

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

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**Environmental Assessment WY-050-EA11-78**

**Catch, Treat and Release with limited Removal  
Red Desert Complex Wild Horse Herd Management Areas  
(Lost Creek, Stewart Creek, Green Mountain, Crooks Mountain,  
Antelope Hills)**

***Location:* Rawlins & Lander, Wyoming  
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## **Acronyms**

<b>AML</b>	<b>Appropriate Management Level</b>
<b>BLM</b>	<b>Bureau of Land Management</b>
<b>CEQ</b>	<b>Council on Environmental Quality</b>
<b>CFR</b>	<b>Code of Federal Regulations</b>
<b>EA</b>	<b>Environmental Assessment</b>
<b>EIS</b>	<b>Environmental Impact Statement</b>
<b>HMAP</b>	<b>Herd Management Area Plan</b>
<b>HMA</b>	<b>Herd Management Area</b>
<b>HSUS</b>	<b>Humane Society of the United States</b>
<b>IBLA</b>	<b>Interior Board of Land Appeals</b>
<b>MVP</b>	<b>Minimum Viable Population</b>
<b>PZP</b>	<b>Porcine Zonae Pullicida</b>
<b>RMP</b>	<b>Resource Management Plan</b>
<b>S&amp;G</b>	<b>Standards and Guides (for Rangeland Health)</b>
<b>WH&amp;B</b>	<b>Wild Horse and Burro</b>
<b>WHBA</b>	<b>Wild Horse and Burro Act, 1971</b>
<b>WHHMA</b>	<b>Wild Horse Herd Management Area</b>
<b>WSA</b>	<b>Wilderness Study Area</b>

## **1.0 Purpose and Need**

### ***1.1 Introduction***

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of a “Catch, Treat and Release (CTR)” of wild horses in the Red Desert Wild Horse Herd Management Area (HMA) Complex. In addition to the proposed action of a CTR gather, removal of wild horses outside identified HMAs within the project area will also be conducted. The HMAs included in this complex are Lost Creek, Stewart Creek, Green Mountain, Crooks Mountain and Antelope Hills(See Area Map, Appendix 2). The EA is a site-specific analysis of potential impacts that could result with the implementation of a proposed action or alternatives to the proposed action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If the decision maker determines that this project does not have “significant” impacts following the analysis, then an EA would be prepared for the project. A Decision Record may be signed for the EA approving one of the alternatives presented in the EA.

### ***1.2 Background***

The Bureau of Land Management (BLM) Rawlins and Lander Field Offices propose to gather wild horses via helicopter and implement a retreatment of fertility control on captured mares that will be turned back to the range. The gather is expected to begin in early October of 2011 and will last approximately 25 days.

The purpose of this environmental assessment (EA) is to analyze the impacts associated with the BLM’s proposal to Catch, Treat and Release wild horses from the Red Desert HMA Complex (Lost Creek, Stewart Creek, Green Mountain, Crooks Mountain and Antelope Hills) and to remove excess wild horses residing outside the HMA’s.

The implementation of the gather is necessary to retreat mares that were treated in the fall of 2009 so that the remaining population levels are consistent with the appropriate management level (AML) for the herd management areas (HMAs) as well as to achieve a thriving natural ecological balance and a multiple use relationship with other resources within the project area. Implementing fertility control measures as part of the proposed action would slow the growth rate of the population that is returned to the HMA’s. In the event that weather or other factors prevent a gather at this time, the operation would be conducted as scheduling permitted in 2011.

The BLM also anticipates the implementation of the proposed action will meet RMP objectives and remain in compliance with the State of Wyoming Consent Decree Agreement.

### ***1.3 Need for the Proposal***

The Wild Free-Roaming Horses and Burros Act of 1971 (WFRHBA) established the framework for managing wild horse and burro populations on public lands. The WFRHBA provides in part, that the Department of Interior “manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands.” P.L. 92-195 Section 1333 (as amended). BLM’s management of wild, free roaming horses must comply with law and policy pertaining to wild, free roaming horses on public lands. The policy of the BLM addresses a range of topics including establishment and maintenance of AMLs in a humane, safe, efficient, and environmentally sound manner.

Nationwide, there are more horses and burros on public lands than can “achieve and maintain a natural ecological balance.” To maintain appropriate herd numbers, and to reduce the need for long term pastures nationwide, the BLM must manage each of its HMAs to slow population growth.

Wild horse population numbers have the potential to double every four years. With fertility control vaccine treatment, productivity can be reduced substantially in the short term because treatments are effective for up to three years. Because mares in the Red Desert Complex were treated in the fall of 2009 during the last removal gather, populations in the HMAs would be slightly over the high AML limit.

The boundaries of the HMAs are delineated by fencing and topography which is generally effective in limiting wild horse distribution to the HMAs; however, some wild horses have been observed outside of HMA boundaries. These animals have caused conflicts with adjacent landowners including trespass on private land, breeding with domestic horses, and property damage.

In order to meet local and national wild horse program goals, the objectives would be to:

- slow population growth to maximize the time between gathers;
- reduce the number of wild horses being placed
  - for adoption/sale; or
  - in short-term holding or long-term pastures;
- maintain wild horse populations within AMLs;
- remove wild horses outside the HMAs; and
- maintain a thriving, natural ecological balance and multiple use relationship on public lands in the Red Desert Complex.

The purpose of the proposed action is to achieve and maintain the AML for wild horses in the Red Desert HMA Complex, collect information on herd characteristics, and determine herd health. By achieving and maintaining AML in the Red Desert HMA Complex, the BLM will also meet its objectives within the various HMA’s. These objectives include:

- *Manage the Red Desert HMA Complex to achieve and maintain a thriving natural ecological balance, and multiple-use relationship.*
- *Manage the Red Desert HMA Complex population to preserve and enhance the historic physical and biological characteristics of the herd. (Including noted Spanish characteristics.)*

- *Maintain sex ratios and age structures, which will allow for the continued physical, reproductive and genetic health of the Red Desert HMA Complex.*
- *Preserve and maintain a healthy and viable wild horse population that will survive and be successful within the HMA during poor years when elements of the habitat are limiting due to severe winter conditions, drought, or other uncontrollable and unforeseeable environmental influences to the herd.*
- *Manage the Red Desert HMA Complex wild horse herd as a self-sustaining population of healthy animals in balance with other uses and the productive capacity of their habitat.*

As of February 2011 the population has grown to an estimated 1197 adult animals. Inside the HMAs the population is estimated to be 827 adults and outside the HMAs the population is estimated to be 370 adults. Assuming a 20% foal crop for 2011 the population will be higher, however, the population will be inventoried in August of 2011 to confirm reproduction this past year. Gather operations will consist of removing 100% of the wild horses outside the HMAs and removing a limited number of animals inside the HMAs, down to the mid-point AML of 602.

The need for management of wild, free roaming horses is to maintain a thriving natural ecological balance and to preserve the multiple use relationship that exists in the areas affected by wild horses. Management of wild horse populations is also needed to maintain the health of the public rangelands that wild horses and other animals depend on.

A variety of monitoring data has been collected since the AML was established, including vegetative trend, utilization and use pattern mapping, livestock actual use, professional observations and precipitation. In general, forage utilization levels vary from year to year based upon climatic conditions, vegetative production, and the number of horses, livestock and wildlife present in the HMAs.

