United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Lewistown Field Office
920 NE Main Street
Lewistown, Montana 59457
http://www.blm.gov/mt

TAKE PRIDE IN AMERICA

In Reply To:

5000

March 15, 2011

Dear Reader:

Thank you for your interest in the Tin Can Hill Vegetation Treatment Units B Environmental Assessment # DOI-MT-L060-2010-0035-EA.

The BLM is proposing to utilize prescribed fire and mechanical thinning, which may include grinding, hand slashing, and commercial sale of timber, in order to reduce fuel loadings and improve or maintain Fire Regime Condition Class (FRCC) in ponderosa pine stands. The proposed action is located in the Tin Can Hill area of Petroleum County, about 13 miles north east of Winnett, Montana. Work is scheduled to begin during the spring of 2011.

This proposal includes treating 4,065 acres with prescribed fire and mechanical methods in order to reduce ladder fuels, and the associated threat of high severity wildfire, while maintaining mature ponderosa pine stands. Mechanical treatment units will be identified within the prescribed fire unit following implementation of the prescribed fire and will focus on the removal of small diameter conifers to reduce ladder fuels and overall stand density. Mechanical treatments will take place over several years and will focus on removing small trees while maintaining the mature overstory.

The public comment period will last for 15 days and end on Wednesday, March 30, 2011.

For additional information contact Josh Barta, Fuels Specialist at 406-538-1971 or Steve Knox, Fuels Program Manager at 406-538-1976.

Sincerely,

Willy Frank
Lewistown Office Field Manager

U. S. Department of the Interior
Bureau of Land Management
Lewistown Field Office
and
Montana Department of Natural Resources and Conservation
Northeast Land Office
Lewistown, MT

FINDING OF NO SIGNIFICANT IMPACT
for the
Tin Can Hill Vegetation Treatment Unit B

ENVIRONMENTAL ASSESSMENT NUMBER: DOI-BLM-MT-L060-2010-0035-EA

Finding of No Significant Impact

On the basis of the information contained in the environmental assessment for the Tin Can Hill Vegetation Treatment Unit B, I find that the proposed action will not have a significant effect on the human environment. Therefore, an environmental impact statement will not be prepared.

This finding is based on the following reasons. Known historic properties within the area of potential effects will be avoided during implementation. Protective measures including but not limited to black lining, hand removal of vegetation, etc. will be completed around known cultural sites; the permitted use for livestock grazing will not change; fuel loadings will be reduced and the potential for high severity wildfire will be lowered; changes to the visual landscape would not attract the attention of the casual observer once green up and revegetation occurs; there will be no significant or long-term effect to recreation values; and wildlife habitat will be enhanced.

Mitigation Measures

Existing noxious weed infestations will be monitored and treated using an integrated weed management approach, cooperative agreements with grazing permittees, and contracts with approved applicators may be used to control existing and new infestations. Surveys, for new infestations, will be conducted for 3 to 5 years or until the vegetation completely recovers from the treatment and provides competition from new infestations. Any new infestations will be monitored and treated as an existing infestation. Weed surveys will continue throughout the area, on a regular basis, by the BLM and grazing permittees.

_____ _____
Lewistown Field Manager Date

_____ _____
Area Manager, Northeast Land Office Date
Department of Natural Resources and Conservation

U. S. Department of the Interior
Bureau of Land Management
Lewistown Field Office

Montana Department of Natural Resources and Conservation
Northeastern Land Office

ENVIRONMENTAL ASSESSMENT
For the
Tin Can Hill Vegetation Treatment Unit B

EA NUMBER: DOI-MT-L060-2010-0035-EA

PROPOSED ACTION/TITLE TYPE: The BLM is proposing to utilize prescribed fire and mechanical thinning, which may include grinding, and hand slashing, in order to reduce fuel loadings and improve or maintain Fire Regime Condition Class (FRCC). The Montana Department of Natural Resources and Conservation proposes to cooperate in the proposed action through the inclusion of state land located within T17N R28E sec 36.

LOCATION OF PROPOSED ACTION: Tin Can Hill Unit B is in Petroleum County, Montana and is located at T17N R28E E1/2 sec 22, sec 23, sec 24, sec 26, sec 25, sec 35, sec 36, T 17N R 29E S1/2 sec 31, sec 30, W1/2 sec 29, sec 19. (allotment #15115 River Ranch, #04849 Blood Creek-Marty, #04870 Lower Blood Creek) and includes 4065 acres of which 265 are privately owned and 394 acres are state lands administered by DNRC. See Map.

PREPARING OFFICE: Lewistown Field Office

APPLICANT: Bureau of Land Management, MT DNRC

DATE OF PREPARATION: 12/20/10

CONFORMANCE WITH APPLICABLE LAND USE PLANS: This proposed action is in conformance with the *Judith Valley Phillips Resource Management Plan (RMP)* approved in September 1994. The approved plan states on page 28, under the Fire Management section, that "prescribed burning will be administered on an individual basis in grassland, sagebrush, and/or conifer types to improve wildlife habitat and vegetation production".

The Fire /Fuels Management Plan EA /Plan Amendment for Montana and the Dakotas (2003) provides for fuel treatments that include prescribed burns and mechanical (including manual) methods on pg. 12. Page 25 states that "fuels treatments would focus on improving Condition Class 2 or 3 attributes, and would be refined for the project / watershed level."

The Musselshell Breaks Watershed plan (approved August 2005) states on page 69 that "mechanical thinning in the forested areas would be proposed in the River Ranch and Blood Creek-Marty allotments using chainsaws and or low impact mechanized equipment." And on page 75 that "Implementation of Alternative 2 would initiate a prescribed fire program of work that would include burning for increased wildlife forage, range improvement, forest health, and

protection of the scattered intermix communities."

This Plan is in conformance with the Montana Environmental Policy Act (MEPA) 75-1-101 MCA et seq.

PURPOSE AND NEED: The purpose of the proposed action is to shift the vegetation structure and composition in the Tin Can Hill project area to fall within the historical fire regime. The current condition is an abundance of pole-sized trees 5 – 9 inches diameter at breast height (dbh) and 9 – 21 inches dbh. The need for action is for a healthy diverse forest that is within the historical fire regime. Timber stands are overstocked and poles and saplings are encroaching on adjacent rangeland, due to departure from historical fire frequency. Improvements to the overall condition class within the project area will likely result in benefits to wildlife habitat through an increase in the diversity and production of herbaceous vegetation.

Condition classes are described as "a function of the degree of departure from historical (pre-European settlement) fire regimes resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, and canopy closure. One or more of the following activities may have caused this departure: fire exclusion, timber harvesting, grazing, introduction and establishment of exotic species, insects and disease (introduced or native), or other past management activities" (Schmidt et al, 2002).
Condition Class 1 (CC1) represents the lowest degree of departure from historic fire regimes. The attributes are:

- Fire regimes are within natural or historical range of variation.
- There is low risk of losing key ecosystem components.
- Vegetation attributes such as species composition and structure are intact and functioning.

Condition classes 2 (CC2) and 3 (CC3) represent the highest degree of departure from historic fire regimes. The attributes are:

- Fire regimes have been moderately to significantly altered from their historical ranges.
- There is moderate to high risk of losing key ecosystem components.
- Fire return frequencies have departed from historical frequencies by more than one, and in some cases multiple, return intervals. This may result in dramatic changes to one or more of the following: fire size, frequency, and intensity, severity, or landscape patterns.
- Vegetation attributes such as species composition and structural stage have been moderately to significantly altered from their historical ranges.

ALTERNATIVE 1 - PROPOSED ACTION: The proposed action would treat Tin Can Hill Unit B (see map Appendix 1) with prescribed fire which may be followed up with mechanical methods. Prescribed fire treatments would be implemented when environmental conditions would allow low to moderate fire behavior (typically spring or fall). Mechanical treatments would be implemented when conditions are favorable for minimal soil disturbance. Treatments would be implemented over the course of several years in coordination with other resource management program needs such as range, wildlife, and cultural resources.

Approximately 1600 acres of the 4065 acre project area are occupied by ponderosa pine. These forested settings within the project area have been assessed at Condition Class 2 and 3. When compared to reference conditions present in a properly functioning natural fire regime, open-structured, middle-aged and late stands, as well as early succession stands, are under-represented or at trace levels on the landscape. Closed structure stands are overly abundant on the landscape compared to reference conditions. For example, in the Southern Rocky Mountain Ponderosa Pine Savanna Biophysical Setting (BpS), the middle-aged *closed-canopy* stands currently occupy 35 percent of the strata, whereas reference conditions indicate these stands should occupy about 10 percent of the strata. On the other end of the scale late development, *open-canopy* stands occupy about 15 percent of the forested settings whereas reference conditions indicate these stands should occupy about 65 percent in the ponderosa BpS. Therefore, in conifer strata at least 50 percent of the middle-aged closed canopy stands should be altered into more open stands to increase the future amount of late development, open stands. The same situation occurs for middle-aged, open stands although the differences are not so high. Appendix 6 contains the FRCC worksheet report which displays the reference and current compositions for the successional stands in both conifer strata. By treating 75 percent of the forested settings in the project area, closed stands of middle and late development may be altered to more open

conditions which would increase the under-represented amounts of open-structured stands on the landscape.

Current fire severity has increased compared to reference conditions. The understory vegetation in the closed stands is dominated by small-diameter ponderosa pine regeneration, and species diversity and herbaceous biomass production is limited. Conifer encroachment is expanding into the edges of rangelands adjacent to forested sites.

Implementing prescribed fire in the project area would decrease conifer encroachment and increase the acres of open-structured forest stands to levels that are similar to reference conditions. With the reduction in natural fuel loadings and stand densities, fire severity would also become similar to reference conditions. This would change the project area FRCC rating from a CC3 to CC2 or even to a CC1. The biomass and species diversity of herbaceous and deciduous understory vegetation would likely increase. Reducing natural fuel loadings and ladder fuels may decrease the severity of a wildfire in the future and improve fire fighter and public safety.

The prescribed fire objectives of this project would be to:

1. Under burn a minimum 75 percent of the ponderosa stands.

2. Top-kill 30-60 percent of conifers less than 3" dbh (diameter at breast height)

3. Limit mortality in trees 8" dbh and larger to 30 percent.

Prescribed fire operations would be conducted under specific conditions which result in low to moderate fire intensity and create a mosaic of burned and unburned areas. Small trees and those encroaching on open areas would be reduced while minimizing the risk to the mature overstory. The conditions under which prescribed fire would be used and implemented would be addressed in a project-specific burn plan.

The primary purpose of mechanical treatment would be to thin overstocked areas where the prescribed fire did not kill enough young pine saplings. Mechanized equipment will be limited to slopes of 40% or less with an emphasis on reducing dense areas of pine regeneration as a means of removing ladder fuels and promoting a more open stand. All mechanical treatments will be based on the silvicultural prescription (see appendix 3). Patches of conifer stands will be left untreated as dictated by terrain and the need to retain security cover for big game.

Treatments will be coordinated with the appropriate range management specialist and the field office archeologist prior to implementation.

Control lines would consist of existing roads, natural barriers such as areas of sparse fuels or cow trails, and hand lines. The use of blade lines is not anticipated. Off-road travel by engines and ATV/UTV's would be required during prescribed fire operations.

Mechanical treatments utilizing mechanized equipment will be limited to slopes of 40% or less.

All treatments would adhere to the Water Quality Best Management Practices (BMPs) for Montana Forests (MSU Extension, 2001).

Existing fences, pipelines, stock tanks and water savers would have fuels removed from around them as necessary prior to implementing prescribed fire operations, and would be protected during the operation.

Post-fire grazing treatments: Prescribed fire treatments within the River Ranch Allotment would receive two growing seasons of annual deferment within the Van Hemp Pasture. The Tin Can Hill and Raundall Pastures would alternate early and mid-season use while grazing would be delayed in the project area (Van Hemp Pasture) until September 1 of each year for 2011 and 2012, or two consecutive years after the project is implemented. No other modifications would be required.

Design Criteria:

Cultural Resources: Any known cultural resources would be avoided during project implementation. Protective

measures, including but not limited to black/wet lining, hand removal of vegetation, etc. will be completed around the known cultural sites. Any cultural resources which were discovered as a result of, or during implementation of the project, will be protected as appropriate based on the type of site and values at risk. Post-burn inventory will be completed to determine the effectiveness of the protective measures, as well as to determine if historic properties are revealed by prescribed burning activity.

Range land Vegetation: Prescribed fire treatments within the River Ranch Allotment would receive two growing seasons of annual deferment within the Van Hemp Pasture. The Tin Can Hill and Raundall Pastures would alternate early and mid-season use while grazing would be delayed in the project area (Van Hemp Pasture) until September 1 of each year for 2011 and 2012, or two consecutive years after the project is implemented. No other modifications would be required.

Noxious Weeds: Noxious weed infestations will continue to be monitored and treated using an integrated weed management approach. New infestations will be mapped and treated either by the grazing permittee through cooperative agreements or the BLM. If noxious weeds, such as Canada thistle, become wide spread throughout the treatment area, as a result of the fire and thinning operation, the BLM will assume the primary control responsibilities and may be treated by a contracted party. The BLM will approve any chemicals used and specify applications rates. Control measures will be monitored and control applications will continue until weed eradication is achieved.

Wildlife: Prescribed burning during nesting, big game calving/fawning and active vegetation growth causes mortality and direct effects to wildlife species. After May 1 no prescribed burning would occur without the documented concurrence of the field office wildlife biologist and assigned rangeland management specialist.

