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Rural Sustainability Organization Wild Horse Ecosanctuary

Location: Granite County, Montana

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Table of Contents

I. Purpose and Need……...2
II. Description of the Alternatives……9
2.1 Proposed Action (Alternative A)……...…..13
2.2 Alternative B……19
2.3 No Action Alternative……..22
III. Affected Environment……...22
3.1 Vegetation……22
3.2 Cultural Resources……...……30
3.3 Recreation……30
3.4 Hydrology and Water Quality…….…....…30
3.5 Wild Horses…….……31
3.6 Wildlife……32
3.7 Fisheries, Aquatic Habitat, Streams, Riparian Vegetation……..…34
IV. Environmental Consequences……..……39
4.1 Vegetation……...……39
4.2 Cultural Resources……...…41
4.3 Recreation……42
4.4 Hydrology and Water Quality……..43
4.5 Wild Horse…….....43
4.6 Wildlife……45
4.7 Fisheries, Aquatic Habitat, Streams, Riparian Vegetation……..49
V. Cumulative Impacts……61
5.1 Vegetation……61
5.2 Cultural Resources……...…63
5.3 Recreation……64
5.4 Hydrology and Water Quality……..…64
5.5 Wild Horse……...…65
5.6 Wildlife……...…….65
5.7 Fisheries, Aquatic Habitat, Streams, Riparian Vegetation……..…69
VI. Consultation and Coordination……...73
VII. Literature Cited……...……75
VIII. Maps……79
IX. Appendix……82

1 Purpose and Need

Introduction

The Wild Free-Roaming Horses and Burros Act of 1971 (WFRHBA) directs the Secretary of the Interior to manage wild horses and burros on ranges designated for their use in a manner that is designed to achieve and maintain a thriving natural, ecological balance and multiple use relationship. The Bureau of Land Management (BLM) manages wild horses and burros in 179 separate herd management areas in ten western states. Wild horse and burro herds increase at relatively high rates in North America due to lack of natural predators. If left unchecked, population growth results in a decline in the health of the range and the animals. When populations exceed the Appropriate Management Level established to maintain a thriving, natural ecological balance and a determination is made that an over population exists within a herd management area, the WFRHBA requires BLM to "immediately remove excess animals from the range so as to achieve appropriate management levels." (16 U.S.C. 1333(b)(2).

Excess wild horses removed from the public lands that are not adopted or sold are cared for in short-term holding facilities that are not designed for long-term care, or long term holding pastures. As part of the WFRHBA, 1336 states "The Secretary is authorized to enter into cooperative agreements with other landowners and with the State and local governmental agencies and may issue such regulations as he deems necessary for the furtherance of the purposes of this Act". This authority is allowing for the development of ecosanctuaries.

An ecosanctuary is a place of safety providing a natural and healthy habitat for excess wild horses where they would be properly cared for, yet allowed to roam freely, while conserving the environment and ecology of the lands (USDI-BLM, 2012). An ecosanctuary offers the public the opportunity of engaging with the cultural heritage of wild horses and local area through public outreach, and the creation of economic opportunities for local communities. The ecosanctuary model provides BLM with an alternative method for providing humane, long-term care for excess wild horses in a natural setting. Excess wild horses that have not been adopted because of age or other factors are presently being cared for on private lands primarily in the southern plains with one in Montana outside of Ennis. Currently, existing facilities are at capacity and excess wild horses removed from public rangelands require cost-effective and humane care, additional pasture facilities are needed. The Ecosanctuary concept seeks to provide partnership opportunities for wild horses on private land that, in addition to providing a natural and healthy habitat for the horses, would help bring awareness of the program in order to assist the BLM with meeting the objectives of the WFRHBA.

The stocking of wild horses on privately owned, tallgrass prairie rangelands in the southern plains has been undertaken by the BLM for 20+ years. In that time there has been no need to remove animals or terminate long-term holding contracts due to environmental conditions. Recently, facilities have been voluntarily closing due to economic factors. The contractors are paid to keep the animals in good body condition and to provide for their needs (feed, water, shelter, supplemental feed and feed supplements, and natural hoof care).

To provide additional facilities for the care of the excess wild horses, BLM proposes to enter into an Assistance Agreement (AA) with Rural Sustainability Organization, Inc. (RSO) for the care and maintenance of excess wild horses on non-Federal ranch land within the Western Montana District, Missoula Field Office (MiFO) in Granite County, Montana. Mostly older, unadoptable geldings would be cared for by RSO over the life of the agreement; "an assistance agreement for one year with the option for four (4) additional years, not to exceed a total of 5years from the date of the award." After the initial award period, the agreement may be renewed every five years through a competitive process.

Regional Setting and Description of Private Lands

RSO is a non-profit organization whose mission is to promote energy conservation, provide employment opportunities, and optimize productivity of land in rural communities. The proposed ecosanctuary would be on approximately 15,336 acres of private land and consist of 3 different units. For the purpose of identification, the three units will be referred to as: Limestone Ridge (5,061 acres), Bearmouth (5,743 acres) and Nirling Hill (4,531 acres). The Limestone Ridge unit is located approximately two miles northeast of Drummond; the Bearmouth unit is immediately south of Bearmouth, and the Nirling Hill unit is approximately seven miles southwest of Drummond (Map 1). Elevation varies between units from approximately 4,200' to 6,300'. RSO controls the private lands proposed for the ecosanctuary through a contract with Cow Creek Cattle Company, LLC, and corresponding lease agreements with other private entities.

Limestone Ridge and Bearmouth are located near Drummond, Montana which is the closest climatic data available. This area consists of short, warm summers and long, cold winters. The average high temperature for Limestone Ridge and Bearmouth units is 57.5 degrees F.; the average low temperature is 28.3 degrees F. Average annual precipitation for these units is 12.67 inches with about one-third of the precipitation falling as snow. The area experiences 249 days a year where the temperature is below 32 degrees F (www.wrcc.dri.edu).

The Nirling Hill unit is located near Hall, MT which is the closest climatic data available within this area. The average high temperature for the Nirling Hill area is 54.9 degrees F., and the average low temperature is 26.1 degrees F. Average annual precipitation is 10.9 inches a year with about one-third of the precipitation falling as snow. This area experiences 224 days a year where the temperature is below 32 degrees F (www.weatherbase.com).

The Limestone Ridge Unit is divided into 3 pastures with each pasture located at progressively higher elevation. The Bearmouth Unit is divided into eight pastures with the overall unit containing valley floors, North and South facing slopes. The Nirling Hill unit is divided into 7 pastures and varies in topography throughout the unit. The Limestone Ridge and Bearmouth Unit contain approximately 95-98% of established perimeter fencing.

The Limestone Ridge Unit is divided into three pastures with each pasture set at different elevations. Fence measurements indicate that the perimeter fence ranges in height from 27 inches to 61 inches with a variance of 4 to 6 barb wire strands. Fences that have woven wire have 2 strands of barb wire placed above the woven wire. Overall, fence conditions are fair to good, however, repairs are needed. The Bearmouth perimeter fence height ranges from 38

inches to 50 inches with sections containing 4 and 6 strands of barb wire. Fence conditions here vary from poor to good with some broken strands and/or missing strands of barbwire. Woven wire sects are the same design as those mentioned in the Limestone Ridge unit. Random measurements for Nirling Hill unit show fence height from 39 inches to 48 inches with sections varying from 4 to strands of barbwire. Woven wire section is the same design as previously mentioned. Fence conditions vary from poor to good with some broken or missing strands.

Each unit contains branding corrals with woven wire and/or wire feedlot panels around the perimeter and interior of the corrals. One or more building structures are located adjacent or near the branding corrals.

Background

The BLM issued a "Request for Applications (RFA)" to solicit proposals for the creation of a wild horse ecosanctuary. The RFA provided specific information and criteria regarding the care of wild horses and marketing information to be included in applications.

Need

The need for the action is to respond to the proposal for creation of a wild horse ecosanctuary with RSO, specifically to determine whether to accept the proposal, deny the proposal, or accept a modified version of the proposal with terms and conditions. The BLM need is driven by a greater need to address excess wild horses in facilities off of the range. The number of excess wild horses kept in off-range facilities exceeds the number of wild horses on the range. The cost of caring for and gathering wild horses in off-range facilities has strained the Wild Horse and Burro program's budget.

Purpose(s) of the Proposed Action

The purpose for the action is to comply with the BLM's responsibility under the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA) which is to preserve populations of wild horses in good health in their natural habitat while balancing ecological health and multiple-use relationships. In response to the announcement of the BLM creating a more cost-efficient and sustainable wild horse program in 2011, the BLM is developing partnerships with private landowners to create ecosanctuaries for wild horses on private land that, in addition to providing a natural and healthy habitat for the horses, will assist the BLM with meeting the objectives of the WFRHBA.

Decision to be made

The BLM will decide whether or not to accept the proposal and, if so, with what modifications, terms and conditions.

Scoping

BLM published a press release on March 28, 2014 informing the public of RSO's application to provide long term, humane care for up to 325 wild horses, and soliciting public comments.

BLM received sixteen responses from the public after the press release was published. The public responses included: 1 oppose, 1 interest in starting a wild horse ecosanctuary, 1 concern with cost to tax payer for managing wild horses, 6 requesting more information, and 7 supporting the ecosanctuary. The Montana Department of Fish, Wildlife, and Parks sent the BLM a comment letter focusing on various aspects of fish and wildlife.

Conformance with Land Use Plan

The Federal Land Policy and Management Act of 1976 (FLPMA) requires that an action under consideration be in conformance with applicable BLM land use plans and be consistent with other federal, state, and local laws and policies to the extent possible.

The placement of excess wild horses into private grasslands is not subject to BLM land use planning regulations as land-use plans are specific to public rangelands. Removal of wild horses from public rangelands and maintenance of excess wild horses is consistent the WFRHBA.

This project does not pertain to federal administered lands therefore is in conformance with the Garnet Resource Area, Resource Management Plan, 1986 (USDI-BLM, 1986).

Statutes, Regulations, or Other Plans

Removal of excess wild horses from the public rangelands is required by the WFRHBA. The Proposed Action complies with the goals of the Strategic Plan for the Management of Wild Horses and Burros on Public Lands, June 1992. The 2011 Proposed Strategy for Future Management of America's Wild Free Roaming Horses and Burros. These goals include: perpetuating and protecting viable wild horse and burro populations and their habitat, and ensuring humane care and treatment of excess wild horses and burros.

In addition to the WFRHBA and FLPMA, the following statutes and regulations are of primary concern to this environmental assessment:

- The National Environmental Policy Act of 1969, as amended.
- National Historic Preservation Act, as amended.
- Endangered Species Act of 1973, as amended.
- Migratory Bird Treaty Act of 1918, as amended.

The Proposed Action does not conflict with any known State or local planning or zoning ordinance. This proposal is consistent with the land uses occurring within the area (e.g., ranching and agriculture).

Identification of Issues

For the purpose of BLM NEPA analysis, an issue is a point of concern, disagreement, debate, or dispute with a proposed action based on some anticipated environmental or socio-economic effect. Issues identified in this EA point to anticipated environmental effects of the proposed

action and enable the BLM to develop design features or mitigation measures if they are needed. An issue:

- has a cause and effect relationship with the proposed action or alternatives;
- is within the scope of the analysis;
- has not been decided by law, regulation, or previous decisions;
- is amenable to scientific analysis rather than conjecture.

By applying the criteria above to internal and external scoping, and issues relevant to the proposed action were identified and are listed below by resource. Identifying relevant issues associated with the proposed action assists the BLM in the alternative design and decision-making process. Chapter 6.1 and 6.2 lists the persons, groups, and agencies consulted and a summary of the external scoping process. Internal scoping was conducted by using a BLM interdisciplinary team comprised of resource specialists.

Wild Horses

Would the action or alternatives provide natural habitat while balancing ecological health and multiple use as required by the WFRHBA?

Would the action or alternatives result in the maintenance or improvement of soils, riparian areas, and streams?

Part of the Proposed Action (2.1) is to monitor for the objective of maintaining or improving these resources. Wild horses have the potential to impact these resources if use levels cause compaction, altered runoff, erosion, denudation, or water pollution.

How would the proposed action affect the public's access to, appreciation, and knowledge of wild horses?

As part of entering into the Assistance Agreement, the proponent is asked to increase the public's knowledge and appreciation for wild horses through education and access to the horses. The proponent is to come up with a marketing plan as to how they are going to do this. The proceeds from the "eco-tourism" would go back into the Assistance Agreement.

Wildlife

How effective would the proposed perimeter and division fence be at enclosing wild horses while at the same time providing safe passage for deer, elk, moose, pronghorn, bears, trumpeter swans and other wildlife?

Deer, elk, moose, pronghorn, bears, swans, and other wildlife are capable of jumping fences, but many common fence designs and fences in disrepair can snare, injure, and/or kill wildlife. Wire strands can readily entangle legs. Wildlife can be blocked by fences that are too high, impermeable, buried in deep snow, or are located on steep slopes. Woven wire fences can be a complete barrier to fawns and calves even if adults can jump over. Woven wire can snare and

strangle medium-sized animals if they push their heads through the wire mesh, and may block animals such as bears, bobcats, and lynx that are too large to slip through. If woven wire is topped with one or more strands of barbed wire, the fence can become a complete barrier. Animals trying to leap a woven wire fence topped by barbed wire are even more likely to tangle a leg between the top wire and the woven wire. Fences present in trumpeter swan flight path may cause entanglement (Arnold 2014, Paige 2012).

How effective would the proposed winter presence of wild horses be at preventing competition between deer, elk, pronghorn, and wild horses and displacement of elk and deer to other private lands?

Wild horses would remain on the proposed ecosanctuary throughout the winter creating competition between elk, deer, and wild horses. In particular, potential displacement of elk onto adjoining and nearby winter range owned by other landowners is a concern of Montana Fish, Wildlife, and Parks (FWP). Introduction of wild horses on these ranges could result in additional game damage issues in the area. Displacement of elk from Limestone Ridge unit could force elk to move south across Interstate-90 where they would add to an already high concentration of elk on private land intensifying impacts to nearby landowners experiencing elk depredation problems and complicating FWP's ongoing efforts to resolve the problem (Arnold 2014).

How effective would the proposed winter supplemental feeding of wild horses be at preventing deer and elk from feeding, preventing wild horses and elk from comingling, and preventing disease transmission among elk?

Supplemental feeding would attract elk and deer to feed on hay placed out for wild horses. Potential feeding would encourage commingling of wild horses, deer and elk. This would have an economic cost to the ecosanctuary and would create potential disease considerations among elk. Montana Fish, Wildlife, and Parks have expressed concerns over this issue. (Arnold 2014).

How effective would the proposed wild horse carcass removal be at preventing the attraction of grizzly bears, black bears, and gray wolves near home sites, ranch facilities, and areas with human and livestock activity?

Black bears, grizzly bears, and gray wolves can be found throughout the proposed ecosanctuary. All three species may scavenge on carcasses. Carcasses left on the ecosanctuary in remote areas are not a human safety problem, but carcasses left near home sites, ranch facilities, and areas with human or wild horse activity should be removed. Grain and other supplemental feed, such as horse feed and cake, can also attract bears (Arnold 2014).

How effective would the proposed grazing of wild horses be at preserving high-quality grasslands for long-billed curlews and Columbian sharp-tailed grouse?

Long-billed curlews and Columbian sharp-tailed grouse may inhabit the proposed ecosanctuary. Both species require shrub and grass-dominated habitat. Residual cover from the previous fall is important to nesting curlews and nesting sharp-tails. Grazing management removing residual cover could negatively affect breeding habitat. Grazing lands should be in good to excellent

range conditions as defined by the Natural Resource Conservation Service. Grazing management should encourage the use of multiple pastures and include rotational grazing providing heterogeneity across the landscape. Intensive grazing over long periods can have negative effects on sharp-tails (Casey 2013, Connelly 2010).

Vegetation

How would vegetative conditions be affected in the future?

Grazing intensity can affect plant species composition overtime. Inappropriate number of animals that exceed the carrying capacity of the land could contribute to the decline of preferred range conditions.

How would the proposed action affect the spread of noxious weeds?

Grazing livestock can have a substantial impact on noxious weed spread. The impact increases if noxious weeds are already present. As noxious weeds populations increase, the amount of available forage for livestock and wildlife decreases.

Aquatic/Riparian

How would wild horse grazing in the eco-sanctuary affect riparian vegetation, stream banks and instream habitats?

Wild horse grazing along Morris Creek, Antelope Creek, North Fork Lower Willow Creek, Spring Creek and Cow Creek could impede recovery or cause a further decline of riparian vegetation. The loss of riparian vegetation along these streams from past management activities has destabilized stream banks resulting in streams that are wider and more shallow than desired to provide for high quality aquatic habitat.

What is the likelihood of trampling of westslope cutthroat trout eggs and embryos in spawning beds if wild horses are on the ecosanctuary during the spawning/incubation season?

If wild horse use along westslope cutthroat trout streams in the ecosanctuary occurs during the spawning and/or incubation period for westslope cutthroat trout, it is likely that cutthroat eggs and embryos could be trampled. This could result in reduced survival and recruitment of westslope cutthroat trout in Antelope Creek, North Fork Lower Willow Creek, Spring Creek and Cow Creek.

General Resources Checklist:

Resources	Issues Present – to be analyzed in detail	No Issues Identified so not analyzed in detail	Resource not present so not analyzed in detail
Air Quality		x	
Cultural		x	
Vegetation Management	x		
Invasive/Non-native Species	x		
Water Quality	x		
Hydrology and Soils Management	x		
Forest Management		x	
Fire and Fuels Management		x	
Wildland Urban Interface		x	
Livestock Management	x		
Environmental Justice			x
Floodplains			x
Drinking/Ground Water Quality			x
Land and Reality		x	
Minerals		x	
Native American Religious Concerns		x	
Prime or Unique Farm Land			x
Paleontology/Geology Management			x
Socioeconomics		x	
Wild and Scenic Rivers			x
Wild Horse Management	x		
Wildlife Special Status Species	x		
Recreation	x		

2 Description of the Alternatives

This section discusses the alternatives presented in this EA. The Proposed Action (Alternative A) was developed in response to a proposal submitted by Rural Sustainability Organization, Inc. (RSO) to create a wild horse ecosanctuary. Alternative B was developed in response to on the ground assessments of resources and facilities by resource specialists and the issues identified during the scoping process. A No Action (Alternative C) alternative is included to provide a baseline comparison of effects among the alternatives.

RSO submitted the proposal in response to the BLM advertising a Request for Applications (RFA) for Wild Horse Partnerships for Ecosanctuaries on Private Lands. The RFA discussed that proposals must meet the Project Priority Criteria listed below. Also, applicants were to describe how they propose to conduct and achieve the goals of the ecosanctuary; and the

technical requirements that the applicant is to provide for sanctuary infrastructure and the health of horses.

1) Project Objectives
    a. The overall intent of this program is to develop partnerships with willing private landowners in order to provide sanctuary for excess wild horses as an alternative to the current practice of long-term pasture facilities, without a Federal investment in land and a limited investment in infrastructure.
    b. In addition to ensuring the humane care and management of wild horses, each sanctuary will be marketed in a manner designed to encourage public visitation and provide opportunities for learning. Creating an eco-tourism venue may provide economic stimulation and assist communities by providing local job creation. Project-specific objectives include:
        i. To provide facilities that can provide the food, water and shelter necessary to sustain a minimum of 100 horses in good condition. Good condition is described as follows: ribs cannot be visually distinguished, but can be easily felt; backbone is not visible; hip bones do not show; withers are distinguishable but do not protrude; shoulders and neck blend smoothly into the body.
        ii. To provide regular, on-the-ground monitoring of the wild horses to ascertain their well-being and safety.
        iii. To provide care by partnership organizations who are knowledgeable and experienced about the behavior and nutritional requirements of equines and the management of the land they inhabit for the sustained production of grass and other desirable forage plants.
        iv. To provide veterinary services to animals as described in the Technical Approach portion of this document.
        v. To provide a proactive fund-raising campaign within its chartered purposes from which funds will be utilized to support the humane care and management of wild horses.
        vi. To promote visitation to the sanctuaries.
2) Project Priorities
    a. The applicant must explain in their proposal how they will prevent eco-sanctuary horses from interacting with free roaming horses within an HMA or identify that the proposed sanctuary is located a minimum of 10 miles away from existing herd management areas (HMAs). Maps can be accessed on the BLM website:
        i. http://www.blm.gov/wo/st/en/prog/wild_horse_and_burro/wh_b_information_center/statistics_and_maps/herd_area__ha__and.html.
        ii. Demonstrate that the proposed sanctuary is located on land the applicant controls through ownership or lease or other legal means that demonstrates land control.
        iii. Demonstrate that sanctuary infrastructure will be in place before horses are moved into the area and that there are adequate facilities to unload/load, manage and contain wild horses (e.g., meet minimum standards for fencing as delineated in Section IV B 4. Technical Approach).

iv. Address the applicant's ability to manage a non-reproducing herd.
v. Demonstrate that adequate forage and water for the horses received will be available primarily as pasture, and available year-round, or that supplemental feed will be of such quality and fed in sufficient quantity to sustain horses in good condition.
vi. Demonstrate the applicant will cooperate with the BLM during agency compilation of the applicable environmental compliance documents (e.g. required analysis under Endangered Species Act or National Environmental Policy Act). The environmental documents must be completed prior to receiving horses.
vii. Provide a plan for fundraising activities as well as promoting eco-tourism by attracting visitors to the sanctuary. The applicant should provide details regarding infrastructure or activities for viewing the horses in a safe environment for both the public and the horses.
viii. Identify how maintenance records for all horses placed in the proponent's care will be accomplished.
ix. Identify a disease abatement plan and how it will be implemented in the event of the outbreak of disease.
x. Identify how safety protocols will be developed and followed.
xi. Identify procedures that will be used in the event a horse dies while under the applicant's care.
xii. Identify a contingency plan to ensure wild horses remain in good condition during difficult weather events, deep snow, prolonged drought and a plan to evacuate horses if a fire emergency is encountered.
xiii. Address how eco-sanctuary horses that graze on native (wild and uncultivated) rangelands within the eco-sanctuary will be managed to ensure that rangeland ecological processes, including the hydrologic cycle, nutrient cycle and energy flow, are maintained in order to support healthy watersheds and native biotic populations and communities.
xiv. Demonstrate the applicant will be eligible to secure a bond up to $100,000.00 if awarded a cooperative agreement to cover removal expenses of horses should the partnership be terminated.
xv. Ensure the establishment of the sanctuary will be in compliance with all Federal, State, and local governmental law and/or ordinances.
xvi. Demonstrate that all events and activities will positively portray the BLM Wild Horse and Burro Program.

