the major components. Prescribed burns are designed to set the vegetation type in the burn area back to earlier successional stages that would be on the landscape without human interference.

Slashing of trees, including junipers, will be implemented to help achieve the objectives of the proposed treatment. Slashing juniper and small trees promotes fuel concentration in specific areas that are targeted to meet the objectives of the projects. Targeting areas with slashing will allow for a wider prescribed fire prescription, allowing for burning to occur under lower weather parameters, i.e. lower temperature and higher relative humidity which should lessen fire intensity and be more controllable, thus making it easier to achieve a mosaic burn pattern as discussed in sections 2.4.4, 3.4.4.2, and 3.4.4.5 of the EA.

42. **Comment:** Please summarize how many acres of sagebrush habitat have been burned in the past by acres and years. (5)

Response: BLM prescribed burns in the DA have included:

In 1995, a prescribed burn was implemented. The purpose of this burn was to improve elk winter and spring habitat, improve livestock distribution and utilization and to create

a more favorable vegetation mosaic in a portion of the Limestone Hills allotment. The objective of this burn was to remove 50-70% of the sagebrush and sagebrush/conifer colonization in two burn units. Approximately 350 acres were burned.

In 2007, a prescribed burn was implemented. The purpose of this burn was to restore and improve bighorn sheep foraging and security habitat. The objectives of this burn was to: achieve mortality of 60% to 80% of the colonizing juniper and Douglas-fir in the grass and sagebrush habitat; obtain up to 90% mortality in the forested stands in the burn units; and achieve mortality of 60% to 100% of juniper and Douglas-fir that had encroached into aspen stands. The overall size of the prescribed fire unit was approximately 650 acres with 60%, or approximately 390 acres, consisting of sagebrush/grasslands.

43. **Comment:** The EA does not identify why a reduction in nesting habitat, hiding cover, thermal cover, and food sources for birds provided by conifer trees and sagebrush will benefit songbirds. (5)

Response: There are many species of songbirds, and all species have varying habitat preferences. The reduction of conifers, intended to restore a more natural vegetation composition to the PA, would benefit bird species that prefer open grassland habitats such as horned lark, long-billed curlew, common nighthawk, vesper sparrow, meadowlark, and others.

According to Murphy (2008): Proliferation of trees and tall shrubs negatively impacts populations of some bird species adapted to nesting in prairie grasses. Numbers of breeding birds and their nests decrease sharply after a prairie tract is burned, but they return to or exceed pre-burn levels in following years. Short-term, post-fire loss of bird breeding habitat is likely outweighed by long-term benefits to vegetation structure.

44. **Comment:** 1200 acres of burning/slashing is planned for the Shep's Ridge unit. There is no information provided that the original treatment has, in fact, been beneficial. Have bighorn sheep been documented using this area and what are the impacts on other wildlife, especially songbirds? What are the costs? (5)

Response: No burning is proposed for the Shep's Ridge unit. The proposal is only to cut small conifers that have sprouted since the 2006 treatment to maintain the effects of that treatment (please refer to photo in section 2.4.4 of the EA). Cutting these small conifers, which came up from the seed source in the ground at the time of the treatment, is expected to maintain the results of the treatment for a much longer time period. Additionally, there would be some conifer removal from small aspen stands in the larger treatment area. This conifer removal would be in patches of less than two acres, and benefit the deciduous vegetative component. The original 2006 treatment has moved those 1200 acres to a more natural successional state. Bighorn sheep have used the area; however, there was a pneumonia die-off in 2008 from approximately 200 to 30-40 individuals. Songbirds are discussed in the previous response. Costs to cut small conifers in areas similar to Shep's Ridge using contractors typically range from \$35-120

per acre. However, volunteers, Montana Conservation Core crews, or seasonal employees could also be used to accomplish this treatment.