Known raptor nests would be buffered for treatments.

Soils: All project associated operations shall not be performed during periods when the soil is too wet to adequately support equipment/vehicles. If such equipment/vehicles create ruts in excess of 3 inches deep, operations must cease as the soil will be deemed too wet to adequately support equipment/vehicles.

Limit prescribed burning of all areas to ensure low to low end moderate severity. Suggested prescription conditions that would promote low to moderate severity include:

Implement burning at a time of year when litter, duff, and soil moisture conditions are favorable for minimizing the loss of litter and duff and excess soil heating.

If grinding is used as a mechanical treatment, then mulch thickness shall be no greater than 7.5 cm in areas where prescribed fire will be implemented after grinding. Also, prescriptions for masticated (grinded) fuels should emphasize burning when soils are near saturation (Busse et al. 2005).

Leave 5 to 10 tons per acre of downed coarse woody material greater than 4 inches in diameter following slash reduction on all treatment areas to help re-establish soil productivity (Graham et al. 1994).

All mechanically disturbed areas will be reclaimed and stabilized using the appropriate measures. These measures may include water bars, straw wattles, mulch, seeding, etc.

Air Quality: If smoke dispersal is inadequate burning would be halted if at all possible. No burning would occur without approval from the Smoke Monitoring Unit of the Montana / Idaho state air shed group.

ALTERNATIVE 2 - NO ACTION: No prescribed fire or mechanical treatments would be implemented.

AFFECTED ENVIRONMENT:

Fire and Fuels Management: Ponderosa pine stands within the unit display a wide variety of age classes and structure with the majority of the unit falling into condition class 2 and 3. Fire regimes have been moderately to significantly altered from their historical ranges because: 1) fire return frequencies have departed from historical

frequencies by one or more intervals, 2) vegetation attributes such as stand density and structural stage have been moderately to significantly altered from their historical ranges, and 3) current fire severity includes more stand-replacement than historical reference severities. With respect to wildfire, these alterations in the landscape could result in increased fire size, intensity, and severity, which would further alter the landscape's structural diversity. Treatment will primarily be prescribed fire with any mechanical treatments consisting of actions required to prepare the unit for burning, and post fire mechanical treatments to further reduce stand densities as needed. Prescribed fire will be used to reduce fuel loadings and maintain or improve condition class by reducing areas of dense pine regeneration while preserving the mature overstory and leaving a mosaic of burned and unburned areas. Currently fuel loadings and stand condition are such that prescribed fire is likely to be an effective and efficient means of maintaining or improving condition class.

The ponderosa pine forest types in the Tin Can area have been assessed over all at CC2, and CC3 because:

- Open stands of mature and middle-aged ponderosa pine are underrepresented in the landscape whereas closed stands of the same age classes are overly abundant;
- The current average fire return interval for the forested landscape is estimated to be 25 to 30 years, whereas historic intervals should be about 15 years (Frost 2008), (Mangan 2004), (Fischer and Clayton 1983), (FRCC BpS data accessed online April 30, 2009);
- Current fire severity is estimated to replace about 20% of the forested canopy, whereas historic fire severities are estimated to have replaced about 5% of the forest canopy.

Ponderosa pine stands, which have been identified for treatment, are mostly condition class 2 and 3. Condition Class 2 stands are generally open with scattered pockets of pine saplings under the mature overstory. Adjacent to these stands the saplings have spread into sagebrush/grassland sites. Most of the trees in the understory are small enough that mechanical treatments in combination with prescribed fire would be effective in reducing stand density and rangeland encroachment with minimal risk to the mature over story while maintaining the open nature of the stand. It is far more effective to maintain areas which are in CC1 or CC2 than to wait for the stand to deteriorate further. Postponing treatments would allow the existing ponderosa pine seedlings to increase in size and density, making future treatments more difficult and expensive, while the stand characteristics continue to move toward condition class 3 with further departure from historic fire return intervals.

Densely stocked mature and middle-aged pine stands with continuous ladder fuels are overly abundant on the landscape and contribute to a CC3 condition class rating. There is typically little vegetative diversity in the understory and these stands would be susceptible to a high severity wild fire, should an ignition occur. These areas will generally require mechanical treatments in order to meet objectives and allow a controllable prescribed fire. Reducing the stand density through a combination of mechanical treatments and prescribed fire would lower the risk of high severity wildfire as well as reducing conifer encroachment of open rangelands and would provide the opportunity for increased production and diversity of forbs, shrubs, and grasses. Postponing treatments will result in a continued departure from historic fire regimes, continued accumulation of fuels and associated risk of high severity wildfire while increasing the costs and difficulty of future operations.

Cultural Resources: The Montana State Antiquities Database and the BLM's site and survey atlas identify one cultural resource inventory for federal lands within this analysis area. There have been no documented cultural resource inventories completed for the non-federal portions. Currently almost 21 % of the analysis area (1010 acres) has been inventoried for cultural resources. Cultural resource Class II inventory was completed in 2009 for the unit (Report #10-MT-060-001). Four historic (3 ineligible and 1 unevaluated) sites were identified within the area of potential effect.

Grazing Administration and Livestock Grazing: Tin Can Hill Unit B is located within the River Ranch Allotment # 15115, Blood Creek-Mary Allotment #04849, and the Lower Blood Creek Allotment #04870.
The affected grazing permits and allotments are currently permitted as follows:

GR# 2506543

Allt.#	Allt. Name	No.	Kind	Begin	End	% P.L.	Type Use	AUMs
15115	River Ranch	198	Cattle	05/01	10/31	57	Active	683

The Van Hemp Pasture which contains the proposed action is used in conjunction with the Tin Can Hill and Raundall Pasture in a three pasture, deferred rotation grazing system within the River Ranch Allotment. Permitted dates of use are between May 1 and October 31. Use is described in the in accordance with the River Ranch Allotment Management Plan 1981. In August 2005, the allotment was determined to be in conformance with Standards and Guidelines for Rangeland Health.

The Lower Blood Creek Allotment #04870 contains those portions of Camelbratten Coulee located north of the River Ranch Allotment in the northeastern portion of the project area. This allotment is issued under a base property lease and is permitted as follows:

GR# 2506397

Allt.#	Allt. Name	No.	Kind	Begin	End	% P.L.	Type Use	AUMs
04870	Lower Blood Creek	140	Cattle	05/01	12/31	79	Active	892

The Lower Blood Creek Allotment is used season-long. The allotment is not meeting Standards and Guidelines for Rangeland Health, however, this is primarily due to distribution problems which concentrate livestock along Blood Creek. Upland areas encompassing the project areas were determined to be in conformance with upland standards. The project area is located in the southwestern end of the pasture which is situated far from stock water sources and contains topography that restricts the majority of livestock use.

The northwestern portion of the project area contains the Blood Creek-Marty Allotment which is permitted as follows:

GR# 2506397

Allt.#	Allt. Name	No.	Kind	Begin	End	% P.L.	Type Use	AUMs
04849	Blood Creek Marty	547	Cattle	05/01	09/30	59	Active	217

The Blood Creek-Marty Allotment is used season-long as permitted. This allotment is also not meeting Standards and Guidelines for Rangeland Health, however, this is primarily due to distribution problems which concentrate livestock along Blood Creek. Upland areas encompassing the project areas were determined to be in conformance with upland standards. The project area is located in the southeastern end of the pasture which is situated far from stock water sources and contains topography that restricts the majority of livestock use.

Riparian/Water Resources: The proposed action is located within the Blood Creek watershed. Tin Can Hill Unit B is located within the upper reaches of an unnamed coulee and Camelbratten Coulee, which drain into Blood Creek. Camelbratten Coulee and the unnamed coulee are smaller order streams and exhibit ephemeral and interrupted conditions. Seasonal fluctuation in water availability and composition of riparian-wetland plant species is evident. Water yield in these smaller order drainages may be decreased by the increased canopy cover, patch size, and density of ponderosa pine relative to historic conditions.

Stream channel and riparian conditions on Blood Creek in the vicinity of the proposed actions are highly degraded because of livestock grazing (Ecosystem Management, 2009). Streambank vegetative condition, which is extremely important for stability given the valley type, sinuosity, and gradient of Blood Creek, is very poor. As a result, deteriorated physical function is evident with down cutting, entrenchment and large width to depth ratios present. Excessive erosion and vertical and lateral instability are contributing to water quality issues; Blood Creek is listed as a water quality impaired stream because of degraded riparian conditions by the Montana Department of Environmental Quality (MDEQ, 2010). The channel morphology that currently exists is very sensitive to changes in sediment or water yield and direct increases in stream bank disturbance.

Coniferous Forest: Ponderosa pine is the dominant overstory species within the project area. Historical stand densities (measured in basal area) ranged from 10 – 80 square feet per acre with an overall average of less than 40 square feet per acre. Currently, numerous timbered draws average upwards of 80-100 square feet with some areas approaching 160 square feet. Along forest margins and on some ridge tops, a dense ponderosa pine understory has become established under areas with scattered, large diameter overstory trees; with seedling numbers approaching 1,200 trees per acre (TPA). Due to the lack of natural fire, these ponderosa pine seedlings, coupled with increasing

amounts of Rocky Mountain juniper, are contributing to high fuel loadings and are providing ladder fuels that may result in high intensity wildfire. Additionally, in areas of dense canopy, the understory is lacking in overall vegetative diversity.

Rangeland Vegetation: The allotments are all characterized by sharply defined rough, "breaks" topography. Ponderosa pine and common juniper cover is substantial throughout the project area. Bluebunch and western wheatgrass, junegrass, threadleaf sedge, blue grama and Sandberg's bluegrass occur in the understory and open areas. Green needlegrass has been identified as a key species of primary range in the majority of these ecological sites. Rubber rabbitbrush, big sagebrush, skunkbrush sumac, chokecherry, yucca, western snowberry, and broom snakeweed are common shrubs. Western yarrow, aster spp., scarlet globemallow, white penstemon, American vetch, fringed sagewort, hood's phlox, dandelion and goatsbeard are forbs known in the vicinity. There are no documented BLM sensitive plant species within or near the project area. Double bladderpod and dwarf woolly-heads are known in Petroleum County. Double bladderpod is limited to sparsely vegetated, steep, eroding, south-facing slopes of highly dissected breaklands. Substrate parent materials include sandstone and shale. These habitat requirements exist within the affected area. Associate species are also known within the area. Japanese brome is persistent throughout the area.

Noxious weeds: Russian knapweed, Leafy spurge Canada thistle and Houndstongue are known to occur in the area, with Russian knapweed and Canada thistle identified and mapped in the proposed treatment area. No other noxious weeds have been identified, but may occur.

VRM: The project area is located in Class III and IV visual resource management areas which allow for moderate contrasts to the environment that are subordinate to the existing landscape.

Recreation: The project area is a fairly large block of public land with county road access, and is adjacent to a popular Block Management Area that allows public access on private lands. The area is used by the public for hunting, primarily during the spring turkey season and the fall big game seasons. Dispersed camping does occur.

Lands with Wilderness Characteristics:
FLPMA directed the BLM to manage the public lands and their resources under principles of multiple use and sustained yield. Wilderness is one of the multiple use values. Section 2(c) of the Wilderness Act of 1964 requires that in order to be considered to have wilderness characteristics, an area must meet all of the following criteria:

(1) "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable"; commonly referred to as naturalness.
(2) "has outstanding opportunities for solitude or a primitive and unconfined type of recreation;"
(3) "has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition;"

The Tin Can Hill project area is located within two contiguous blocks of BLM Lands, each being greater than 5000 acres based on the current transportation network which has not been updated. However these areas clearly lack naturalness criterion set forth in the BLM manual 6301 due to extensive surface disturbances (BLM Manual 6303, 2011). For example: Three grazing allotments exist within this area, for purposes of livestock management, the BLM and permittees have constructed several dams, water savers and pipelines with stock tanks. In conjunction with the constructed watering facilities associated with range improvement projects, came mechanically constructed roads for building, accessing, and maintaining these sites. Many of these disturbances are visible via satellite imagery, showing substantially noticeable human impacts (BLM Manual 6301, 2011). Therefore, the area clearly lacks wilderness characteristics and a Wilderness Inventory is not required.

Wildlife:
Wildlife - General:
Wildlife species within the project area include species typically associated with the Missouri River Breaks habitat. Mule deer, elk, raptors, furbearers, reptiles and amphibians are common throughout the analysis area. The entire project area is within mapped elk and mule deer winter range and along the eastern boundary of antelope range (MFWP 2008). A northern goshawk was detected during call surveys in August, 2010, but no nest was located.

Suitable goshawk nesting habitat occurs within the project area. A greater short horned lizard was also observed near the southwestern boundary of the project.

Threatened, Endangered, Candidate, and Species Proposed for Listing:
There are no threatened or endangered wildlife species present in the area of the proposed action. There is no designated critical habitat for any species within the project area. Greater sage-grouse and Sprague's pipit are both candidate species, with small amounts of potential habitat within the project area. Mountain plover is proposed for listing and could also occur in the project area. Appendix 4 contains the TES species that may occur in the project area and rationale for excluding remaining TES species from further analysis.