3) Technical Requirements
   a. Corrals
      i. Corrals should be permanent. It is anticipated that the corrals will be used to receive, hold, gather, ship and prepare horses. The corrals should be at least 72" high and made of stoutly constructed material i.e. pipe, steel, lumber, etc. No barbed wire will be allowed in the construction of corrals and any corral constructed of mesh wire (openings no larger than 2 by 4 inches) must be equipped with at least 3 wood sight boards (2 by 8 inches) located on the upper portion of the fence. The three sight boards should be spaced no more than 12 inches apart. Corrals constructed of pipe or wood

must have openings of not more than 12 inches between horizontal members. Corrals and holding areas need to be free of protrusions, and hazards. Corral gates should be constructed of wood or pipe the same height as the fences. Gates should be visible to the horses either from the materials used in construction or by using materials such as plywood or plastic mesh placed on the gates. The recipient should furnish a stable area (concrete or gravel) to place a hydraulic squeeze chute provided by the BLM. Electricity (120) must be available to run the hydraulic squeeze chute.

ii. Soil types in corrals/pens must be well drained and non-alkaline in nature. Slopes within the pens should provide for adequate drainage.

iii. Adequate chutes and crowding alleys to facilitate gathering, preparing, and shipping animals.

iv. The runway must have solid sides, have at least three sliding gates, be solidly constructed of steel or lumber, be at least 36' in length, 28-32" wide, and at least 72"tall.

v. All animals should be maintained, treated, handled, and destroyed, when necessary, by experienced personnel in a humane manner and in accordance with all applicable Federal, State, and Local Laws and regulations. Animals should be worked individually to prevent injuries from crowding or trampling.

b. Unloading and Working Facility

i. The facility should have a loading and unloading chute, sufficient to safely unload and load semi-trailer trucks and small stock trailers. Chutes should have solid sides which restrict the animal's vision and will minimize the risk that animals may attempt to jump out of the chute. Width of the chute must be at least 32 inches. If chute has brace bar(s) between the two sides, across the top, there must be a 72" minimum head clearance.

ii. Fences should be at a minimum of 72 inches high, stoutly constructed and made of lumber, pipe, or steel.

c. Fences

i. Perimeter and division fences should be a minimum of 48" in height and completely enclose the facility. All the fences should consist of four strands of barbed wire or other acceptable fencing materials.

ii. If determined by the PO, it may be necessary for the recipient to flag certain fences with eight (8) inches of flagging attached to the top horizontal member of the fence every 20 feet to make the fences more visible to the horses (or native wildlife). In some areas, wildlife-friendly fences will need to be constructed (these may include raising the bottom wire from 16-18" off the ground; use of a white resin coated top wire, use of smooth (as compared to barbed wire) at key wildlife crossings; the use of extensive flagging or attaching a piece of white PVC pipe to the top wire to increase visibility; or the construction of gates or sections of let-down fence at key wildlife crossings and opening or letting down these sections when horses are not grazing in the pasture.

iii. Gates, rather than cattle guards, should be used at all road crossings or fence openings to keep horses in pastures.

d. Veterinary Services: Selection of veterinarian will be negotiated prior to award. Specific veterinary services should be performed as follows:
   i. Booster and vaccinations
   ii. Diagnose sick horses.
   iii. Treat sick and injured horses.
   iv. Issue health certificates for interstate shipment of animals.
   v. Provide in writing to the PO the probable cause of death of animals that die at or en route to the facility.
   vi. Humanely euthanize wild horses when necessary, and provide a written report to the PO.
   vii. Collect tissue samples for postmortem examination as directed by the PO.

2.1 Proposed Action (Alternative A)

Under this alternative, the BLM would enter into an Assistance Agreement (AA) with Rural Sustainability Organization, Inc. (RSO) for the humane care and management of excess wild horses (geldings). The AA allows the BLM to:

- Develop a partnership with willing private landowners in order to provide sanctuary for excess wild horses as an alternative to the current practice of long-term pasture facilities, without a Federal investment in land and a limited investment in infrastructure.
- Ensure the humane care and management of wild horses.
- Ensure the sanctuary would be marketed in a manner designed to encourage public visitation and provide opportunities for learning.
- Create an eco-tourism venue which would provide economic stimulation and assist communities by providing local job creation.

By entering into the AA, the BLM would provide funding to RSO for the care and management of wild horses; and would place up to 325 excess wild horses in RSO's care. The AA would be awarded for one year, with the option for four additional years, not to exceed a total of five years from the date of the award. Following the initial five year agreement period, RSO would have to go through the agreements process to continue the partnership for management of the ecosanctuary. In the event the horses would need to be removed, RSO would secure a $100,000 bond to cover the cost associated with the removal.

While the BLM does not have authority of resources on private lands, the management of horses and resources are included in this EA as "Connected Actions" because entering into an AA for the care of wild horses requires approval by the BLM.

Non-federal Connected Action

RSO proposes to develop a partnership between the BLM and Cow Creek Cattle Company to create, operate, and maintain a wild horse ecosanctuary with up to 325 horses on approximately

15,336 acres of privately owned lands. Creation of the ecosanctuary would require excess wild horses managed by the BLM. As such, the creation of the ecosanctuary cannot proceed without BLM's approval to enter into an AA with RSO for the care and management of excess wild horses. Because the connected action can be prevented by the BLM's decision, the effects of the connected action are properly considered indirect effects of the proposed action, and are analyzed as effects of the proposed action (40 CFR 1508.7 and 1508.25[c]).

Lands

As described in Chapter 1, the ecosanctuary would be located on approximately 15,336 acres of private land and consist of 3 different units. The units are designated as Limestone Ridge (~5,061 acres), Bearmouth (~5,743 acres), and Nirling Hill (~4,531 acres). RSO controls the private lands proposed for the ecosanctuary through a contract with Cow Creek Cattle Company, LLC, and corresponding lease agreements with other private entities.

Containment and Working Facilities

Acclimation Pens

Delivered horses would be placed in pens constructed of large square bales with a gate on one end facing the pasture they are to be released in.

Corrals

Existing corrals would be maintained, updated, or replaced to meet the technical requirements previously described.

Fences

Property boundaries would need to be surveyed. Map 2 illustrates where fences would be installed, removed, or replaced. An estimated cost for surveying and fencing (new, replaced, and maintained) is approximately $34,000. All fences would meet BLM's technical requirements. BLM lands adjacent to the private lands proposed for the ecosanctuary would be fenced to exclude wild horses from public lands.

Gates

Gates, rather than cattle guards, would be used at all road crossings or fence openings to keep horses in pastures.

Unloading and Working Facilities

Working facilities would be located at the base of each pasture. Working facilities would consist of portable panels. Additional materials (concrete and posts) and labor to construct and move the facilities is estimated to be $10,000. One set of panels would be moved from pasture to pasture.

Forage Inventory and Water Resources

Forage Inventory

Stocking rates of the private lands were estimated by RSO and are based off of 10+ years of grazing livestock.

Supplemental Feed
Up to 500 tons of hay are available on an annual basis. If needed, more hay would be purchased from local sources.

Water Resources
All three units of the ecosanctuary have sufficient water resources (streams and developed springs) that would be available to wild horses year round. If it becomes obvious another source of live water in the winter is needed, there are springs or perennial streams that can be developed for continuous flow into tanks. If necessary, a well can be drilled and a heated water tank installed as electricity is available within a half mile from the pastures.

Wild Horse Management

Handling of Wild Horses
RSO would contract with a private company for the on-the-ground management and handling of the wild horses. The handling of wild horses would be minimized to the extent possible. When horses need to be handled, preferred methods of luring such as using water, salt and feed would be used.

Grazing Management Plan/Pasture Composition
The goal of the grazing management plan is to maintain and improve resources. The grazing plan is designed to ensure that horses would be provided with adequate forage and water year round. In the event more forage and water would be needed, a contingency plan is discussed under "Wild Horse Health" to mitigate these measures.

The pastures include both native range and improved pastures varying in size from 320 acres to 1200 acres. The native range is composed primarily of rough and Idaho fescue, bluebunch wheatgrass and various forbs. The improved pasture is seeded with crested wheatgrass and alfalfa. The sub irrigated and riparian areas are composed primarily of smooth brome, timothy and crab grass.

The following noxious weeds occur in one or more of the pastures: houndstongue, leafy spurge, spotted knapweed, and dalmation toadflax. Management would consist of releasing available biological control agents for noxious weeds as well as herbicide control where required.

A rest rotation with a seasonal rest (see Map 3) and summer/winter pastures would be utilized. Summer pastures would be used from May 15th through November 15th and would be the higher elevation north facing pastures. Winter pastures would be used from November 16th through May 14th and would be lower elevation south facing pastures. Annually, one pasture would be rested. Seventy-five horses would be placed in the Limestone Ridge Unit, 150 horses would be placed in the Bearmouth Unit, and 100 horses in the Nirling Hill Unit.

Horse Identification and Records
The RSO would be responsible for reporting and record keeping. Given that all long-term holding horses have 3" or 4" hip or neck brands that correspond with the last four numbers of

their freezemarks, RSO would maintain records using these freezemarks and hip brands. The horse numbers will be entered into a database where they will be tracked as follows:

- Hip Brand.
- Neck Brand.
- Color.
- Markings.
- Date Vaccinated/Types of Vaccine Given.
- Notes.

Wild Horse Health

Veterinary Services
Selection of a veterinarian would be negotiated prior to award. Specific veterinary services should be performed as follows:

- Booster and vaccinations.
- Diagnose sick horses.
- Treat sick and injured horses.
- Issue health certificates for interstate shipment of animals.
- Provide in writing to the Program Officer (PO) the probable cause of death of animals that die at or en route to the facility.
- Humanely euthanize wild horses when necessary, and provide a written report to the PO.
- Collect tissue samples for postmortem examination as directed by the PO.

Disease Abatement Plan
The disease abatement plan would be an extension of the ground monitoring. In the event of a sick horse being identified, it would be sorted off and quarantined away from the rest of the herd. The horse would be inspected by a veterinarian to determine the ailment, treated as necessary, and only allowed to rejoin the herd after written approval by the veterinarian.

In the event that a horse dies under RSO's care, a tissue sample would be taken by a veterinarian and the sample would be sent to a lab to establish the cause of death. The BLM would be notified immediately of any death. Photos would be taken and sent to the P.O. as soon as the test results are in. The BLM would be given a full report of the mortality. Carcasses would be removed and taken to the Drummond city dump where they would be composted using The Blackfoot Challenge's carcass removal program.

Contingency Plan
In the event of extreme weather (i.e. drought, winter conditions, etc.) or wildfire, wild horses would be relocated, if needed, to a safe pasture where they would be fed ample amounts to ensure they remain in good condition and to minimize impacts to the native range from grazing pressure.

In severe winter weather, windbreaks would be erected with large straw square bales; and straw would be strewn on the ground to provide thermal bedding. When necessary, snow would be plowed for feeding. Historically, the snowfall only lasts for a couple of days on the south facing slopes and if it should last longer, there are additional local sources to purchase hay.

In severe winter conditions, water gaps would be made in ice covered streams and horses would be fed close to streams to limit distance traveled to water sources. The winter pastures would have been rested and supplemental feed would be provided when needed. If it becomes obvious another source of live water in the winter is needed, there are springs or perennial streams that can be developed for continuous flow into tanks. If necessary, a well can be drilled and a heated water tank installed as electricity is located within a half mile from the pastures.

Safety Protocols
To help ensure the safety of workers and the general public, RSO has placed specific restrictions on the types of activities in which RSO and Cow Creek Cattle Company employees may be involved.

Enhanced Safety Measures
Each project must institute safeguards as necessary and appropriate to ensure the safety of participants. Listed below are procedures which employees must undertake to help ensure the safety of both the wild horses and the employees.

Safety Awareness Training: Training would provide clear guidance for employee safety as well as procedures to help ensure wild horse safety. Training would occur in pre-work settings as well as during work, as determined by specific project activity and needs identified during project operation. The training should also include sessions on:

- Avoiding dangerous situations
- Procedures for obtaining immediate assistance in the event of an emergency,
- including explicit guidelines for reacting to dangerous or threatening situations
- Becoming familiar with the community
- Interaction with supervisors and other employees
- Prevention of occupational hazards (safe handling of equipment and tools)
- Appropriate and prohibited activities

Range and Pasture Monitoring Plan
Monitoring objectives on all lands would be to maintain or improve resources, including soils, riparian areas, streams, wildlife, plants, etc.

A one-time ecological baseline reading would be employed to capture and portray the functions relating to nutrient, hydrologic, biotic state, and energy flow processes. Baseline information would also include plant inventory, frequency, compositional measurements, annual precipitation, soil cover, and utilization (seasonal and annually). Annually, sites would be visited, maintained, and read (late summer or fall), employing a standard annual field method

focused on capturing core ecological indicators and management information. Daily observations would be done to assess forage availability.

Monitoring sites would be located relative to access, soils, topography, pasture configuration, and distance to stock water. The scale of the program would be determined once the project is engaged.

Ecosanctuary Marketing Strategy

The objectives are to bring people into Granite County, offer educational opportunities and sustain a viable ecotourism business.

RSO would team up with Inspired Classroom to create a signature science based curriculum that would meet Next Generation Science Standards, Common Core State Standards, and STEM Standards. Elementary students would become scientists and use real world data to determine wild horse behavior. They would be allowed to set up monitoring stations with webcams to watch the horses interact and record their behaviors. Teachers would have the opportunity to enroll their students in a series of lessons on Native American culture, Ghost towns, homesteads, paleontology, geology and geography all with field related experiments and curriculum.

RSO would coordinate with tourism groups and local luxury resorts to offer day trip venues with educational opportunities. These day trips would be family oriented with the goal to view the wild horses and allow for photography but would be backed up with visits to old homesteads, pictographs, dinosaur digs and local geography lessons.

RSO would market the ecosanctuary in a manner that promotes public visitation and provides opportunities for learning. A benefit of the marketing plan includes raising public awareness and participation in the Wild Horse and Burro Program, thereby potentially increasing the total number of annual wild horse adoptions. In addition, the ecosanctuary would provide unique opportunities to view and learn about wild horses, their history, and their potential as working horses, therapy horses, show horses, and pets.

A marketing plan would be developed upon approval of the AA and could include the following:

- Road signage on designated viewing routes.
- Designated “wild horse” viewing routes would include Interstate 90, Highway 271, Mullan Road, Willow Creek Reservoir Road, and the Frontage Road. Also for viewing on these roads are pictographs, and various forms of wildlife.
- A kiosk in Drummond, Montana educating the public about BLMs Wild Horse and Burro Program and the most likely places to drive for viewing the wild horses.
- Granite County could designate viewing areas and RSO would post with signs, “do not enter, harass, feed, or touch the horses”.
- Social Media creates an opportunity for local businesses to reach out and promote eco-tourism globally through the use of the internet, Facebook and Twitter as well as locally sponsored events.
- UTV Tours

- **Scheduling:** Initially, the tours would be by appointment and RSO would later have designated days. Each tour would take 1 1/2 hours and would take tourists over the Old Mullan Road to view the wild horses as well as other attractions.
- **Tour Details:** The UTVs would stay on designated roads through the pastures and there would be no off-roading. Each UTV would be equipped with a first aid kit, fire extinguisher, drinking water and snacks. The tours would be educational, promoting the wild horse and burro program with BLM approved brochures about the history of wild horses and the ecosanctuary approach to managing non-reproducing herds.
- **Cost:** Each tour would cost $25.00 per person.
- **Expenses:** UTV, insurance, tour guide, fuel, maintenance, helmets & safety equipment. Estimated startup cost = $30,000.00

Local Job Opportunities

Local events could provide businesses with opportunities to host dances, parades, and reception areas. Scenic routes would offer opportunities for tour buses to engage citizens in the history of wild horses while taking them through viewing areas. RSO and Cow Creek Cattle Company would employ local people in the following areas:

- Fencing
- General labor
- Construction

2.2 Alternative B

This alternative was developed to address the issues described in Chapter 1 and to provide a natural and healthy habitat for excess wild horses while conserving the environment and ecology of the lands as described in the RFA (USDI-BLM, 2012). To that end, this alternative includes a guideline to limit forage utilization to 50 percent.

Under this alternative, the BLM would enter into an AA with Rural Sustainability RSO for the humane care and management of excess wild horses (geldings). This alternative is similar to the proposed action and would place a lower number of excess wild horses in RSO's care along with additional terms.

The AA allows the BLM to:

- Develop a partnership with willing private landowners in order to provide sanctuary for excess wild horses as an alternative to the current practice of long-term pasture facilities, without a Federal investment in land and a limited investment in infrastructure.
- Ensure the humane care and management of wild horses.
- Ensure the sanctuary would be marketed in a manner designed to encourage public visitation and provide opportunities for learning.

- Create an eco-tourism venue which would provide economic stimulation and assist communities by providing local job creation.

By entering into the AA, the BLM would provide funding to RSO for the care and management of wild horses; and would place up to 97 excess wild horses (geldings) in RSO's care with the potential of supplemental feeding for 90 days during the winter. The AA would be awarded for one year, with the option for four additional years, not to exceed a total of five years from the date of the award. Following the initial five year agreement period, RSO would have to go through the agreements process to continue the partnership for management of the ecosanctuary. In the event the horses would need to be removed, RSO would secure a $100,000 bond to cover the cost associated with the removal.

While the BLM does not have authority over resources on private lands, the management of horses and resources are included in this EA as "Connected Actions" because entering into an AA for the care of wild horses requires approval by the BLM.

Non-federal Connected Action

RSO proposes to develop a partnership between the BLM and Cow Creek Cattle Company to create, operate, and maintain a wild horse ecosanctuary with up to 97 wild horses (geldings) on approximately 15,336 acres of privately owned lands. Creation of the ecosanctuary would require excess wild horses managed by the BLM. As such, the creation of the ecosanctuary cannot proceed without BLM's approval to enter into an AA with RSO for the care and management of excess wild horses. Because the connected action can be prevented by the BLM's decision, the effects of the connected action are properly considered indirect effects of the proposed action, and are analyzed as effects of the proposed action (40 CFR 1508.7 and 1508.25[c]).

Design Features

The following range improvements and treatments are designed to address the purpose and need; minimize the impacts on resources and create ecosanctuaries for wild horses on private land that, in addition to providing a natural and healthy habitat for the horses.

1. Insert wildlife escape ramps in all livestock tanks; repair and clean tanks

2. Existing and new perimeter fencing would be repaired/constructed at the height of 48" with the top and bottom being smooth wire and middle strands would be barb wire. Existing and new interior fencing would be repaired/constructed using a wildlife friendly design.

3. If cake is used for winter supplemental feeding, cake would be stored in bear proof containment structures or facilities.

4. Remove horse carcasses near home sites, ranch facilities, and areas with human or livestock activity; horse carcasses in remote areas could be left on site.

5. Provide a mixture of light and moderate grazing

6. Insure adequate water availability during all seasons

Features Common to the Proposed Action (Alternative A) and Alternative B

The following under this alternative are the same proposals as listed under the Proposed Action (Alternative A):

- Lands.
- Containment and Working Facilities:
  Acclimation Pens – Corrals – Gates – Unloading/Working Facilities.
- Wild Horse Management:
  Grazing Management Plan/Pasture Composition – Horse Identification and Records.
- Wild Horse Health:
  Veterinary Services – Disease Abatement Plan – Contingency Plan – Safety Protocols Enhance Safety Measures – Range and Pasture Monitoring Plan.
- Ecosanctuary Marketing Strategy:
  Scheduling – Tour Details – Cost – Expenses.
- Local Job Opportunities.

Fences
Existing and new perimeter fencing would be repaired/constructed at the height of 48" with the top and bottom being smooth wire and middle strands would be barb wire. Existing and new interior fencing would be repaired/constructed using a wildlife friendly design.

Forage Inventory
Stocking rates of the private lands are based on topography and actual forage data collected from selected key areas. See Appendix A for description and calculations.

Supplemental Feed
Up to 500 tons of hay are available on an annual basis. If needed, RSO would purchase additional hay from local sources. Supplemental feed such as cake may also be used during winter conditions. If cake is stored on site it should be stored in bear proof containment structures or facilities.

Water Resources
All three units of the ecosanctuary have sufficient water resources (streams and developed springs) that would be available to wild horses year round. If it becomes obvious another source of live water in the winter is needed, there are springs or perennial streams that can be developed for continuous flow into tanks. If necessary and if approved by BLM, a well can be drilled and a heated water tank installed as electricity is within a half mile from the pastures. Water tanks/troughs whether functional or not shall have wildlife ramps installed by RSO to provide an escape ramp for small mammals and birds that may become trapped within the water tanks/troughs.

Wild Horse Management

Handling of Wild Horses
RSO would contract with a private company for the on-the-ground management and handling of the wild horses. The handling of wild horses would be minimized to the extent possible. The handling of horses may only be by horse back or methods of luring using water, salt and feed.

Grazing Management Plan/Pasture Composition
The goal of the grazing management plan is to maintain and improve resources. The grazing plan would be designed to ensure that horses would be provided with adequate forage and water year round.

A rest rotation with a seasonal rest (see Map 3) and summer/winter pastures would be utilized. Summer pastures would be used from May 15th through November 15th and would be the higher elevation north facing pastures. Winter pastures would be used from November 16th through May 14th and could be lower elevation south facing pastures. Annually, one pasture would be rested. A deferred rotation may be implemented in the Limestone Ridge unit due to elevation and size of pastures. In reference to the definition of "Ecosanctuary" to conserve the environment and ecology of the lands and providing a natural and healthy habitat for excess wild horses, a standard range management guiding principle of maximum use (50%) of available forage will be implemented. When up to 50% use is reached in established key areas or monitoring sites, wild horses will be moved to the next pasture of rotation.

Twenty-six horses would be placed in the Limestone Ridge Unit, thirty-six horses would be placed in the Bearmouth Unit, and thirty-five horses in the Nirling Hill Unit. All proposed ecosanctuary units will be exclusive use for wild horses (geldings) under RSO's care.

2.3 No Action Alternative

Under this alternative, the BLM would not enter into an AA with RSO or provide them with excess wild horses on the privately controlled lands in Granite County, Montana. The No Action alternative would continue management of this area under the private landowner's discretion. Excess wild horses removed from public rangelands would either be sent to other grassland pasture facilities or would be cared for in short-term holding facilities

3 Affected Environment

3.1 Vegetation

Soils and Ecological Sites

Limestone Ridge Unit
The Limestone Ridge Unit consist of six different ecological sites, ranging from steep slope conifer forest with grassy understory to wet meadow bottomlands to steep, open loam hills.

Ecological site descriptions are used to stratify the landscape and organize ecological information for purposes of monitoring, assessment, and management. An ecological site, as defined for rangeland, is a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation. (USDA, NRCS Ecological Information Site http://esis.sc.egov.usda.gov). Six ecological sites exist on the Limestone Ridge Unit: coarse uplands, silty, loamy, shallow loamy, coarse calcareous slopes, clayey.