45. **Comment:** Vegetation treatments are being done to promote livestock grazing but will destroy wildlife habitat. The EA needs to define exactly what the connection is with the Iron Mask PA and the Elkhorn Implementation Group, as per wildlife objectives. (5)

Response: As mentioned in the Purpose and Need section of the EA, vegetation communities have been altered since European settlement by a combination of management activities including livestock grazing and fire suppression. Vegetation treatments are intended to restore natural vegetation composition characteristics to the habitat that would occur under a natural disturbance regime, not degrade the habitat. The Elkhorn Implementation Group is comprised of resource specialist staff from the Beaverhead-Deerlodge and Helena National Forests; the Montana Fish, Wildlife, and Parks Department; and the Butte BLM Field Office. At the request of these agency managers, the Implementation Group produced a document entitled *Elkhorn Cooperative Management Area Conifer Colonization Management Strategy* in 2011. This document is used as one source of guidance, in addition to other literature, in determining if vegetation treatments are necessary and what types of treatments to implement.

46. **Comment:** There is no rationale or scientific reference provided to document why vegetation treatments will benefit wildlife. The EA states in several places that treatments will benefit wildlife. The removal of conifers, sagebrush, and Russian olive is clearly being done to promote livestock grazing, not wildlife. If forage is limiting to big game why isn't a reduction in livestock grazing being considered? (5)

Response: Vegetation restoration treatments are attempts to return an ecosystem to its' historic trajectory, i.e., to a state that resembles a known prior state or to another state that could be expected to develop naturally within the bounds of the historic trajectory (also called 'natural range of variability'). In general, species preferring open habitats or associated with early successional vegetation benefit from restoration or fuel reduction treatments. In contrast, species that prefer closed-canopy forests or dense understory will likely be negatively affected by restoration treatments (Pilliod et al. 2006). Across the Northern Rockies ecosystem, areas receiving vegetation treatments are small in comparison to areas not receiving treatments. Therefore it is important to enhance habitat for species which depend on the more open areas when possible. The treatments are not to promote livestock grazing and use levels are not proposed to increase. Elimination of livestock grazing is considered in Alternative A for the forage reserve allotment and Alternative C for the other allotments.

47. **Comment:** Nesting songbirds will be killed by prescribed burning and slashing. The EA does not identify how these impacts will be avoided. (5)

Response: The prescribed burning would be done in accordance with the Butte RMP, which states, "Management-ignited prescribed fire will not be conducted between May 1st

and August 30th to protect nesting migratory birds, unless breeding bird surveys document low potential impact to breeding birds.” Some individuals could still be killed or harmed from burning and slashing activities, but in the long term, species that prefer open habitats or early successional vegetation would benefit.

48. **Comment:** It’s not clear from the EA if Shep’s Ridge is being proposed for burning. FWP opposes reburning Shep’s Ridge at this time. (7)

Response: Shep’s Ridge is not being proposed for reburning. Proposals for this unit are only hand-cutting of small trees that have come up since the 2006 treatment, and hand-cutting or mastication of conifers competing with small aspen stands within the original 1200-acre treatment.

49. **Comment:** Don’t burn where cheatgrass or noxious weeds are prevalent unless they have been thoroughly controlled prior to burning. (7)

Response: Section 2.2.2, Features Common to all Alternatives, include the following:

- Conifer treatment units would be monitored for noxious weeds and cheatgrass, and treated to prevent the expansion of noxious weeds.
- Pre-treatment weed inventory/control and post treatment weed control would be completed within each unit.
- Areas proposed for burning or for the operation of mechanized equipment that occur within existing weed populations would be treated for weeds prior to activities.
- All weed treatment sites would be monitored for infestations before operations and weeds would be treated annually after project completion.

50. **Comment:** Leave juniper in draws for cover and forage. Treat the flat bench areas. Push back colonization. Has BLM contacted DNRC about treating section 16? (7)

Response: Some juniper would be left in draws for cover and forage and other draw areas would be cleared in a mosaic pattern since anecdotal evidence from local residents indicates that juniper in draws is inhibiting movement of antelope.

BLM has contacted DNRC about treating section 16, and the possibility of treating a portion of this section is included in the Cumulative sections of the EA. DNRC would have to complete appropriate Montana Environmental Policy Act documentation prior to any treatment of this section.

51. **Comment:** Treat conifers mechanically or by hand where sage is a primary vegetative component. If sage is burned, do it in a mosaic pattern. (7)

Response: The EA does state that burns would be conducted in a mosaic pattern. Sage is not a primary component of proposed prescribed burn areas.

52. **Comment:** BLM should consider treating the extensive amount of prickly pear on the east side of the forage reserve. (7)

Response: A proposal to conduct test treatments on up to 10 acres of prickly pear has been added as part of the proposed action in the EA. Literature on treatment of prickly pear in the Northern Rockies area is lacking so nothing large-scale is being proposed at this time.