While wild horse numbers have been maintained within AML the trend data collected for the Stewart Creek HMA has generally shown an upward trend in vegetative cover and increased species composition. There has also been a noted reduction in undesirable plant species such as halogeton and prickly pear. The riparian areas have shown a similar pattern while wild horse numbers have not exceeded the established AML. In the 1990's and early 2000's wild horse numbers were greatly above AML in both the Lost Creek and Stewart Creek HMAs. At that time utilization studies indicated moderate to high use in riparian habitat and light to moderate use in sites adjacent to riparian habitats. Additionally data collected from Rain Gauges within the Lost Creek and Stewart Creek HMAs has reflected a 10 year average (2001-2010) of about 92% of normal precipitation. This has been a contributing factor for recently more productive forage years also impacting the upward trends seen in vegetation within the HMAs. Wild horse numbers, greatly exceeding the high AML, have been identified as a contributing factor to riparian areas within the Lost Creek and Stewart HMAs not passing the standards for rangeland health.

For the Lander Field Office, when the wild horse population is at the lower range of the AML, most of the HMA's receive slight to light use on upland areas (less than 40% utilization of current year's production). As the wild horse population approaches the upper range and exceeds the AML, the preferred horse use concentration areas begin to receive moderate to heavy use (41% to 80% utilization of current year's production), while other areas continue to receive slight to light use. This is primarily due to wild horse distribution and herd space requirements. This upland forage utilization is attributed primarily to wild horses, with minor wildlife use, since nearly all

domestic livestock grazing within the HMA's has only been permitted at 40 to 60 percent of the normal permitted use in attempts to balance use within the HMA's .

The three HMA's encompassing the Northern portion of the Red Desert HMA Complex has only received normal or above normal precipitation in four of the past eleven years. According to BLM precipitation monitoring data, the Northern portion of the Red Desert HMA Complex received approximately 79% of normal precipitation from 2000 through 2009 (BLM Rain Gauge data). Forage production in the HMA's since 2000 has been well below normal. Forage availability for wild horses since the drought began has declined each year, as well as the health and vigor of the key forage plant species. Residual forage levels in most of the HMA's are below average, impacting not only wild horses, but degrading wildlife habitat and watershed conditions. As the wild horse population increases, horses begin increasing their range in search of forage, water, and space. Livestock actual use levels have also declined as permittee's and BLM have tried to manage the rangelands within the HMA's to maintain an ecological balance between use and available forage.

The proposed capture and fertility treatment of wild horse mares is necessary to slow the population growth of the herds and to remove the excess animals (foals) in order to achieve a thriving natural ecological balance between wild horse populations, wildlife, livestock and vegetation, and to protect the range from the deterioration associated with overpopulation of wild horses as authorized under Section 3(b) (2) of the 1971 Free-Roaming Wild Horses and Burros Act (1971 Act) and section 302(b) of the Federal Land Policy and Management Act of 1976.

The proposed management actions are also needed to be in conformance with the August 2003 Consent Decree upheld by the United States District Court of Wyoming. The Consent Decree is an out of court settlement agreement between the State of Wyoming and United States Department of the Interior, Bureau of Land Management. This agreement specifies that when information is gathered that indicates an HMA within the State of Wyoming is determined to be over the established AML, the BLM has one year from discovery to remove wild horses to within range of AML.

#### ***1.4 Conformance with Existing Land Use Plans (LUPs)***

The proposed action is in conformance with the land use plans terms and conditions as required by (43 CFR 1610.5-3(a)). Any action in the Rawlins and Lander Field Offices are subject to requirements established by the Rawlins and Lander Resource Management Plans, approved December 12, 2008 and June 9, 1987 respectively. The Red Desert HMA complex has been designated as suitable for long term, sustained wild horse use in the Rawlins and Lander RMPs. The proposed capture, treatment and removal conform to the land use decisions and resource management goals and objectives of the Rawlins and Lander Resource Management Plans.

#### ***1.5 Relationship to Statutes, Regulations or Other Plans***

Gathering excess wild horses is in compliance with Public Law 92-195 (Wild Free-Roaming Horses and Burros Act of 1971) as amended by Public Law 94-579 (Federal Land Policy and Management Act of 1976), and Public Law 95-514 (Public Rangelands Improvement Act of 1978). Public law 92-195, as amended, requires the protection, management, and control of wild free-roaming horses and burros on public lands. The preparation and transport of wild horses will be conducted in conformance with all applicable state statutes.

The Proposed Action is in conformance with all applicable regulations at 43 Code of Federal Regulations (CFR) 4700 and policies. The following are excerpts from 43 CFR relating to the protection, management, and control of wild horses under the administration of the BLM.

43 CFR 4700.0-2 One of the objectives regarding wild horse management is to manage wild horses “as an integral part of the natural system of the public lands under the principle of multiple use . . .”

43 CFR 4700.0-6(a-c) Requires that BLM manage wild horses “...as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat ... considered comparably with other resource values ...” while at the same time “...maintaining free-roaming behavior.”

43 CFR 4700.0-6 (e): Healthy excess wild horses for which an adoption demand by qualified individuals exists shall be made available at adoption centers for private maintenance and care.

43 CFR 4710.3-1 “HMA's shall be established [through the land use planning process] for maintenance of wild horse and burro herds.”

43 CFR 4710.4 “Management of wild horses and burros shall be undertaken with the objective of limiting the animals' distribution to herd areas. Management of wild horses shall be at the minimum level necessary to attain the objectives identified in approved land use plans and herd management area plans.”

43 CFR 4720.1 “Upon examination of current information and a determination by the authorized officer that an excess of wild horses or burros exists, the authorized officer shall remove the excess animals immediately.”

Under 43 CFR 4180 it is required that all BLM management actions achieve or maintain healthy rangelands.

All federal actions must be reviewed to determine their probable effect on threatened and endangered plants and animals (the Endangered Species Act).

Federal actions must also be reviewed to determine their probable effect on cultural and historic properties. This process is termed section 106 consultation (Section 106 of the Historic Preservation Act).

Executive Order 13212 directs the BLM to consider the President’s National Energy Policy and adverse impacts the alternatives may have on energy development. The action would also be in conformance with the Great Divide Resource Area Wild Horse Herd Management Area Evaluation EA/ Capture Plan and the associated Environmental Analyses (EAs) WY-037-EA4-122 and WY037-EA4-121 and the Record of Decision and Approved Rawlins Resource Management Plan as well as, the Lander Resource Area Wild Horse Herd Management Plan, Lander Herd Management Area Evaluation / Capture Plan and the associated Environmental Analyses (EAs) WY-036-EA3-010 and WY-036-EA3-013. Recommendations from these evaluations and documents were the basis for establishing the AML. These documents contain specific management prescriptions for the HMA’s, as well as information on the existing

environment and environmental impacts of the management actions. The decisions were affirmed by the Interior Board of Land Appeals in *Animal Protection Institute of America et. al.* (IBLA 93-308, 94-14). Rangeland conditions have changed significantly since 1993 with the inception of the drought in 2000. Changes to HMA boundaries or AMLs are beyond the scope of this analysis and will not be discussed further. The proposed action is consistent with all other federal, state, and local plans. The capture and fertility treatment will assist in maintaining the health of the public lands within the HMA. The “*Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming*” is available at <http://www.wy.blm.gov/range/sandgs.htm>.

The carrying capacity for livestock and wild horses, multiple use management objectives, and the Terms and Conditions for livestock grazing for the Cyclone Rim, Stewart Creek, Green Mountain Common and Whiskey Peak Common Allotment’s were established in conformance with the Rawlins RMP, Lander RMP, BLM policy, and the Wyoming Standards and Guidelines. See Appendix 6 for permitted livestock AUM’s.