The Limestone Ridge Unit is located in an area where the soil series are classified as Haplustalf soils in the coarse uplands with areas of Trapps, Whitecow, Yreka gravelly loam and Calciusept soils on Limestone Ridge (88 E&F; 95F; 98D,E,&F); Argiustolls in the shallow loamy and silty ecological sites (151E); Pachic Argiustolls in the coarse calcareous slopes (442E) ; Roy-Shawmut-Danvers Complex fine-textured Argiustolls in the clayey ecological sites (351E); Cumulic Haplustolls in the loamy draws across the ecosanctuary (25B). Many smaller soil inclusions exist across the Limestone Ridge Unit; however, a strong majority of these inclusions exist within the parameters of rocky, steep, calcareous parent materials, often varying only due to slope percentage and not changing overall soil characteristic. Many sites are considered to be droughty and shallow.

Approximately one-third of the Limestone Ridge Unit rangelands (~1,689 acres or 33 percent) consist of coarse uplands with numerous rock outcrops. This shallow, rocky, droughty, well-drained soil is found on backslopes and shoulder slopes in colluvium derived from calcareous limestone. Typically, the surface of this coarse upland ecological site contains high gravel and cobble content and is found on very steep (35-60 percent slopes) backslopes and slightly steep shoulder slopes (15-35 percent slopes) of mountains and hills. Potential native vegetation consists of bluebunch wheatgrass, sandberg bluegrass, junegrass, green needlegrass, arrowleaf balsamroot, Idaho fescue, antelope bitterbrush, snowberry, pinegrass, juniper, rough fescue, Wood's rose, and serviceberry.
The loamy ecological site (~260 acres or 5 percent) is a moderately deep and well-drained soil formed in residuum and alluvium derived from calcareous limestone. It is found on alluvial fans, stream terraces, and toe slopes. Potential vegetation includes bluebunch wheatgrass, needle-and-thread, green needlegrass, Sandberg bluegrass, junegrass, fringed sagewort, rubber rabbitbrush, western wheatgrass, and other perennial forbs.

The shallow loamy ecological site (~708 acres or 14 percent) is a shallow, well-drained soil formed in calcareous alluvium and colluvium derived from limestone. It is found on footslopes and backslopes across the Limestone Ridge unit. Potential native vegetation typically includes rough fescue, bluebunch wheatgrass, Idaho fescue, green needlegrass, lupine, sagebrush, junegrass, Sandberg bluegrass, and various perennial forbs.

The coarse, calcareous slopes ecological site (~1,061 acres or 21 percent) is a deep, well-drained, alkaline soil located in open, dry, slightly steep (15-35 percent slopes) backslopes and foot slopes across the Limestone Ridge Unit. These soils are derived from colluvium originating from limestone. Expected vegetation on these sites includes bluebunch wheatgrass, Idaho fescue, green needlegrass, Sandberg bluegrass, junegrass, arrowleaf balsamroot, antelope bitterbrush, and other perennial forbs.

The silty ecological site (~169.4 acres or 3.5 percent) is a deep, well-drained, slightly alkaline soil located on footslopes and toe slopes of alluvial fans and stream terraces. The silty material is formed from alluvium derived from the surrounding hills, many of which are made of calcareous limestone. Potential vegetation for these sites includes rough fescue, bluebunch wheatgrass, Idaho fescue, green needlegrass, Sandberg bluegrass, junegrass, lupine, fringed sagewort, and other perennial shrubs/forbs.

The clayey ecological site (~1081 acres or 21 percent) is a deep, well-drained, moderately alkaline soil located on toeslopes of alluvial fans and stream terraces at lower elevations and drainage bottoms. These soils are derived from alluvium originating from the limestone ridges above these drainages. Typical vegetation expected at these sites includes bluebunch wheatgrass, green needlegrass, needle-and-thread, junegrass, and other perennial forbs/shrubs.

The lower elevations of the southern pasture (Sec. 1, 11, 12, T10N, R12W) begin to rise in elevation from 4,000 feet northward with small open knolls and ridges towards Limestone Ridge (located in the northern pasture). These lower elevations consist mostly of clayey and silty ecological sites formed by many fine-textured alluvial soils – the largest of which is the Roy-Shawmut-Danvers complex and covers approximately 672 acres. Permeability of these soils is moderate and available water capacity is high. Occasionally, a soil inclusion on ridgelines will present itself as a dry and rocky site and is ecologically classified as a droughty site. Potential production with these sites may reach 1550 lbs./acre under favorable conditions and 750 lbs./acre during unfavorable conditions (USDA, NRCS, Granite County Soil Survey, 1996). The southern pasture does not rise above 4,750 feet in elevation. These higher elevation sites on ridges and knolls will provide drier, rockier conditions and limited production of perennial forage.

Upon entering the northern pasture (Sec. 23, 26, 27, 35, T10N, R12W) from the south, elevation continues to rise rapidly and slope percentages begin to increase. This area is split between rocky, open, south-facing, juniper-sagebrush grasslands and higher elevation coniferous forest. These soils are increasingly dominated by the coarse, calcareous slopes and coarse upland ecological sites made up of the Trapps, Whitecow, and Yreka gravelly, and cobbly loams. Around the 4,600-5,200 feet elevation zone, there are several drainages and gullies with intermittent tree stands that are infrequent in the southern pasture. The open hillsides and exposed ridgelines will continue to produce dry/upland vegetation with intermitent rocky outcrops. At the base of Limestone Ridge, the slope percentage increases and the ecological site shifts to Ponderosa/Douglas Fir coniferous forest and shrub/forb-dominated understory. These sites produce limited preferred forage for grazing. Permeability of these soils is rapid and available water capacity is low.

Several field trips were conducted in the spring of 2014 with a Range Management Specialist with NRCS to select key sites for establishing forage production and data collection. Field observation revealed the majority of the unit displayed low amounts of litter content on soil surfaces. Species composition was similar to ecological site description, however, Sandburg bluegrass and junegrass were found to be greater in population than expected. Rough fescue populations were limited in the sites with little or no litter from previous year's growth. Steeper

slopes and areas further away from salting and watering areas contained vegetative characteristics expected with some litter in contact with the soil surface. Forage production for most sites is below its potential.

Bearmouth Unit

The Bearmouth Unit consist of five different ecological sites, ranging from low-temperature conifer forest with grassy understory to wet meadow bottomlands to steep, open loam hills. The five different ecological sites on the Bearmouth Unit are: loamy, coarse loamy, coarse rocky uplands, low-temperature forested uplands, and wet bottomlands.

The Bearmouth Unit can be divided into two main sections: north of Antelope Creek and south of Antelope Creek. All ecological sites are found in both sections, except for the wet bottomlands which are only found north of Antelope Creek (North ½, Sec. 18 T11N, R13W).

The soil series in the loamy ecological sites are classified as fine-textured Argiustolls in the Ekah, Fergus, and Martinsdale loams (56B,C,&D; 140C; and 52D, respectively) and Haplustolls in the Quigley series (60B,D) with areas having shrink-swell properties in the Fergus (140C) and Martinsdale (52D) soils. The coarse loamy ecological sites contain rocky, skeletal Argiustolls in the Roy-Shawmutt-Danvers complex (351E,F) as well as the individual series making up this complex. The coarse loamy sites also include\ areas of Calciustolls in the Winspect gravelly soils (39D,F) and Haplustalfs in the Yreka gravelly loam (95E,F).

The coarse, rocky upland sites contain Calciustolls with measurable amounts of Calcium Carbonate accumulation in the Windham-Lap-rock outcrop complex (839D,E,F). Included in the coarse, forested upland sites are deep Argiustolls in the Braziel-Tolbert-Rock outcrop complex (200E,F) and Haplustepts (886E) in the steep, forested areas. The low-temperature forested upland sites contain much shallower, less developed Calciustepts in the Whitecow series (88E, 488F) with pockets of deeper Pachic Argiustolls in the Fessler gravelly loams (94E,F). Also found in the low-temperature forested upland sites are rocky, clayey Haplustalfs in the Bignell, dry-Yreka, cool complex (299E, 399E).

The wet bottomlands found around the pond and abandoned meanders in Section 18 north of Antelope Creek contain less-developed Aeric Fluvaquents in the McCabe-Canarway complex and Albicaulis series (11A;12A) and deeper, well-developed Aquic Haplustolls in the Gregson series (434B). These major soil types represent approximately 95% of the land within the boundaries of the Bearmouth Unit. Many smaller inclusions exist across this north half of the Bearmouth Unit; however, these inclusions exist within the parameters of rocky, steep, calcareous parent materials, often varying only due to slope aspect and steepness and not changing overall soil characteristic.

Approximately one-half of the Bearmouth Unit rangelands (~2,283 acres or 40.9 percent) consist of well-developed loams found across alluvial fans and stream terraces. This deep soil occurs most frequently in the low bottomlands on the north and south of Antelope Creek, below 4,200 feet in elevation. Typically, the surface of this low-lying site consists of fine-textured loam in drainage bottoms or outwash plains below mountains and hills. Potential vegetation consists of rough fescue, bluebunch wheatgrass, Columbia needlegrass, Idaho fescue, and green

needlegrass. Sandberg bluegrass and junegrass are found in increasing numbers here. The shrub community is dominated by big sagebrush.

The coarse loamy ecological site (~1,532.6 or 27.4 percent) consists of open, gravelly loams on dry, droughty hill slopes, alluvial fans, and stream terraces. These soils are characterized by clayey textures, but contain large amounts of cobble and gravel fragments and are found on footslopes and backslopes of calcareous mountains and hills. Potential vegetation is characterized by bluebunch wheatgrass and rough fescue co-dominance followed by occurrences of green needlegrass, Idaho fescue, western wheatgrass, lupine and big sagebrush.

The coarse, rocky uplands (~832.3 acres or 14.9 percent) found across the Bearmouth Unit are largely made up of deep, calcium-rich, rocky soils derived from limestone colluvium on mountainous shoulders and backslopes. On very steep slopes, shallow, rocky, less-developed soils occur but are still characterized by rocky, calcium-rich soils with organic deposits from the forest overstory. The steep slopes associated with this ecological site lead to well-drained to excessively well-drained soils. Expected vegetation typically consists of Douglas-fir overstory with an understory dominated by forbs and shrubs including elk sedge, arrowleaf balsamroot, white spirea, and snowberry. Bluebunch wheatgrass and rough fescue are subdominant grasses in these sites.

The low-temperature forested uplands (~584.9 acres or 10.5%) are found at high elevation sites on steep (15-60%) slopes throughout the Bearmouth Unit. The soils on this ecological site are derived from limestone colluvium on the north side of Antelope Creek and igneous colluvium and residuum on the south side. These soils are found on footslopes and backslopes of mountains. Expected vegetation on these sites is dominated by Douglas-fir overstory with an understory dominated by elk sedge, arrowleaf balsamroot, white spirea, and snowberry. Bluebunch wheatgrass is an expected common grass on this site, along with occurrences of rough fescue and pinegrass.

The wet bottomland ecological site (~75.5 acres or 1.3%) is primarily found in Section 18 north of Antelope Creek. This site is defined by hydric soil conditions and a high water table. Expected native vegetation for this site is reedgrass, sedge, tufted hairgrass, Great Basin wildrye, bearded wheatgrass, mannagrass, wild iris, shrubby cinquefoil and willows.

South of Antelope Creek, a low-elevation, steep ridge rolls from ~4,922 feet (Sec. 31, T11N, R13W) towards lower hills to the west. The highest elevation on this point sits on a shoulder slope made of igneous-derived colluvium typical of the coarse, rocky ecological sites across the Bearmouth Unit, covering approximately 832.3 acres across the Bearmouth Unit. Permeability of these soils is moderately high and the available water is low. Occasionally, these sites will present themselves with no forest overstory and become increasingly droughty. These soils are ideally suited for production of rough fescue, Idaho fescue, and bluebunch wheatgrass; however, the current species composition is beginning to transition away from a climax community – specifically on the north-facing slopes in the SW1/4 of Sec. 30. Litter and ground cover is low. Production here could be expected to reach 1500 lbs./acre in favorable conditions and 800 lbs./acre during unfavorable conditions (USDA, NRCS,Granite County Soil Survey, 1996). Moving west-northwest along the ridgeline South of Antelope Creek, both elevation and slope

decrease. Steep slopes are only found in the few forested drainages along this ridgeline and present themselves as the low-temperature, forested upland ecological sites. Exposed, grassy hills slope gently northeast down toward the bottom of the valley containing Antelope Creek at 3,886 feet. Moisture availability for growth is higher on these slopes due to the north-facing aspect than on those found north of Antelope Creek.

On the north side of Antelope Creek, the ecological sites trend toward a drier vegetative community. A ridgeline runs northwest to southeast at the northern end of the north section of the Bearmouth Unit. South-facing slopes begin to rise gently from the bottom of the Antelope Creek valley towards this ridgeline, drying out as they increase in elevation. The expected vegetative community is dominated by bluebunch wheatgrass, rough fescue, and Idaho fescue. This rise in elevation continues until an elevation of 4,200 feet when slope percentage increases. Here, the soils become shallow and increasingly gravelly towards the top of the ridge. Most drainages and gulches are dominated by grasses and forbs. After peaking at 4,680 feet, the leeward side of the ridge drops precipitously and is dominated by forest overstory. Here, soils are dominated by cobbles and boulders derived from the limestone ridge above. Permeability is rapid and soil water availability is low.

Field observations in spring of 2014, in this unit indicate that lower toe slopes and valley bottoms contain higher populations of Sandburg bluegrass and junegrass than expected. In sections 13 and 24, east and adjacent of Mullan Road, rough fescue and bluebunch wheatgrass populations are lower than expected for that site. The valley bottom west of Mullan road (sections 23 & 24) exhibited lower production than expected and little or no litter from previous year's growth. Steeper slopes and areas further away from salt and water sources appear to retain similar vegetation characteristics expected for that area.

Nirling Hill Unit

The Nirling Hill Unit consist of six different ecological sites, ranging from pockets of wet meadow to steep conifer forest to rolling, open loamy hills. The six ecological sites on the Nirling Hill Unit are: loamy, coarse loamy, shrink-swell loam, steep forest, shallow rocky, and wet meadow.

The Nirling Hill Unit is located in an area where the soil series are classified as fine, somewhat gravelly Argiustolls soils in the Roy-Fergus complex (746C,D,E) across open, loamy hills with areas of Haplustolls in the Quigley series (746C,D,E; 60B). The coarse loamy sites are made up of Pachic Argiustolls in the Braziel-Tolbert complexes (200E; 242D,E; 442E,F) and are characterized by coarse soil textures and the presence of many cobbles/stones. Shrink-swell loams in this Unit are made up of smectitic, Vertic Argiustolls (49B,C,D; 56B,C,D). The steep forest ecological sites are characterized by Haplustalfs in the Yreka series and complexes (95E; 195E,F; 299E). The shallow-rocky sites consist of Lithic Argiustolls and are characterized by the shallow depth to bedrock found in the Tolbert-Braziel-Rock outcrop complexes with intermittent occurrences of the Winlker-Rubble land-Rock outcrop complex (543E,F; 643E; 886F). Wet meadow ecological sites are characterized by fine-textured, deep, wet Cumulic Endoaquolls (735B; 855A).

Approximately one-half of the Nirling Hill Unit rangelands (~2,250.3 acres or 50.8 percent) consist of deep, loamy gentle slopes and hillsides. This ecological site type is dominated by fine-textured soils with intermittent gravelly, coarse textures and is found on backslopes (15-35% slopes), footslopes (8-15% slopes), and toeslopes (4-8% slopes) of mountains. These soils are derived from igneous colluvium. Potential vegetation consists of rough fescue - bluebunch wheatgrass co-dominance with minor components of green needlegrass, Columbia needlegrass, Idaho fescue, junegrass, Sanberg bluegrass, and western wheatgrass. Forbs and shrubs at these sites may include lupine, winterfat, and big sagebrush.

The coarse loamy ecological sites (~766.3 acres or 17.3 percent) consist of deep, rocky and cobbly loams on footslopes and backslopes across the Nirling Hill Unit. The soils across these ecological sites are largely made up of colluvium derived from igneous rock. The Pachic Argiustolls found across these sites are distinguished from the loamy ecological sites by coarse soil textures and the presence of many cobbles/stones. The low available water and exposed hillsides lead to droughty conditions across these sites. Potential vegetation consists of dominance by rough fescue and Idaho fescue with minor inclusions of bluebunch wheatgrass, Columbia needlegrass, Junegrass, Sandberg bluegrass, and western wheatgrass. Forbs/shrubs include lupine, fringed sagewort, and big sagebrush.

The ecological sites defined as shrink-swell loams (~863.8 acres or 19.5 percent) are largely made up of deep, loamy sites with strong production of preferred forage. The shrink-swell properties of these soils are unique to these ecological sites in the Nirling Hill Unit. These well-drained loams are derived from calcareous alluvium and found on alluvial fans and stream terraces and contain moderately available water for forage production. Potential vegetation consists of rough fescue dominance with subdominant compositions of Bluebunch wheatgrass, Idaho fescue, green needlegrass, Columbia needlegrass, and minor inclusions of Sandberg bluegrass, junegrass, and timber oatgrass. Big sagebrush and forbs are expected in these sites.
The steep forest ecological site (~172.8 acres or 3.9 percent) is found intermittently across the Nirling Hill Unit and is characterized by cool temperatures, steep slopes (15-60%), and Douglas-fir overstory. The soils at this site tend to be fine-textured, yet rocky and well-developed due to the organic input from the forest vegetation. These sites are limited to the steep slopes of the North Fork Lower Willow Creek in Sec. 4 T9N, R14W and McLean Creek. The colluvium and residuum derived from igneous rock that makes up these soils is found on shoulders and backslopes in the mountains surrounding the upper drainages of the creeks in the Nirling Hill Unit. Expected vegetation for this site should be dominated by Douglas-fir overstory and an understory consisting primarily of snowberry, white spirea, elk sedge, heartleaf arnica, arrowleaf balsamroot, and lupine with a minor inclusion of bluebunch wheatgrass, rough fescue, Idaho fescue, and pinegrass.

The shallow rocky ecological site (~305.6 acres or 6.9 percent) is characterized by a shallow depth to bedrock (≤12 in.). The soil types found in this ecological site are found on steep, south-facing slopes of the North Fork Lower Willow Creek in Sec. 4 T9N, R14W and ridge tops south of Cow Creek in Sec. 24 T10N, R14W. These sites are defined by coarse rock fragments and droughty site conditions. These soils consist of residuum derived from igneous rock. The available water capacity of these sites is very low and soils are well-drained. Potential vegetation may be comprised of bluebunch wheatgrass and rough fescue co-dominance with sub-

dominance of Idaho fescue, Sandberg bluegrass, and junegrass. Forb/shrub communities consist of fringed sagewort, lupine, and big sagebrush.

The wet meadow ecological sites (~57.5 acres or 1.3 percent) occur in limited quantities across the Nirling Hill unit and are only found sporadically in the stream bottoms of Cow Creek, North Fork Lower Willow Creek, and McLean Creek. The soils making up these ecological sites are formed primarily from alluvium in alluvial fans, stream terraces, and flood plains. These soils are deep and fine-textured with high available water and poor drainage. Expected vegetation is reedgrass and sedge with minor components of tufted hairgrass, mannagrass, rush, blue-eyed grass, meadow foxtail, shrubby cinquefoil and willows.

Elevations throughout the Nirling Hill Unit range from 4,600 feet in the northeast along Cow Creek to 5,500 feet on the ridges and knolls in the middle of the unit and 5,000 feet in the McLean Creek and north Fork Lower Willow Creek drainages in the south portion of the unit. Igneous rock underlies most of the Nirling Hill Unit. Residuum and colluvium are the primary parent materials throughout Nirling Hill and transition to alluvium in drainage bottoms of McLean, North Fork Lower Willow, and Cow Creeks. Overall, vegetation is primarily open, rolling grassland hills with few rocky outcrops. Forested areas are intermittent throughout and mostly limited to steep drainages with north-facing aspects.

The Nirling Hill unit is similar to the vegetative characteristics found in the Limestone Unit. Litter in contact with the soil surface is lower than expected. Lower slopes and bottom lands contain higher populations of Sandberg bluegrass and junegrass. Some areas at higher slopes further way from salting and water sources contain expected native vegetation for these sites.

Invasive Weeds

Limestone Ridge Unit

Noxious weeds present on the Limestone Ridge unit include: dalmatian toadflax, *Linaria dalmatica*, leafy spurge, *Euphorbia esula*, spotted knapweed, *Centaurea stoebe ssp*., hounds-tongue, *Cynoglossum officinale*, sulfur cinquefoil, *Potentilla recta*, Canada thistle, *Cirsium arvense*.and musk thistle, *Carduus nutans*. Dalmatian toadflax and leafy spurge are found in the north half of the track, are widespread and well established, and are found on dry south aspects with coarse calcareous soils. Both species are very difficult to control and have the ability to spread rapidly. Leafy spurge was also found on the same site types and several sites had a combination of both species. Spotted knapweed was found throughout the track. Houndstongue, sulfur cinquefoil, Canada thistle and musk thistle were present but not found to be having a significant impact on sites examined.

Bearmouth Unit

Noxious weeds present on the Bearmouth unit include: dalmatian toadflax, *Linaria dalmatica*, leafy spurge, *Euphorbia esula*, spotted knapweed, *Centaurea stoebe ssp*., houndstongue, *Cynoglossum officinale*, Canada thistle, *Cirsium arvense*, and musk thistle, *Carduus* nutans. The listed species are widespread and well established with leafy spurge, dalmatian toadflax and spotted knapweed being the species of most concern. These species are very difficult to control and have the ability to spread rapidly and invade many different ecological sites.

Nirling Hill Unit
Noxious weeds present on the Nirling Hill unit include**:** spotted knapweed, *Centaurea stoebe ssp*., houndstongue, *Cynoglossum officinale*, sulfur cinquefoil, *Potentilla recta*, Canada thistle, *Cirsium arvense*, and musk thistle, *Carduus nutans*. Spotted knapweed was found throughout the unit with higher densities in grazed creek bottoms, corrals and other areas with heavy livestock use. Other listed species were only found in scattered isolated patches and presently are not widespread in this unit. Forested areas were found not to have noxious weeds present and not likely to be invaded.

3.2 Cultural Resources

A literature search at both the State historic Preservation Office and the BLM Cultural Resources Database indicate that six sites have been previously recorded. All six sites are prehistoric lithic scatters located in a concentrated area in the Bearmouth Unit on BLM land. Half were determined not eligible for the National Register of Historic Places and half were determined potentially eligible for the National Register of Historic Places. The current use of the land the sites are located on is cattle grazing. One site was completely collected by the archaeologist and no longer exists. These sites were recorded in the early 1980s and it is unclear if the remaining sites are still there. There are no Class III surveys on any of the privately owned units.

3.3 Recreation

The three potential ecosanctuary units are located approximately 5 to 10 miles apart from one another in western Montana. The units which are owned by several groups/individuals are not visitor destinations and do not offer many recreational opportunities. However, RSO does offer guided elk hunts on their property and allows a few members of the public to access their property to look for dropped antlers. In the past, paleontologists have conducted research on some of RSO's property and found Arikareean aged vertebrate fossils including a rhinoceros skull and fossils from a three-toed horse. Recreational activities in the vicinity of the eco-sanctuary units include touring Garnet Ghost Town, rock climbing in Rattler Gulch, fishing local streams, and hunting on public lands. No petroglyphs or pictographs are located on the eco-sanctuary pastures. The only known pictograph is on private land, not owned by RSO or the other individuals associated with this proposed project.