BLM Montana Designated Sensitive Species:
Great Plains toad, northern leopard frog, Plains spadefoot, greater short-horned lizard, milk snake, Baird's sparrow, bald eagle, Brewer's sparrow, chestnut-collared longspur, Dickcissel, Ferruginous hawk, greater sage-grouse, loggerhead shrike, long-billed curlew, marbled godwit, McCown's longspur, mountain plover, sage thrasher, Sprague's pipit, Swainson's hawk, three-toed woodpecker, Northern goshawk, golden eagle, fringed, long-legged and long-eared myotis and Townsends big-eared bats all have potential habitat within the project area. Presence is assumed in the absence of adequate surveys.

Soils: Soils were identified from the Natural Resources Conservation Service's (NRCS) Soil Survey Geographic (SSURGO) dataset and the Soil Data Mart (SDM) website (http://soildatamart. nrcs.usda.gov/). Soil surveys were performed by the NRCS according to National Cooperative Soil Survey (NCSS) standards. Pertinent information for review and analysis is from the SDM and the National Soils Information System (NASIS) database for the area.

Soils developed from sedimentary residuum parent material. Soil depths range from shallow (10 to 20 inches) to very deep (>60 inches). Water erosion hazard, mostly dependent on slope and erodibility factor, ranges from slight to severe. The potential for damage to the soils by fire ranges from low to high; dependent on texture, slope, surface depth, and rock fragments. There are areas of exposed bedrock.

The primary soil map units the proposed action would occur on are the: Cabbart loam, 8 to 15 percent slopes; Cabbart-Delpoint loams, 4 to 15 percent slopes; Cabbart-Delpoint-Cabbart, moist, loams, 4 to 35 percent slopes; Cabbart-Yawdim-Rock outcrop complex, 4 to 35 percent slopes; Cabbart, moist-Blackhall-Delpoint complex, 6 to 60 percent slopes; and, Delpoint-Cabbart-Yamac loams, 4 to 15 percent slopes.

Appendix 2 provides a description of the major soils that occur in an SMU. Descriptions of non-soil (miscellaneous areas) and minor SMU components are not included.

Air Quality: Air quality in the area is generally considered good to excellent, meeting air quality standards set forth by the Clean Air Act. The project area is within a class II airshed. Spring and fall typically have atmospheric conditions that are favorable for smoke/particulate dispersal. The area is sparsely populated with few smoke receptors. Lightly travelled county roads can be found within the project area.

Climate: Ongoing scientific research has identified the potential impacts of anthropogenic "greenhouse gas" (GHG) emissions and their effects on global climatic conditions. These anthropogenic GHGs include carbon dioxide; methane; nitrous oxide; and several trace gases, as identified by the Intergovernmental Panel on Climate Change (IPCC). The general consensus is that as GHG emissions continue to rise, average global temperatures and sea levels will raise, precipitation patterns will change, and climatic trends will change and influence earth's natural resources in a variety of ways.

Montana's GHG emissions were recently updated and a forecast was made of expected emissions through 2020 (Montana DEQ 2007). The inventory indicates that Montana's electricity generation, heating needs, commerce, agriculture practices, and transportation needs accounted for 0.6% of the GHG emissions in the United States in 2005, or about 37 million metric tons of gross consumption-based carbon dioxide equivalents. The state's forests, cropland, and rangeland provide a vast terrestrial carbon sink that helps balance the state's emissions; however, a 14% increase in GHG emissions from 1990 to 2005 moved Montana from a net carbon sink to a net carbon emitter.

ENVIRONMENTAL CONSEQUENCES

ALTERNATIVE 1- PROPOSED ACTION

Fire and Fuels Management: The fire regime/condition class of conifer stands and adjacent sagebrush/grasslands would improve with treatment, which would move parts of the landscape toward historic vegetation patterns and fire severity. Reduced fuel loadings and arrangement would lower the risk of high severity wildfire and improve fire fighter and public safety. Maintaining areas of CC1 or CC2 will be more efficient and effective than allowing continued departure from historic fire regimes.

Cultural Resources: Vegetation treatment projects have the potential to affect historic properties. Prehistoric sites can have their setting modified, subsurface artifacts can suffer from compaction, surface artifacts can be broken, displaced, and be affected by intense heat (cracking, spalling, discoloration). Historic sites, particularly wooden buildings and associated features, can be lost during firing activities. To prevent such effects from occurring, cultural resource inventories of the analysis area have been initiated, and will continue in a phased approach through the life of the project.

The proposed action includes completing cultural resource inventories: to define the area of potential effect (APE), to identify cultural resources within the APE, to determine which cultural resources are eligible for listing in the National Register of Historic Places (NRHP), and to assist in redesigning the project if the protection of eligible historic properties warrants such action. In 2009 the BLM contracted the completion of a Class II cultural resource inventory within the analysis area. 1,010 acres received intensive inventory, resulting in the documentation of four historic sites and two historic isolates. Three of the sites (a homestead, a stone wall, and historic graffiti) were determined ineligible for listing on the National Register of Historic Places. A dam has yet to have its eligibility determined, so it will be avoided by project–related activities. This site type is not susceptible to effects from prescribed burning activity. Based on the inventory results and eligibility determinations, no historic properties will be affected by this undertaking.

Grazing Administration and Livestock Grazing: Prescribed fire treatments would receive annual deferment within the River Ranch Allotment. Turnout would be delayed in the Van Hemp Pasture until after September 1 for two years. The grazing treatment may potentially require that the existing grazing schedule and/or permit date to be extended to accommodate this treatment. Flexibility within the existing AMP authorizes an extension of two weeks after the permit date. No additional extension of the permit date would be needed.

Rest to light use would occur on the Blood Creek-Marty and Lower Blood Creek Allotments due to livestock distribution patterns. The proposed action would be consistent with management objectives for these allotments. Some short-term flush in vegetative production could result causing livestock to select burned sites which would result in less concentration of livestock in the riparian zone. Any shift in distribution away from bottomlands would be beneficial for rangeland health. However, estimated positive benefits would be minimal to neutral depending on the degree to which livestock select for these sites. There is not water present in the uplands to support significant changes in use patterns regardless of treatment.

Riparian/Water Resources: The potential would exist for increases in runoff and sediment following implementation of the prescribed burn. Increases would be small, temporary, and cease following revegetation. Hydrologic response from the decrease in canopy cover and density of trees following implementation of the proposed action would have the potential for a small positive effect on the rehabilitation of riparian processes of small order drainages within the project area. Increases in groundwater and relative abundance of wetland indicators were evident following prescribed burning in other areas of the Missouri River Breaks in central Montana (Marlow et al., 2006). Removal of tree canopy cover would not help with rehabilitating degraded riparian conditions on larger streams such as Blood Creek. Minor increases in sediment would not affect the water quality impaired status of Blood Creek because the cause and source of impairment are alteration in stream-side or littoral vegetative covers because of grazing in riparian or shoreline zones as opposed to excess sediment.

The removal of conifer encroachment and decrease in canopy coverage of trees may lead to a slight increase of water availability in small order drainages as less water would be lost to interception and evapotranspiration.

Degraded stream channel conditions would continue to exist on Blood Creek although livestock distribution may improve as a result of the proposed action. Studies by Fuhlendorf and Engle (2001 and 2004) found a strong preference for burned areas by grazing ungulates. This may lead to a small improvement in riparian and stream channel conditions on Blood Creek as livestock are drawn away from streamside zones.

Coniferous Forest: Conifer densities would be reduced to levels within the historical range of variation using appropriate silvicultural prescriptions (see appendix 3). The proposed vegetation treatments and subsequent maintenance actions will also mimic the stand improvement effects of the natural fire cycle and promote a more fire tolerant forest consisting of open stands of mature ponderosa pine. Forest health would also improve by decreasing overall stand densities creating a more vigorous forest which will be less susceptible to future insect and disease problems. Conifers that are expanding onto ridge tops and rangeland areas would be eliminated or slowed, thus decreasing fuel loadings and the potential for high intensity wildfire. Open pine stands with mature trees would be maintained, and the overall reduction in conifer density and canopy continuity would provide the opportunity for increased production and diversity of shrubs, forbs, and grasses within the understory.

Rangeland Vegetation: Conifer expansion along forest margins would be reduced. Reductions in forest canopy would promote growth of bunchgrasses, forbs and deciduous shrubs, particularly skunk brush sumac. There may be an increase in the abundance and diversity of shrubs, forbs, and grasses. Annual grasses such as Japanese brome could increase significantly in the short term depending on results of the burn and post-burn environmental conditions such as rainfall and timing of rain events. These short-term consequences would be expected to diminish over time as late seral species re-establish, in addition a low to moderate intensity prescribed fire will minimize the amount of bare mineral soil which is exposed and limit the potential for the establishment of undesirable species. Recent prescribed fire in the Tin Can Hill vicinity with similar post-burn grazing treatments did not exhibit increases in Japanese brome or other invasive and noxious weeds.

Noxious weeds: Noxious weeds are expected to increase as a result of this treatment. After treatment, the infested areas will be surveyed and mapped to establish a post treatment base line. This base line will be used to evaluate weed expansion and treatments. The burn area will be monitored for new infestations by the Resources and Fuels staff and treated when new infestations are found. Noxious weeds will be treated using an integrated control approach with chemical, biological or mechanical methods, approved by the BLM, at appropriate rates.

VRM: Any negative impacts would be of short duration. Reduction in conifer density and increases in herbaceous cover may actually improve the appearance of the project area in the long term.

Recreation: Any negative impacts would be temporary and would likely be offset by the long-term benefits. Hunting is the primary recreational use within the project area and may be disrupted during operations. However, long-term benefits to forest and rangeland health may improve wildlife habitat and make the area more attractive to wildlife species such as turkey, deer, and elk. Improved wildlife habitat may increase opportunities for hunting and wildlife viewing in the future.

Wildlife: Threatened, Endangered, Candidate, and Species Proposed for Listing, BLM Designated Sensitive Species, and Migratory Birds:

Objectives for the prescribed burn are to reduce ponderosa pine understory and regeneration, while maintaining most overstory trees. The prescribed burn would reduce competition for the remaining ponderosa pine, increasing growth rate and vigor. Reduced canopy cover and needle cast would also increase herbaceous vegetation production (until the canopy begins to close again (15-20 years)) and nutrition (approximately 3 years). Wyoming sagebrush would not be targeted for treatment, but small acreages (<20 acres) could be consumed incidentally adjacent to ponderosa pine treatments. Silver sagebrush occurs adjacent to forested habitat in many of the drainages and unlike Wyoming sagebrush, responds favorably to disturbance.

Elk populations in the Missouri River Breaks Elk Management Unit are approximately 7,750 elk, above the objective of 4,725 (MFWP 2004). The objective of the project is not to increase the elk population, but would help meet the state's habitat objective to "promote conservation and improvement of habitats that support the state's elk populations".

Resident wildlife species would be displaced short-term during implementation until suitable habitat establishes. Similar habitats exist in immediate proximity to the project area that will remain unburned following the project and the outlying areas contain a larger amount of similar habitats. Only approximately 3,000 to 4,000 acres are prescribed burned annually in the Malta and Lewistown Field Offices and UMRBNM, so species preferring habitat conditions that exist currently would still have the opportunity to select those habitats. Additionally, all areas within the project area would not be treated; unburned pockets would remain and the targeted areas only cover ~50 -70% of the forested areas. Mortality could result from treatment activities, especially if burns are initiated later in the spring when migratory birds begin returning to breeding habitat. Given the significant decline in some grassland bird species over the last 40 years, treatments should not occur during the breeding season. These detrimental impacts would be short-term and would be mitigated by the long-term benefits to the species using the habitat and species drawn to the habitat created by prescribed fire.

BLM Designated Sensitive Species:
Birds and bats would be temporarily displaced during spring burning operations and for that year's nesting season. There may be mortality of less mobile individuals. These are short-term impacts and will not affect the populations of any species. The detrimental impacts would be mitigated by the long-term benefits to the species using the habitat and species drawn to the habitat created by the prescribed fires (remaining snags). Some greater short-horned lizard individuals would be subject to loss during burning operations if the fire were to burn into sagebrush/grassland plant communities. Losses could also occur from incidental mortality from vehicle use during follow-up monitoring. These short-term impacts would not affect the stability of the local population for this species. The proposed action would remove and open up more of the timber habitat providing minor increases in habitat for this species. The impacts from the proposed project would not affect the state or regional populations of any of these species or contribute to the need for listing under the Endangered Species Act.

Migratory Birds: Excerpt from Saab et. al 2007
The effect of fire on birds can be beneficial, neutral, mixed, or adverse depending on the species, length of time since fire, and burn severity. Generalizing the effect of fire on birds in western forests is challenging: short-term responses may differ from long-term responses, responses by resident bird species may differ from migratory species, and effects observed at the stand scale may differ from those at the regional or landscape scale. Also, fire that benefits one species may harm another. Ultimately, managing for particular fire conditions—including wildland fire, prescribed fire, or fire exclusion—entails ecological tradeoffs among selected wildlife species and habitats. In the combined study areas (NW and SW), all but one of the eight resident species had a positive or neutral response to burning treatments. The one exception, the pygmy nuthatch (in the SW study area), showed a negative response the year of burning, but showed a neutral response the following year. Migrants showed mixed responses. Some, like western bluebirds, experienced positive changes in density, whereas others, such as yellow-rumped warblers, showed declines in response to fire treatments. Overall, at both study sites, a greater percentage of birds, both migrants and residents, showed some decline during the same year as the fire, but were back to prefire abundances (i.e., neutral to prescribed burns) 1 year after the fire. These preliminary results suggest that the effects of prescribed fire on birds may be short term. However, monitoring for additional years after treatments is needed to fully address this issue of short-term losses for long-term gains (Saab et al. 2006b). This is particularly important because we also observed several migratory species that showed no response during the year of prescribed fire, but showed a decline in the year after treatment. These were the gray flycatcher (in the SW), and the red-breasted nuthatch and Townsend's solitaire (in the NW).