An AML is the maximum number of wild horses to be managed in the HMAs. The Great Divide Resource Area Wild Horse Herd Management Area Evaluation EA/ Capture Plan and the associated Environmental Analyses (EAs) WY-037-EA4-122 and WY037-EA4-121, the Lander Herd Management Area Evaluation / Capture Plan and the associated Environmental Analyses (EAs) WY-036-EA3-010 and WY-036-EA3-013 states that wild horses; “will be managed in a range from 480 to 724 wild horses”. Table 1. lists the AML for wild horses in the Red Desert HMA Complex by HMA and allotment.

**Table 1. AML by Allotment and Decision Record Date**

Allotment	HMA Name	AML	Decision Record - Date
<b>Stewart Creek (#10102)</b>	<b>Stewart Creek</b>	125-175	May 1994
<b>Cyclone Rim (#10103)</b>	<b>Lost Creek</b>	60-82	May 1994
<b>Green Mountain Common (#32001), Cyclone Rim (#10103)</b>	<b>Antelope Hills/Cyclone Rim</b>	60-82	May 1994
<b>Green Mountain Common (#32001)</b>	<b>Crooks Mountain</b>	65-85	May 1994
<b>Green Mountain Common (#32001), Whiskey Peak Common (#12003)</b>	<b>Green Mountain</b>	170-300	February 1993
Total		480-724	

Environmental analyses (EA's) have been conducted in past years which analyzed the impacts of various gather methods on wild horses, and other critical elements of the human environment, to achieve AML. These documents include:

1. The Great Divide Resource Area Wild Horse Herd Management Area Evaluation EA/ Capture Plan and the associated Environmental Analyses (EAs) WY-037-EA4-122 and WY037-EA4-121, May 1994.
2. Adobe Town – Salt Wells Creek Herd Management Complex – Management Action and Environmental Assessment EA No. WY040-07-EA-37 January 4, 2007.
3. Removing Excess and Stray Wild Horses From the Area North of Interstate 80 and West of US HWY 287 in the Rawlins Field Office, EA No. WY030-06-EA-165 August 8, 2006.
4. Removing Excess Wild Horses From the Adobe Town and Salt Wells Creek HMAs of the Rawlins and Rock Springs Field Offices EA No. WY030-05-EA-158 August 8, 2006.
5. Lander Resource Area Wild Horse Herd Management Plan, Lander Herd Management Area Evaluation / Capture Plan and the associated Environmental Analyses (EAs) WY-036-EA3-010 and WY-036-EA3-013, February, 1993.
6. Wild Horse Gathering Inside and Outside of the Muskrat Basin, Rock Creek Mountain, Dishpan Butte and Conant Creek Wild Horse Herd Management Areas, EA No. WY-050-EA1-039, May, 2001.
7. Wild Horse Gathering Inside and Outside of the Crooks Mountain Wild Horse Herd Management Area, EA Number WY-050-EA2-032, April 2002.

8. Wild Horse Gathering Inside of the Green Mountain Wild Horse Herd Management Area EA Number WY-050-EA2-031, April 2002.

9. A Consent Decree (2003) between the BLM and the State of Wyoming expressed the State's desire for the Bureau of Land Management (BLM) to gather within the level of the AML, but to also maintain a healthy herd.

10. North Lander HMA Complex (Conant Creek, Rock Creek Mountain, Dishpan Butte and Muskrat Basin) Capture/Removal and Fertility Control Lander Field Office EA Number WY-050-EA4-061, 2004.

11. Antelope Hills/Cyclone Rim Horse Management Area Capture/Removal and Fertility Control Lander Field Office, EA Number WY-050-EA4-060, 2004.

12. Green Mountain Horse Management Area Capture/Removal and Fertility Control Lander Field Office, EA Number WY-050-EA5-133, 2005.

13. Crooks Mountain Horse Management Area Capture/Removal and Fertility Control Lander Field Office, EA Number WY-050-EA06-129, 2006.

14. Wild Horse Gathering for the North Lander Complex Wild Horse Herd Management Areas (Conant Creek, Dishpan Butte, Rock Creek Mountain and Muskrat Basin) Capture/Removal and Fertility Control, Lander Field Office, EA Number EA WY-050-EA08-95, 2008.

15. Wild Horse Gathering for the Red Desert Complex Wild Horse Herd Management Areas (Lost Creek, Stewart Creek, Green Mountain, Crooks Mountain, Antelope Hills), Environmental Assessment WY-030-2009-0258-EA, 2009.

16. Adobe Town – Salt Wells Creek Herd Management Area Complex Wild Horse Gather, Environmental Assessment WY-040-EA10-109, 2010.

These documents are available for public review at the Rawlins and Lander Field Offices. No other permits or authorizing actions are required prior to implementing the Proposed Action.

## **2.0 Alternatives**

This chapter describes the three alternatives, including any that were considered but eliminated from detailed analysis. Alternatives analyzed in detail include the following:

- **Alternative 1- Catch, Treat & Release Mares and Remove Horses Outside the HMAs:** Capture approximately 1,240 wild horses in order to apply PZP-22 fertility control vaccine to approximately 200 released mares. Up to 390 of the gathered horses inside the HMA's would be removed to meet the midpoint AML and to assure individual animal welfare and herd health. An additional 450 wild horses within the project area, but outside the HMAs would be removed.

- **Alternative 2- No Action:** No capture to apply fertility control vaccine to mares would occur at this time. A removal gather would not occur at this time, however, it would take place when wild horse populations in the HMAs reach the upper limit of AMLs utilizing a 4 year maintenance cycle.
- **Alternative 3- Catch, Treat & Release Mares, plus Geld and Remove Horses Outside the HMAs:** Capture approximately 1,240 wild horses, castrate/geld 60 studs and fertility treat 200 mares. An additional 450 wild horses within the project area, but outside the HMAs would be removed.

## **2.1 Actions Common to Alternatives 1 and 3**

The following actions are common to Alternatives 1 and 3:

Maintain an AML in the Red Desert HMA Complex of 480 to 724 wild horses, as shown in Table 2.

**Table 2. Management Range for Wild Horses in the Red Desert HMA Complex**

<b>HMA Name</b>	<b>Management Range</b>
<b>Stewart Creek</b>	<b>125 – 175</b>
<b>Lost Creek</b>	<b>60 - 82</b>
<b>Antelope Hills</b>	<b>60 - 82</b>
<b>Crooks Mountain</b>	<b>65 - 85</b>
<b>Green Mountain</b>	<b>170-300</b>
<b>Totals</b>	<b>480-724</b>

Wild horse movements among the five herd areas in the Red Desert HMA Complex are apparent through trails and seasonal variation in distribution. It is recognized that individually, the AML for wild horses in three of the herd areas (Lost Creek, Antelope Hills, and Crooks Mountain) may not be a genetically diverse population. However, as indicated, these horses interact with each other between herd areas, the interaction and exchange should ensure genetic variability. The sum total of the management range of all five herd areas in the Red Desert HMA Complex will be the AML.

- Gather operations would be conducted in accordance with the Standard BLM Operating Procedures for Wild Horse Removal (Appendix 1). The helicopter drive method would be used for this gather, and may include multiple gather sites. To the extent possible gather sites

(traps) would be located in previously disturbed areas. Post-gather, every effort would be made to return released horses to the same general area from which they were gathered.