Several roads pass through or near the three ecosanctuary units including a major interstate and highway. Interstate 90 passes by two of the ecosanctuary units (Limestone Ridge and Bearmouth). Highway 271 which goes between Helmville and Drummond, Montana, is on the western side of part of the Limestone Ridge units. A county road (locals call the Mullan Road) passes through the Bearmouth unit. Currently, a small amount of the recreating public uses the Willow Creek road near the Nirling Hill unit to access land administered by the Forest Service.

3.4 Hydrology and Water Quality

The Montana Department of Environmental Quality (DEQ) has listed Antelope Creek in the Bearmouth tract as 'water quality limited'. They report that the assigned beneficial use 'aquatic

life' is not fully supported by existing water quality conditions. They list streambank modifications, destabilization, and riparian grazing as the probable sources (Montana DEQ, 2014). The fence exclosure and rehabilitation work completed in 2002 has allowed for an improving trend in channel, vegetation, and habitat conditions. It is likely that water quality has improved due to more stable banks and reduced livestock use on 3.5 miles of the stream.

No other streams in the tracts are listed by DEQ and no other water quality information is available. Surrogate indicators of water quality such as stream erosion, riparian vegetation, and soil conditions were observed on other streams in the tracts (Bert Creek, Morris Creek, Cow Creek, Woods Creek, McClean Creek, and non-fenced portions of Antelope Creek). Water quality impairments may be occurring due to sedimentation from bed and bank erosion, elevated nutrient levels from livestock waste, and elevated water temperature from reduced stream cover and widened and shallowed streams.

In the Limestone Ridge tract, the steeper headwater intermittent and ephemeral streams exhibit past gully formation and downcutting most likely in response to hydrologic alterations from low ground cover due to past grazing use and livestock damage to steep banks and streamside soils. Bunchgrass pedestaling and surface flow patterns and rills were observed in the tract. Surface flow patterns and rills were rare and isolated on the the Bearmouth and Nirling Hill tracts. In the Nirling Hill tract, Cow Creek and McLean Creek exhibit frequent bank caving and lateral bank

erosion in fine silty soils displaced by livestock trampling. Water quality may be impaired due to siltation and nutrients but no quantitative data are available.

Wild horses, as well as native wildlife, would likely benefit from good water quality and functional riparian areas with diverse native species, age classes, and varied cover types. Healthy riparian/wetland vegetation may also appeal to sanctuary visitors and benefit ecotourism and economics, and would meet the purpose and need for an ecosanctuary.

3.5 Wild Horses

Wild horses and burros have virtually no natural predators and their herd sizes can double about every four years. As a result, the agency must remove thousands of animals from the range each year to control herd sizes. West wide the BLM has established an Appropriate Management Level of 26,677. In the last several years adoption demand has greatly decreased with only about 2500 animals being adopted nationwide. The Bureau of Land Management estimates that nearly 50,000 wild horses and burros are roaming on BLM-managed rangelands in 10 Western states. Off the range, as of April 2014, there were 48,194 wild horses and burros fed and cared for at short-term corrals and long-term pastures. Specifically, there were 14,163 horses and 1,066 burros in corrals for a total of 15,229 animals in short-term holding and 32,965 horses in pastures or long term holding. All wild horses and burros in holding, like those roaming Western public rangelands, are protected by the BLM under the 1971 Wild Free-Roaming Horses and Burros Act.

Wild horses determined to be excess are gathered and removed from public rangelands. Once an animal is gathered and removed it is transported to a BLM short term holding facility/corral.

While at the short term facility each wild horse is prepared for adoption or sale eligibility. At the corral the animals are sorted by sex, pairs and health. Each animal is inspected by a veterinarian, aged through dental examination, physical features cataloged (color, socks, markings, whorls etc), assigned an individual number, freeze-marked on the left side of their neck, vaccinated, de-wormed, males are gelded, and acclimated to a hay diet. Animals are typically given their boosters 4 weeks after their first vaccinations. Sale age animals (11 and older) are given an additional freezemark on their neck and animals bound for long term holding are typically freeze-marked on the left hip with the last four digits of their individual identifier.

Before leaving a corral all wild horses and burros are brand inspected, have negative coggins test, vaccines booster if due, certificate of veterinary inspection (CVI) and import permits for individual states the animal is going to obtained. At this point animals under the age of 11 are to be offered for adoption, if offered unsuccessfully three times they can become sale eligible. Older horses and unadoptable horses are typically placed on long term holding facilities/pastures either gelding only or mare only to run in a more natural setting. This setting is more cost effective and allows for less animal handling as the horses can run in a range setting to graze, drink, seek natural shelter, and self-trim their hoofs on rocks and gravel. Some supplemental feeding and pasture rotations occur depending on the individual setting.

3.6 Wildlife

Project location has been analyzed to determine what wildlife species may and may not inhabit the proposed action area or would not be impacted. Threatened, endangered, and candidate species occurring and potentially impacted include the grizzly bear. The proposed action does not occur in Canada lynx habitat, Canada lynx Critical Habitat, or wolverine habitat and these species would not be impacted. Sensitive species occurring and potentially impacted include the gray wolf, long-billed curlew, and trumpeter swan. Other sensitive species do not occur and would not be impacted. Big game species occurring and potentially impacted include elk, mule and white-tailed deer, moose, pronghorn antelope, and black bear. Bighorn sheep do not occur and would not be impacted. Montana Species of Concern occurring and potentially impacted include the Columbian sharp-tailed grouse. Other Montana Species of Concern do not occur, except for the species listed above in other categories, and would not be impacted.

Threatened, Endangered, and Candidate Species

Grizzly Bear (threatened): The grizzly bear is a year-round resident of the proposed ecosanctuary. The analysis area is approximately 28 miles south of the Northern Continental Divide Grizzly Bear Recovery Zone. Bear biologists have estimated that there are currently 1,000 grizzly bears in the Northern Continental Divide Ecosystem and delisting efforts are being planned (Dood and others, 2006). Grizzly bear populations have expanded during the last decade. Grizzly bears have been documented in and around the Drummond Valley (Arnold 2014).

Sensitive Species

Gray Wolf: The gray wolf is a year-round resident of the proposed ecosanctuary. Wolf populations have expanded in Montana to the extent that they were delisted from Endangered Species Act protection in 2012. The gray wolf is currently recognized as a sensitive species by

the Montana/Dakotas BLM State Director and is currently managed as a big game species by Montana Fish, Wildlife, and Parks (FWP). Wolf activity has been reported in the Drummond Valley (Arnold 2014).

Long-billed Curlew: The curlew is the largest sandpiper in North America and is a summer resident of the proposed ecosanctuary and winters in Mexico. The curlew is currently recognized as a sensitive species by the Montana/Dakotas BLM State Director and as a Species of Conservation Concern by FWP, with Level II priority. Curlews require shrub and grass-dominated habitat; sparse shrubs and short grass. Residual cover from the previous fall is of particular importance for nesting. The nesting season occurs from mid-March through mid-July (Casey 2013).

Trumpeter Swans: Trumpeters may be present during all seasons in the Bearmouth unit, but not present at any season in the Limestone Ridge and Nirling Hill units. Swans may migrate during spring and fall through the oxbows and ponds located along I-90. These wetlands may be suitable for trumpeter swan winter and summer-nesting season. Trumpeter swans are currently recognized as sensitive species by the Montana/Dakotas BLM State Director and as a Species of Conservation Concern by FWP, with Level 1 priority.

Big Game

Elk: All three tracts for the proposed ecosanctuary are within important elk winter range and crucial elk winter range. Approximately 1,000 elk winter in the vicinity of the Limestone Ridge unit from Highway 270 east to Hoover Creek. All of the Limestone Ridge unit is elk winter range; approximately 2,000 acres is crucial winter range. Approximately 100 and 200 elk winter on the south slopes and lower elevations of the Bearmouth and Nirling Hill, respectively. Crucial winter range is present on the Bearmouth and Nirling Hill units. All units have some summer use, but the greatest numbers are present during winter, which is the most critical time for elk. The elk herds are all in an upward population trend. (Ray Vinkey, personal communication).

Mule and White-tailed Deer: Mule and white-tailed deer are year-round residents of the proposed ecosanctuary. Habitat use is wide-spread and incorporates the majority of the proposed ecosanctuary. Mule deer typically inhabit dry-upland sites, while white-tailed deer are most often found in wetter locations. Summer and winter habitat may be defined by elevation gradients and snow depth. Mule deer population is in a downward trend, while white-tailed deer are in an upward population trend (Ray Vinkey, personal communication).

Moose: Moose are present at a low number throughout the proposed ecosanctuary and may be present throughout the year. Moose are currently in a downward population trend in western Montana.

Pronghorn Antelope: Pronghorn are present in the Limestone Ridge and Nirling Hill units primarily during summer, but may be present during winters with deep snow. The Bearmouth tract does not have pronghorn.

Black Bear: Black bears are year-round residents of the ecosanctuary. They may hibernate on all units during winter.

Montana Species of Concern
Columbian Sharp-tailed Grouse: Historical observations of sharp-tailed grouse have been documented in the Drummond Valley prior to 2003. Recent reports for this grouse have not occurred in the Drummond Valley during the past decade. It is uncertain if this species inhabited or is still present on or near the proposed ecosanctuary. Sharp-tailed grouse require shrub and grass-dominated habitat. Residual cover from the previous fall is of particular importance for nesting. The nesting season occurs from mid-March through mid-July (Marks et al. 2007).

3.7 Fisheries, Aquatic Habitat, Streams, Riparian Vegetation

The proposed wild horse eco-sanctuary is located in the Upper Clark Fork River watershed. The Upper Clark Fork River provides habitat for numerous fish species within the project area including native westslope cutthroat trout (sensitive species), bull trout (federally threatened species), sucker, dace, sculpin, and mountain whitefish and non-native species (not limited to) brown trout, brook trout, and rainbow trout.

The Upper Clark Fork River has been designated as bull trout critical habitat and as a bull trout Core Area.

With the removal of Milltown Dam, migratory bull trout and westslope cutthroat trout again have access to the Upper Clark Fork River. Poor instream habitat conditions, however, limit use of this stretch of river by both bull trout and cutthroat trout.

Limestone Ridge Unit
The Limestone Ridge Unit is located within drainages on the north side of the Clark Fork River east of Drummond. There are two major drainages in the Limestone Ridge area: Morris Creek and Bert Creek. Bert Creek, a perennial, non-fish bearing stream, flows into a ditch and appears to go subsurface before entering the Clark Fork River.

Morris Creek flows adjacent to Highway 271 (Helmville Road) and is a fish bearing stream with genetically pure westslope cutthroat trout (MFWP, 2014), a BLM sensitive species and a Montana Species of Concern. Due to the geology of the watershed, Morris Creek becomes an intermittent channel between approximately river mile 2 and river mile 3. Within the proposed eco-sanctuary, Morris Creek is an intermittent channel.

There are two reaches of Morris Creek located within the proposed ecosanctuary. The upper reach is approximately 500’ long with the highway to the northwest and a steep, forested slope on the southeast. The banks along this stretch of creek are dominated by pasture grasses and lack riparian vegetation including forbs, shrubs and trees, with only a few patches of sedge. Actively eroding stream banks are common throughout this reach and the stream is fairly wide and shallow. Surveys conducted on May 15 and June 2, 2014 found perennial flow in this stream reach but, due to the geology of the watershed, it is suspected that this reach goes subsurface later in the summer.

The downstream reach is longer, approximately 1,100 feet. The upper section of this reach has a variety of vegetation including rose, juniper, maple, snowberry, and Douglas-fir along the banks but pasture grasses were the dominant understory species. The majority of the reach, however, was lacking shrub cover and riparian vegetation. The lower section of the reach has scattered juniper and currant with pasture grasses being the dominate species along the stream banks. Although there is a lack of riparian vegetation, the banks are fairly stable and habitat features such as pools and down wood are present in the upper portion of the reach. Overall, this 1,100' reach is fairly shallow. Surveys conducted on May 15, 2014, found perennial flow in this stream reach but surveys on June 2, 2014 found the channel was dry.

Morris Creek does not directly enter the Clark Fork River. Instead, this creek flows into an irrigation channel for approximately 5.5 miles before entering the Clark Fork River.

Amphibians

Western toads, a BLM sensitive species, have been documented in the Morris Creek watershed (MNHP 2014). Since western toads travel long distances from their breeding sites, this species is likely to be found dispersing through the Limestone Ridge Unit. In addition, livestock ponds in the area may provide suitable breeding habitat for both western toads and long-toed salamanders. Due to the intermittent nature of the channel and limited ponds, however, it is suspected the amount of suitable amphibian habitat is restricted in the Limestone Ridge Unit.

Bearmouth Unit

The Bearmouth Unit is located immediately adjacent to the Clark Fork River on the south side of the river near Bearmouth. There are two fish bearing streams in or adjacent to the Bearmouth Unit, Antelope Creek and Wood Creek. Both Antelope and Wood Creek were identified by Montana Fish, Wildife and Parks as important spawning streams for genetically pure westslope cutthrouat trout (MTWP, 2014 and Brad Liermann personal communication 2014).

Approximately 2.3 miles of Antelope Creek located in the proposed ecosanctuary were excluded from livestock use in 2002. The Montana Chapter of Trout Unlimited completed the rehabilitation of Antelope Creek and Wood Creek through revegetation and plantings in 2002. The project improved riparian habitat conditions, stream channel stability and westslope cutthroat trout habitat.

Approximately 0.2 mile of Wood Creek was also excluded from livestock use in 2002. Under the Proposed Action and Alternative B, all of Wood Creek would be outside the ecosanctuary boundary.

Antelope Creek provides habitat for genetically pure westslope cutthroat trout that are very abundant in some reaches despite relatively low stream flows (Brad Liermann personal communication April 2014) and poor habitat conditions (Montana DEQ, 2014). The fence exclosure and rehabilitation work completed in 2002 has allowed for an improving trend in channel, vegetation, and habitat conditions. It is likely that water quality has improved due to more stable banks and reduced livestock use within the exclosure. Approximately 2.3 miles of Antelope Creek is excluded from the ecosanctuary area but along this length of stream there are

four developed water gaps. Antelope Creek goes subsurface in a drainage ditch before entering the Clark Fork River.

Within the exclosure, Antelope Creek is dominated by pasture grasses growing along the stream banks. However, mats of sedges are present along the entire reach indicating an upward trend in riparian plant growth. Shrubs such as alder, choke cherry and willow are also present on the banks, mostly in mature growth stage, but some saplings are also present. The upper stretch of Antelope Creek in the exclosure also has good cover of cottonwood and aspen. Within the four water gaps, stream banks are lacking riparian vegetation, the channel is wide and the substrate is predominately silt. When streamside plants are present in the water gaps, they are largely annuals with no bank stabilizing capacity. The most upstream water gap, however, appears to receive light use as demonstrated by colonizing sedges along the banks.

Upstream and outside of the exclosure, Antelope Creek continues to be a perennial, fish bearing stream for another 1.5 mile before becoming an intermittent channel. This stream reach is characterized by unstable banks, lack of riparian shrubs and forbs, and an absence of pool habitat. However, sections of the stream have good cover of cottonwood and aspen. Instream substrate is dominated by silt, gravel and small cobble. Upland grasses such as bluegrass and brome as well as dandelion make up the majority of the understory vegetation. Although several small sedge pockets were found along the stream, sedges were not found consistently covering or stabilizing the banks.

Amphibians

A BLM survey conducted in June 2014 found western toads and Columbia spotted frogs in the Bearmouth Unit. In addition, it is likely that the proposed ecosanctuary provides habitat for long-toed salamander. Habitat for these species is found adjacent to the proposed project area in backwaters and ponds of the Clark Fork River. Ponds in the Bearmouth Unit, especially in the north parcel, likely provide suitable breeding habitat for these species. Since western toads travel long distances from their breeding sites, this species is likely to be found dispersing through this area.

Nirling Hill Unit

The Nirling Hill Unit is located in the Flint Creek watershed. Flint Creek is a primary tributary to the Upper Clark Fork River. The Flint Creek drainage has been considerably impacted from human activity, and currently bull trout densities are considered very low. Large systems like Flint Creek were likely much more important spawning and rearing streams historically but now bull trout are considered rare in Flint Creek (USDA-FS 2013). The habitat value provided by Flint Creek is considered “limited” from the Clark Fork River to the mouth of Douglas Creek and moderate throughout the rest of its length (Brammer et al. 2000). Water temperatures, flow conditions, and nonnative species limit the potential for bull trout recovery in this drainage.

There are three fish bearing streams in Nirling Hill Unit: Cow Creek, North Fork Lower Willow Creek and Spring Creek.

Cow Creek
Cow Creek is a tributary to Lower Willow Creek. Montana Fish, Wildlife and Parks were not able to sample Cow Creek in 2007 due to low water conditions; however, dewatering is likely due to the geology of the watershed and not from human caused factors (Brad Liermann personal communication April 2014). Although Cow Creek has severe dewatering issues, fish were observed by BLM staff in May 2014 within the boundary of the ecosanctuary. These fish are suspected to be westslope cutthroat trout.

Approximately 4 miles of Cow Creek is in the proposed project area. Although mature willows can be found along the majority of Cow Creek in the ecosanctuary, the stream has been impacted by riparian livestock grazing. Riparian shrubs are lacking in different reaches, especially young age classes, and stream banks are unstable and contributing fine sediment to the stream.

North Fork Lower Willow Creek
North Fork Lower Willow Creek is a tributary of Lower Willow Creek. Approximately 1 mile of North Fork Lower Willow Creek is in the proposed project area. North Fork Lower Willow Creek provides habitat for an important population of genetically pure westslope cutthroat trout (Brad Liermann personal communication April 2014). Similar to Antelope Creek, this drainage is very productive with high densities of westslope cutthroat trout, although the stream has relatively low base flows in the summer for the size of the drainage. This population of trout is part of a relatively large stronghold (meta-population) of pure westslope cutthroat trout in both the North Fork and South Fork Lower Willow drainages. These populations are protected from introgression with rainbow trout and invasion by brown trout by Lower Willow Dam. Although there are brook trout in the drainage, the population is currently very small (Brad Liermann personal communication April 2014).

Montana Fish, Wildlife and Parks conducted a riparian assessment in 2008 at river mile 1.2 which appears to be in or close to the proposed ecosanctuary boundary (FWP 2008). At this site, the creek received a score of 37 out of a possible 70 (53%). Table 1 shows the results of the FWP survey.

Table 1. FWP 2008 Riparian Assessment for North fork Lower Willow Creek

River Mile	Geomorphology	Vegetation	Fish Habitat	Total Score
1.2	19/30 (63%)	15/30 (50%)	3/10 (30%)	37/70 (53%)

Geomorphic considerations included; downcutting of the channel, active stream bank cutting (erosion) and if the stream was in balance with the water and sediment being supplied. North Fork Lower Willow Creek received a rating of 19 out of a possible 30 for geomorphology at river mile 1.2 (FWP 2008).

Vegetation considerations included; deep root masses, stream side cover, weeds, woody species, and browse. North Fork Lower Willow Creek received a rating of 15 out of a possible 30 for vegetation at river mile 1.2 (FWP 2008).

Fish habitat considerations included; instream cover, large woody material, overhanging vegetation, boulders and undercut banks. North Fork Lower Willow Creek received a rating of 3 out of a possible 10 for fish habitat at river mile 1.2 (FWP 2008).

Riparian cattle grazing was the primary reason for the observed poor habitat by FWP. Riparian cattle grazing had caused a reduction in woody riparian vegetation recruitment, which caused some bank erosion in the reach and also reduced stream shade (FWP 2008). Very few woody species were observed on the adjacent floodplain and floodplain vegetation consisted primarily of upland grass species, which provide only minimal protection. Stream flow was found to be quite low in this reach with many of the riffles being very shallow and nearly dry (FWP 2008).

Observations by the BLM in May, 2014, found large, mature alder dominating the riparian vegetation along North Fork Lower Willow Creek in the proposed area with occasional willow; however other age classes or shrub species were lacking. Pasture grasses were found to be the dominant understory species along the stream banks with occasional patches of sedge. Stream banks showed signs of active erosion. A few pools created by down wood were observed but, for the most part, pool habitat was largely lacking.

Spring Creek

Approximately 1.8 miles of Spring Creek, a tributary to North Fork Lower Willow Creek, flows through the project area. This stream maintains moderate densities of genetically pure westslope cutthroat trout despite being a small drainage with minimal flow (Brad Liermann personal communication April 2014). Montana Fish, Wildlife and Parks conducted a riparian assessment on Spring Creek just above its confluence with North Fork Lower Willow Creek (which is within or close to the boundary of the proposed ecosanctuary) and the stream received a score of 28 out of a possible 70 (FWP 2008) (Table 2).

Table 2. FWP 2008 Riparian Assessment for Spring Creek.

River Mile	Geomorphology	Vegetation	Fish Habitat	Total Score
0.3	19/30 (63%)	9/30 (30%)	0/10 (0%)	28/70 (40%)

Cattle grazing along Spring Creek was identified as the source of damage to riparian vegetation on this stream (FWP 2008). Woody riparian vegetation was nearly absent in this reach, although some young willow recruitment was observed. However, nearly all young willows were heavily browsed. Sedges were found to be quite abundant in this reach but heavy utilization was also observed for this species. Overall, this reach of Spring Creek had a very high width to depth ratio for a Rosgen Type E channel (several portions appeared to be small ponds) and was scored as “poor” in terms of fish habitat.

A survey by the BLM in May 2014 found a healthy sedge community along some banks of Spring Creek that has kept the stream fairly narrow and deep with some undercut banks in these locations. Although mature willow were present, shrubs were found to be lacking, especially younger size classes. Although limited, down woody material was found creating some pool habitat and fish were observed in most of these pools. Redds were also observed along the entire stream reach as well as an abundance of fish. Although sedges were stabilizing sections of the stream, other areas of the stream have widened.

Amphibians
Amphibians documented near the proposed ecosanctuary are western toads and tailed frogs (MNHP 2014). Within the proposed ecosanctuary, suitable breeding habitat likely exists for western toads, long-tailed salamander and Columbia spotted frogs in beaver ponds of Cow Creek as well as in numerous ponds scattered throughout the Nirling Hill Unit. Since western toads travel long distances from their breeding sites, this species is likely to be found dispersing through Nirling Hill Area.

4 Environmental Consequences

4.1 Vegetation

Soils and Ecological Sites

Proposed Action Alternative A
Under the proposed action with grazing up to 325 wild horses for all three units, grazing impacts would likely be similar to the past impacts of grazing domestic livestock. Domestic horses and cattle grazing have been the primary use for these units. See Table 3 for estimated past use provided by the applicant.