Figure 6—Example of bird species associated with burn severity in dry coniferous forests of the interior Western United States (photos by Evelyn Bull, Catherine Raley, and Charlie Chrisafulli).

Table 1—Preliminary results for species population density responses to prescribed fire at the Birds and Burns Network northwest sites

Species	Year of burning	One year after burning	Guild		
			Foraging	Nest layer	Nest type
Migrant					
Northern flicker (short-distance migrant)	+	0	OM	CA	C
Hammond's flycatcher	-	-	AI	CA	O
Gray flycatcher	0	+	AI	SH	O
Dusky flycatcher	+	+	AI	SH	O
Cassin's vireo	0	0	FI	CA	O
Red-breasted nuthatch	0	-	BI	CA	C
Western bluebird	+	0	AI	CA	C
Townsend's solitaire	0	-	AI	GR	O
American robin	+	0	GI	CA	O
Yellow-rumped warbler	-	-	FI	CA	O
Western tanager	0	0	FI	CA	O
Chipping sparrow	0	0	OM	SH	O
Dark-eyed junco	0	0	OM	GR	O
Brown-headed cowbird (short-distance migrant)	+	0	OM	Various	P
Cassin's finch	0	0	OM	CA	O
Pine siskin	-	0	OM	CA	O
Resident					
Hairy woodpecker	0	+	BI	CA	C
Mountain chickadee	0	0	FI	CA	C
White-breasted nuthatch	+	0	BI	CA	C

Note: Statistically significant changes in population densities are indicated by the signs + (positive) or – (negative). All zeros indicate no statistical change in population densities from pre- to posttreatment. Columns represent foraging guild (AI = aerial insectivore, GI = ground insectivore, FI = foliage insectivore, OM = omnivore, BI = bark insectivore), nest layer (CA = canopy, SH = shrub, GR = ground), and nest type (C = closed, O = open, P = parasitic). Species are listed in taxonomic order, an order that reflects the evolutionary relationships among birds.

Soils: Prescribed fire and mechanical treatment would expose mineral soil and have the potential to alter physical, chemical and biological soil properties; disrupt nutrient cycles; displace soil; and, compact and rut soil. These actions impact overall soil quality. Exposed and/or compacted soils would be susceptible to erosion. Soil compaction and erosion can impact soil quality by reducing water infiltration/permeability; reducing the exchange of gases; reducing or eliminating the most productive and highly biologically active layer of soil and limiting plant growth and health. Implementing and adhering to the Water Quality BMPs for Montana Forests (MSU Extension, 2001) would mitigate the amount of soil disturbances, the potential for prolonged compaction and erosion, and long-term effects to soil quality. In time, organic matter would gradually re-accumulate from litter, woody debris, forbs, and grasses. Nutrients would gradually accumulate due to inputs (in precipitation, dry deposition, weathering of parent material, and nitrogen fixation) and retention. Erosion would return to natural rates overtime as vegetation re-establishes.

Prescribed fire has not only physical effects on soils, but also chemical and biological effects (Hungerford et al. 1991). Physical changes include reduction in soil cover, loss of duff and litter layers, loss of organic matter from mineral soil, and erosion. These changes influence texture, bulk density, and porosity of soils. Chemical changes occur as nutrients are volatilized (nitrogen, phosphorus, and sulfur), ashed, and redistributed. Some nutrients are lost or reformed, pH is changed (typically increased due to ash), cation exchange capacity is changed (generally the greater the heating, the greater the chances of ion deficiencies), and displaced hydrocarbons may coat soil particles causing water repellency. Biological effects include microorganism population increases or decreases (typically a decrease due to heating, loss of moisture, and reduced gas exchange followed by an increase attributed to an improved environment with respect to soil physical characteristics over time) and changes in activity which can influence nutrient cycling. Generally, the greater the burn severity the greater the negative effects to soils. Low intensity burning, as proposed, may cause short-term increases in the availability of plant nutrients, reduction in disease or pathogens, and thinning of over-crowded stands of trees, all of which can promote healthy systems (Neary et al. 1999).

Hatchett et al. (2006) found that mechanical mastication (grinding) to be an effective thinning treatment for overstocked forests with few discernable negative effects on soil compaction and increased erosion. The same researchers' results suggest that erosion is slight to insignificant following mastication, provided that a layer of woodchip mulch is left on the forest floor and the mastication equipment is operated in an environmentally effective manner. Busse et al. (2005) found that soil temperatures can surpass the biologically lethal threshold of 60 degrees Celsius if masticated residues burn. Mulch depths of 7.5 cm or greater are generally required to generate peak temperatures above 60 degrees Celsius at 10-cm soil depth (Busse et al. 2005); therefore, mulch thickness shall be no deeper than 7.5 cm. in areas where prescribed fire would be implemented after grinding.

Air Quality: Due to light fuels and the small size of the project area, combined with a lack of receptors in the area, any negative impacts to air quality or visibility are expected to be minor and of short duration. Although emissions such as fine particulate matter and carbon monoxide may be released by the prescribed fire, these emissions would likely be less than that of a wildfire and would help to prevent large releases of these pollutants during future wildfires.

Climate: Potential impacts to natural resources due to climate change are likely to be varied. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased windblown dust from drier and less stable soils. Cool season plant species' ranges could potentially move north and due to the potential loss of habitat, or from competition from other species whose ranges shift northward, the population of some animal species could change. While many existing climate prediction models are global or regional in nature, the lack of scientific tools designed to predict climate change on local scales limits the ability to project potential future impacts of climate change on the specific area for this project. It is not possible to predict with any certainty site-specific effects on climate change relative to the proposed action.

Increased forest health as a result of the proposed action may result in a greater capacity to absorb greenhouse gases such as carbon dioxide over the long term. According to the National Center for Atmospheric Research (2010), prescribed fires may help reduce the U.S. carbon footprint. Prescribed fires generally burn underbrush and smaller trees, which give off substantially less emissions than stand-replacing, high-intensity wildfires. Furthermore, large trees that sequester a significant amount of carbon are left.

ALTERNATIVE 2 - NO ACTION-

Fire and Fuels Management: The fire regime / condition class of conifer stands will continue to decline due to increasingly long fire return intervals and departure from historic conditions. Conifer encroachment of rangelands would continue and dense stands of ponderosa pine would remain at risk of high severity wildfire in the event an ignition occurs. As more CC2 stands move towards CC3, treatment costs would increase

Cultural Resources: Under current management (No Action alternative), the condition of cultural sites that may be present would remain static to slightly deteriorating. No further inventory would be done in the area unless other undertakings are proposed.

Grazing Administration and Livestock Grazing: There would be no changes in grazing administration.

Riparian/Water Resources: No immediate increases in the quantity of runoff and sediment would occur. Wildfire burning through larger fuel loads would have greater burn intensity. This would lead to a temporary larger increase in runoff and sediment than a lower intensity prescribed burn.

Coniferous Forest: Multistoried stands would continue to develop across the project area, increasing the possibility of a stand-replacing wildfire while large patches of stagnant, co-dominant trees will continue to be highly susceptible to insects and disease. Rangelands would continue to be impacted as increased conifer encroachment continues to shift existing plant communities to late seral stages, which typically limits the amount of grasses and forbs and overall vegetative diversity.

Rangeland Vegetation: Conifer encroachment of rangelands would continue under the No Action alternative. Production of forbs and shrubs would remain the same or may decrease in the long-term.

Noxious weeds: The No Action alternative would have no effect on noxious weeds. Any noxious weeds identified within the treatment area will be treated by the grazing permitees through the use of cooperative agreements. An integrated control approach using chemical, biological and mechanical methods will be utilized when applicable. Chemicals applied to noxious weeds will be approved by the BLM and at rates approved for public land.

VRM: Implementation of the No Action alternative would have no effect on VRM resources within the project area.

Recreation: Implementation of the No Action alternative would have no effect on recreational resources within the project area.

Wildlife: Dense, multistoried ponderosa pine stands would continue to develop across the project area and continue to provide habitat for the suite of wildlife species that utilize these habitats. These conditions would persist until some disturbance takes place. Fire suppression is expected if a wildfire occurs. No drastic change in condition is predicted in the foreseeable future in the absence of the proposed actions. Large wildfires have occurred in the vicinity, with the most recent being the Raven-Rat-Patch fire in 2010 that burned approximately 30,000 acres along the CMR wildlife refuge and Lewistown FO.

Soils: Prescribed fire and mechanical treatment would not occur; therefore, effects described above in Alternative 1 would not occur. If the proposed units and surrounding areas were to be burned by wildfire in the future, a mix of burn severities would be anticipated depending on topography, fuels and climatic conditions. High and moderate soil burn severities would likely result where there is heavy fuel buildup. This would result in an increased amount of bare soil, accelerated erosion, slow recovery of effective vegetative cover and loss of soil nutrients and soil microbes. Areas of low soil burn severity may benefit from a short term release of nutrients available to plant growth and a change in the types and amounts of vegetation.

Air Quality: The No Action Alternative would have no impact on air quality.

Climate: Healthy forests act as a carbon sink. Under the No Action alternative forest health is likely to decline, resulting in reduced capacity to absorb greenhouse gases such as carbon dioxide from the atmosphere in the event of

a stand-replacing wildfire. "When trees burn down or die, much of that carbon is returned to the atmosphere. It can take decades for forest regrowth to sequester the amount of carbon emitted in a single fire" (National Center for Atmospheric Research, 2010).

CUMULATIVE IMPACTS:

Historically the project area was likely open short grass prairie and sagebrush rangelands with some areas of ponderosa pine savannah or woodland (condition class 1). Open pine stands would have been maintained by naturally occurring wildfires and pine encroachment of rangelands would have been minimal. Increasing density of pine stands and percent conifer cover is likely a result of fire exclusion and past management practices.

Implementation of the proposed action would reduce fuel loadings and improve or maintain condition class of conifer stands. Existing pine savannah would be maintained and pine encroachment of open rangelands would be reduced. Reduced fuel loading would result in a lowered risk of high severity wildfire. As forest/rangeland health improves there would be an increase in vegetative diversity and production of shrubs, forbs, and grasses which may initially result in increased use from wildlife such as elk and mule deer. As additional projects are completed in the area resulting improvements in herbaceous cover and composition over a larger portion of the landscape could potentially spread out the grazing pressure from wildlife. Noxious weed infestations have the potential to expand throughout the past, current and future prescribed burn areas through ground and vegetative disturbance. Monitoring for new infestations and applying appropriate treatments as described in the proposed action will minimize the cumulative impacts of noxious weeds. An increase in soil nutrients as short term result from low to moderately intense fires may cause increased production of noxious weeds within the project areas.

Water and riparian resources within the project area have been affected by man's fire suppression efforts, which have allowed for an increase in canopy cover and density of conifers. These trees affect water yield by increasing interception loss and evapotranspiration. As a result, less water is available for overland flow and infiltration. Water developments within the area also trap overland flow that would normally reach stream channels. Overall, the streams in the project area are in good to excellent condition (Ecosystem Management, 2009); however, the stream channel conditions in lower Blood Creek are poor because of intense livestock grazing. The proposed project would lead to a small, positive impact on water and riparian resources by decreasing the canopy cover and density of conifers, thereby increasing water availability for smaller order drainages and drawing some livestock from streamside zones.

CONSULTATION/COORDINATION: Permittee/authorized representative, base property owner.