- An Animal and Plant Inspection Service (APHIS) veterinarian will be on-site to examine animals and make recommendations to BLM for care and treatment of wild horses. All euthanasia will be in accordance with Washington Office Instruction Memorandum (IM) 2009-041 the final decision for euthanasia is delegated to the COR on site.
- Data on the captured horses would be collected, including sex and age distribution, condition class information (using the Henneke rating system), color and size, along with the disposition of that animal (removed or released).
- All areas outside of the HMA would be considered total removal areas.

Impacts from gather activities would be similar between alternatives 1 and 2 (Table 1). Objectives of reducing the number of wild horses placed in adoption/sale or long-term pastures would be met by Alternative 1 to a greater degree than Alternative 2.

## **2.2 Alternative Descriptions**

### **2.2.1 Alternative 1 – Catch, Treat & Release Mares & Remove Horses Outside HMAs**

About 1240 wild horses would be gathered from within and outside the Red Desert Complex HMAs beginning in October 2011. Approximately 400 of the captured wild horses would be released; of these, about 200 mares would be treated with fertility control vaccine as follows:

- All of the released mares would be treated with a two-year Porcine Zona Pellucida (PZP-22) or similar vaccine and released back to the range. Fertility control treatment would be conducted in accordance with the approved standard operating and post-treatment monitoring procedures (Appendix A).
- Post-gather, every effort would be made to return the released horses to the same HMA from which they were gathered.

Up to approximately 20% of gathered excess wild horses, mostly foals or yearlings, would be removed to prevent any issue of abandonment that might occur after being released back into the HMA, and to ensure the long-term health and welfare of the horses. Additionally, horses found with injuries needing treatment and any wild horses residing outside the HMA boundary would be removed from the range. These animals would be offered for adoption or sale to individuals who can provide good homes, and/or placed in long-term holding pastures out of state.

The gather would begin in October 2011 and take about 25 days to complete. Several factors such as animal condition, herd health, weather conditions, or other considerations could result in adjustments in the schedule. Gather operations would be conducted in accordance with the Standard Operating Procedures (SOPs) described in the National Wild Horse and Burro Gather Contract (Appendix B).

The primary gather (capture) methods would be the helicopter drive method with some limited helicopter assisted roping (from horseback) if needed to restrain individual horses. Trap sites and temporary holding facilities would be located in previously used sites or other disturbed areas (Map 1) whenever possible. New trap sites would be selected to avoid sensitive resources (Appendix B). New trap sites would be surveyed for cultural, botanical, and wildlife resources prior to use. If sensitive resources are encountered, these locations would not be utilized unless they could be modified to avoid any impacts. Public access to the HMAs could be restricted during gather operations to ensure public and horse safety and minimize disruption to the gather process.

An Animal and Plant Inspection Service (APHIS) or other veterinarian would be on-site during the gather to examine animals and make recommendations to the BLM for care, treatment, and if necessary, euthanasia of captured wild horses. Decisions to humanely euthanize animals would be made (by the BLM COR) in conformance with BLM policy (Washington Office Instruction Memorandum 2009-041). Refer to:

[http://www.blm.gov/wo/st/en/info/regulations/Instruction\\_Memos\\_and\\_Bulletins/national\\_instruction/2009/IM\\_2009-041.html](http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-041.html)

Data including sex and age distribution, condition class information (using the Henneke rating system), color, size and other information may also be recorded. Hair samples would be collected in accordance with IM No. 2009-062 to assess the genetic diversity of the herd.

### **2.2.2 Alternative 2 – No Action**

No gather would occur and fertility control application would not be undertaken to control the size of the wild horse population within the established AML range at this time. However, future gathers to remove excess wild horses would be scheduled when the AML upper limit is exceeded and/or other resource management objectives are not being met. A gather at that time would reduce numbers to the lower level of the AMLs. Gather and treatment activities would be conducted as described in Alternative 1. The post-release sex ratios would be re-evaluated.

### **2.2.3 Alternative 3 – Catch, Treat & Release Mares, plus Geld and Remove Horses Outside the HMAs.**

Same as Alternative 1, however an additional 20% of the total stallion population would be castrated and returned to the range as geldings. Of the 400 wild horses returned to the range, approximately 200 mares would be treated with PZP. Of the 200 studs returned, approximately 60 would be gelded. These 60 geldings would make up 20% of the male population. The populations in the Red Desert Complex would be managed in part as non-reproducing herds. The population would be monitored and the population would be supplemented with wild horses from other HMAs if it was determined to be needed.

· Table 3. Summary Comparison of Impacts between Alternatives.

Resource	Alternative 1 & 3	Alternative 2 No Action
Wild Horses	Horses would be stressed by gather activities, but would recover quickly. Up to 50% of gathered horses from the HMAs would be added to adoption/sales or long-term pastures by 2012. The need for a removal gather would be postponed until at least 2013. Under Alternative 3 - 60 wild horse studs would be gelded adding stress and potential health concerns with this alternative.	Horses would build in population and new bands would continue to establish outside the HMAs until another AML gather was implemented.
Soils	Compaction would occur from concentration of horses and vehicles at trap sites. Limited soil disturbance could occur up to 0.25 miles from trap sites. Soil and watershed conditions maintained over long term.	Soil and watershed conditions would decline slightly over the short term (4 years) because populations would be increasing and exceeding the upper end of AML in the HMAs.
Vegetation Including Noxious Weeds, Special Status Plants, Wetlands/Riparian Zone and Water Quality	Vegetation could be lost or altered in and around trap sites. Noxious weeds could increase in disturbed areas. Special status plants would not be affected. Short-term (up to 3 years) streambank damage and water quality degradation where riparian crossings occur.	General vegetation conditions would decline slightly over the short term (4 years) where wild horse and livestock use overlap. As utilization increased and perennial forage competition decreased, noxious weeds could establish easily. Riparian and wetlands would see an increase in use, especially in the areas between the water and the uplands.
Wildlife/Fisheries, Endangered & Special Status Species	Short-term (up to 10 days) disturbances caused by gather activities would occur when animals are preparing for winter.	An increase in the wild horse population would cause competition between wild horses and wildlife in wintering areas.
Heritage Resources including Cultural, Paleontological, and Historic Resources	No impacts to cultural resources within the proposed project areas would be anticipated.	No impact related to gather activities.
Livestock Grazing Management	Gather activities would have short-term impacts on up to three allotments.	No impact related to gather activities.
Recreation	Disruption of hunting and recreation access for up to five days in each HMA would occur during October.	No impact related to gather activities.
Energy	No impact related to gather activities	No impact related to gather activities

## **2.3 Alternatives Considered But Eliminated From Further Analysis**

These alternatives were eliminated from further analysis because they either do not accomplish the management objectives are not consistent with the RMP, regulation, and/or policy, and/or pose a health and safety issue for horses and personnel.

### **Use of Bait and/or Water Trapping**

It would not be timely, cost-effective, or practical to use bait and/or water trapping as the primary gather method because the number of water sources on both private and public lands within and outside the HMA would make it almost impossible to restrict wild horse access to the selected water trap sites. Due to the size of the project area and the distribution of horses, it is not practical to bait or water trap. As a result, this alternative was dismissed from detailed analysis.