Table 3. Past Use

Grazing Unit	Livestock Number & Kind	Season of Use
Limestone Ridge	150 cattle (pairs)	06/01 – 10/01
	10 horses	11/15/04/15
Bearmouth	50 cattle (pairs)	06/01 – 09/30
	580 bred heifers	06/01 – 09/30
	15 horses	11/15 – 04/15
Nirling Hill	1500 yearlings (cattle)	04/17 – 06/15

Winter and summer pastures have been identified in all units and would operate under a rest rotation system. This incorporates grazing pastures at different portions of the seasons to allow grass species to complete their growth cycles in some years. Grazing systems should be compatible to appropriate carrying capacity to maintain healthy rangelands.

Soils susceptible to compaction will be similar to past grazing use. Coarse uplands that are well drained and rocky are generally not susceptible to compaction and impacts are expected to be minimal. Under current existing vegetation conditions in all units, forage availability for the proposed stocking rate is limited. Utilization by wild horses may be heavy resulting in a decrease of key forage species and plant vigor. Excess removal of vegetation reduces litter content and would increase the amount of bare ground. It is expected in the long term, plant diversity and abundance of desirable native vegetation would decrease and contribute to poor range conditions.

Alternative B

This alternative proposes the placement of up to 97 wild horses in all three units under RSO's care. This stocking rate is based on topography and forage data collection. Current range conditions indicate high populations of Sandberg's bluegrass and junegrass. Published in the Range Plants of Montana by the Montana State University Extension 2007, the grazing response for these grass species are classified as increasers. They are readily grazed by livestock however forage production is limited due to the nature of their inherent plant size.

In some areas of the units, preferred forage such as rough fescue and bluebunch wheatgrass are in moderate populations providing efficient forage for livestock. These species can produce greater amounts of forage than Sandberg bluegrass and junegrass. It is expected by using a forage utilization guideline of 50%, preferred forage species will retain plant vigor and allowing sufficient litter for plant insulation.

Soil and vegetative impacts under this proposal would be less compared to the other alternatives. In the short term or the life of the AA, preferred plant species may not be noticeable due to the slow recovering process of uplands. In the long term (10 years) it is expected that upland conditions would improve by regulating forage utilization and allowing ample litter for insulation. In addition, sufficient litter in contact with the soil surface would reduce surface water runoff and assist in the prevention of soil surface erosion.

The grazing rotation is identical to the proposed action however under this proposal it states that the Limestone Ridge unit should incorporate a deferred rotational system due to the different levels of elevation for all three pastures. Soil and vegetation impacts from this grazing system are expected to be similar to the rest rotation system proposed on the other units.

Alternative B initiates the appropriate carry capacity for the existing plant community and incorporates grazing systems that are commonly practiced to maintain viable rangelands and a sustained yield of preferred forage for grazing.

No Action Alternative

Under this alternative, ranch operations would probably continue at the discretion of operator. The lands may be used for the grazing of domestic livestock and horses. Impacts to soil and vegetation would remain the same as they have been in the past.

Invasive Weeds

The following discussion applies to all alternative. The establishment of invasive plant species can affect the quality of habitat through competition with, and eventual replacement of, desirable native species. Replacement of native species can have various environmental effects including changes in the nutrient regime of soils, and increased soil erosion. Invasive plant species can negatively impact vegetation community structure by creating, changing the density of, or eliminating vegetation layers or canopy cover (Di Tomaso 2000). In wildlife winter range, invasive plant species have the potential to reduce the quality, quantity, and value of forage and

can increase land management procedures and costs. In addition, disturbance in riparian areas can provide favorable growing conditions for invasive plant species that require regular moisture, and the hydrological movement in these areas can spread these species to downslope or downriver areas.

Vegetation removal and soil disturbance during fence construction and spring development could create optimal conditions for the establishment of invasive plant species. Spotted knapweed, musk thistle and oxeye daisy are species that typically produce an abundance of seed, thrive in disturbed areas, and have few natural competitors; therefore, once established they spread quickly and can overtake desirable plant communities (Di Tomaso 2000).

Vehicles and construction equipment traveling from areas that contain invasive species into "weed-free areas" could disperse invasive plant seeds and fragments, resulting in their establishment in previously undisturbed areas that may not have contained invasive species, as well as increasing the distribution or abundance of existing populations in previously disturbed areas.

Furthermore, disturbed areas may be seeded by airborne seeds originating from plants within adjacent areas; therefore, direct contact between infested areas and construction equipment is not required for invasive plant species to spread to new areas. In addition, the transportation of materials into areas disturbed by construction (e.g., borrow materials, mulch, gravel, as well as native seed mixtures and/or saplings used during re-vegetation efforts) may contribute to the spread of invasive plant species. If measures are not taken to prevent and control newly established infestations resulting from construction, then invasive plant species can persist in disturbed and reclaimed areas, and those that are present in the construction area may spread into adjacent areas.

Grazing

Livestock grazing under alternatives A and B would contribute to the spread of existing infestations and could introduce noxious weed species not already present on ROI. The effect of livestock grazing on noxious weed spread has been well documented and a large body of data exists (DiTomaso 2000; Callawaway et al. 1999; Vavra et al. 2007).

4.2 Cultural Resources

Alternative A

There are approximately 3.5 miles of new fence and .5 mile of new pipeline proposed in the ecosanctuary. These areas would be surveyed at a Class III standard. The remaining areas would not be surveyed as the land has already been utilized as a working cattle ranch for years. The ranch has run several hundred head of cattle over the years. There is various infrastructure associated with cattle ranching already installed. Mitigations measures will be recommended for any archaeological sites located during Class III surveys.

Adverse effects to cultural resources are not anticipated as the proposed land use is not significantly different from cattle ranching to horse ranching. It is assumed that current trends and conditions would continue.

Alternative B

It is not anticipated that Alternative B would have adverse effects as this alternative proposes fewer animals than Alternative A.

No Action Alternative

It is assumed that current trends and conditions would continue. No adverse effects are anticipated.

4.3 Recreation

The Proposed Action (Alternative A)

RSO would develop a marketing plan once the Assistance Agreement is in place. However, according to RSO, the first part of the eco-tourism component would be working with Inspired Classrooms to develop curriculums for wild horses, the natural history of the area (geology and paleontology) and cultural history of the area. As part of the curriculum, RSO proposes field trips to the ecosanctuary units. Other components of the eco-tourism include UTV tours, working with the county to sign and advertise the ecosanctuary and working with luxury resorts and tourism groups to offer day trips to the units for wild horse viewing, photography and would also include activities such as ghost town tours, dinosaur digs, homestead tours and local geography tours. RSO also mentioned social media as a way to increase public awareness.

In the short term, recreation opportunities would not increase. RSO has not proposed a budget or timeline for the curriculum development, so it is unknown when and how long it would take to be developed. In addition, developing signage and tours would take time and a budget as well. If RSO creates social media sites, the public might visit the tracts, but without signage, the public would not know where the tracts are located.

In the long term, if RSO can develop curriculums for local Montana schools that focus on the wild horses, the geology and paleontology of the area and the history of the area, appreciation and knowledge of the area including wild horses would be a positive benefit of the proposed project. Once signage is in place and social media sites are up and running, members of the public would be able to visit the ecosanctuary and view wild horses. UTV tours would offer more recreational opportunities for the public. Offering paleontological tours/paleontologist led excavations could increase some visitation as that sort of activity is not offered locally.

Alternative B

The only difference between this alternative and the Proposed Action is the number of horses. The impacts to Recreation would be the same as the Proposed Action.

No Action (Alternative C)

Under Alternative C recreation opportunities would remain the same as they currently are which are limited by the private landowners.

4.4 Hydrology and Water Quality

Proposed Action (Alternative A)

Federal horses would be released and managed at a level to allow for the maintenance or improvement of resource conditions (Chapter 2). Resource conditions would not decline provided the design features are implemented and monitored to meet ecosanctuary requirements and priorities (Chapter 2). Whether conditions remain static or improve would depend on herd management changes in response to monitoring results. Based on the estimated carrying capacity of the lands (Chapter 2), if the number of horses proposed exceeds the carrying capacity, vegetation and site productivity would likely remain static or decline, depending how wild horse use compares to historic livestock use of the lands, and how the herd is managed to meet ecosanctuary goals for ecological health. These impacts may translate to altered hydrology and streamflow character, as well as direct (bank trampling) and indirect (reduction in stabilziing vegetation from browsing, stream erosion and depostion from altered flows and sedimentation) impacts to water quality.

Alternative B

Federal horses would be released at lower numbers and managed at a level lower than the carrying capacity of the land (Chapter 2) which would have a higher likelihood of allowing for the maintenance or improvement of resource conditions (Chapter 2). Resource conditions would not likely decline provided the design features are implemented and monitored to meet resource goals. Whether conditions remain static or improve would depend on herd management changes in response to monitoring results. Hydrologic conditions and water quality would likely be faster to recover and easier to maintain.

No Action (Alternative C)

No wild horse ecosanctuary would be established. It is assumed that current livestock operations and land management would continue which would likely maintain the current hydrologic and water quality conditions and trends (Chapter 3).

4.5 Wild Horses

Proposed Action

Impacts to the wild horses would occur from transportation while being conveyed from short-term holding facility and during the acclimation process once they arrive. Approximately 33 to 36 head of horses would be delivered at a time depending on the size of the wild horses and trailer configuration. Wild horses would be rested at another short-term facility if the trip

exceeds 24 hours. When the wild horses arrive at the ecosanctuary they would be off-loaded and into acclimation pens. They would remain there for approximately ten days to two weeks to adapt to their new surroundings. After this period the wild horses would be released into larger pastures and left alone. One of the primary stipulations of the AA is "To maintain excess wild horses on private land in pastures that are large enough to allow free-roaming behavior and that can provide the food, water, and shelter necessary to sustain the animals in good condition". Once the wild horses have acclimated to their new surroundings they would be moved into progressively larger pastures where they can roam free, search for food, create new bands, defend space and behave naturally.

Wild horses would be left alone as much as possible, outside of weekly counting and checking on body condition from a distance. This would help maintain the wild and free-roaming aspect of the ecosanctuary in a similar setting wild horses are accustomed to. Herds of geldings in other BLM long-term holding pastures tend to run as one large herd during the early part of the day and break off into small bands in the later part of the day.

The presence of predators, mountain lions, bears and other predators pose little threat beyond those similar to the present cattle operation. However, the presence of large carnivores would help retain the wild horse's innate instincts for survival; defenses and herd character that help preserve the wild horses in the Horse Management Areas. As horses tend to band together, it is unlikely the predators in the area would have much impact beyond the current situation.

Predators may take sickly and or isolated animals. As the herd would be comprised of older geldings, it is unlikely predators would have an impact on the herd numbers.

The level of 325 wild horses would place the animals in a situation where feed is short. When feed is short the body condition of the animals is more difficult to maintain without increased supplemental feeding. With this stocking level and proposed amount of supplemental feeding, animals would be at greater risk of injuries from fighting from feed competition, poorer body condition leading to more susceptibility to illness, and at greater risk of leaving the properties in search of feed. This many animals would be more susceptible to sustain injuries as hazards from old agricultural operations are on the properties. Reconstruction of fences to one standard would make a safer environment for the wild horses as old wire and potential entanglements would be greatly reduced. Unlike cattle that walk along fences, wild horses tend to jog or trot along the fence, which makes a tight fence safer.

Alternative B

The impacts to wild horses would be the same from transportation, acclimation, and getting used to the property and setting. This alternative would be for a reduced number of wild horses at 97 based upon on ground forage inventories that have been completed. Also a specific term for hazards removal would also be included along with the other stipulations. With this level of stocking there would be no concerns about animal health or forage competition between wild horses. The level of supplemental feeding would accommodate this number of horses more readily. The chances of injuries from hazards or resource competition fighting would be greatly reduced. This number of horses would reduce the chances of an animal leaving the properties.

Under this Alternative, the exterior fences would remain the same as Alternative A. This alternative fully meets BLM comprehensive animal welfare programs objectives for the care of wild horses.

No Action

Under the No Action alternative cattle would continue grazing under current ranch practices and the AA for wild horse ecosanctuary would not entered into.

4.6 Wildlife

Proposed Action (Alternative A)

Effects are discussed in the context of each question raised for wildlife issues in Chapter 1.

How effective would the proposed perimeter and division fence be at enclosing wild horses while at the same time providing safe passage for deer, elk, moose, pronghorn, bears, trumpeter swans, and other wildlife?

Deer, elk, moose, and pronghorn are all capable of jumping fences. The proposed action would install new fences and replace and maintain existing fences along the perimeter of all units at a height of 48 inches. A fence height of 48 inches would enclose wild horses, but would not provide safe passage for deer, elk, moose, and pronghorn, and may block, snare, injure, and/or kill ungulates. Bears and swans would not be impacted. Interior fences would be constructed with a wildlife friendly design with a height of 40 inches. Perimeter and interior fence would be constructed of 4-wires: the top and bottom wires smooth, middle wires barbed, the distance between the top two wires should be no less than 12 inches apart, the bottom wire should be at least 18 inches from the ground, with no vertical stays, and posts at 16.5 foot intervals, and gates, lay-downs, or other passages where wildlife concentrate and cross. Top wires would be made more visible by marking with resin or vinyl clips. All existing fence should be maintained, modified, and/or replaced. Broken fence posts, old barbed wire lying on the ground, and woven wire fence would be removed (Paige 2012, Arnold 2014).

How effective would the proposed winter presence of wild horses be at preventing competition between deer, elk, moose, pronghorn and wild horses and displacement of elk and deer to other private lands?

Lack of behavioral interactions and dietary difference suggest ecological separation of wild horses from deer and moose (Salter and Hudson. 1980). Moose rely primarily on browse throughout the year, although grasses occur in the spring and summer diet (Salter and Hudson 1980). Deer and pronghorn graze on grasses in spring, on forbs in summer, and on shrubs in winter (Wallmo 1981, Halls 1984, and Cook 2002). Pronghorn would compete with wild horses during spring, summer, and fall, but move to other locations during winter. Elk would compete with wild horses for food and space during winter. Elk are mixed feeders foraging on grasses, forbs, and shrubs during various times of year (Thomas and Toweill 1982). Wild horses forage primarily on grasses throughout the year (Hosten. et al. 2007). Elk and wild horses both use grasslands during winter and spring (Salter and Hudson. 1980). Salter and Hudson (1980) found

that horses used 93% of sites occupied by elk, whereas elk used only 6% of sites utilized by horses; horses and elk were observed feeding in the same areas during winter. Hosten et al. (2007) found that elk avoided cattle in the summer, but subsequent intermingling of elk with livestock during fall and winter may indicate a preference for segregation overcome by browse/forage constraints during the fall and winter. Competition for forage and space between wild horses and elk would occur. But to what level of competition and potential displacement is uncertain.

How effective would the proposed winter supplemental feeding of wild horses be at preventing deer and elk from feeding, preventing wild horses and elk from comingling, and preventing disease transmission among elk?

Supplemental feeding of wild horses during winter would attract deer and elk. Elk and deer have a long-time history of utilizing winter range on the proposed ecosanctuary. Supplemental feeding wild horses in the winter would very likely attract deer and elk. Preventing deer and elk from foraging on supplemental feed would be very unlikely. Comingling would occur between deer, elk, and wild horses. Deer and elk foraging on supplemental feed would remove hay from the diet of horses. The amount of hay planned to feed wild horses would need to be adjusted and increased to adequately sustain wild horses. The cost of supplemental feeding would increase to compensate for deer and elk use. Any time deer and elk congregate in feeding areas the potential for disease transmission may occur. Deer and elk may become conditioned to supplemental feeding and increase use from year to year. Disease transmission of chronic wasting disease may occur in deer and elk; Brucellosis may also be transmitted among elk (Smith 2013). Disease would be monitored in wild horses

How effective would the proposed wild horse carcass removal be at preventing the attraction of grizzly bears, black bears, and gray wolves near home sites, ranch facilities, and areas with human and livestock activity?

Carcasses would be removed and taken to the Drummond city dump and would be composted using The Blackfoot Challenge's carcass removal program. This would minimize risk of attracting grizzly bears, black bears, gray wolves throughout the ecosanctuary. Carcasses left on the range in remote areas are not a problem for large predator attraction and would not cause a human safety concern. Carcasses near home sites, ranch facilities, and areas with human or livestock activity should be removed. Carcasses not removed from home sites, etc. would cause a human safety concerns (Arnold 2014). Grain and other supplemental feed, such as pellets and cake, can attract bears. If this type of supplemental feeding occurs it would be stored in bear proof containment structure or facilities.

How effective would the proposed grazing of wild horses be at preserving high-quality grasslands for long-billed curlews and Columbian sharp-tailed grouse?

Breeding and nesting season is the most critical stage for curlews and sharp-tailed grouse. Impacts may include displacement, nest destruction, and consequential loss of nests and nestlings. Ground nests may be trampled. Curlews have a preference for relatively short (4-12 inches) and relatively sparse grass for nesting; often nest on sites grazed by livestock; timing and

intensity of grazing can affect both overall habitat suitability and nest success; and Curlews often selects nest sites composed of slightly taller vegetation and with more cover (Casey 2013). Grazing can be a useful habitat management technique for sharp-tails and grazing can remove accumulated standing litter and keeps vegetation in early stages of succession (Marks et al. 2007). Rotating between summer and winter pastures would alleviate disturbance to nesting birds on winter pastures form mid-March through mid-July. Summer pastures would be subject to potential displacement of adults and nest site disturbance.

Alternative B

Effects are discussed in the context of each question raised for wildlife issues in Chapter 1.

How effective would the proposed perimeter and division fence be at enclosing wild horses while at the same time providing safe passage for deer, elk, moose, pronghorn, bears, and other wildlife?

Impacts would be the same as the Proposed Action (Alternative A).

How effective would the proposed winter presence of wild horses be at preventing competition between deer, elk, and wild horses and displacement of elk and deer to other private lands?

Impacts would be to a lesser degree with 97 rather than 325 wild horses. If the 50% guideline for wild horse forage utilization were implemented, there would likely be more forage available for wildlife. Competition and displacement may not occur, or, would occur at a lower rate.

How effective would the proposed winter supplemental feeding of wild horses be at preventing deer and elk from feeding, preventing wild horses and elk from comingling, and preventing disease transmission among elk?

Impacts would be same as the proposed action. Deer and elk would forage on supplemental feed, wild horses and elk would comingle, and potential disease transmission among elk would occur.

How effective would the proposed wild horse carcass removal be at preventing the attraction of grizzly bears, black bears, and gray wolves near home sites, ranch facilities, and areas with human and livestock activity?

Impacts would be the same as the Proposed Action. Carcasses would be removed and taken to the Drummond city dump and would be composted using The Blackfoot Challenge's carcass removal program. Carcasses in remote areas are not a problem; Carcasses near home sites, ranch facilities, and areas with human or livestock activity would be removed.

How effective would the proposed grazing of wild horses be at preserving high-quality grasslands for long-billed curlews and Columbian sharp-tailed grouse?

Impacts would be the same as the Proposed Action. Range conditions may improve for curlews

and grouse if 97 horses rather than 325 horses are present and if 50% forage utilization is implemented.

No Action (Alternative C)

Effects are discussed in the context of each question raised for wildlife issues in Chapter 1.

How effective would the proposed perimeter and division fence be at enclosing wild horses while at the same time providing safe passage for deer, elk, moose, pronghorn, bears, trumpeter swans, and other wildlife?

The impacts of no action would not be increased beyond what already exists. However, current fence conditions are unfriendly to wildlife. Fences currently consist of 4, 5, and 6 stands of barbed wire, with top wire height ranging from 41 to 49 inches and bottom wire ranging from 5 to 15 inches. Distance between top wire and second wire <12 inches. Sections of woven wire fence topped with 2-3 strands of barbed wire are present and at times doubled-up with more recent barbed wire fencing. Broken fence posts and old barbed wire lying on the ground are present.

New fence installation, repair of downed fence, replacement of broken posts, and replacement of woven wire would not occur. Existing and proposed fence designs can snare and injure wildlife. Wire strands can readily entangle legs, especially if wires are loose or spaced too close together. Animals can be blocked by fences that are too high, impermeable, buried in deep snow, or on steep slopes. Young, pregnant, or winter-stressed animals may have a particularly difficult time clearing fences. Some fences, especially woven wire fence, can be a complete barrier to fawns and calves even if adults can still jump over (Paige 2012, Arnold 2014).

How effective would the proposed winter presence of wild horses be at preventing competition between deer, elk, and wild horses and displacement of elk and deer to other private lands?

The impacts of No Action would not be increased beyond what already exists. Wild horses would not be introduced. Competition and displacement of elk, due to wild horses, would not occur.

How effective would the proposed winter supplemental feeding of wild horses be at preventing deer and elk from feeding, preventing wild horses and elk from comingling, and preventing disease transmission among elk?

The impacts of No Action would not be increased beyond what already exists. Supplemental feeding of wild horses would not occur. Deer and elk would not compete for supplemental feed and comingling and disease transmission would not occur.

How effective would the proposed wild horse carcass removal be at preventing the attraction of grizzly bears, black bears, and gray wolves near home sites, ranch facilities, and areas with human and livestock activity?

The impacts of No Action would not be increased beyond what already exists. Wild horse carcasses would not result and attraction of grizzly bears, black bears, and gray wolves would not occur.

How effective would the proposed grazing of wild horses be at preserving high-quality grasslands for long-billed curlews and Columbian sharp-tailed grouse?

The impacts of No Action would not be increased beyond what already exists. Potential impacts of wild horse grazing to curlews and sharp-tails would not occur.

4.7 Fisheries, Aquatic Habitat, Streams, Riparian Vegetation

Proposed Action – Alternative A

Limestone Ridge Unit
Under the Proposed Action, up to 75 horses would be located in the Limestone Ridge Unit. The area consists of a winter pasture to the south (November 16-May 14) and a summer pasture to the north (May 15-November 15) (Map 3).

Bert Creek is the largest drainage in the winter pasture. Since this stream is not fish bearing, there would be no direct effects to fish from use of this pasture by wild horses during any time of year under any alternative. In addition, Bert Creek does not drain directly into the Clark Fork River so there would be no indirect impacts to fish or other aquatic species in the Clark Fork River from grazing in the Bert Creek watershed.

In the summer pasture, Morris Creek is an intermittent channel within the lower part of the ecosanctuary and, likely, the upper reach. Genetically pure westslope cutthroat trout, however, may be present in the spring when the stream is flowing. Morris Creek is located within 2 separate locations in the ecosanctuary. The lower reach was found to be dry by early June 2014 but the upper reach still had flow at this time. Even though the short upper reach provides a water source, at least until early-mid summer, as well as a small area of forage, it is not expected that this reach would receive much use by wild horses due to topography and terrain. The northern part of the Limestone Ridge Unit has steep terrain and forested habitat.