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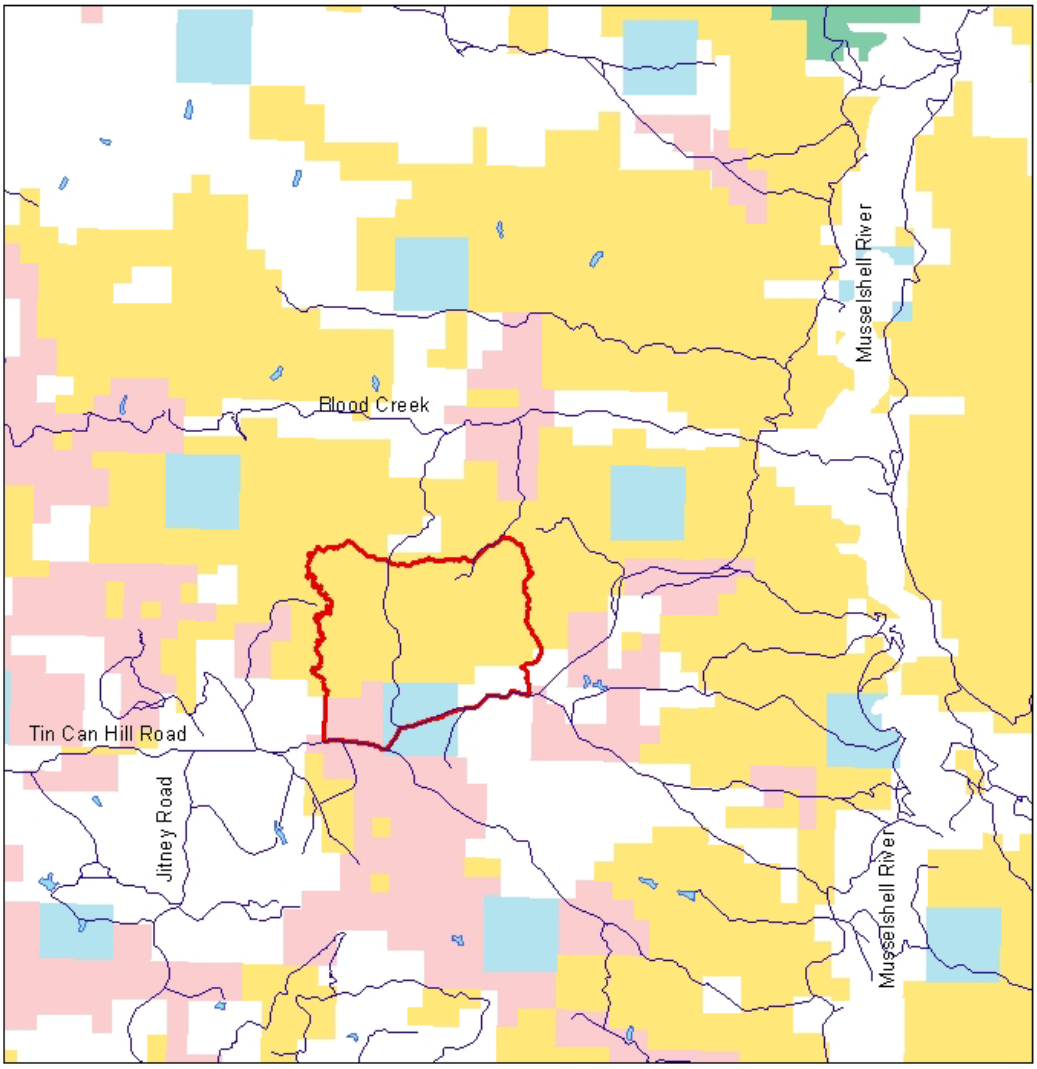
Appendix 1

Tin Can Hill Unit B Vicinity



Legend

- Unit_B_Burn
- Bankhead-Jones Land Use Lands (BLM)
- Bureau of Land Management (BLM)
- Private Lands
- State Lands
- USFW Service Wilderness Area

0 1.25 2.5 5 Miles

1:125,000

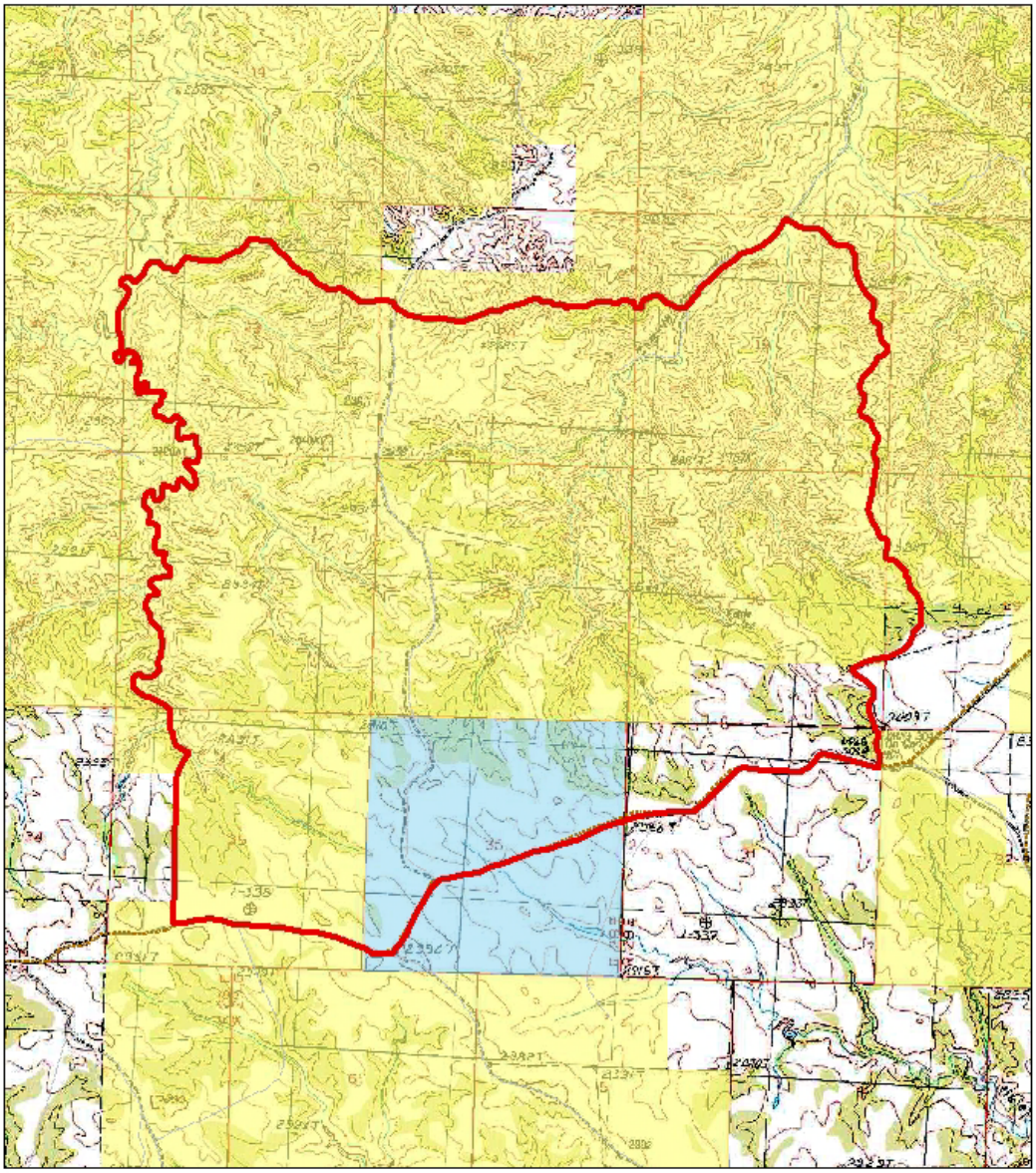
N

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MONTANA/DAKOTAS STATE OFFICE

No warranty is made by the BLM as to the accuracy, reliability or completeness of this data for individual use or aggregate use with other data

Appendix 1

Tin Can Unit B 4065 acres



Legend

Unit_B_Burn

ownclass

State Government

USDI Bureau of Land Management

0 0.25 0.5 1 Miles

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MONTANA/DAKOTAS STATE OFFICE

No warranty is made by the BLM as to the accuracy reliability or completeness of this data for individual use or aggregate use with other data.

Soils

Map unit: 14 - Cabbart loam, 8 to 15 percent slopes

The Cabbart component makes up 90 percent of the map unit. Slopes are 8 to 15 percent. This component is on hills, plains. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC057MT Shallow (sw) 11-14" P.z. ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 16 - Cabbart-Delpoint loams, 4 to 15 percent slopes

The Cabbart component makes up 50 percent of the map unit. Slopes are 8 to 15 percent. This component is on hills, plains. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC057MT Shallow (sw) 11-14" P.z. ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

The Delpoint component makes up 40 percent of the map unit. Slopes are 4 to 8 percent. This component is on hills, plains. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC040MT Silty (si) 11-14" P.z. ecological site. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 17 - Cabbart-Delpoint-Cabbart, moist, loams, 4 to 35 percent slopes

The Cabbart component makes up 35 percent of the map unit. Slopes are 4 to 35 percent. This component is on plains, hills. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC057MT Shallow (sw) 11-14" P.z. ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

The Delpoint component makes up 30 percent of the map unit. Slopes are 4 to 15 percent. This component is on plains, hills. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC040MT Silty (si) 11-14" P.z. ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

The Cabbart moist component makes up 20 percent of the map unit. Slopes are 4 to 35 percent. This component is on hills, plains. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 21 - Cabbart-Yawdim-Rock outcrop complex, 4 to 35 percent slopes

The Cabbart component makes up 45 percent of the map unit. Slopes are 4 to 35 percent. This component is on hills, plains. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC057MT Shallow (sw) 11-14" P.z. ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

The Yawdim component makes up 25 percent of the map unit. Slopes are 4 to 35 percent. This component is on hills, plains. The parent material consists of residuum weathered from shale. Depth to a root restrictive layer, bedrock (paralithic), is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R058AC059MT Shallow Clay (swc) 11-14" P.z. ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

The Rock outcrop is a miscellaneous area.

Map unit: 23 - Cabbart, moist-Blackhall-Delpoint complex, 6 to 60 percent slopes

The Cabbart component makes up 40 percent of the map unit. Slopes are 15 to 60 percent. This component is on plains, hills. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface.

The Blackhall component makes up 25 percent of the map unit. Slopes are 6 to 60 percent. This component is on plains, hills. The parent material consists of residuum weathered from sandstone. Depth to a root restrictive layer, bedrock (paralithic), is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC057MT Shallow (sw) 11-14" P.z. ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

The Delpoint component makes up 20 percent of the map unit. Slopes are 6 to 15 percent. This component is on hills, plains. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC040MT Silty (si) 11-14" P.z. ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 32 - Delpoint-Cabbart-Yamac loams, 4 to 15 percent slopes

The Delpoint component makes up 50 percent of the map unit. Slopes are 4 to 15 percent. This component is on plains, hills. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC040MT Silty (si) 11-14" P.z. ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

The Cabbart component makes up 25 percent of the map unit. Slopes are 8 to 15 percent. This component is on hills, plains. The parent material consists of residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock (paralithic), is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC057MT Shallow (sw) 11-14" P.z. ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil

surface.

The Yamac component makes up 15 percent of the map unit. Slopes are 4 to 8 percent. This component is on fans, terraces, plains. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R058AC040MT Silty (si) 11-14" P.z. ecological site. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Appendix 3

Forest Resources

DATE: 10 / 1 / 2010 PREPARED BY: R. Byron

SILVICULTURAL PRESCRIPTION

TWP 17N RNG **28E** **SEC** **Multiple** **FORVIS OR STAND #** Unit B **FIELD OFFICE** Lewistown

AVG ELEV. & RANGE 2,800-3,000 ft. **ASPECT** Varied **SLOPE (AVERAGE) 25%**

HABITAT TYPE PIPO/AGSP and PIPO/JUSC **ACRES** 4,828 **PRODUCTIVITY** Low

PRIMARY OBJECTIVE Forest Health

SECONDARY OBJECTIVE(S) Wildlife Habitat Enhancement

DESCRIPTION OF EXISTING STAND:

The unit consists of overstocked stands of ponderosa pine with stocking levels currently approaching 120 square feet of basal area per acre in some areas. There are scattered clumps and single tree remnants ranging in size from 16" to 20" DBH along with stands of 6" + DBH co-dominants. Extremely dense (in some cases over 3,500 TPA) pockets of advanced ponderosa pine regeneration can also be found throughout the unit due to recent fire exclusion.

CONSTRAINTS TO MEETING OBJECTIVES:
The rugged terrain will make ignition operations difficult and expensive. Additionally, if mechanized equipment is needed, the rugged terrain will make equipment operation difficult.

TARGET STAND: STRUCTURE **Multi**-aged **% SPP MIX** 60 10"+DBH; 30 6"+DBH; 10% advanced regeneration 1-3" DBH

DESIRED STOCKING LEVELS: BASAL AREA 20-40 square feet

DESCRIPTION OF TARGET STAND:
The unit would consist of timbered draws with open ridges having a few, large ponderosa pine. A majority of the trees would be greater than 10" DBH and resistant to fire mortality. Basal areas ranging from 20-40 square feet will allow for the establishment of grasses and shrubs in the understory. Leave trees will have a mix of 3 age classes and should occur as scattered clumps and groups; along with single trees with varied spacing between individual trees and/or groups and clumps of trees.

CONSTRAINTS TO MEETING TARGETS:
Once target stand is achieved, natural fire and or man-made disturbances should occur on a 15-30 year rotation to avoid future overstocking and to maintain open, mature stand of ponderosa pine.

PRESCRIBED TREATMENT:
Once the prescribed fire treatment has been evaluated, possible mechanical treatments would include hand thinning, and or grinding, utilizing a rubber tracked bob cat in order to reduce ponderosa pine regeneration. These pockets will be treated using a "thin from below" prescription in which trees less than 4" DBH will be removed. This will create a more open, fire-resistant stand by removing ladder fuels and will improve overall forest health by reducing stand densities. Mechanical treatments will be limited to slopes less than 40% and halted when ruts greater than 3" occur.

CONSTRAINTS TO IMPLEMENTING TREATMENTS:

If prescribed fire does not completely meet stocking level objectives, the rugged terrain and equipment constraints may leave large areas essentially untreated.

Appendix 4

Threatened, endangered, candidate/proposed, and BLM sensitive wildlife and fish species with the potential to occur within the Analysis Area on the Lewistown Field Office (FO). NOTE: The U.S. Fish and Wildlife Service species list (US Fish and Wildlife Service 2010), Montana and Dakotas sensitive species list (BLM 2009) were reviewed.

[1]**Status Codes**: **E**=federally listed endangered; **T**=federally listed threatened; **C**=federally proposed/candidate for listing; and **S**=BLM sensitive

[2]**Exclusion Rationale Codes**: **ODR**=outside known distributional range of the species; **HAB**=no habitat present in Analysis Area; **SEA**=species not present/affected during season.