### **No Additional Gathers and/or Remove or Reduce Livestock within the HMAs**

No gather would take place in the HMAs now or in the future. As wild horse numbers increase, livestock numbers could be reduced or wild horses could be moved into areas occupied prior to passage of the WFRHBA. This alternative was not considered in detail because it would be contrary to previous decisions which allocated forage for wild horse and livestock use. The grazing allotments in the HMAs were designated as open to livestock grazing and forage was allocated to both livestock and wild horses (Objective LVST-1 (pages 23-25, USDI 1999) and forage allocations Table LVST-1 (pages 104-112, USDI 1999)). Even with complete removal of livestock, the carrying capacity of the HMAs or Herd Areas (43 CFR 4700.0-5) would eventually be exceeded for wild horses. A thriving, natural ecological balance would not be maintained which would be inconsistent with the WFRHBA.

### **Gather Using Non-motorized Methods**

Gather operations would be conducted using riders on horseback which would require extensive personnel. The level of stress on wild horses would be substantially greater than helicopter gathering because an individual herd is pushed constantly from initial contact to the trap. Gather time for each band of horses would be longer and overall human disturbance would be greater than for the proposed action.

## **3.0 Environmental Impacts**

This chapter will assess the environmental impacts (either positive or negative) on the components of the human environment either affected or potentially affected by the Alternatives. Direct impacts are those that result from the actual gather and removal of wild horses in the Red Desert HMA Complex. Indirect impacts are those impacts that exist once the excess animals are removed. By contrast, cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Critical elements of the human environment (USDI-BLM 1988) and their potential to be affected by the Proposed Action and Alternatives must be considered. The elements that are determined to be not affected will not be analyzed or discussed further in this document.

### **3.1 Wild Horses**

#### **A. Wild Horses**

##### **1. HMA Description**

The Rawlins and Lander Field Offices areas of jurisdiction are located in south central and central Wyoming, covering the eastern third of Sweetwater County, all of Carbon, Albany, Laramie, and Fremont County and portions of Hot Springs and Natrona Counties. The Red Desert Complex (Lost Creek, Stewart Creek, Antelope Hills, Crooks Mountain and Green Mountain HMA) are located in the Sweetwater, Carbon, Fremont and Natrona Counties west and south of Wyoming highway 789/287 (See map in Appendix 2). The Red Desert Complex of HMA's encompass about 753,000 acres of land. About 49,500 acres within the HMAs (about 6 percent) is privately or state owned. The HMAs are characterized by gently rolling to steep mountainous terrain around Green Mountain and Crooks Mountain. Annual precipitation ranges from 5 to 7 inches per year at the lower elevations and 15-20 inches for the upper elevations on Green Mountain and Crooks Mountain. Most of the precipitation received in these areas is from winter snows. This general discussion tiers to the affected environment that is discussed in the Great Divide Resource Area Wild Horse Herd Management Area Evaluation EA/ Capture Plan and the associated Environmental Analyses (EAs) WY-037-EA4-122 and WY037-EA4-121 and the Lander Herd Management Area Evaluation / Capture plan and the associated Environmental Analyses (EAs) WY-036-EA3-010, WY-036-EA3-013.

##### **2. Gather History and Population Characteristics**

Gathers were conducted in the Red Desert HMA Complex in 1986, 1987, 1988, 1989, 1995, 1997, 1998, 2001, 2002, 2003, 2006, 2009. The 1986 through 1995 and 2001, 2002 and 2003 gathers were a gate cut (all gathered horses removed), while the 1998, and 2006 gathers utilized a selective removal criteria. Gathers were conducted in the Green Mountain HMA in 1980, 1984, 1993, 1995, 1996, 1997, 2002 and 2003. All of these gathers were a gate cut (all gathered horses removed) except 1993, 1995, and 1997. These gathers returned studs over five back

to the herd area. The gather conducted in 2005 and 2009 used selective removal criteria with fertility control. Gathers were conducted in the Antelope Hills/Cyclone Rim HMA in 1986, 1987, 1988, 1989, 2000, 2001, 2004 and 2009. All of these gathers were a gate cut (all gathered horses removed). These gathers were conducted on the entire HMA. The gather in 2004 and 2009 used selective removal criteria with fertility control. Gathers were conducted in the Crooks Mountain HMA in 1985, 1996, 1998, and 2002. All of these gathers were a gate cut (all gathered horses removed) except 1996 and 1998. These gathers returned studs over five years of age back to the herd area. These gathers were conducted on the entire HMA. The gather in 2006 and 2009 used selective removal criteria with fertility control utilized on Antelope Hills and Green Mountain HMAs. Table 4 shows the number of wild horses that were gathered and the number removed during the gathers by year.

**Table 4. Number of Wild Horses Gathered and Removed**

**Lost Creek and Stewart Creek HMA's**

Year	HMA Name	Number Gathered	Number Removed
1986	Lost Creek, Stewart Creek & Antelope Hills/Cyclone Rim (Previously Seven Lakes HMA)	88*	88*
1987	Lost Creek, Stewart Creek & Antelope Hills/Cyclone Rim (Previously Seven Lakes HMA)	184*	184*
1988	Lost Creek, Stewart Creek & Antelope Hills/Cyclone Rim (Previously Seven Lakes HMA)	63*	63*
1989	Lost Creek, Stewart Creek & Antelope Hills/Cyclone Rim (Previously Seven Lakes HMA)	154*	154*
1995	Lost Creek & Stewart Creek (Gathered and documented as one)	121	121
1997	Lost Creek & Stewart Creek (Gathered and documented as one)	190	143
1998	Lost Creek & Stewart Creek (Gathered and documented as one)	81	50
2001	Lost Creek HMA	302	302
2001	Stewart Creek HMA	105	105
2002	Lost Creek HMA	21	21
2002	Stewart Creek HMA	283	283
2003	Stewart Creek HMA	94	94
2006	Lost Creek HMA	285	231
2006	Stewart Creek HMA	267	212
2009	Stewart Creek HMA	305	212
2009	Lost Creek HMA	287	224
	<b>TOTALS:</b>	<b>2830</b>	<b>2487</b>

**Antelope Hills/Cyclone Rim HMA**

Year	HMA Name	Number Gathered	Number Removed
1986	Antelope Hills/Cyclone Rim	88*	88*
1987	Antelope Hills/Cyclone Rim	184*	184*
1988	Antelope Hills/Cyclone Rim	63*	63*

1989	Antelope Hills/Cyclone Rim	154*	154*
2000	Antelope Hills/Cyclone Rim	59	59
2001	Antelope Hills/Cyclone Rim	50	50
2004	Antelope Hills/Cyclone Rim	258	208
2009	Antelope Hills/Cyclone Rim	144	77
	<b>Totals</b>	<b>1000</b>	<b>883</b>

### Crooks Mountain HMA

Year	HMA Name	Number Gathered	Number Removed
1985	Crooks Mountain	708	708
1996	Crooks Mountain	380	319
1998	Crooks Mountain	295	220
2002	Crooks Mountain	103	103
2006	Crooks Mountain	74	74
2009	Crooks Mountain	26	0
	<b>Totals</b>	<b>1586</b>	<b>1,424</b>

### Green Mountain HMA

Year	HMA Name	Number Gathered	Number Removed
1980	Green Mountain	255	255
1984	Green Mountain	199	199
1993	Green Mountain	413	318
1995	Green Mountain	107	88
1996	Green Mountain	105	105
1997	Green Mountain	220	145
2002	Green Mountain	155	155
2003	Green Mountain	75	75
2005	Green Mountain	574	490
2006	Green Mountain	89	89
2009	Green Mountain	472	330
	<b>Totals</b>	<b>2664</b>	<b>2249</b>

Sex ratios, based upon gather data, was 47% females and 53% males in 2009. The sex ratio of the current population is expected to be approximately the same.