Habitat selection and use by herbivores, including horses, is influenced by many factors (Girard and Nielsen 2013). Terrain is known to influence habitat selection with horses more likely to occupy flat pastures or gently sloping ridgetops (Ganskopp and Vavra 1987). Feral horses often segregate elevationally from cattle, using steeper slopes (up to 50 percent) and occupying higher elevations. Several studies have identified horses' disproportionately high use of ridgetops, elevated terrian and high benches (Ganskopp and Vavra 1987, Ganskopp and Vavra 1986). Such behavior may be an effort to maximize the viewshed of the horse. Feral horses outside of Vale, Oregon were found to prefer ridgetops on a year-around basis (Ganskopp and Vavra 1986). These horses likely sought elevated terrain as a means of enhancing their view of the surrounding area and negating potential threats to their safety.

Feral horses were observed on 394 occasions at a study site outside of Vale, Oregon (Ganskopp and Vavra 1987). One group of horses was observed on a 100 percent slope with all other observations on slopes of 50 percent or less. Horses generally demonstrated an affinity for high benches and gently sloping ridgetops. Typically, they rapidly traversed rugged or steep topography to gain access to elevated but relatively level terrain. The average grade for horse sightings in Oregon was 11.2 percent. They favored slopes between 0 and 19 percent and showed no preference or avoidance for slopes in the 20 to 29 percent category. Thirty percent or greater grades were generally avoided by horses, with the 50-59 percent category being the upper limit of use.

As hypothesized in an Albertan study, terrain ruggedness was an important deterrent of horse use (Girard et al. 2013). These findings were consistent with previous work indicating feral horses avoid complex topography and instead use flat terrain (Ganskopp and Vavra 1987). Within the Alberta study area, flatter areas were generally limited to valley bottoms, which also contained the habitats selected by horses (i.e. grasslands and shrublands) and an available water supply. These habitats were also those with abundant forage and, therefore, expected to attract horses (Girard et al. 2013). The Alberta study indicated that feral horses preferred areas that were less rugged, farther from forest, near linear travel corridors likely to receive little human traffic, and closer to water, though horses were only found closer to water during periods of low precipitation (Girard et al. 2013). Girard and Nielsen (2013) found that during fall, horses selected grasslands, but at a lower level than during summer, and avoided conifer forest, with all other vegetation types used according to availability.

The 500' section of Morris Creek is adjacent to a steep, forested ridge that is not expected to receive much wild horse use. The effects from direct or indirect impacts to native fish would be expected to be negligible.

The second reach of Morris Creek located within the ecosanctuary is roughly 1,100' in length. This stretch of stream is within an area that would be expected to be used by wild horses from May 15-November 15. A survey by the BLM on June 2, 2014, found this stream reach was dry. Although perennial flow will vary from year to year in this stretch of Morris Creek, horses would only be expected to use this section of stream for watering for a short period of time in the spring (May 15-early-mid June), likely less than 1 month. Lack of water could restrict the amount of use this riparian area receives.

Horses are generally grazers with their adaptation as a hindgut fermentor allowing them to ingest large amounts of low quality forage when high quality forage is sparse (Girard and Nielsen 2013). Thus, horses make foraging decisions based on biomass over quality. Horses are also known to select areas with greater biomass to enhance foraging efficiency (Girard and Nielsen 2013). Due to their large body size and digestive system, wild horses are one of the least selective ungulate grazers across most of western North America so fewer plant species may remain ungrazed in areas occupied by free-roaming horses compared to areas grazed by other ungulates (Beever 2003). The use of a lower quality diet requires that horses consume 20-65 percent more forage than would a cow of equivalent body mass. In addition, horses possess a more elongate head and more flexible lips than cattle and, unlike cattle, have upper front

incisors. Consequently, they can trim vegetation more closely to the ground than do cattle, sometimes delaying the recovery of plants (Beever 2003).

Determining the carrying capacity in the wild horse eco-sanctuary units is critical in predicting how both upland and riparian areas would be impacted. Due to historic grazing practices, upslope forage is limited in the Limestone Ridge Unit. In addition, the north half of the unit is forested which may also limit available forage. Even though the lack of water in the lower reach of Morris Creek could restrict use of this area by horses, it is suspected that due to limited forage upslope, horses would continue to use and concentrate in this riparian area.

Direct effects to westslope cutthroat trout would be expected to be minimal along the downstream 1,100 feet of Morris Creek because of the intermittent nature of the stream and lack of spawning habitat. Wild horses could disturb fish when watering, causing fish to temporarily move from the area.

Due to potential concentrated use, moderate to high indirect effects from wild horses using the riparian area could result from trampling at watering locations, crossings and loss of riparian vegetation. This could result in an increase in fine sediment delivery to the stream. Fine sediment could be transported downstream to occupied westslope cutthroat habitat, including spawning gravels.

Although some studies have found that wild horses tend to water quickly and move away from streams to foraging locations (Ganskopp and Vavra 1986), if upslope forage is limited or the riparian area provides preferred forage, these areas could under adverse impacts from horse use.

Observations of wild horse use in the Whiskey Peak Allotment in south central Wyoming indicated that any detrimental impacts from excessive numbers of feral horses would first be apparent along streams and secondarily in mountain sagebrush habitats (Crane et al. 1997). Streamside and bog/meadow habitats represented a small portion of the Wyoming study area and the allotment as a whole, yet those were the habitats preferred by wildlife, livestock and horses (Crane et al. 1997). Crane et al. (1997) suggested that feral horse numbers must be kept at appropriate levels to mitigate the potential for detrimental impacts to habitats.

Although it is unknown what the exact impacts to the riparian habitat would be from use by up to 75 horses, it is suspected that horses would congregate in the riparian area due to limited forage upslope. It is expected that riparian and instream habitats in the lower stream reach of Morris Creek would remain in the same condition as under the No Action Alternative or continue to degrade from the current condition.

Since Morris Creek does not drain directly into the Clark Fork River, there would be no indirect impacts to fish or other aquatic species in the Clark Fork River from any alternative.

All alternatives would have a "***No Effect***" determination for the threatened bull trout in the Upper Clark Fork River from grazing in the Limestone Ridge Unit. In addition, none of the alternatives would have any adverse direct or indirect impacts on bull trout critical habitat.

Due to the intermittent nature of the stream and lack of perennial ponds, the risk from adverse direct or indirect effects to amphibians from wild horse use in the summer or winter pastures would be minor in this area.

Bearmouth Unit

Under Alternative A (Proposed Action), there would be up to 150 horses in the Bearmouth Unit. The area consists of a winter pasture to the north (November 16-May 14) and a summer pasture to the south (May 15-November 15) (Map 3).

The majority of Antelope Creek (roughly 2.3 miles) and the area with the greatest historic impacts from livestock grazing have been excluded from livestock or wild horse use under all alternatives with the exception of 4 water gaps. Recovery of instream habitats and riparian vegetation is now occurring in and along this 2.3 miles of stream and the area will be protected from grazing in the future.

Approximately 1 mile of Antelope Creek would not be fenced from wild horse use in the summer pasture. All of Antelope Creek, however, would be excluded from the winter pasture.

In the summer pasture, the majority of Antelope Creek outside the exclosure (1 mile) would be accessible by wild horses due to gentle topography and lack of riparian vegetation. As discussed in the Limestone Ridge Unit, it is critical to determine the appropriate number of horses that an area can sustain year after year while still allowing for recovery of important habitat types such as riparian and stream habitats.

A study in the Whiskey Peak Allotment of south central Wyoming indicated that any detrimental impacts from excessive numbers of feral horses would first be apparent along streams and secondarily in mountain sagebrush habitats (Crane et al. 1997). In this study area, streamside and meadow habitats represented a small portion of the allotment, yet were the habitats preferred by wildlife, livestock and horses (Crane et al. 1997). In addition, compared to native ungulates, horses may exert more physical impact on plants and upper soil horizons than do native ungulates at similar densities (Beever 2003).

Grazing by wild horses could occur for a longer length of time during the year than under current cattle grazing. In addition, the use of a lower quality diet requires that horses consume 20-65 percent more forage than would a cow of equivalent body mass. This, along with the fact that horses can trim vegetation more closely to the ground than do cattle, could result in declining range and riparian conditions if there are too many horses for a given area (Beever 2003 and Crane et al. 1997).

The dominant forage along the banks of Antelope Creek consists of upland grasses, the same or similar found in meadow habitat adjacent to the stream. The availability of water along Antelope Creek as well as in other perennial and intermittent tributaries, stock tanks, ponds and springs would allow horses to disperse throughout the pasture. However, forage is limited upslope, especially in the sagebrush stands. Limited upslope forage of lower quality would likely result in horses congregating in and along riparian and meadow habitats of Antelope Creek.

Along 1 mile of stream in the summer pasture, the most likely source of direct adverse effects to westslope cutthroat trout is from wild horse trampling of redds when eggs and alevins are in benthic gravels. Eggs and alevins are considered most susceptible to mortality from trampling because they are immobile. Additionally, redd locations tend to be in wider, shallower channel locations where horses may tend to cross the streams.

Continued removal of stream bank and riparian vegetation or prevention of vegetation recovery could result in reduced dissipation of stream energy, increased or continued bare soil and soil loss through accelerated erosion and reduced riparian community size. Continued erosion and stream channel degradation would also affect water quality by increasing suspended fine sediments and, in conjunction with absence of vegetation shading, water temperature.

The current elevated levels of fine sediment in stream gravels pose a threat to salmonid egg, fry, and juvenile survival by reducing oxygen flow, by smothering or hindering fry emergence (Waters 1995 and Suttle et al. 2004). Rearing habitat may also be affected by sedimentation through the filling of interstitial spaces of stream cobble (Suttle et al. 2004) and filling of pool habitat (Waters 1995). The risk of fine sediment delivery to westslope cutthroat trout eggs and juveniles would be high under Alternative A.

Due to potential concentrated use, moderate to high indirect effects from wild horses using the riparian area could result from trampling at watering locations, crossings and loss of riparian vegetation. This could result in an increase in fine sediment delivery to the stream. Fine sediment could be deposited in westslope cutthroat trout spawning gravels as well as fill pools and interstitial spaces important for young trout and macroinvertebrates. Indirect effects resulting from wild horses grazing on stream banks and riparian areas may result from removal of stream bank vegetation and physical damage to stream banks.

Although some studies have found that wild horses tend to move quickly away from streams after watering to foraging locations (Ganskopp and Vavra 1986), if upslope forage is limited or the riparian area provides preferred forage, these areas could undergo adverse impacts from horse use.

Although it is unknown what the exact impacts to riparian habitats would be from use by up to 150 horses, it is suspected that horses would congregate along Antelope Creek due to limited forage upslope and more preferred and abundant forage along the stream and adjacent meadows. It is expected that riparian and instream habitat conditions of Antelope Creek would either remain in the same condition as under the No Action alternative or potentially decline further under Alternative A.

There could be moderate adverse direct impacts to westslope cutthroat trout from Alternative A due to redd trampling. Adverse indirect impacts to westslope cutthroat trout would be expected to be moderate to high from Alternative A due to an increase of fine sediment from bank trampling and/or loss of riparian vegetation.

Streams in the Bearmouth Unit do not provide habitat for bull trout and have not been designated as bull trout critical habitat. There would be no adverse direct impacts to bull trout from any of

the alternatives. It is highly unlikely that any adverse indirect impacts to bull trout would be detected in the Clark Fork River since Antelope Creek goes subsurface before reaching the Clark Fork. In addition, a 2009 assessment of Antelope Creek by Montana Fish, Wildlife and Parks did not find surface flow beyond outlet end of the I-90 culvert (Workman 2009).

All alternatives would have a "***No Effect***" determination for the threatened bull trout in the Upper Clark Fork River from wild horse use in the Bearmouth Area. In addition, none of the alternatives would result in any adverse direct or indirect impacts on bull trout critical habitat.

There could be adverse direct impacts to amphibians from Alternative A in Bearmouth Area if horses disturb or trample developing eggs or egg masses. There could be adverse indirect impacts to amphibians if habitats are degraded due to increased fine sediment delivery and/or loss of riparian vegetation or pools/ponds. Since Alternative A may have too many horses to maintain suitable forage across the pasture or to allow for improvement of upslope forage, it is assumed that horses would target riparian habitats, increasing the risk to amphibians and amphibian habitats. The risk would likely be similar to the No Action Alternative but higher than under Alternative B.

Nirling Hill Unit

Under Alternative A, there would be up to 100 horses in the Nirling Hill Unit. The area consists of a winter pasture to the northeast (November 16-May 14) and a summer pasture to the southwest (May 15-November 15) (Map 3).

As with the Limestone Ridge and Bearmouth Units, allowing up to 100 horses to graze in the Nirling Hill Unit may exceed the carrying capacity of this area and cause further declines in both upslope and riparian conditions.

Approximately 2 miles of Cow Creek is located in the winter pasture. Salter and Hudson (1980) found horses used lower elevation, drier habitats in the winter and that water was much less limiting in winter since horse eat snow (Wockner et al. 2003). With the onset of spring, horses increased selection of shrubs because of a greater ability by horses to access these areas as snow melts, coupled with taller shrubs representing some of the only forage available after winter and prior to spring green up in Alberta (Salter and Hudson 1979).

Although horses wouldn't necessarily be using Cow Creek to water during the winter, there could be areas where the ice is broken to create watering sites. These would be areas that could be impacted by consistent use. In addition, shrubs along Cow Creek could be browsed by horses in late winter and early spring before green up. Supplemental feeding would also likely occur on flatter terrain near Cow Creek, creating an additional risk of heavy use along the riparian area in the winter pasture.

In the summer pasture, wild horses would have access to approximately 4.8 miles of stream and riparian habitats along North Fork Lower Willow Creek, Spring Creek and Cow Creek. North Fork Lower Willow Creek and Spring Creek provide important habitat for westslope cutthroat trout but trout use of Cow Creek is likely limited due to subsurface flows and poor quality habitat.

The dominant forage along the banks of North Fork Lower Willow Creek, Spring Creek and Cow Creek consists of upland grasses, the same or similar found in meadow habitats adjacent to the streams. Spring Creek also has abundant sedges, a potentially key forage species for horses. The availability of water in the summer pasture should allow horses to disperse throughout the pasture. However, due to historic grazing practices, quality forage is limited upslope, especially in sagebrush stands. Limited upslope forage of lower quality would likely result in horses congregating in and along riparian habitats and meadows of North Fork Lower Willow Creek, Spring Creek and Cow Creek.

Along the 4.8 miles of stream in the summer pasture, the most likely source of direct adverse effects to westslope cutthroat trout is from wild horse trampling of redds when eggs and alevins are in benthic gravels. Additionally, redd locations tend to be in wider, shallower channel locations where horses would likely cross the streams.

Continued removal of stream bank and riparian vegetation or prevention of vegetation recovery could result in reduced dissipation of stream energy, increased or continued bare soil and soil loss through accelerated erosion and reduced riparian community size. Continued erosion and stream channel degradation would affect water quality by increasing suspended fine sediments and, in conjunction with absence of vegetation shading, water temperature.

Current elevated levels of fine sediment in stream gravels pose a threat to cutthroat egg, fry, and juvenile survival by reducing oxygen flow, by smothering or hindering fry emergence (Waters 1995 and Suttle et al. 2004). Rearing habitat may also be affected by sedimentation through the filling of interstitial spaces of stream cobble (Suttle et al. 2004) and filling of pool habitat (Waters 1995). The risk to westslope cutthroat trout eggs and juveniles would be relatively high under Alternative A.

Due to potential concentrated use, moderate to high indirect effects from wild horses using riparian habitats could result from trampling at watering locations, crossings and loss of riparian vegetation. This could result in an increase in fine sediment delivery to the stream. Fine sediment could be deposited to spawning gravels and/or fill pools and interstitial spaces important for young trout and macroinvertebrates. Indirect effects resulting from wild horse grazing/browsing on stream banks and riparian areas may result from removal of stream bank vegetation and physical damage to stream banks.

Although it is unknown what the exact impacts to the riparian habitats would be from use by up to 100 horses, it is suspected that horses would congregate along North Fork Lower Willow Creek, Spring Creek and Cow Creek due to limited forage upslope and more preferred and abundant forage in the riparian areas and streamside meadows. It is expected that these streams would either remain in the same condition as under the No Action alternative or slightly degrade due to congregated use in riparian areas.

There could be moderate adverse direct impacts to westslope cutthroat trout from the Alternative A due to redd trampling. Adverse indirect impacts to westslope cutthroat trout would be

expected to be moderate to high from Alternative A due to an increase of fine sediment from bank trampling and loss of riparian vegetation.

The streams in Nirling Unit do not provide habitat for bull trout and have not been designated as bull trout critical habitat. There would be no adverse direct impacts to bull trout from any of the alteratives. It is highly unlikely that any adverse indirect impacts to bull trout would be detected in Flint Creek (bull trout critical habitat) since the proposed project area is 11 miles upstream of Flint Creek and Lower Willow Creek flows into a reservoir where any sediment generated by the proposed action would likely settle out.

All alternatives would have a "***No Effect***" determination for the threatened bull trout in Flint Creek. In addition, none of the alternatives would have adverse direct or indirect impacts on bull trout critical habitat in Flint Creek.

There could be adverse direct impacts to amphibians from Alternative A in the Nirling Hill Unit if horses disturb or trample developing eggs or egg masses. There could be adverse indirect impacts to amphibians if habitats are degraded due to increased fine sediment, loss of riparian vegetation, and/or pools/pond habitat. Since Alternative A may have too many horses to maintain suitable forage across the pasture or to allow for improvement of upslope forage, it is assumed that horses would target riparian habitats, increasing the risk to amphibians and amphibian habitats.

Alternative B

Limestone Ridge Unit

Under Alternative B, there would be up to 26 horses in the Limestone Ridge Unit. Like Alternative A, the area consists of a winter pasture (November 16-May 14) to the south and a summer pasture to the north (May 15-November 15) (Map 3).

Given the steep and forested habitat in the north half of the summer pasture, the effects to the upper 500' of Morris Creek would be the same as described under Alternative A.

Like Alternative A, the lower 1,100' reach of Morris Creek in the summer pasture would be expected to be used by wild horses. A BLM survey on June 2, 2014 found this stream reach was dry. Although perennial flow will vary from year to year in this stretch of Morris Creek, horses would only be expected to use this section of stream for watering for a short period of time in the spring (May 15-early-mid June), likely less than 1 month. Lack of water could restrict the amount of use this riparian area receives. In addition, numerous upland water sources (existing water tanks) scattered throughout southern portion of this summer pasture along with available forage would be expected to disperse horses across this area.

Crane et al. (1997) suggested that feral horse numbers must be kept at appropriate levels to mitigate the potential for detrimental impacts to habitats, including riparian habitats. As noted by Beever (2003) the use of a lower quality diet requires that horses consume 20-65 percent more forage than would a cow of equivalent body mass. To account for lower quality, limited

forage in the pasture and maintain suitable forage as well as improve riparian habitats, the number of horses in the Limestone Ridge Unit would be reduced to 26 under Alternative B.

Having a suitable number of horses for the available forage in the summer pasture would be expected to allow horses to develop more wild horse behavior. This would include moving quickly away from streams after watering to upslope foraging locations as well as traveling farther from water sources (Ganskopp and Vavra 1986). Having the appropriate number of horses for available and future forage should allow for more natural behavior of the horses and reduce adverse impacts to aquatic species and riparian habitats in Morris Creek compared to the No Action alternative and Alternative A.

Direct effects to westslope cutthroat trout would be expected to be negligible along the downstream 1,100 feet of Morris Creek in the sanctuary because of the intermittent nature of the stream and lack of spawning habitat. Wild horses could disturb fish within the area when watering, causing fish to temporarily move from this location.

It is expected that horses would naturally disperse across the pasture using other water sources throughout the summer. This would reduce impacts on Morris Creek and allow for recovery of both riparian vegetation and instream habitats. However, there could still be minor to moderate indirect effects at small localized sites from trampling or loss of riparian vegetation at watering locations and crossings. This could result in localized fine sediment delivery to the stream at watering sites, crossings or areas targeted for grazing/browsing. Fine sediment could be transported downstream to occupied westslope cutthroat habitat, including spawning gravels.

Although it is unknown what the exact impacts to the riparian habitat would be from use by up to 26 horses, it is suspected that horses would not congregate in this small riparian area due to improved and available forage upslope. It is expected that the riparian vegetation in this small riparian area would improve under Alternative B compared to the No Action alternative or Alternative A.

The risk to amphibians and amphibian habitat would likely be the same as under Alternative A.

Bearmouth Unit

Under Alternative B, there would be up to 35 horses in the Limestone Ridge Unit. Like Alternative A, the area consists of a winter pasture (November 16-May 15) to the south and a summer pasture to the north (May 15-November 15) (Map 3).

Crane et al. (1997) suggested that feral horse numbers must be kept at appropriate levels to mitigate the potential for detrimental impacts to habitats, including riparian habitats. To account for lower quality and limited forage in the Bearmouth pastures and to maintain suitable forage as well as improve riparian habitats, the number of horses in the Bearmouth Unit would be reduced to 35 under Alternative B.

Having a suitable number of horses for available forage in the summer pasture would be expected to allow the horses to develop more wild horse behavior including moving quickly

away from streams after watering to upslope foraging locations and traveling farther from water sources (Ganskopp and Vavra 1986).

Beever (2003) noted that wild horses and cattle use landscapes differently. Free roaming horses were found to use semi-arid landscapes more heterogeneously at some spatial scales than do cattle (Beever 2003). Beever (2003) found that horses will use a few trails repeatedly to cross the landscape, whereas cattle more often graze all portions of an area with similar intensity (Beever 2003). Horses also use only a few trails to travel to and from water (particularly during the driest seasons), traveling farther from water each day than do cattle. In contrast, cattle tend to stay close to springs or riparian areas throughout the day and season, unless managed otherwise (Beever 2003).

In Alberta, feral horse presence and abundance in relation to primary water sources exhibited divergent responses between years. In 2009, horses used areas farther from water, while the opposite response (although weak) was evident in 2010. This divergence may be due to differences in precipitation between years, as increased rainfall in June 2009 may have increased water availability away from ''primary'' water sources, allowing horses to spend more time away from these waterways. In 2010, observations of increased horse use near primary water sources might have been a response to a 20 percent reduction in May–July precipitation that year that caused ephemeral water sources to dry up faster, forcing horses to spend more time closer to main water sources. In any case, the Alberta findings suggest that water can play a role in regulating horse use. Where water sources are abundant, including seasonal and intermittent sources, wild horses will likely tend to roam farther from main rivers and creeks. However, wild horses may have an affinity for areas near streams due to the ability of adjacent riparian habitats to provide abundant sources of preferred forage, such as found in Wyoming by Crane and others (1997).

A study outside of Vale, Oregon found feral horse watering activities were concentrated in the early and late hours of daylight and only 20 percent of their watering efforts occurred during the central portions of the day (Ganskopp and Vavra 1986). Generally, groups of horses moved rapidly to and from water and spent very little time lounging in the vicinity of water. Average time spent at water was 16 minutes, with drinking efforts averaging 6.3 minutes. Typically groups of horses moved rapidly to and from water with very few feeding or loafing activities occurring in the immediate vicinity of the drinking areas (Ganskopp and Vavra 1986).