Species Common and Scientific Name	Status[1]	Potential to Occur?	Rationale for Exclusion[2]	Brief Habitat Description and Range in Montana
INVERTEBRATES				
Dakota skipper *Hesperia dacotae*	S		ODR	Native tallgrass prairie in Eastern Dakotas
FISH				
Arctic grayling *Thymallus arcticus montananus*	S		ODR	small, cold, clear lakes with tributaries suitable for spawning. They do not coexist well with other fishes except cutthroat trout and others with which they evolved. Sun River along Rocky Mtn. Front.
Bull trout *Salvelinus confluentus*	T		ODR	Sub-adult and adult fluvial bull trout reside in larger streams and rivers and spawn in smaller tributary streams, whereas adfluvial bull trout reside in lakes and spawn in tributaries. They spawn in headwater streams with clear gravel or rubble bottom
Northern redbelly dace x Finescale dace *Phoxinus eos x Phoxinus neogaeus*	S		HAB	Northern redbelly dace prefer quiet waters from beaver ponds, bogs and clear streams. The finescale dace likes similar habitat but is also found in larger lakes. Known in Big Coulee Ck in Judith Basin Co.
Paddlefish *Polyodon spathula*	S		HAB	slow or quiet waters of large rivers or impoundments. They spawn on the gravel bars of large rivers during spring high water. Paddlefish tolerate, or perhaps seek, turbid water
Pallid Sturgeon *Scaphirhynchus albus*	E		HAB	large turbid streams including the Missouri and Yellowstone rivers. They use all channel types, primarily straight reaches with islands. They primarily use areas with substrates containing sand (especially bottom sand dune formations) and fines (93% of observations)
Pearl dace *Margariscus margarita*	S		ODR	small cool streams, either clear or turbid (Brown 1971). They spawn in clear water at depths of 1 to 2 feet over a gravel or sand bottom. N/E MT.
Sauger *Stizostedion canadense*	S		HAB	larger turbid rivers and the muddy shallows of lakes and reservoirs. They spawn in gravelly or rocky areas in shallow water and seem to prefer turbid water.
Sturgeon chub *Macrhybopsis gelida*	S		HAB	turbid water with moderate to strong current over bottoms ranging from rocks and gravel to coarse sand
Westslope cutthroat trout *Oncorhynchus clarki lewisi*	S		ODR	gravel substrate in riffles and pool crests for spawning habitat. Cutthroat trout have long been regarded as sensitive to fine sediment
Yellowstone cutthroat trout *Oncorhynchus clarki bouvieri*	S		ODR	relatively clear, cold streams, rivers, and lakes. Optimal temperatures have been reported to be from 4 to 15 degrees C., with occupied waters ranging from 0 to 27 degrees C.
AMPHIBIANS AND REPTILES				
Coeur d'Alene salamander *Plethodon idahoensis*	S		ODR	primary habitats are seepages and streamside talus; W. MT near Libby, MT
Great Plains toad *Bufo cognatus*	S	✓		sagebrush-grassland, rainwater pools in road ruts, in stream valleys, at small reservoirs and stock ponds, and around rural farms; breeding has been documented in small reservoirs and backwater sites along streams appears to prefer stock tanks and roadside ponds rather than floodplains. Eggs and larvae develop in shallow water, usually clear or slightly turbid, but not muddy.
Northern leopard frog	S	✓		wetland habitats of relatively fresh water with moderate salinity, including springs, slow streams, marshes,

Lithobates pipiens				bogs, ponds, canals, flood plains, beaver ponds, reservoirs, and lakes, usually in permanent water with rooted aquatic vegetation.
SPECIES COMMON AND SCIENTIFIC NAME	**STATUS[1]**	**POTENTIAL TO OCCUR?**	**RATIONALE FOR EXCLUSION[2]**	**BRIEF HABITAT DESCRIPTION AND RANGE IN MONTANA**
Plains spadefoot *Spea bombifrons*	S	✓		soft sandy/gravelly soils near permanent or temporary bodies of water. lives largely inactive in burrows of its own construction or occupies rodent burrows, and enters water only to breed. Following heavy rains, adults have been reported in water up to 30 centimeters deep in flooded wagon wheel ruts, temporary rain pools formed in wide flat-bottom coulees, water tanks, and badland seep ponds, and tadpoles and toadlets have been observed in stock ponds and small ephemeral reservoirs, usually in sagebrush-grassland habitats
Western toad *Anaxyrus boreas boreas*	S		ODR	utilize a wide variety of habitats, including desert springs and streams, meadows and woodlands, mountain wetlands, beaver ponds, marshes, ditches, and backwater channels of rivers where they prefer shallow areas with mud bottoms
REPTILES				
Greater short-horned lizard *Phrynosoma hernandesi*	S	✓		ridge crests between coulees, and in sparse, short grass and sagebrush with sun-baked soil. limestone outcrops in canyon bottoms of sandy soil with an open canopy of limber pine-Utah juniper, and are also present on flats of relatively pebbly or stony soil with sparse grass and sagebrush cover
Milk snake *Lampropeltis triangulum*	S	✓		open sagebrush-grassland habitat and ponderosa pine savannah with sandy soils, most often in or near areas of rocky outcrops and hillsides or badland scarps, sometimes within city limits.
Snapping turtle *Chelydra serpentine*	S		HAB	backwaters along major rivers, at smaller reservoirs, and in smaller streams and creeks with permanent flowing water and sandy or muddy bottoms
Spiny softshell *Apalone spinifera*	S		HAB	primarily a riverine species, occupying large rivers and river impoundments, but also occurs in lakes, ponds along rivers, pools along intermittent streams, bayous, irrigation canals, and oxbows. open sandy or mud banks, a soft bottom, and submerged brush and other debris. Spiny Softshells bask on shores or on partially submerged logs. They burrow into the bottoms of permanent water bodies, either shallow or relatively deep (0.5 to 7.0 meters), where they spend winter. Eggs are laid in nests dug in open areas in sand, gravel, or soft soil near water
Western hog-nosed snake *Heterodon nasicus*	S		HAB	apparent preference for arid areas, farmlands, and floodplains, particularly those with gravelly or sandy soil, has been noted. They occupy burrows or dig into soil, and less often are found under rocks or debris, during periods of inactivity
BIRDS				
Baird's sparrow *Ammodramus bairdii*	S	✓		nest in native prairie, but structure may ultimately be more important than plant species composition. (nesting has been observed in crested wheat, while smooth brome is avoided) areas with little to no grazing activity are required.
Bald eagle *Haliaeetus leucocephalus*	S	✓		near open water including rivers, streams & lakes, nesting & roosting in large ponderosa pine, Douglas-fir, or cottonwood trees in proximity to open water and rivers.
Black tern *Chilodonias niger*	S		HAB	wetlands, marshes, prairie potholes, and small ponds. 30%-50% of the wetland complex is emergent vegetation. Vegetation within known breeding colonies includes alkali bulrushes, canary reed-grass, cattail spp., sedge spp., rush spp., reed spp., grass spp., *Polygonum* spp., *Juncus* spp. and *Potamogeton* spp., indicating a wide variety of potential habitats are usable by Black Terns. Water levels range from about 0.5 m to greater than 2.0 m with most having depths between 0.5 m and 1.0 m (MTNHP 2003).
Black-backed woodpecker *Picoides arcticus*	S		HAB	early successional, burned forest of mixed conifer, lodgepole pine, Douglas-fir, and spruce-fir, although they are more numerous in lower elevation Douglas-fir and pine forest habitats than in higher elevation subalpine spruce forest habitats

Black-crowned night heron *Nycticorax nycticorax*	S		HAB	shallow bulrush or cattail marshes, most often within a grassland landscape. also nest in cottonwoods, willows, or other wetland vegetation that allows them to nest over water or on islands that may afford them protection from mammalian Most colonies are located in large wetland complexes, typically with a one-to-one ratio of open water and emergent vegetation
SPECIES COMMON AND SCIENTIFIC NAME	**STATUS[1]**	**POTENTIAL TO OCCUR?**	**RATIONALE FOR EXCLUSION[2]**	**BRIEF HABITAT DESCRIPTION AND RANGE IN MONTANA**
Blue-gray gnatcatcher *Polioptilia caerulea*	S		ODR	brush, scrub, or chaparral are intermixed with taller vegetation (e.g., forest edge, riparian corridors); nesting often occurs near water. Nests are built on branches or forks of trees or shrubs, usually 1 to 25 meters above ground—S. Central MT
Bobolink *Dolichonyx orysivorus*	S		HAB	Nests built in tall grass and mixed-grass prairies. Prefers "old" hay fields with high grass-to-legume ratios.
Brewer's sparrow *Spizella breweri*	S	✓		Sagebrush, mountain meadows, and mountain shrub habitats. nested in sagebrush averaging 16-inches high. The cover (concealment) for the nest provided by sagebrush is very important
Burrowing owl *Athene cunicularia*	S		HAB	open grasslands, where abandoned burrows dug by mammals such as ground squirrels, prairie dogs and badgers are available. Black-tailed Prairie Dog and Richardson's Ground Squirrel colonies provide the primary and secondary habitat for Burrowing Owls in the state
Chestnut-collared longspur *Calcarius ornatus*	S	✓		Species prefers short-to-medium grasses that have been recently grazed or mowed. Prefers native pastures.
Common loon *Gavia immer*	S		HAB	13+ acre lake <5000 feet in elevation. Small islands preferred for nesting, but herbaceous shoreline areas, also selected. Nursery areas are very often sheltered, shallow coves with abundant small fish and insects. relatively oligotrophic and have not experienced significant siltation or other hydrological changes.
Dickcissel *Spiza americana*	S	✓		grasslands, meadows, savanna, cultivated lands, and brushy fields. nest on ground in grass or rank herbage, or raised a little above ground, in grass tufts or tall weeds, or in low shrubs or trees, up to about 2 meters above the ground but usually low. prefer habitat with dense, moderate to tall vegetation (particularly with some forbs) and moderately deep litter. moderately grazed and idle prairie. A high abundance of forbs provides perches, nesting cover, nest support, and possibly increased invertebrate abundance.
Ferruginous hawk *Buteo regalis*	S	✓		mixed-grass prairie, shrub-grasslands, grasslands, grass-sagebrush complex, and sagebrush steppe.
Flammulated owl *Otus flammeolus*	S		ODR	old-growth or mature ponderosa pine, ponderosa pine, & Douglas-fir forests, often mixed with mature aspen, nesting in cavities, feeding on insects.
Franklin's gull *Larus pipixcan*	S		HAB	Preferring large, relatively permanent prairie marsh complexes, the Franklin's Gull builds its nests over water on a supporting structure of emergent vegetation. Nesting is noted to occur in cattails and bulrushes
Golden eagle *Aquila chrysaetos*	S	✓		nest on cliffs and in large trees (occasionally on power poles), and hunt over prairie and open woodlands. Cliff nests selected for south or east aspect, less than 200 in. snowfall, low elevation, availability of sagebrush/grassland hunting areas
Great gray owl *Strix nebulosa*	S		ODR	dense coniferous and hardwood forest, especially pine, spruce, paper birch, poplar, and second-growth, especially near water. forage in wet meadows, boreal forests and spruce-tamarack bogs in the far north, and coniferous forest and meadows in mountainous areas. nest in the tops of large broken-off tree trunks in old nests of other large birds, or in debris platforms from dwarf mistletoe, frequently near bogs or clearings. Nests are frequently reused and the same pair often nests in the same area in successive years.
Greater sage-grouse *Centrocercus urophasianus*	S	✓		tall dense stands of sagebrush; 6 to 18 inch high sagebrush covered benches in June to July (average 213 acres); move to alfalfa fields (144 acres) or greasewood bottoms (91 acres) when forbs on the benches dry out; and move back to sagebrush (average 128 acres) in late August to early September (Peterson 1969).