53. **Comment:** Don't restrict cutting to less than 8". What is the criteria and rationale for leaving 8" and larger trees? Larger trees can provide economic benefits. Use a stewardship contract for any work that allows for removal or salvage of materials. Treat as many encroachment acres as possible. Some encroached areas have trees >8" as evidenced by dead sage stems. Leaving conifers >8" is not a good general concept and a site by site evaluation may indicate larger trees need to be removed. (8,9)

Response: The 8" size restriction was not specified for most of the treatment unit acreage in the draft EA. The final EA has been modified to state that conifers up to those showing old growth structural characteristics could be removed from within 1-3 tree lengths of aspen or cottonwood stands. The vast majority of encroachment in proposed treatment units is under 8", and the stocking level and distribution of merchantable products within treatment units was determined to be at such a low level that it did not make sense to propose removal under a materials contract for economic benefit.

54. **Comment:** Conifers should be removed within 1 to 2 tree lengths around aspen. Aspen stands should be fenced to reduce browsing of suckers. (8)

Response: The following features, common to all action alternatives, are included in the EA. Aspen or cottonwood stands would be fenced on a case-by-case basis, rather than fencing every one:

- Aspen or cottonwood stands within larger treatment unit boundaries would have conifers removed from the periphery of the stand within 1-3 tree lengths. Size restrictions on cutting conifer in the overall treatment unit would be waived within this periphery around aspen or cottonwood stands, except for legacy trees or trees with old growth characteristics.
- Native materials or manufactured fencing would be utilized to create enclosure barriers to wildlife and/or livestock, when necessary, to allow for regeneration of riparian habitats or aspen stands.

55. **Comment:** Prescribed fire should be an option on all proposed treatment acres. Why is fire proposed only in 2 units? Fire could be a foreseeable future action in cut or masticate units. (9)

Response: The units proposed for prescribed fire are the areas of heaviest conifer colonization. Hand and/or mechanical treatments would be most efficient to implement in other, more lightly colonized areas. Additionally, the proposed burn units are for the most part bordered by old roads, which would make the burns easier to control and contain.

Riparian

56. **Comment:** Claims that the fire cycle for woodlands is outside the historic cycle is repeated many times and is false. The problem with aspen is clearly degradation by livestock and past mining activities. We are opposed to the removal of conifers from aspen, as it will likely contribute to the ongoing destruction of these stands by cattle. The proposed reductions of conifers in riparian/aspen areas is being done to promote livestock grazing, not wildlife. Unless the agency can provide monitoring data do show that conifers are directly responsible for the loss of deciduous vegetation, proposals to improve riparian areas by removing conifers are arbitrary. (5)

Response: Three factors, referred to as the aspen regeneration triangle, must be addressed for successful regeneration of this species: 1) hormonal stimulation of root buds to initiate vegetative regeneration via sprouting; 2) proper growth environment, which in the case of stands colonized by conifers involves maximizing the amount of sunlight available to sprouts; 3) protection of sprouts from excessive browsing (Shepperd 2004). Aspen is intolerant of shade and requires sunlight to persist. The removal of conifers in aspen stands is intended to provide the second leg of the triangle, proper growth environment. Other treatments such as burning, soil and root disturbance, and exclosures may be needed to provide the other two legs of the triangle, but removal of conifers alone has been successful in aspen regeneration in some cases (Jones et al. 2005).

57. **Comment:** Russian olive should not be removed from riparian areas. It is a valuable wildlife tree. We question whether this tree is actually replacing other deciduous species or filling a void created by the loss of other species caused by livestock. The reduction of shade and coarse woody debris in riparian areas will be another adverse impact to wildlife. (5)

Response: The Butte RMP states, "Vegetation management will emphasize maintaining and restoring healthy, diverse, and productive native plant communities appropriate to local site conditions (p. 14)." Russian olive is nonnative. Large areas not on BLM land in and adjacent to the PA support stands of Russian olive. This species is beginning to spread up Indian Creek and the proposal to remove it is intended to enhance the health of native riparian species. As stated in the EA, "Species diversity is typically lower, and value to wildlife and livestock in Russian olive stands is generally lower than riparian areas dominated by native species (Zouhar 2005)." Additionally, Hedricks et al. (2005)

found during a study in eastern Montana that Russian olive provides inferior bat and cavity-nesting bird habitat to native cottonwoods. Russian olive may preclude cottonwood establishment along streams where flooding does not occur by shading seedlings (Lesica and Miles 2001).