Having the appropriate number of horses for currently available and future forage should allow for more natural behavior of the horses and reduce the negative impacts to aquatic species and riparian habitats in and along Antelope Creek compared to the No Action alternative and Alternative A.

Along the 1 mile of Antelope Creek in the summer pasture, the most likely source of direct adverse effects to westslope cutthroat trout is from wild horse trampling of redds when eggs and alevins are in benthic gravels.

Although it is unknown what the exact impacts to the riparian habitat would be from use by up to 35 horses, it is suspected that horses would not congregate along Antelope Creek due to

improved and available forage upslope. In addition, numerous watering locations in the Bearmouth Unit summer pasture including stock tanks, ponds, springs and several other perennial reaches, would help disperse horses throughout the summer unit. It would be expected, however, that site specific locations could be adversly impacted where horses cross, water or graze/browse on preferred vegetation. This could result in site specific areas impacted by sedimentation, bank erosion, loss of riparian vegetation (or prevention of vegetation recovery) and temporary displacement of individual fish or amphibians. Although site specific areas could be negatively impacted, it is expected that, overall, riparian vegetation and instream habitats along Antelope Creek would improve and recover under Alternative B.

It is expected that horses would naturally disperse across the pasture using other water sources throughout the summer, this would reduce impacts on Antelope Creek and allow for recovery of both riparian vegetation and instream habitats. However, there could still be minor indirect effects at localized areas from trampling at watering locations, crossings and loss of riparian vegetation. This could result in localized fine sediment delivery to the stream at watering sites, crossings or areas targeted for grazing/browsing. Fine sediment could be deposited at westslope cutthroat trout spawning sites but fine sediment delivery would be expected to be substantially less than under the No Action Alternative or Alternative A.

Because it is expected that horses would be better dispersed across the Bearmouth summer pasture, the impacts to amphibians would be expected to be less compared to the No Action alternative or Alternative A. There would still be a risk of adverse direct impacts to amphibians from Alternative B if horses disturb or trample developing eggs or egg masses. However, amphibian habitat would be expected to improve under Alternative B with an increase of riparian vegetation, improved instream habitats, and a reduction of fine sediment.

Nirling Hill Unit

Under Alternative B, there would be up to 35 horses in the Nirling Hill Unit. Like Alternative A, the area consists of a winter pasture (November 16-May 15) to the south and a summer pasture to the north (May 15-November 15) (Map 3).

To account for lower quality and limited forage in the Nirling Hill Unit, to maintain suitable forage and to improve/restore riparian habitats, the number of horses in the Bearmouth Unit would be reduced to 35 under Alternative B.

Like Alternative A, approximately 2 miles of Cow Creek would be available to horses in the winter pasture. Although horses wouldn't necessarily be using Cow Creek to water during the winter, there could be areas where the ice is broken to create watering sites. These would be areas that could be impacted by consistent use. In addition, shrubs along Cow Creek could be targeted in late winter and early spring before green up. Supplemental feeding would also likely occur on flatter terrain near Cow Creek, creating an additional risk of heavy use along the riparian area in the winter pasture. The reduced number of horses in this pasture under Alternative B, however, could reduce the risk of overutilization of riparian shrubs and may allow for shrub recovery along the creek in the winter pasture.

Having a suitable number of horses for available forage in the summer pasture would be expected to allow the horses to develop more wild horse behavior. This would include moving quickly away from streams after watering to upslope foraging locations and traveling farther from water sources (Ganskopp and Vavra 1986). Several studies have shown that wild horses will move quickly from watering sites, travel further from primary watering locations (streams and rivers) and use upland habitat if suitable water sources are available throughout an area and if adequate forage is found upslope (Salter and Hudson 1979, Crane et al. 1997, and Ganskopp and Vavra 1986). However, wild horses may have an affinity for areas near streams due to the ability of adjacent riparian habitats to provide abundant sources of preferred forage, such as found in Wyoming by Crane and others (1997).

Having the appropriate number of horses for currently available and future forage should allow for more natural behavior of the horses and lessen the negative impacts to aquatic species and riparian areas in the Nirling Hill Unit compared to the No Action alternative and Alternative A.

The most likely source of direct adverse effects to westslope cutthroat trout along the 4.8 miles of North Fork Lower Willow Creek, Spring Creek and Cow Creek in the summer pasture is from wild horse trampling of redds when eggs and alevins are in benthic gravels.

Although it is unknown what the exact impacts to the riparian habitat would be from use by up to 35 horses, it is suspected that horses would not congregate along North Fork Lower Willow Creek, Spring Creek and Cow Creek due to improved and available forage upslope. In addition, other watering locations in the Nirling Hill Unit summer pasture including stock tanks, ponds, springs and several other perennial reaches, would help disperse horses throughout the summer unit. It would be expected, however, that site specific locations could be negatively impacted where horses cross, water or graze/browse on preferred vegetation. This could result in site specific source areas for sedimentation, bank erosion, loss of riparian vegetation (or prevention of vegetation recovery) and temporary displacement of individual fish or amphibians. Although site specific areas could be adversly impacted, it is expected that riparian vegetation and instream habitats along North Fork Lower Willow Creek, Spring Creek and Cow Creek would improve and recover under Alternative B.

It is expected that horses would naturally disperse across the pasture using other water sources throughout the summer, this would reduce impacts on North Fork Lower Willow Creek, Spring Creek and Cow Creek and allow for recovery of both riparian vegetation and instream habitats. However, there could still be minor indirect effects at localized areas from trampling at watering locations, crossings and loss of riparian vegetation. This could result in localized fine sediment delivery to the stream at watering sites, crossings or areas targeted for grazing/browsing. Fine sediment could be deposited to westslope cutthroat spawning gravels but the deposition of fine sediment would be expected to be less than under the No Action alternative or Alternative A.

Although the wild horses would use North Fork Lower Willow Creek, Spring Creek and Cow Creek for watering and, likely, some foraging, it is suspected that they would not congregate along the banks in the same manner as cattle under the No Action alternative. Although horse may graze in the vicinity of these streams they would be expected to move further into the adjacent meadows where they could visually see potential predators or threats as well as use

available forage. Upland grasses are also found along Spring Creek but Spring Creek also has a good covering of sedge which could be targeted by wild horses. Although it is suspected that horses would disperse further from the streams due to improved upslope forage, the sedge community along Spring Creek could be a key species used by horses leading to more impacts on Spring Creek than potentially seen along the North Fork Lower Willow Creek or Cow Creek.

Reduced numbers of animals using the Nirling Hill Unit would be expected to result in an increase in the amount and vigor of herbaceous and deciduous woody riparian species, and allow progression of the riparian plant communities toward later seral stages. Improved riparian conditions would result in more cover and shading along streams, narrowing of stream channels, and potentially a reduction in water temperature. Lower numbers of animals may result in less compaction of moist riparian soils and less shearing of streambanks, leading to improved riparian vegetation, narrowing of stream channels, and reduction of sediment into the streams.

Because it is expected that horses would be better dispersed across the Nirling Hill summer pasture, the impacts to amphibians would be expected to be less under Alternative B compared to the No Action alternative or Alternative A. There would still be a risk of adverse direct impacts to amphibians from Alternative B if horses disturb or trample developing eggs or egg masses. However, amphibian habitat would be expected to improve under Alternative B with an increase of riparian vegetation, improved instream habitats, and a reduction of fine sediment.

No Action (Alternative C)

Under the No Action Alternative, cattle grazing would continue under the current ranch practices and an agreement for the wild horse ecosanctuary would not be issued. Direct and indirect impacts to fish and other aquatic species would be the same as under the current management. Streams and riparian areas would continue to see the same level of use and degree of impact as under existing management.

Livestock grazing practices would continue to impact riparian and instream habitats. Riparian areas could continue to decline in size and riparian vegetation would continue to be insufficient to dissipate energy or stabilize stream banks. Active stream bank erosion would be expected to continue and instream habitat would continue to be impacted by fine sediment and a relative lack of instream habitat.

Under current management, recovery of riparian vegetation or instream habitats would not be expected.

5 Cumulative Impacts

5.1 Vegetation

For vegetative resources the scale for cumulative impacts consists of the three proposed ecosanctuary units and the 5-year time frame of the potential Assistance Agreement.

Soils and Ecological Sites

Past and present actions: All three proposed ecosanctuary units have been grazed by domestic livestock for decades. It is unknown what historical grazing patterns have been used over time. Soils and vegetation may have been subject to various grazing systems and class of domestic livestock. Valley bottoms and lower toe slopes indicate the plant species composition have changed and consist of higher populations of Sandberg bluegrass and junegrass than expected. Higher slopes and distance from water still retain some expected plant characteristics for those soil types. Litter accumulation is limited on lower slopes and valley bottoms with some plant on pedestals.

Reasonably Foreseeable Future Actions (RFFAs): Current range conditions and livestock management are reasonably assumed to continue for the foreseeable future.

Cumulative Effects: Under the Proposed Action alternative (Alternative A), up to 325 wild horses (geldings) would be placed on the proposed lands to graze year around with supplemental feeding during the winter. In consideration of estimated current range conditions, the proposed number of wild horses may exceed actual carrying capacity and range conditions may not improve. In the short term, heavy forage utilization on key native species and trampling is expected. In the long term, key native species populations may decline and lack of ground cover could result in increased soil surface erosion.

Alternative B proposes placing up to 97 wild horses (geldings) on the same units as the proposed action. Incorporation of limiting forage utilization to 50% in conjunction with a rest rotation or deferred rotation grazing system, has the potential to improve range conditions and maintain or improve populations of key native grasses. Incorporating appropriate carrying capacity has the potential to increase some litter build up for ground insulation and reduce soil surface erosion.

The cumulative effects for the No Action alternative would be similar to the Proposed Action (alternative A). The No Action alternative would continue management of this area under the private landowner's discretion. Range conditions may continue to decline under current land management and practices.

Invasive Weeds

Alternative A

Livestock can potentially transport noxious weed species through their coat and feet as well as in their digestive tract. Livestock may carry these undesirable plants that may already exist on the allotment or from other pastures they may encounter throughout their life. Livestock and transport vehicles from regions outside of Western Montana would have a very high potential for introduction of new species of noxious weeds.

Livestock grazing can increase the presence of noxious weeds by over grazing; (DiTomaso, 2000). This can be a primary cause of unwanted noxious weed invasion (Holechek, Pieper, & Herbel, 2004, p. 508).

Since many roads and trails occur throughout project area lands, new weed introductions are likely to occur. Any increase in livestock or human use of existing roads would contribute to the over-all spread of noxious weeds.

Wildlife can potentially impact the spread of noxious weeds by spread on to and off of project area lands. Noxious weed management or lack there of, outside the project area could have a substantial impact on weed populations both on and off project area lands. It is anticipated that under the proposed action an increase in noxious weeds would occur.

Alternative B

Less surface disturbance would occur with the reduction of livestock numbers. The impacts when compared to the proposed action would be less.

No Action (Alternative C)

No change to current management would result in continuing presence and spread of weeds, although weed spread could be reduced if wee treatments were to occur.

5.2 Cultural Resources

The scope of cumulative effects is limited to the affected units within the ecosanctuary and the 5-year timeframe of the potential Assistance Agreement.

Past and Present Actions: Actions that have affected cultural resources to varying degrees include livestock grazing, homesteading, stream channel modification, road construction, powerline construction, fire suppression, irrigation, timber harvest, and plant community conversion. Those actions most influential on cultural resources would include those activities that disturb the most ground area such as cattle ranch infrastructure, road construction and plant community conversion. Impacts may have occurred with homesteading, fire suppression, livestock grazing, and irrigation.

RFFAs: There are no known RFFAs. Current conditions and land management are reasonably assumed to persist for the foreseeable future.

Cumulative Impacts: Under the No Action alternative, it is assumed that the current conditions and trends stated in Environmental Consequences would continue. Any effects associated with wild horses and eco-sanctuary establishment would not occur, and would not contribute to cumulative impacts. Under the Proposed Action with the implementation of the mitigation measures, impacts from the wild horses would be managed to prevent resource impacts. The cumulative impact at a minimum would be to prevent potential impacts to cultural resources along proposed fence lines and pipelines. Under Alternative B, the same mitigation measures would apply as in the Proposed Action. The cumulative impacts would appear to be the same as in the Proposed Action.

5.3 Recreation

The scope of the cumulative effects is limited to the three ecosanctuary units, with the timeframe being 5 years (the length of the potential Assistance Agreement).

Past and Present Actions: The ecosanctuary units are located on private land. As a result, recreation opportunities for the public have been limited. Some members of the public are allowed to look for shed antlers and some have gone on guided elk hunts.

RFFAs: The current recreational opportunities are reasonably assumed to continue into the foreseeable future.

Cumulative Impacts: Under the Proposed Action alternative, recreational opportunities would increase for the public. Under the Alternative to the PA (Alternative B), the same opportunities would be offered and the impacts would be the same as under the Proposed Action. Under the No Action alternative (Alternative C), the recreational opportunities would remain the same as they currently are dependent on the private land owners.

5.4 Hydrology and Water Quality

The scope of cumulative effects is limited to the affected stream segments and associated drainage areas that bound the ecosanctuary, and the 5-year timeframe of the potential Assistance Agreement.

Past and Present Actions: Actions that have affected the individual watersheds to varying degrees include livestock grazing, homesteading, stream channel modification, road construction, powerline construction, fire suppression, irrigation, timber harvest, and plant community conversion. Those actions most influential on current hydrologic and water quality conditions include livestock grazing, stream channel modification, and plant community conversion. Hydrologic impacts may have occurred with plant community conversion, fire suppression, livestock grazing, and irrigation.

RFFAs: There are no known RFFAs. Current conditions and land management are reasonably assumed to persist for the foreseeable future.

Cumulative Impacts: Under the No Action alternative, the current conditions and trends stated in Environmental Consequences would continue. Any effects associated with wild horses and ecosanctuary establishment would not occur, and would not contribute cumulative impacts. Under the Proposed Action with the implementation of the design features and monitoring, impacts from the wild horses would be managed to maintain or improve resource conditions. The cumulative impact at a minimum would be maintaining the current conditions of hydrology and water quality. Under Alternative B, the same design features apply as in the Proposed Action, wherein monitoring would determine the management of the horses to maintain or improve resources. The cumulative impacts would appear to be the same as in the Proposed Action, however Alternative B was developed to address potential impacts associated with forage. Maintaining or improving resources would likely be easier to attain under the

Alternative B.

5.5 Wild Horses

The cumulative impacts are limited to the wild horses themselves as they are considered a resource. The impact to the individual animal from the proposed action would have the greatest potential impact. Under Alternative A, as forage resources on the three units may be insufficient for 325 excess wild horses, this would result in more competition especially as forage availability declines. This would result in more handling and potential for having to capture and ship horses out including being subject to more cross country transportation. The more handling that occurs the more risk for injury.

The cumulative impact from Alternative B would result in less potential for future actions or risk to individual excess wild horses than the Proposed Action. The proper amount of animals ensures animal welfare is maintained. Cumulative impact from the No Action is wild horses that could have potentially been shipped to Drummond, Montana would remain in short term corals for longer period of time before being shipped to either another ecosanctuary or a long term holding facility.

5.6 Wildlife

Wildlife cumulative effects are described in the context of questions identified as wildlife issues in Chapter 1.

Proposed Action (Alternative A)

How effective would the proposed perimeter and division fence be at enclosing wild horses while at the same time providing safe passage for deer, elk, moose, pronghorn, bears, and other wildlife?

The cumulative effects boundary combined perimeter and division fence for all three units, which is roughly 60 miles. The timeframe for the analysis is the length of the Assistance Agreement (5-years). Direct and indirect effects would occur. Fences are a mixture of original and current design and materials. Old cedar posts have been replaced with railroad ties, which were later replaced with metal t-posts and wooden posts. Woven wire fence is left over from the days of domestic sheep production. Reasonably foreseeable future actions would replace unfriendly wildlife fence with wildlife friendly fence. The effects of the proposed action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed winter presence of wild horses be at preventing competition between deer, elk, and wild horses and displacement of elk and deer to other private lands?

The cumulative effects boundary is a 1-mile buffer around each unit of the proposed ecosanctuary. The timeframe for the analysis is the length of the Assistance Agreement (5-years). Direct and indirect effects would occur. Winter use of tracts occurred in the past, but

may have been limited to a few domestic horses. Cattle grazed all tracts during spring, summer, and fall and are currently present on all tracts. Reasonably foreseeable future actions would be wild horse presence only. Montana Fish, Wildlife, and Parks currently have game depredation situations on ranches within the 1-mile buffer.

Deer and elk would compete with wild horses for forage and space resulting in potential displacement to other private lands. This may result in augmenting current impacts to nearby landowners experiencing elk depredation problems and complicating Montana Department of Fish, Wildlife, and Parks' efforts to resolve the problem. The effects of the proposed action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed winter supplemental feeding of wild horses be at preventing deer and elk from feeding, preventing wild horses and elk from comingling, and preventing disease transmission among elk?

The cumulative effects boundary is the perimeter of all three units. The timeframe for the analysis is the length of the Assistance Agreement (5-years). Direct and indirect effects would occur. Wild horse winter supplemental feeding would attract deer and elk. Supplemental feeding has not occurred in the past or present, but would in the reasonably foreseeable future. Elk would potentially comingle with wild horses, which would likely have an increased economic cost. Supplemental feeding would condition deer and elk and have the potential to increase wild ungulate use from year to year. Deer and elk congregating year after year in supplemental feeding areas would increase the potential of disease transmission. The effects of the proposed action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed wild horse carcass removal be at preventing the attraction of grizzly bears, black bears, and gray wolves near home sites, ranch facilities, and areas with human and livestock activity?

The cumulative effects boundary is the perimeter of all three tracts. The timeframe for the analysis is the length of the Assistance Agreement (5-years). Direct and indirect effects would occur. Wild horse and/or other livestock carcasses have not been an issue in the past or present. Wild horse carcasses would result in the reasonably foreseeable future. The carcass removal system currently in place at the Drummond city dump and at the Blackfoot Challenge's carcass removal site would be very effective in preventing the attraction of large carnivores near home sites, ranch facilities, and areas of human and livestock activity. The effects of the proposed action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects. In the context of ESA Section 7 consultation, the proposed action, with consideration of cumulative effects, has been determined to "may affect, not likely to adversely affect" the grizzly bear and its habitat.

How effective would the proposed grazing of wild horses be at preserving high-quality grasslands for long-billed curlews and Columbian sharp-tailed grouse?

The cumulative effects boundary is the perimeter of all three tracts. The timeframe for the analysis is the length of the Assistance Agreement (5-years). Direct and indirect effects would occur. Rotating between summer and winter pastures would alleviate disturbance to nesting birds on winter pastures form mid-March through mid-July. Summer pastures would be subject to potential displacement of adults and nest site disturbance. Past and present livestock grazing, primarily cattle, has occurred on all tracts. Field review of tracts during the spring, 2014 indicated heavy grazing utilization with little residual cover. Reasonably foreseeable future actions would involve wild horse grazing, which may produce grazed/ungrazed habitat. The effects of the proposed action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

Alternative B

How effective would the proposed perimeter and division fence be at enclosing wild horses while at the same time providing safe passage for deer, elk, moose, pronghorn, bears, and other wildlife?

The cumulative effects boundary, timeframe of analysis, past, present, and reasonably foreseeable future actions, direct and indirect effects, and fences would be the same as the proposed action. Regardless of the amount of wild horses, upgrading perimeter and division fences would have a positive effect on enclosing wild horses and providing safe passage of wildlife. The effects of the Alternative B, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed winter presence of wild horses be at preventing competition between deer, elk, and wild horses and displacement of elk and deer to other private lands?

The cumulative effects boundary, timeframe of analysis, past, present, and reasonably foreseeable future actions, direct and indirect effects, and competition and displacement would be similar to the proposed action, but at a reduced rate. Potential competition and displacement would occur with reduced wild horse stalking rates. Deer and elk would potentially move to other private lands. Management problems would occur for Montana Fish, Wildlife, and Parks. The effects of the Alternative B, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed winter supplemental feeding of wild horses be at preventing deer and elk from feeding, preventing wild horses and elk from comingling, and preventing disease transmission among elk?

The cumulative effects boundary, timeframe of analysis, past, present, and reasonably foreseeable future actions, direct and indirect effects, and fences would be similar to the proposed action, but at a reduced rate. Wild horses and elk would potentially comingle and disease transmission among elk would still be a risk at supplemental feeding sites. The effects of the Alternative B, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed wild horse carcass removal be at preventing the attraction of grizzly bears, black bears, and gray wolves near home sites, ranch facilities, and areas with human and livestock activity?

The cumulative effects boundary, timeframe of analysis, past, present, and reasonably foreseeable future actions, direct and indirect effects, and carcass removal issues would be the same as the proposed action. Wild horse carcasses would potentially be available for bears and wolves, but at a lower rate of occurrence. Carcasses in remote areas would not require removal but would be removed under this alternative. Carcasses near homes, ranch facilities, and areas with human and livestock activity would require removal. The effects of the Alternative B, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed grazing of wild horses be at preserving high-quality grasslands for long-billed curlews and Columbian sharp-tailed grouse?

The cumulative effects boundary, timeframe of analysis, past, present, and reasonably foreseeable future actions, direct and indirect effects, and curlew and grouse issues would be similar as the proposed action, but at reduced rates. Past and present cattle grazing have removed residual vegetation cover resulting in low litter buildup. Reasonably foreseeable future actions of wild horse grazing may produce a mixture of grazed/ungrazed habitat for curlews and grouse. The effects of the Alternative B, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

No Action (Alternative C)

How effective would the proposed perimeter and division fence be at enclosing wild horses while at the same time providing safe passage for deer, elk, moose, pronghorn, bears, and other wildlife?

The cumulative effects boundary, timeframe of analysis, and past and present actions would be the same as the proposed action. The impacts of no action would not be increased beyond what already existed in the past, or what presently exists. Foreseeable future actions would not include wild horses. Fences would remain in various condition and design, which are unfriendly to wildlife. The proposed action would be wildlife friendly and an improvement over no action. The effects of no action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed winter presence of wild horses be at preventing competition between deer, elk, and wild horses and displacement of elk and deer to other private lands?

The cumulative effects boundary, timeframe of analysis, and past and present actions would be the same as the proposed action. The impacts of no action would not be increased beyond what already existed in the past, or what exists in the present. Foreseeable future actions would not include wild horses. Competition and displacement between deer, elk, and wild horses would not occur. This would alleviate impacts to nearby landowners experiencing elk depredation

problems, and reduce complications with Montana Fish, Wildlife, and Parks efforts to resolve this problem. The effects of no action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed winter supplemental feeding of wild horses be at preventing deer and elk from feeding, preventing wild horses and elk from comingling, and preventing disease transmission among elk?

The cumulative effects boundary, timeframe of analysis, and past and present actions would be the same as the proposed action. The impacts of no action would not be increased beyond what already existed in the past, or what presently exists. Foreseeable future actions would not include wild horses. Deer, elk, and wild horses would not comingle and disease transmission would not be an issue. The effects of no action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed wild horse carcass removal be at preventing the attraction of grizzly bears, black bears, and gray wolves near home sites, ranch facilities, and areas with human and livestock activity?