Table 5 shows the inventory of August 2010 population by HMA within the Red Desert Complex.

**Table 5. Inventory Population**

HMA Name	Inventory Population August 2010	Population Outside the HMA
Stewart Creek	210	65
Lost Creek	100	55
Antelope Hills	99	63
Crooks Mountain	58	57

Green Mountain	360	130
<b>TOTALS</b>	<b>827</b>	<b>370</b>

Estimated un-observed percentage added into count (Rawlins 20% and Lander 10%).

### **Genetic Diversity and Viability**

Blood samples were collected from horses removed during the 2001 and 2006 gathers to develop genetic baseline data (e.g. genetic diversity, historical origins of the herd, unique markers). Genetic samples (hair samples) were taken in 2009 and these samples were also analyzed by Dr. E. Gus Cothran, Equine Genetics Laboratory, Texas A&M University. His conclusions and recommendations regarding genetic diversity in the Red Desert Complex of HMA's herd are summarized as follows:

#### ***Summary of the Lost Creek HMA-2009***

“Genetic variability of this herd is fairly high. The all values related to allelic diversity and heterozygosity are high. Genetic similarity results suggest a herd with mixed ancestry that primarily is North American. There is a possibility of some, although limited, Iberian ancestry.”

#### ***Recommendations for the Lost Creek HMA - 2009***

“Current variability levels are high enough that no action is needed at this point. The herd should be monitored to make sure population size remains stable or increase to make sure no dramatic reductions in variability take place.”

#### ***Summary of the Stewart Creek HMA - 2009***

“Genetic variability of this herd is generally high. The values related to allelic diversity are near above average while heterozygosity is high. The herd appears to be in genetic equilibrium despite a high percentage of alleles at risk of loss. Genetic similarity results suggest a herd with mixed ancestry that primarily is North American.”

#### ***Recommendations for the Stewart Creek HMA - 2009***

“Current variability levels are high enough that no action is needed at this point. The herd should continue to be monitored to make sure that population size does not fall to low levels (less than 100).”

#### ***Summary of the Antelope Hills/Cyclone Rim HMA - 2006***

Genetic variability within the Antelope Hills/Cyclone Rim herd is near and slightly above the average for wild herds. The Herd has genetic markers that would reflect a similarity for the New World Spanish horse breeds. The genetic similarity to this group is relatively high for a mustang herd. In conclusion, the data support a strong Spanish heritage for this herd but there likely is some other type of blood within the group. The Antelope Hills portion of the herd shows a number of markers that are suggestive of Spanish blood, however, the overall similarity is greatest with the North American breeds and Spanish

breed similarity is relatively moderate. Although one cannot rule out Spanish heritage, it does not look like that is the main component of this herd.

#### ***Recommendations for the Antelope Hills/ Cyclone Rime HMA -2006***

This herd has reasonably high genetic variability so that no action need be taken at this time. However, the AML for this herd is fairly low so that future monitoring will be needed.

#### ***Summary of the Green Mountain and Crooks Mountain HMA's - 2006***

Blood samples were collected from Crooks Mountain and Green Mountain wild horses in previous gathers to develop genetic baseline data (e.g. genetic diversity, historical origins of the herd, unique markers). The samples were analyzed by a geneticist to determine the degree of heterozygosity for the herd. The results showed enough genetic diversity to prevent inbreeding and negative genetic mutation. This genetic data would be incorporated into the Herd Management Area Plan in the future. There is known movement between the HMA's (Green Mountain, Antelope Hills/Cyclone Rim, Stewart Creek and Lost Creek) and this helps to diversify these gene pools and contribute to herd heterozygosity.

Based upon Dr. Cothran's recommendations, further genetic testing is planned within the complex for the proposed wild horse catch, treat and release in the fall of 2011. Genetic tests would be based upon hair samples instead of blood samples. This will ensure genetic variation within the wild horse herds are remaining within acceptable levels. At this time, there is little evidence to indicate that the Red Desert HMA Complex suffers from reduced genetic fitness. Due to the proximity and generally unfenced boundaries between HMAs adequate drift of individual animals between HMAs has been shown to maintain genetic variability. This drift ensures that the lower range of the AMLs will indeed maintain sufficient genetic variability and exchange within each HMA.

At this time, there is little evidence to indicate that the Red Desert HMA Complex suffers from reduced genetic fitness. The immediate proximity of the different herds to each other allows for the constant exchange of genetic material as for the majority of the year only open space separates the HMA's from each other. Due to the proximity and generally unfenced boundaries between HMAs adequate drift of individual animals between HMAs has been shown to maintain genetic variability. This drift ensures that the lower range of the AMLs will indeed maintain sufficient genetic variability within each HMA.

The following summarizes current knowledge of genetic diversity as it pertains to wild horses.

- Smaller, isolated populations (<200 total census size) are particularly vulnerable when the number of animals participating in breeding drops below a minimum needed level (Coates-Markle, 2000).
- It is possible that small populations will be unable to maintain self-sustaining reproductive ability over the long term, unless there is a natural or management-induced influx of genetic information from neighboring herds. An exchange of only 1-2 breeding age animals per generation would maintain the genetic resources in small populations of about 100 animals, thus obviating the need for larger populations in all cases (Singer, 2000).

- There is little imminent risk of inbreeding since most wild horse herds sampled to date, have large amounts of genetic heterozygosity, genetic resources are lost slowly over periods of many generations, wild horses are long-lived with long generation intervals, and there is little imminent risk of in breeding or population extinction (Singer, 2000).
- Genetic effective population size (Ne) is a difficult number to calculate for wild horses, since the calculation is complicated by many factors inherent in wild horse herds. No single universally acceptable formula exists to deal with these complexities, and no standard goal for Ne or loss of genetic resources currently exists for wild horse herds. A goal of Ne=50 is currently being applied as an estimate for Ne in wild horse herds (Singer, 2000).
- Current efforts with wild horses suggest management should allow for a 90% probability of maintaining at least 90% of the existing population diversity over the next 200 years (Coates-Markle, 2000).

The following summarizes what is known about the Red Desert HMA Complex as it pertains to genetic diversity:

- The current estimated population for the Red Desert HMA complex is 827 horses (pre 2011 foaling and not including horses outside the HMAs).
- Ne (genetic effective population size) for Red Desert HMA Complex has not been established. Current knowledge is limiting for application of these concepts to wild horse herds managed by the BLM. As more research is completed, and knowledge becomes available, it will be applied to the HMAs managed by the RFO and LFO.

### Environmental Impacts

The following table provides a summary of the population modeling results for each alternative, as derived from the wild horse population model, WinEquus (Appendix C). A total of 100 trials were run for 10 years, to assess the potential results of each possible management scenario. The results shown in Table 6, below, represent the median trial for each alternative.