58. **Comment:** The EA should analyze an alternative for restoration of aspen and cottonwood stands in locations that are able to or historically supported these trees. (10)

Response: A separate alternative is not necessary as numerous aspen stands are already included within the proposed upland and riparian treatment units. The following features pertaining to these stands are included in Section 2.2.2:

- Aspen or cottonwood stands within larger treatment unit boundaries would have conifers removed from the periphery of the stand within 1-3 tree lengths. Size restrictions on cutting conifer in the overall treatment unit would be waived within this periphery around aspen or cottonwood stands, except for legacy trees or trees with old growth characteristics.
- Native materials or manufactured fencing would be utilized to create enclosure barriers to wildlife and/or livestock, when necessary, to allow for regeneration of riparian habitats or aspen stands.

Fencing

59. **Comment:** Please address past and planned impacts of fences to wildlife. (5)

Response: In general, fences can create hazards and barriers to many wildlife species. They can hinder movements, cause avoidance of areas, and cause injury or death from entanglement or collision. During field work in the PA only one deer fatality has been documented from entanglement in a fence on private land. Construction of new fences and conversion of old fences to wildlife-friendly designs are expected to reduce fence impacts to wildlife.

60. **Comment:** Along with let-down fences, fences should include numerous gates that can be left open when there is no grazing for wildlife passage. (7)

Response: The following has been added to the EA in Sections 2.2.2 and 2.4.6: Gates would be strategically placed along fencelines to be left open for wildlife passage when grazing allotments are not in use.

61. **Comment:** EA should address the use of innovative fencing options like electrified drop-down fences in the forage reserve and other areas. (9)

Response: Options for different fencing types would be considered depending on location, slope, type of treatment area, etc., and electric fence could be used in fence construction. Several of the fences in the EA are specifically proposed as let-down fences (EA sections 2.4.2, 2.4.3). These methods are included in the BLM Fencing Manual and/or *A Landowner's Guide to Wildlife Friendly Fences: How to Build Fence with Wildlife in Mind*, which the EA states would be adhered to.

Wildlife

62. **Comment:** It is not clear why antelope have been avoiding this PA. Why is that? (5)

Response: The EA does not state that antelope have been avoiding the PA; antelope are frequently seen within the PA. However, antelope habitat within the PA is shrinking because of the conifer colonization that proposed vegetation treatments would reduce. Anecdotal evidence from local residents indicates that antelope will walk down and around encroached drainages in the PA rather than through them to get to the other side.

63. **Comment:** The EA does not address the value of juniper and Douglas-fir as browse for elk and mule deer. (5)

Response: The EA refers readers to the Montana Field Guide and other sources for basic information on any wildlife species mentioned rather than attempting to include all pertinent life history information within the document. Juniper can be important browse for mule deer in winter; juniper and big sagebrush can make up the majority of deer diets in winter. However, juniper has a poor palatability rating. High levels of volatile oils in Rocky Mountain juniper may cause mule deer to select against the foliage in favor of other browse when available. Douglas-fir browse is not highly nutritious and is less valuable winter browse for deer than juniper. Elk are primarily grazers and make less use of these species for browse than deer (Scher 2002, Steinberg 2002, Foresman 2012).

64. **Comment:** The EA does not address the value of lower elevation juniper woodlands as winter habitat for goshawks. (5)

Response: According to the Montana Field Guide, little information exists concerning northern goshawk non-breeding or wintering habitat in the state. Migration of this species is poorly understood for North America; data indicate that this species is a partial migrant and may move hundreds of miles or short distances to areas where prey is more available in winter (Squires and Reynolds 1997, Kirkley pers. comm.).

65. **Comment:** Please discuss the presence of any prairie dog colonies that may occur in the PA. (5)

Response: There are no prairie dog colonies on BLM land within the PA.

66. **Comment:** The EA needs to identify specific wildlife objectives. (5)

Response: There are no specific wildlife objectives such as species population numbers since that is the purview of FWP, not BLM. Habitat improvement towards what would historically occur through vegetation treatments is a general objective that cannot be specifically quantified.