Harlequin duck *Histrionicus histrionicus*	S		ODR HAB	fast moving, low gradient, clear mountain streams. birds in streams on the Rocky Mountain Front were seen in pole-sized timber.
Least tern *Sternula antillarum*	E		HAB	nest on unvegetated sand-pebble beaches and islands of large reservoirs and rivers in northeastern and southeastern Montana, specifically the Yellowstone and Missouri river systems.
LeConte's sparrow *Ammodramus leconteii*	S		ODR	wet meadows within peatlands, often with a strong sedge (*Carex*) component
SPECIES COMMON AND SCIENTIFIC NAME	**STATUS[1]**	**POTENTIAL TO OCCUR?**	**RATIONALE FOR EXCLUSION[2]**	**BRIEF HABITAT DESCRIPTION AND RANGE IN MONTANA**
Loggerhead shrike *Lanius ludovicianus*	S	✓		open riparian areas, montane meadows, agricultural areas, grasslands, shrublands, & piñon/juniper woodlands
Long-billed curlew *Numenius americanus*	S	✓		Nests primarily in short-grass or mixed-prairie habitat with flat to rolling topography Habitats with trees, high density of shrubs (e.g., sagebrush [*Artemisia* spp.]), and tall, dense grass generally. Taller, denser grass used during brood-rearing when shade and camouflage from predators are presumably more important for chicks, but may also reflect decline in availability of shorter habitats with season.
Marbled godwit *Limosa fedoa*	S	✓		Breeds in short, sparsely to moderately vegetated landscapes that include native grassland and wetlands. ephemeral ponds, as well as temporary ponds and alkali wetland. Semi permanent ponds used as well. Upland habitat during breeding season primarily idle grassland and pastures
McCown's longspur *Calcarius mccownii*	S	✓		breeding habitat is a matrix of perennial shortgrass species (e.g., *Bouteloua gracilis*, *Buchloe dactyloides*) interspersed with cactus, and limited cover of midgrasses (e.g., *Aristida longiseta*, *Agropyron smithii*, *Stipa comata*) and shrubs (e.g., *Gutierrezia sarothrae*, *Chrysothamnus nauseosus*, *Artemesia frigida*).
Mountain plover *Charadrius montanus*	S/P	✓		prairie dog colonies and other shortgrass prairie sites are confirmed as preferred breeding habitat. Strong preference was also given to sites with slopes less than 5% and grass height of less than 6 cm (3 inches)
Nelson's sharp-tailed sparrow *Ammodramus nelson*	S		ODR	freshwater wetlands with dense, emergent vegetation or damp areas with dense grasses
Northern goshawk *Accipiter gentilis*	S	✓		primarily forest habitat, especially in mountains, nesting in lower portions of mature Douglas-fir, ponderosa pine, lodgepole pine, or aspen canopies; prefers mature or old-growth forest structure.
Peregrine falcon *Falco peregrinus anatum*	S		HAB	wide variety of habitats, selects cliff ledges or rock outcroppings for nesting, preferring high, open cliff faces that dominate the surrounding area.
Red-headed woodpecker *Melanerpes erythrocephalus*	S		HAB	along major rivers having riparian forest. open savannah country w/ ground cover, snags and canopy cover. Large burns also utilized. nest in holes excavated 2 to 25 meters above ground by both sexes in live trees, dead stubs, utility poles, or fence posts. Individuals nest in the same cavity in successive years.
Sage sparrow *Amphispiza belli*	S		ODR	Prefers semiopen habitats with evenly spaced shrubs 1–2 m high. Vertical structure, habitat patchiness, and vegetation density may be more important in habitat selection than specific shrub species, but this sparrow is closely associated with big sagebrush throughout most of its range. Historical records w/i FO 20+ years old. Extreme S. Central MT
Sage thrasher *Oreoscoptes montanus*	S	✓		sagebrush obligate in Montana. abundance is generally positively correlated with the amount of sage cover and negatively correlated with grass cover.
Sedge wren *Cistorthorus platensis*	S		ODR	areas that are highly susceptible to flooding and drying caused by annual and seasonal variation in rainfall.
Sprague's pipit *Anthus spragueii*	S	✓		native, medium to intermediate height prairie and in a short grass prairie landscape, can often be found in areas with taller grasses. more abundant in native prairie than in exotic vegetation; area sensitive, requiring relatively large areas of appropriate habitat; the minimum area requirement in a Saskatchewan study was 470 acres. known to utilize and breed in alkaline meadows and around the edges of alkaline lakes

Swainson's hawk *Buteo swainsoni*	S	✓		nest in river bottom forests, brushy coulees, and shelterbelts. hunt in grasslands and agricultural land, especially along river bottoms.
Three-toed woodpecker *Picoides dorsalis*	S	✓		mature or old-growth spruce-fir forest, but also occurs in ponderosa pine, Douglas-fir, & lodgepole pine forests with abundant snags and insect populations are present due to outbreaks from disease or fire.
Trumpeter swan *Cygnus buccinators*	S		HAB	Along the Rocky Mountain Front the breeding habitat is small pothole lakes, generally with sufficient water to maintain emergent vegetation through the breeding season. Habitat requirements for breeding include room to take off (~100 m), shallow, unpolluted water with sufficient emergent vegetation and invertebrates, appropriate nest sites (i.e. Muskrat lodges), and areas with little human disturbance
SPECIES COMMON AND SCIENTIFIC NAME	**STATUS[1]**	**POTENTIAL TO OCCUR?**	**RATIONALE FOR EXCLUSION[2]**	**BRIEF HABITAT DESCRIPTION AND RANGE IN MONTANA**
White-faced ibis *Plegadis chihi*	S		HAB	freshwater wetlands, including ponds, swamps and marshes with pockets of emergent vegetation. also use flooded hay meadows and agricultural fields as feeding locations. nest in areas where water surrounds emergent vegetation, bushes, shrubs, or low trees. use old stems in cattails (*Typha* spp.), hardstem bulrush (*Scirpus acutus*) or alkali bulrush (*S. paludosus*) over shallow water as their nesting habitat
Yellow rail *Coturnicops noveboracensis*	S		ODR	Breeding habitat consists of wet sedge meadows and other wetlands containing grasses, rushes and bulrushes. Presence of the Yellow Rail is most commonly dictated by water depth, specifically one that fluctuates throughout the breeding season, i.e. wet in the early part of the breeding season and relatively dry (no standing water) by July or September. NE MT and Flathead Valley.
Yellow-billed cuckoo *Coccyzus americanus*	S		HAB	tall cottonwood and willow riparian woodlands. Nests are found in trees, shrubs or vines, an average of 1 to 3 meters above ground. Western subspecies require patches of at least 10 hectares (25 acres) of dense, riparian forest with a canopy cover of at least 50 percent in both the understory and overstory. Nests are typically found in mature willows
MAMMALS				
Black-footed ferret *Mustela nigripes*	E		HAB	intimately tied to prairie dogs and only found in association with prairie dogs. limited to habitat used by prairie dogs: grasslands, steppe, and shrub steppe. rely on abandoned prairie dog burrows for shelter. Only large complexes (several thousand acres of closely spaced colonies) can support and sustain a breeding population. estimated that 40 to 60 hectares of prairie dog colony is needed to support one Black-footed Ferret, and females with litters have never been found on colonies less than 49 hectares
Black-tailed prairie dog *Cynomys ludovicianus*	S		HAB	colonies are found on flat, open grasslands and shrub/grasslands with low, relatively sparse vegetation. The most frequently occupied habitat in Montana is dominated by western wheatgrass, blue grama and big sagebrush. Colonies are associated with silty clay loams, sandy clay loams, and loams and fine to medium textured soils are preferred, presumably because burrows and other structures tend to retain their shape and strength better than in coarse, loose soils.
Canada lynx *Lynx canadensis*	T		HAB	dense spruce-fir, Douglas-fir, early seral lodgepole pine, mature lodgepole pine with developing understory of spruce-fir & aspen in subalpine zone & timberline, using caves, rock crevices, banks, logs for denning, closely associated with snowshoe hare.
Fisher *Martes pennanti*	S		HAB ODR	When inactive, they occupy dens in tree hollows, under logs, or in ground or rocky crevices, or they rest in branches of conifers (in the warmer months). Fishers occur primarily in dense coniferous or mixed forests, including early successional forests with dense overhead cover. Optimal conditions for Fishers are forest tracts of 245 acres or more, interconnected with other large areas of suitable habitat.
Fringed myotis *Myotis thysanodes*	S	✓		rocky outcroppings in mid-elevation ponderosa pine, piñon/juniper, oak, & mixed conifer woodlands, grasslands, deserts, & shrublands;
Fringe-tailed myotis *Myotis thysanodes pahasapensis*	S		ODR	occurs primarily in caves in the Black Hills and Badlands. occurs only in certain montane (mountainous) areas of South Dakota and Wyoming

Gray wolf *Canis lupis*	T		ODR	no particular habitat preference except for the presence of native ungulates within its territory on a year-round basis. Gray Wolves establishing new packs in Montana have demonstrated greater tolerance of human presence and disturbance than previously thought characteristic of this species.
Great Basin pocket mouse *Perognathus parvus*	S		ODR	arid and sometimes sparsely vegetated. They include grassland-shrubland with less than 40% cover, stabilized sandhills, and landscapes with sandy soils, more than 28% sagebrush cover, and 0.3 to 2.0 meters shrub height. Extreme SW MT.
Grizzly bear *Ursus arctos horribilis*	T		ODR	primarily use meadows, seeps, riparian zones, mixed shrub fields, closed timber, open timber, sidehill parks, snow chutes, and alpine slabrock habitats. Habitat use is highly variable between areas, seasons, local populations, and individuals. Historically, the Grizzly Bear was primarily a plains species occurring in higher densities throughout most of eastern Montana.
SPECIES COMMON AND SCIENTIFIC NAME	**STATUS[1]**	**POTENTIAL TO OCCUR?**	**RATIONALE FOR EXCLUSION[2]**	**BRIEF HABITAT DESCRIPTION AND RANGE IN MONTANA**
Long-eared myotis *Myotis evotis*	S	✓		found in wooded and rocky areas. It has been located hibernating in a mine in riverbreaks habitat in northeastern Montana
Long-legged myotis *Myotis volans*	S	✓		typically occupy mountainous or relatively rugged areas. They often live in coniferous forest, although they are sometimes found in oak or streamside woodlands, and even deserts. They feed mostly on moths, but are opportunistic, eating whatever soft-bodied insects are most abundant.
Meadow jumping mouse *Zapus hudsonius*	S		ODR	dense, tall and lush grass and forbs in marshy areas (sometimes with standing water), riparian areas, woody draws, and grassy upland slopes, sometimes within or near forested sites of ponderosa pine. E/SE MT.
Northern myotis *Myotis septentrionalis*	S		ODR	located hibernating in an abandoned mine in riverbreaks habitat in Richland County. prefers cooler hibernacula than *Myotis lucifugus* and selects narrow crevices in which to hibernate. NE MT.
Pallid bat *Antrozous pallidus*	S		ODR	arid deserts, juniper woodlands, sagebrush shrub-steppe, and grasslands, often with rocky outcrops and water nearby. arid and semi-arid regions throughout northern Mexico and the western United States. Pallid bats eat beetles, grasshoppers, and moths, and they forage for slow-moving prey, such as scorpions, flightless arthropods, and sometimes lizards, at and near ground level. visit flowers in their hunt for insects, and are natural pollinators of several species of cactus. S. Central MT.
Pygmy rabbit *Brachylagus idahoensis*	S		ODR	shrub-grasslands on alluvial fans, floodplains, plateaus, high mountain valleys, and mountain slopes, where suitable sagebrush cover and soils for burrowing are available. Some occupied sites may support a relatively sparse cover of sagebrush and shallow soils, but these usually support patches of dense sagebrush and deeper soils. Big sagebrush was the dominant shrub at all occupied sites, averaging 21.3 to 22.6% coverage; bare ground averaged 33% and forbs 5.8%. SW MT.
Swift fox *Vulpes velox*	S		HAB	open prairie and arid plains, including areas intermixed with winter wheat fields in north-central Montana. They use burrows when they are inactive; either dug by themselves or made by other mammals (marmot, prairie dog, badger). The burrows are usually located in sandy soil on high ground such as hill tops in open prairies, along fencerows, or occasionally in a plowed field. Suitable habitat generally extensive in size (preferably over 100,000 acres), with relatively level topography, and with greater than 50% of the area undisturbed by agriculture. A total of 8,000,000 suitable acres were identified in Montana
Townsend's big-eared bat *Plecotus townsendii*	S	✓		associated with caves & abandoned mines for day roosts & hibernacula, will also use abandoned buildings in western shrubland, piñon/juniper woodlands, & open montane forests in elevations up to 9,500 ft.
White-tailed prairie dog *Cynomys leucurus*	S		ODR	xeric sites with mixed stands of shrubs and grasses. habitats dominated by two types of vegetation: areas with Nuttall saltbrush with lesser amounts of big sage, and areas with poverty sumpweed and winter fat. Extreme S. Central MT
Wolverine *Gulo gulo*	S		HAB	alpine & subalpine mature/intermediate timbered areas around natural openings, including cliffs, slides, basins, & meadows, dependant on ungulates, range extending the length of the Rocky Mts.

Bureau of Land Management (BLM). 2009. 2009 Montana/Dakotas Special Status Species List. Instruction Memorandum No. MT-2009-039 (April 24, 2009). (effective until 9/30/2011 per Instruction Memorandum No. MT-2011-006) **http://www.blm.gov/mt/st/en/res/public_room/efoia/2009/IMs/09mtm039.html**

U.S. Fish and Wildlife Service (FWS). 2010. Endangered, Threatened, Proposed and Candidate Species Montana Counties. Ecological Services Montana Field Office (October, 2010). **http://www.fws.gov/montanafieldoffice/Endangered_Species/Listed_Species.html** accessed 12/6/10**.**

Appendix 5

Determination Summary for the Tin Can Hill Unit B Prescribed Burn Project.