The cumulative effects boundary, timeframe of analysis, and past and present actions would be the same as the proposed action. The impacts of no action would not be increased beyond what already existed in the past, or what presently exists. Foreseeable future actions would not include wild horses and potential carcasses would not occur. Potential carcasses near home sites, ranch facilities, and areas with human and livestock activity would not occur. The effects of no action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

How effective would the proposed grazing of wild horses be at preserving high-quality grasslands for long-billed curlews and Columbian sharp-tailed grouse?

The cumulative effects boundary, timeframe of analysis, and past and present actions would be the same as the proposed action. The impacts of no action would not be increased beyond what already existed in the past, or what presently exists. Foreseeable future actions would not include wild horses. High quality grasslands for curlews and sharp-tails would not be impacted by wild horses. The effects of no action, when combined with the past, present, and reasonably foreseeable future actions, would not result in adverse cumulative effects.

5.7 Fisheries, Aquatic Habitat, Streams, Riparian Vegetation

It is appropriate to use watershed boundaries when addressing cumulative impacts because land management activities throughout an entire watershed can result in adverse impacts and changes to riparian and instream habitats. The degree of management within a watershed is an index of the potential to experience adverse effects to aquatic resources (USDA-FS 1993). As a general rule, the probability to experience adverse effects increases as the percentage of the watershed affected by management increases.

The cumulative effects analysis area is the watersheds for Morris Creek, Antelope Creek, North Fork Lower Willow Creek, Spring Creek and Cow Creek.

Past, Present and Reasonably Foreseeable Actions

Management activities that have occurred and are expected to continue within the cumulative boundary include; livestock grazing, timber harvest, road construction, diversion ditches and dams, and development of private lands.

Various land-use and management activities can affect fish and aquatic habitats. Although the activities themselves may differ, the environmental changes they produce generally affect fish and aquatic habitats in similar ways. The effects of increased sedimentation on spawning gravels, for example, will be the same whether the sediment resulted from road construction, timber harvest, livestock grazing or mining. The same is true for other habitat variables such as water quality, temperature, quantity and distribution of instream cover, channel morphology, and dissolved oxygen concentrations (Meehan et al. 1991).

Undisturbed forest and rangelands typically have low rates of erosion and sedimentation (Stednick 2010). However, land management activities have the potential to alter the nature of sediment delivery from upslope and in riparian areas, increasing the rate of sedimentation in perennial and fish bearing streams. In particular, unpaved roads can present a major source of sediment affecting stream channels (Elliot 2000). Roads have lower infiltration rates and can generate increased runoff over bare surfaces, factors that can lead to increased flow and more sediment from altered hillslopes reaching channels.

Riparian areas occupy only 0.5 to 2.0 percent of the landscape in the western U.S., yet they are disproportionately important for maintenance of water quality and quantity (water storage and aquifer recharge), habitat for aquatic and terrestrial biota, sediment retention, and streambank building and maintenance. Because stream/riparian corridors are located at the lowest point within drainage basins, they are vulnerable to the effects of land use conducted upslope and upstream in the watersheds. Ongoing issues surrounding the management of riparian areas in the western U.S. include the impacts of forest harvest, livestock grazing, road construction, inadequate road maintenance, and recreation on the structure and function of riparian ecosystems (NCASI 2005).

Timber harvest may change the distribution of precipitation that reaches the ground (and the evaporation rate from the ground), the amount that is intercepted or evaporated by foliage, and the amount that can be stored in the soil. These hydrologic properties, as well as the density of road or surface drainage networks and the physical structure of the soil, govern the rate and pathways of movement of water to stream channels (Meehan et al. 1991).

Streamside vegetation stabilizes streambanks and channels, provides cover and maintains stream temperatures. When streamside vegetation is removed, summer water temperatures and fine sediment delivery to streams generally increase. Several important riparian/stream areas have been fenced from livestock grazing and from wild horse use. These include Wood Creek and Antelope Creek.

A decline in soil condition, plant cover, and plant species composition from trampling and overgrazing can encourage the invasion and growth of noxious weeds or other invasive plants in riparian sites. Early spring grazing can also adversely affect vegetation resources as a result of trampling of wet soils, uprooting of seedlings, and damage to mature plants.

Proposed Action (Alternative A)

Alternative A would convert cattle grazing to wild horse grazing in the cumulative effects area. Although the number of animals using the three management units would be substantially less than under the No Action Alternative, the number of horses allowed under Alternative A would not likely support suitable upland or riparian vegetative conditions or allow for recovery of riparian or instream habitats.

Due to historic livestock grazing along with a longer duration of time wild horses would graze in both the winter and summer pastures, the number of horses proposed under Alternative A would be expected to maintain the current condition or cause degradation of instream and riparian habitats.

Use by wild horses would be expected to exceed the amount of forage available for their maintenance. Competition between wildlife and wild horses for limited forage and water resources would occur. Damage to rangeland resources would likely continue or increase.

Alternative B

By entering into an AA for the the number of horses the range studies determined is available forage for yearlong maintenance of wild horses while meeting the goals of an ecosanctuary. Alternative B would allow for recovery of riparian and instream conditions of Morris Creek, Antelope Creek, North Fork Lower Willow Creek, Spring Creek and Cow Creek. Because of this, Alternative B would contribute to improving watershed conditions and function.

Maintenance of range associated with wild horse use would be avoided under Alternative B. Managing wild horse populations in balance with the available forage, water and habitats would result in improved vegetation conditions (i.e. forage availability and quantity), which in turn would result in improved riparian vegetation density, cover, vigor, seed production, and seedling establishment.

Alternative B is designed to improve and protect streams (and associated riparian communities) by managing wild horses within the proper stocking rate as determined utilizing NRCS methodology. This would curtail the current impacts to many riparian sites from high utilization rates and ground disturbance and bring such use to levels that allow for recovery of riparian areas, and allow for greater production of vegetative cover within riparian plant communities.

No Action (Alternative C)

Under the No Action Alternative, livestock grazing would continue without restrictions in riparian areas of the cumulative effects boundary. This would result in direct and indirect

cumulative effects in the watersheds by maintaining a source of chronic and potentially high levels of sediment to Morris Creek, Wood Creek, Antelope Creek, North Fork Lower Willow Creek, Spring Creek and Cow Creek. High sediment loads would be long-term and deposited immediately adjacent to eroding banks as well as to downstream habitats for westslope cutthroat trout and for other aquatic species.

The No Action Alternative would continue to contribute to long-term direct and indirect cumulative effects in the Morris Creek, Wood Creek, Antelope Creek, North Fork Lower Willow Creek, Spring Creek and Cow Creek watersheds by preventing recovery of riparian vegetation, allowing continued bank erosion and preventing restoration of riparian and instream conditions.

6 Consultation and Coordination

6.1 PERSONS, GROUPS, AND AGENCIES CONSULTED

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
USFWS - Kelly Douglas (Wildlife Biologist)	Information on Consultation, under Section 7 of the Endangered Species Act (16 USC 1531), March and April, 2014	Coordination on ESA Section 7 Consultation for project effects on Grizzly Bears.
Montana Fish, Wildlife, & Parks – Ray Vinkey (Wildlife Biologist)	Clarification on Wildlife Issues and interagency coordination	Discussion and clarification of proposed project, effects and wildlife design features.
Granite County Commissioners	Update to Commissioners, April, 2014	Clarify awareness and project status update by BLM to county commissioners.
Montana Fish, Wildlife, & Parks – Brad Liermann (Fisheries Biologist)	Data gathering and interagency coordination.	BLM acquired data and information on streams in project area to support EA.
USDA-NRCS Watler Lujan (Rangeland Mgt Spec.)	Consultation and assistance with vegetation and production data.	Assistance with Range data collection and Carrying Capacity.
Montana State Historic Preservation Office	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (16 USC 470)	BLM would consult with State Historic Preservation Office prior to implementation of project level activities via Class III Cultural Resource Inventories. If cultural resources are located during the inventory mitigation measures would be applied to reduce or eliminate adverse effects.
Salish & Kootenai Tribes	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	Tribal Consultation occurred on May 1, 2014 with Salish/Kootenai Culture Committee. No issues were brought forward at that time. Results of the Class III Cultural Resource Inventory of fence and pipelines will be given to the Culture Committee for review.

6.2 LIST OF PREPARERS (Table 6-2)

Name	Title	Responsible for the Following Section(s) of this EA
Steve Bell	Rangeland Mgmt. Specialist	Soils and Vegetation. ID Team Lead.
MariaCraig	Recreation Specialist	Recreation
Sarah LaMarr	Fishery Biologist	Fisheries, Aquatic Habitat, Steams, and Riparian Vegetation
James Sparks	Wildlife Biologist	Wildlife and Wildlife Habitat
Steve Flood	Hydrologist	Hydrology and Water Quality
Dennis Leonard	GIS Specialists	GIS analysis and maps
Jody Miller	Archaeologist	Cultural Resources
John Hill	Nat. Res. Specialist	EA Introduction and RFA
Jared Bybee	Wild Horse Specialist	Wild Horses
Tim LaMarr	Acting Field Manager	Document Review

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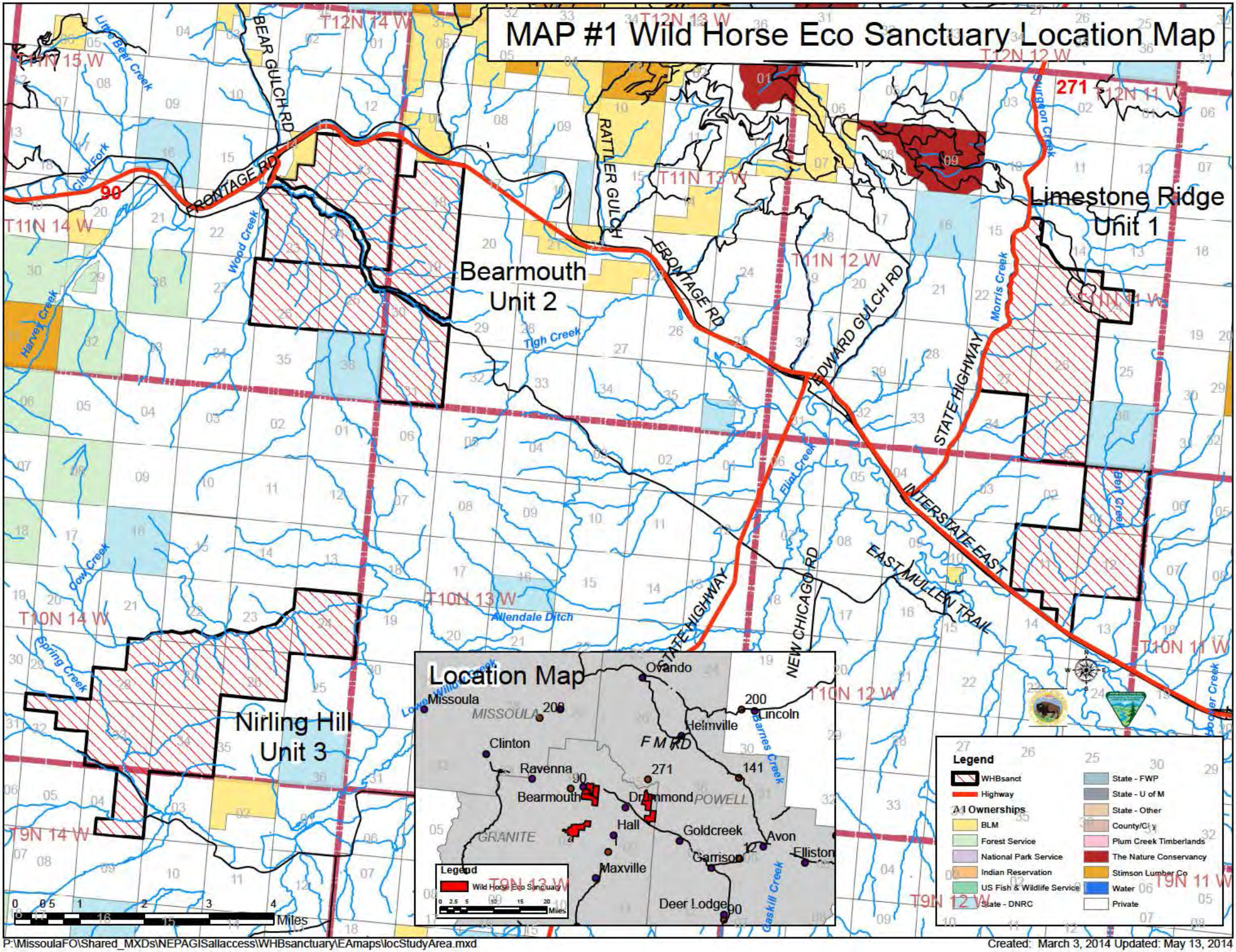
MAP #1 Wild Horse Eco Sanctuary Location Map



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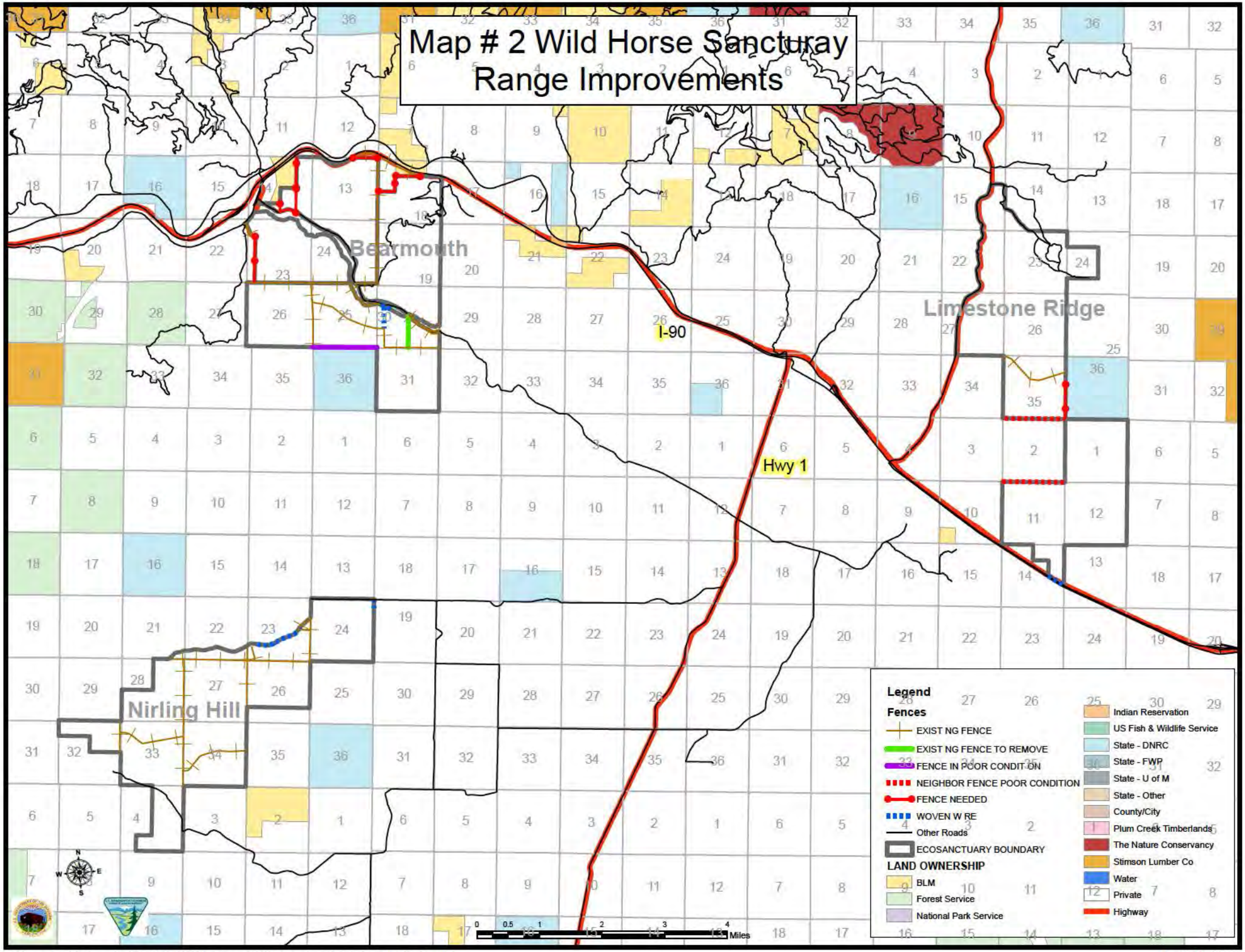

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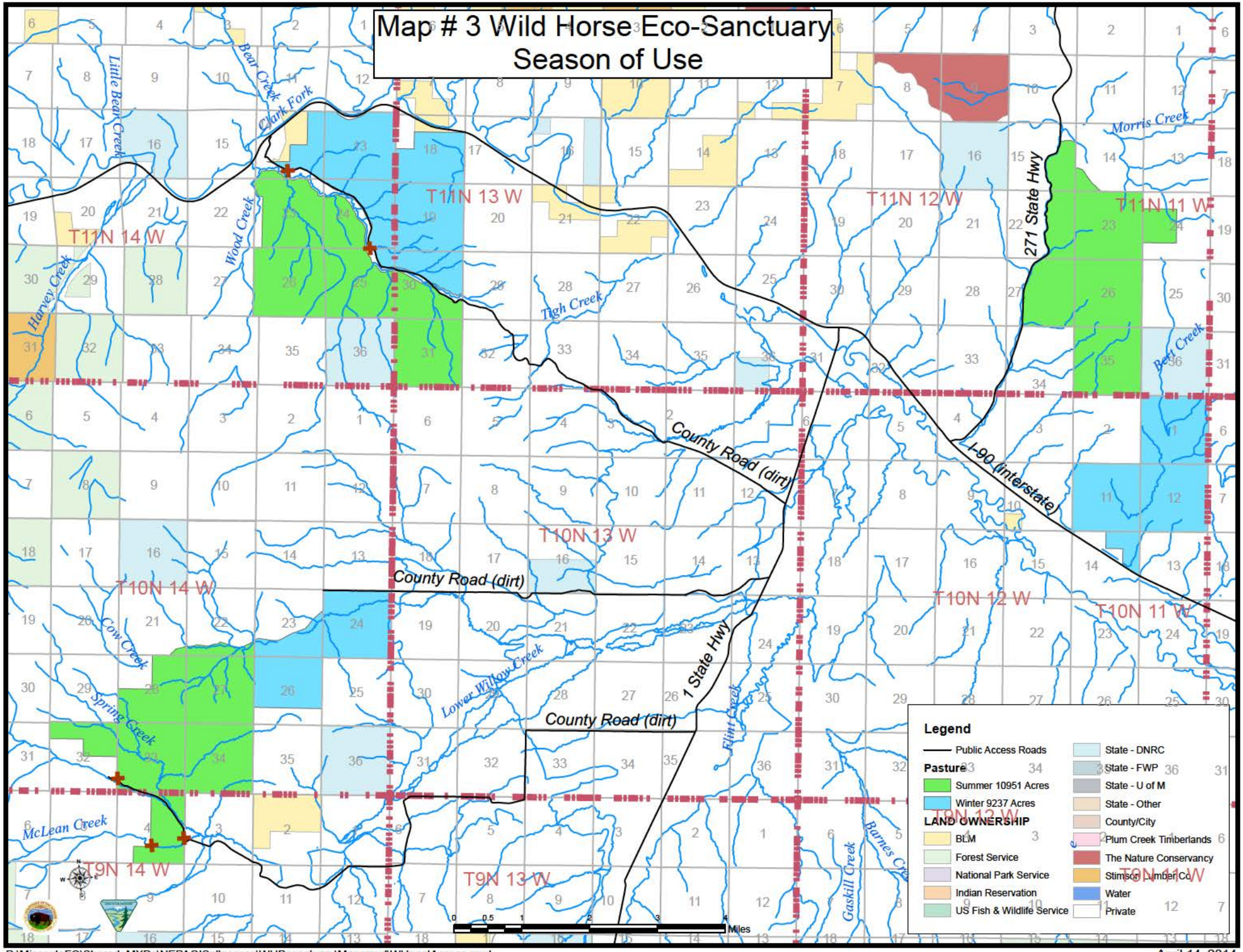
April 11, 2014

Map # 3 Wild Horse Eco-Sanctuary
Season of Use



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April 14, 2014

Appendix A

The BLM worked collaboratively with the United States Department of Agriculture-Natural Resource Conservation Service to jointly assess available forage on the three units in the proposed ecosanctuary. The purpose of this effort was to assess wild horse carrying capacity in a manner that would meet the criteria for an ecosanctuary: provide a natural and healthy habitat for excess wild horses while conserving the environment and ecology of the lands (USDI-BLM, 2012), while maintaining wild horse health and condition.

A 4.8 square foot hoop was used to clip available forage rooted in the hoop. A NRCS conversion factor of 20 was used to convert the grams of grass clipped in the hoop to represent pounds per acre. Grass was clipped and weighed individually according to species except for *Koeleria cristata* and *Poa secunda* which were grouped together since they both have approximately the same weights. The weight was then measured in grams by placing the grass in paper bags and using a 100g scale to measure the green weight of the grass excluding the weight of the bag. The grass was then aired dried on truck dashboards for approximately 1 week and weighed again to gain the dry weight and the percent dry weight that each species contained.

The green weight and the dry weight were used to calculate the percent dry weight. The percent dry weight is calculated as: Percent Dry $Weight = \frac{dry\ Weight}{Green\ Weight}$ which is used to calculate the amount of forage available. Once the percent dry weight was calculated, we used a reconstruction factor that uses the percent dry weight, percent growth ungrazed, percent growth curve complete, and the percent of normal production to calculate the amount of forage that is available for grazing. The reconstruction factor is calculated as:

$$\frac{\%\ dry\ weight}{\%growth\ ungrazed\ x\ \%\ \ growth\ curve\ complete\ x\ \%\ \ normal\ production}.$$

The percent growth ungrazed is the percent amount of current year growth that has been left ungrazed at the time of clipping. The percent growth curve complete is the percent of the growth curve that the grass has reached at the time of clipping. The percent of normal production takes into consideration whether the area that is being clipped has had a normal level of production or if it has a decreased level of production for that time of year such as can be seen during a drought year. The reconstruction factor is then used to calculate the total amount of forage that is available. This is done by multiplying the green weight by the reconstructing factor which will give the total amount of grams per acre available for use. This does not take into consideration harvest efficiency or wildlife grazing but is just the amount of production that the area has.

To calculate the stocking rate in animal unit months (AUM) per acre, the following equation was used:[a] $per\ acre = \frac{Available\ Forage\ \ (\frac{lbs}{acres})\ \text{X .25 Harvest Efficiency}}{915\ lbs\ forage\ per\ month}$. Harvest Efficiency is the percentage of forage actually ingested by the animals from the total amount of forage produced (NRCS, National Range and Pasture Handbook, 1997).