**Table 6 – Population Modeling Summary**

Alternative	Population Size (0 to 20+ age horses)				Number of Horses Gathered, Removed, and Treated			Growth Rate
	Lowest Minimum	Minimum	Average	Maximum	Horses Gathered	Horses Removed	Horses Treated	
(1) Gather & Fertility Control (Proposed Action)	476	808	1146	1543	4435	<b>1324</b>	1236	8.2%
(2) Removals Only on a 4 yr Gather Cycle (No Action)	507	688	1074	1558	3073	<b>2278</b>	0	19.9%
(3) Gather, Fertility Control & Castration of 20% of the Total Male Population	417	754	1010	1340	4401	<b>1058</b>	1348	5.5%

The population modeling projects that by utilizing the catch, treat and release approach there will be a slightly higher average number of horses on the range while the number of horses removed from the range is nearly 1,000 fewer than by only gathering and removing animals every 4 years. The model also projects that the average growth rate is only 8.2% for the proposed alternative while it is projected at 19.9% under the no action alternative. In all trials run for both alternatives the lowest minimum population size would be 476. This would be well within the parameters specified by Dr. Cothran for maintaining a herd with sufficient genetic variation.

### **Impacts Common to Alternatives 1 and 3**

The Wild Free-Roaming Horse and Burro Act of 1971 (Public Law 92-195 as amended) states that all management activities shall be at the minimum feasible level. The minimum feasible level of management would require that every two years wild horses would be gathered and mares would be fertility treated, limited removal of offspring would occur to keep wild horses within the AML described for each of the HMAs. To the extent practical, these alternatives would allow maintenance of a self sustaining population, as well as maintaining a thriving natural ecological balance.

By implementing a fertility control program on the wild horse population in the Red Desert Complex of HMA's would meet the intent of the Wild Free Roaming Horse and Burro Act that all management actions shall be at the minimum feasible level. This higher frequency of gathers would involve less horses at each gather than a large scale gather that would involve gathering hundreds of wild horses when the population exceeded the upper AML and funding was available. The following positive impacts for wild horses and their habitat would occur:

- A thriving natural ecological balance would be achieved and maintained by maintaining the population within the respective AML range.
- The wild horses remaining on the range would experience decreased competition and stress for available resources.
- Ensure a viable population of wild horses that would survive, and be successful during poor years when elements of the habitat are limiting due to severe winter conditions, drought or other uncontrollable and unforeseeable environmental influences to the herd.
- Annual gathers would not be required which would allow for a greater level of herd stability and band integrity.
- Catch, treat and release gathers would occur every 2 years and only the young more adoptable age class of animals would be removed and made available to the public for adoption.
- Older wild horses would be returned to the range and spared the added stress of shipping and handling.

If a management range is not maintained in the Red Desert HMA Complex, the intent of the Wild Free Roaming Horse and Burro Act (that all management actions shall be at the minimum feasible level) would not be met. The following negative impacts would occur:

- Annual gathers would be required to remove the annual increase in population each year, approximately 150 horses.
- A thriving natural ecological balance would not be maintained if yearly gathers to remove the annual increase do not take place. Resource degradation would begin occurring the year following the last gather and increase for each year that a gather is postponed.
- Annual gathers would have more severe impacts to herd stability and band integrity.

The wild horse population would be subjected to the stress associated with gathering and handling annually. There would be a greater likelihood that more horses would be injured or killed.

To the extent practical, the lower limit of the management range should allow maintenance of a self sustaining population, and the upper limit of the management range must be consistent with the objective of maintaining a thriving natural ecological balance. Population modeling (Appendix 5) conducted for the Proposed Action (Removal to the mid-point of the AML range, with fertility control) and the No Action Alternative indicates that these management ranges should allow for maintenance of a self sustaining population. For the Proposed Action, the average population size in 10 years found that the lowest number of 0-20+ year old horses ever obtained was 476 horses, with an average median trial population of 1,146 horses. For the No action alternative the average population size in 10 years found that the lowest number of 0-20+ year old horses ever obtained was 507 head, with an average median trial population of 1,074 head.

The Herd Management Area Evaluation, Environmental Assessment and Decision Record for the herd areas in the Red Desert HMA Complex established the level of horses that would result in maintaining a thriving natural ecological balance.

Maintenance of the AML in the herd areas within the Red Desert HMA Complex would meet the intent of the Wild Free Roaming Horse and Burro Act that all management actions shall be at the minimum feasible level. The following positive impacts for wild horses and their habitat would occur:

### **Gather Operations**

These direct impacts include: handling stress associated with the gathering, processing, and transportation of animals from gather sites to temporary holding facilities, and from the temporary holding facilities to an adoption preparation facility. The intensity of these impacts varies by individual, and is indicated by behaviors ranging from nervous agitation to physical distress. Mortality does occur during a gather however it is infrequent and typically is no more than one-half to one percent of the total animals gathered.

Impacts which may occur after the initial stress of herding and capture include: spontaneous abortion in mares, increased social displacement, and conflict with studs and mares. Spontaneous abortion following capture is rare, depending on the time of year gathered. Traumatic injuries that may occur typically involve biting and/or kicking which results in bruises and minor swelling but normally does not break the skin. These impacts occur intermittently and the frequency of occurrence varies with the individuals.

Population wide impacts may occur during or immediately following the implementation of Alternatives 1 or 2. They include the displacement of bands during capture and the associated re-dispersal, temporary separation of members from individual bands of horses, re-establishment of bands following release, and the removal of animals from the population. With the exception of the changes to herd demographics, direct wide population impacts have proven to be temporary in nature with most if not all impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release except for a heightened shyness toward human contact. Observations of animals following release have shown horses relocate themselves back to their home ranges within 12 to 24 hours of release.

All activities would be carried out in accordance with current BLM policy, with the intent of conducting as safe and humane a gather as possible. Recommended actions incorporate proven Standard Operating Procedures (Appendix 1) which have been developed over time. These SOPs represent the best methods for reducing impacts associated with gathering, handling, transporting and collecting herd data.

### **Transport, Short Term Holding, and Adoption (or Sale) Preparation**

Animals would be transported from the trap to a designated BLM short-term field holding facility. Wild horses would then be aged, sexed and sorted to holding pens where they would be fed hay and fresh water. Mares that are returned to the range would be fertility treated at this temporary field facility. Mares and studs returning to the range would be held for a short period of time before being returned.

Horses slated for removal would then be transported to a larger receiving short-term holding facility in straight deck semi-trailers or goose-neck stock trailers. Vehicles are inspected by the BLM COR or PI prior to use to ensure wild horses can be safely transported and that the interior of the vehicle is in a sanitary condition. Wild horses are segregated by age and sex and loaded into separate compartments. A small number of mares may be shipped with foals. Transportation of recently captured wild horses is limited to a maximum of 8 hours. During transport, potential impacts to individual horses can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless wild horses are in extremely poor condition, it is rare for an animal to be seriously injured or die during transport.

Upon arrival at the short term holding facility, recently captured wild horses are off-loaded by compartment and placed in holding pens where they are fed good quality hay and water. Most wild horses begin to eat and drink immediately and adjust rapidly to their new situation. At the short-term holding facility, a veterinarian examines each load of horses and provides recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club feet, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the American Veterinary Medical Association (AVMA).

Wild horses in very thin condition or animals with injuries are sorted and placed in hospital pens, fed separately and/or treated for their injuries as indicated. Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. Some of these animals are in such poor condition that it is unlikely they would have survived if left on the range. Similarly, some mares may lose their pregnancies. Every effort is taken to help the mare make a

quiet, low stress transition to captivity and domestic feed to minimize the risk of miscarriage or death.

After recently captured wild horses have transitioned to their new environment, they are prepared for adoption or sale (with limitations). Preparation involves freeze-marking the animals with a unique identification number, drawing a blood sample to test for equine infectious anemia, vaccination against common diseases, castration, and de-worming. During the preparation process, potential impacts to wild horses are similar to those that can occur during handling and transportation. Serious injuries and deaths from injuries during the preparation process are rare, but can occur.