67. **Comment:** The EA does not discuss how actions would improve connectivity within and between terrestrial and aquatic habitats. (9)

Response: Construction of wildlife-friendly fencing and conversion of existing fences to wildlife-friendly specifications would increase connectivity and wildlife movements. Vegetation treatments to reduce conifer colonization of grasslands would improve connectivity for antelope. Within the PA, however, the major barriers to connectivity are Highway 285 and development on private land. Addressing those issues is outside the scope of the EA.

Soil and Water

68. **Comment:** Tailing waste dumps that produce toxic runoff should be programmed for removal. Short term actions should be implemented to reduce or hold toxic water. The head cut needs to have an engineered design.

Open roads need proper drainages. Closed roads need culverts removed and stream courses rebuilt. (8)

Response: The Iron Mask mine site, which includes mine and mill processing waste material, is proposed for removal during the 2016 field season.

The Indian Creek headcut has been identified for repair work. A detailed proposal and timeframe will be developed as the Iron Mask planning area work is finalized and implemented.

Open roads and roads proposed for closure will be evaluated for Best Management Practices (BMPs) and these will be implemented as other proposed work in the area is done. Roads proposed for administrative use only or closure are not proposed for restoration so existing culverts would be replaced as needed to assure effective water management. (EA: 2.2.2 Stream Crossings, 2.4.1 Travel & Recreation, 3.4.5 Riparian Habitat, 3.4.8 Water Quality.)

Monitoring

69. **Comment:** Description of monitoring in the EA is inadequate. There should be a Monitoring Plan specific to this project. Monitoring objectives, timing and recurrence, measurement of results should be laid out and is important to support the concept of restoration. (9)

Response: Established monitoring sites and study plots will continue to be monitored following the time frames that were initially established, usually every three to five years, unless vegetation treatments, study results, or other factors indicate that the monitoring should be more frequent or include different methodologies. New monitoring locations would be established in areas of concern or in treatment areas depending on the resource values present, and may include but not be limited to the following methodologies:

- Daubenires, line-point intercepts, photo points, belt transects, remote sensing, species richness soil stability, aspen stand long-term, (vegetation)
- Greenlines, cross-sections, photo points (riparian)
- Clipping and weighing, key species utilization, Cole browse, stubble height, use area mapping (wildlife/livestock vegetation use).

Additional monitoring would be established in conformance to the Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems, volumes I and II (Herrick et al. 2005). Key areas would be monitored for attributes specific to that site in relation to management objectives and actions. Monitoring methods approved in the future by the science communities may also be established.

Monitoring for prescribed fire treatment will be done in accordance with the RMP, p. 28.

Socioeconomics

70. **Comment:** EA lacks coverage of ecosystem goods and services provided by proposed actions, and effects on communities. It should describe effects on forest product availability. It should address linkage between restoration activities and long term sustainability for ranchers, forest industry components, local and regional businesses, and hunting. (9)

Response: Socioeconomics has not been identified as an issue associated with the proposed action or alternatives. Even so, quantitative economic analysis is generally not done in EAs. Furthermore, CEQ regulations indicate that quantitative economic analysis should not be applied to qualitative factors such as environmental quality or land health where economic values cannot be assigned. Qualitatively, none of the actions proposed are of large enough magnitude or scope as to affect local or regional socioeconomic outputs. It is assumed that projects to enhance land health are beneficial to the local economy.

Cumulative Effects

71. **Comment:** It is not clearly defined how the site-specific conditions in the project area relate to the broader landscape scale. Would like to see discussion on how these proposed treatments fit into overall restoration needs. (9)

Response: The PA and DA comprise a very small portion of the entire ECMA. Vegetative conditions within the PA, however, are thought to be fairly representative of the ECMA as a whole. Treatments to restore natural conditions can only be implemented a little bit at a time due to funding and manpower constraints; and temporary displacement of wildlife during treatments should be minimized by not treating too much at one time. So analysis and treatments proposed in this EA are basically just one small step toward restoring the entire mountain range to natural conditions.

The creation of the forage reserve allotment would partially eliminate the logistical constraint of permitted grazing on other allotments, making it easier for restoration treatment projects to occur in other areas of the ECMA, facilitating restoration goals across the broader landscape.