Species	No Action	Proposed Action
Great Plains toad	NI	MIIH
Northern leopard frog	NI	NI
Plains spadefoot	NI	MIIH
Greater short-horned lizard	NI	MIIH
Milk snake	NI	MIIH
Baird's sparrow	NI	MIIH
Bald eagle	NI	NI
Brewer's sparrow	NI	MIIH
Chestnut-collared longspur	NI	MIIH
Dickcissel	NI	MIIH
Ferruginous hawk	NI	MIIH
Golden eagle	NI	MIIH
Greater sage-grouse	NI	MIIH
Loggerhead shrike	NI	MIIH
Long-billed curlew	NI	MIIH
Mabled godwit	NI	MIIH
McCown's longspur	NI	MIIH
Mountain plover[1]	NI/NE	MIIH/NLJ
Northern goshawk	NI	MIIH
Sage thrasher	NI	MIIH
Sprague's pipit	NI	MIIH
Swainson's hawk	NI	MIIH
Three-toed woodpecker	NI	MIIH
Fringed myotis	NI	MIIH
Long-eared myotis	NI	MIIH
Long-legged myotis	NI	MIIH
Townsend's big-eared bat	NI	MIIH

[1]**Species Proposed For Listing**

NE – No Effect

NLJ – Not likely to Jeopardize the continued existence of the species or result in adverse modification of proposed critical habitat

***LJ –** Likely to Jeopardize the continued existence of the species or result in or adverse modification of proposed critical habitat

Sensitive Species

NI – No Impact

MIIH – May Impact Individuals or Habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to the population or species

***WIFV –** Will Impact Individuals or habitat that is likely contribute to a trend toward federal listing or cause a loss of viability to the population or species

BI – Beneficial Impact

Fire Regime Condition Class
Standard Landscape Report

version 1.3.2.4

Landscape Project

Registration Code: BLMT Project Code: Msslshll Project Number: 1 Characterization Date: 5/4/2009

Examiner: Walker Project Name: Tin Can EA Area: 39500 Acres

Lat: 47.100000 Lon: -108.050000 Datum: NAD83

Comment:

Biophysical Stratifications

Num	Code	Life-form	BpS	Species				Land-form	Slope Class	Insol Class	Elevation Low	Elevation High	Strata Comp (%)	Ref Freq	Cur Freq	Ref Sev	Cur Sev	FRCC Depart	FRCC
1	PPwoods	CF	2010540	PIPO	PSSP6	PASM	JUSC2	PLA	STEEP	MOD	2300	3000	50	15	25	5	30	61	2 (34-66%)
2	PPsavanna	CF	2011170	PIPO	PASM	PSSP6	RHTR	PLA	MOD	HIGH	2700	3000	50	15	25	4	20	59	2 (34-66%)
													100						

Fire Regime Condition Class
Standard Landscape Report - StratumData

Registration Code: BLMT Project Code: Msslshll Project Number: 1 Char Date: 5/4/2009 Strata Num: 1

Strata Code: PPwoodsStrata Name: S.PP Woodland Date: 5/4/2009 Lifeform: CF BpS: 2010540 (1) Strata Comp: 50

Species: PIPO PSSP6 PASM JUSC2 Local BpS: PP Woodland Landform: PLA Slope: STEEP Insol: MOD

Low Elev: 2300 High Elev: 3000 Feet Lat: 47.17419 Lon: -108.08573 Datum: NAD83

Ref Freq: 15 Curr Freq: 25 Ref Sev: 5 Cur Sev: 30

Ref Comp Src: F Cur Comp Src: R Nat Amer Burn: C B/C Class Break: 50 D/E Class Break: 51

Vegetation-Fuel Classes

Code	Upper Layer Majority Lifeform	Size	Closure	Dominant Species				Fuel Model	Ref Comp	Cur Comp	Sim	Diff	Relative Amount	Stand FRCC	Stand Depart	Acres Departed from Reference
AESP	HERB	LOWH	50	PSSP6	PASM	CAFI	PIPO		10	10	10	0	SIMILAR	1	0	0
BMSC	CONT	POLE	76	PIPO	CAFI				5	25	5	80	ABUNDANT	3	80	3950
CMSO	CONT	POLE	25	PIPO	PSSP6				15	10	10	-33	SIMILAR	1	0	-987
DLSO	CONT	VLAR	25	PIPO	PSSP6				65	25	25	-61	UNDER REP	1	0	-7900
ELSC	CONT	MEDM	76	PIPO	JUSC2				5	30	5	83	ABUNDANT	3	83	4937
								Total	100	100	55					

Current Veg-Fuel Departure: 45

Current Frequency Departure: 39

Current Frequency-Severity Departure: 61

Veg-Fuel Condition Class: 2 (34-66%)

Current Severity Departure: 83

Frequency-Severity Condition Class: 2 (34-66%)

Strata Fire Regime: I - Frequent Surface and Mixed

Strata Departure: 61

Strata Fire Regime Condition Class: 2 (34-66%)

Fire Regime Condition Class
Standard Landscape Report - StratumData

Registration Code: BLMT Project Code: Msslshll Project Number: 1 Char Date: 5/4/2009 Strata Num: 2

Strata Code: PPsavanna Strata Name: S.PP Savanna Date: 5/4/2009 Lifeform: CF BpS: 2011170 (1) Strata Comp: 50

Species: PIPO PASM PSSP6 RHTR Local BpS: PP Savanna Landform: PLA Slope: MOD Insol: HIGH

Low Elev: 2700 High Elev: 3000 Feet Lat: 47.17322 Lon: -108.10755 Datum: NAD83

Ref Freq: 15 Curr Freq: 25 Ref Sev: 4 Cur Sev: 20

Ref Comp Src: F Cur Comp Src: R Nat Amer Burn: C B/C Class Break: 35 D/E Class Break: 31

Vegetation-Fuel Classes

Code	Upper Layer Majority Lifeform	Size	Closure	Dominant Species			Fuel Model	Ref Comp	Cur Comp	Sim	Diff	Relative Amount	Stand FRCC	Stand Depart	Acres Departed from Reference
AESP	CONT	SAPL	15	PIPO	PSSP6	PASM	1	2	15	2	86	ABUNDANT	3	86	2567
BMSC	CONT	POLE	46	PIPO			4	10	35	10	71	ABUNDANT	3	71	4937
CMSO	CONT	MEDM	20	PIPO	PSSP6	PASM	1	20	15	15	-25	SIMILAR	1	0	-987
DLSO	CONT	LARG	20	PIPO	PSSP6	PASM	9	65	15	15	-76	TRACE	1	0	-9875
ELSC	CONT	LARG	46	PIPO	JUSC2	PASM	10	3	20	3	85	ABUNDANT	3	85	3357
							Total	100	100	45					

Current Veg-Fuel Departure: 55

Current Frequency Departure: 39

Current Frequency-Severity Departure: 59

Veg-Fuel Condition Class: 2 (34-66%)

Current Severity Departure: 80

Frequency-Severity Condition Class: 2 (34-66%)

Strata Fire Regime: I - Frequent Surface and Mixed

Strata Departure: 59

Strata Fire Regime Condition Class: 2 (34-66%)

Fire Regime Condition Class
Standard Landscape Report - Natural Fire Regime Summary

Registration Code: BLMT Project Code: Msslshll Project Number: 1 Char Date: 5/4/2009

Strata #	Ave Reference Fire Frequency	Stratum Comp (%)	Weighted Frequency	Ave Reference Fire Severity	Stratum Comp (%)	Weighted Severity
1	15	50	7	5	50	2
2	15	50	7	4	50	2
Sum		100	14		100	4

Landscape Natural (Historical) Fire Frequency:

Weighted Mean Fire Frequency: 14 years

Fire Frequency Class: Frequent (0-35)

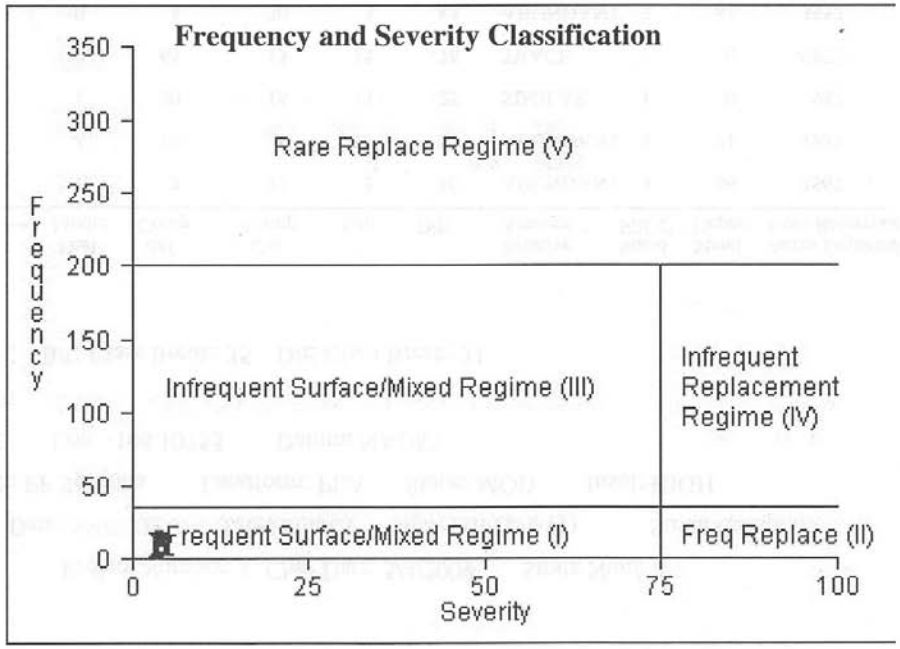
Landscape Natural (Historical) Fire Severity:

Weighted Mean Upper Layer Severity: 4%

Fire Severity Class: Surface (<= 25%)

Landscape Natural Fire Regime Group:

I - Frequent Surface and Mixed



Fire Regime Condition Class
Standard Landscape Report - FRCC Summary

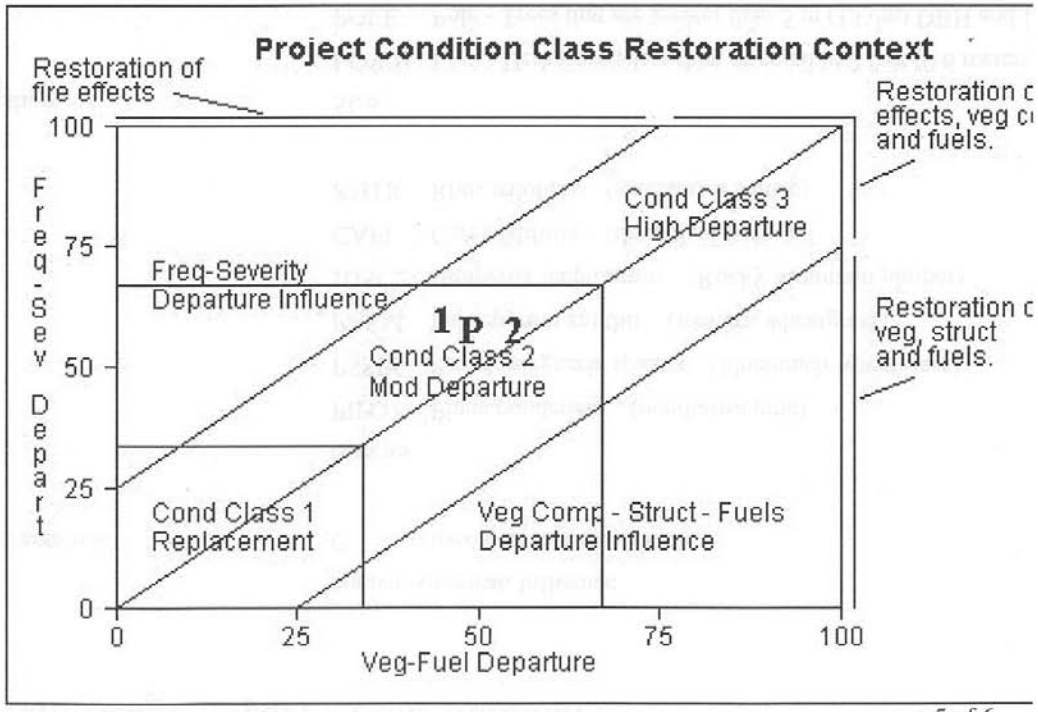
Registration Code: BLMT Project Code: Msslshll Project Number: 1 Char Date: 5/4/2009

Strata #	Veg-Fuel Depart (%)	Stratum Comp (%)	Weighted Depart (%)	Freq-Sev Depart (%)	Stratum Comp (%)	Weighted Depart (%)
1	45	50	22	61	50	30
2	55	50	27	59	50	29
Sum		100	49		100	59

Landscape FRCC Departure: 59

Landscape Fire Regime Condition Class:

2 (34-66%)



page 5 of 6

Fire Regime Condition Class
Standard Landscape Report - Code Summary

Lifeforms

CF Coniferous upland forest -- Pine, spruce, hemlock

Landform

PLA Plains - rolling plains - plains w/breaks

Average Slope

STEEP Steep (31-50 degrees)

MOD Moderate (11-30 degrees)

Reference Composition Source

F local study + lit. review/modeling workshop

Insolation Class

MOD Flat(<+10% slope) or all aspects

HIGH W,SW,S,SE

Upper Layer Majority Lifeform

HERB Herbaceous (graminoids, forbs and ferns

CONT Coniferous Trees

Strata Biophysical Land Unit(PNVG)

2010540 ERROR-No description found

2011170 ERROR-No description found

Native American Influence

C used coarse-scale default

Species

PIPO Pinus ponderosa (ponderosa pine)

PSSP6 Pseudoroegneria spicata (bluebunch wheatgrass)

PASM Pascopyrum smithii (western wheatgrass)

JUSC2 Juniperus scopulorum (Rocky Mountain juniper)

CAFI Carex filifolia (threadleaf sedge)

RHTR Rhus trilobata (skunkbush sumac)

Size

LOWH Low - Herbaceous less than or equal to 2 feet (0.6 meters

POLE Pole - Trees that are greater than 5 in (13 cm) DBH and l

VLAR Very large - Trees that are greater than 33 in (83 cm) DB

MEDM Medium - Trees that are greater than 9 in (23 cm) DBH a

SAPL Sapling - Trees that are greater than 4.5 feet (1.37 meters

LARG Large - Trees that are greater than 21 in (53 cm) DBH an