At short-term corral facilities, a minimum of 700 square feet is provided per animal. Mortality at short-term holding facilities averages approximately 5% per year (GAO-09-77, Page 51), and includes animals euthanized due to a pre-existing condition; animals in extremely poor condition; animals that are injured and would not recover; animals which are unable to transition to feed; and animals which are seriously injured or accidentally die during sorting, handling, or preparation.

### **Adoption or Sale with Limitations, and Long Term Holding/Pasturing**

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall for horses over 18 months of age. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse for one year and the horse and the facilities are inspected to assure the adopter is complying with the BLM's requirements. After one year, the adopter may take title to the horse, at which point the horse becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR 5750.

Potential buyers must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal that is more than 10 years old; or has been offered unsuccessfully for adoption three times. The application also specifies that all buyers are not to resell the animal to slaughter buyers or anyone who would sell the animal to a commercial processing plant. Sales of wild horses are conducted in accordance with Bureau policy. Animals 5 years of age and older are transported to long-term holding (LTH) grassland pastures. The BLM has maintained LTH pastures in the Midwest for over 20 years.

Potential impacts to wild horses from transport to adoption, sale or LTH are similar to those previously described. One difference is that when shipping wild horses for adoption, sale or LTH, animals may be transported for a maximum of 24 hours. Immediately prior to transportation, and after every 18-24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and 25 pounds of good quality hay per horse with adequate bunk space to allow all animals to eat at one time. Most animals are not shipped more than 18 hours before they are rested. The rest period may be waived in situations where the travel time exceeds the 24-hour limit by just a few hours and the stress of offloading and reloading is likely to be greater than the stress involved in the additional period of uninterrupted travel.

LTH pastures are designed to provide excess wild horses with humane, life-long care in a natural setting off the public rangelands. There wild horses are maintained in grassland pastures large enough to allow free-roaming behavior and with the forage, water, and shelter necessary to sustain them in good condition. About 22,700 wild horses, that are in excess of the existing adoption or sale demand (because of age or other factors), are currently located on private land pastures in

Iowa, Kansas, Oklahoma, and South Dakota. Located in mid or tall grass prairie regions of the United States, these LTH pastures are highly productive grasslands as compared to more arid western rangelands. These pastures comprise about 300,000 acres (an average of about 8-10 acres per animal). The majority of these animals are older in age.

Mares and castrated stallions (geldings) are segregated into separate pastures except one facility where geldings and mares coexist. Although the animals are placed in LTH, they remain available for adoption or sale to qualified individuals. No reproduction occurs in the long-term grassland pastures, but foals born to pregnant mares are gathered and weaned when they reach about 8-10 months of age and are then shipped to short-term facilities where they are made available for adoption. Handling by humans is minimized to the extent possible although regular on-the-ground observation and weekly counts of the wild horses to ascertain their numbers, well-being, and safety are conducted. A very small percentage of the animals may be humanely euthanized if they are in very thin condition and are not expected to improve to a BCS of 3 or greater due to age or other factors. Natural mortality of wild horses in LTH pastures averages approximately 8% per year, but can be higher or lower depending on the average age of the horses pastured there (GAO-09-77, Page 52). The savings to the American taxpayer which results from contracting for LTH pastures averages about \$4.45 per horse per day as compared with maintaining the animals in short-term holding facilities.

#### **Euthanasia and Sale without Limitation**

While humane euthanasia and sale without limitation of healthy horses for which there is no adoption demand is authorized under the WFRHBA, Congress prohibited the use of appropriated funds between 1987 and 2004 and again in 2010 for this purpose. It is unknown if a similar limitation will be placed on the use of fiscal year 2012 appropriated funds.

#### **Data Collection**

Direct impacts associated with data collection involve increased stress levels to the animals as they are restrained in the portable aging chute. Once the animal is released from the chute, stress levels decrease rapidly. The collection of data is a positive impact to the long term management of the population. This data would be used to develop population specific objectives that would help to ensure the long term viability of the population. This procedure is within the intent of the Act, as it relates to managing populations at the minimum feasible level.

#### **Alternative 1:**

The direct impacts of Alternative 1 would include capturing about 1240 adult wild horses, treating 200 mares and releasing 400 adult horses back to the HMA. Foals would be removed. Of the animals released back to the range, about 200 breeding age mares would be re-treated with two-year immunocontraceptive (PZP) vaccine. This vaccine has shown effectiveness of 94% in year one, 82% in year two and 68% in year 3.

Each mare to be released would receive a single-dose of the two-year PZP contraceptive vaccine, as described in Section II. When injected, PZP (antigen) causes the mare's immune system to

produce antibodies that bind to her eggs, effectively blocking sperm penetration and fertilization (ZooMontana, 2000). PZP is relatively inexpensive, meets BLM requirements for safety to mares and the environment, and could be administered in the field. Also, among mares, PZP contraception appears to be completely reversible, and to have no ill effects on ovarian function if the mare is not contracepted for more than 3 consecutive years. PZP would not affect normal development of the fetus, hormone health of the mare or behavioral responses to stallions, should the mare already be pregnant when vaccinated (Kirkpatrick, 1995). Turner (1997) also found that the vaccine has proven to have no apparent effects on pregnancies in progress, the health of offspring, or the behavior of treated mares. Inoculated mares if pregnant would foal normally in 2012, and the contraceptive would limit foal production in 2013 and to a lesser degree in 2014. Near normal foaling rates would be expected to resume in 2015.

Mares receiving the vaccine would experience slightly increased stress levels from additional handling while being inoculated and freeze marked. There may be some swelling at the injection site following the administration of the fertility control vaccine, but this would be a temporary, short term impact. Injection site injury associated with fertility control treatments is extremely rare in treated mares, and may be related to experience of the person administering the vaccine. Injection of the vaccine would be controlled, handled and administered by a trained BLM employee, researcher or veterinarian. Any direct impacts associated with fertility control are expected to be minor in nature and of short duration. The mares would quickly recover once released back to the HMA.

### **Alternative 2: No Action**

Under this alternative, horses would not experience the stress associated with gathering, removal or adoption until 2013 when the next planned AML gather would be implemented. At this time a larger number of horses would be subject to removal and an increased number of horses would be placed into long term pasturing. The current population of wild horses would continue to increase, and exceed the carrying capacity of the range. Though it may require many years for the population to reach catastrophic levels, by exceeding the upper limit of the management range, this alternative poses the greatest risk to the long-term health and viability of the Red Desert Complex of HMA wild horse population, wildlife populations, and the vegetative resource.

The population of wild horses would compete for the available water and forage resources. The areas closest to water would experience severe utilization and degradation of the rangeland resources. Over the course of time, the animals condition would deteriorate as a result of declining forage availability and the increasing distance traveled between forage and water sources. The mares and foals would be affected most severely. The continued increase in population would eventually lead to catastrophic losses to the herd, which would be a function of the available forage and water and the degradation of the habitat. A point would be reached where the herd reaches the ecological carrying capacity and both the habitat and the wild horse population would be critically unhealthy.

Ecological carrying capacity of a population is a scientific term, which refers to the level at which density-dependant population regulatory mechanisms would take effect within the herd. At this level, the herd would show obvious signs of ill fitness, including poor individual animal condition, low birth rates, and high mortality rates in all age classes due to disease and/or increased vulnerability to predation (Coates-Markle, 2000). In addition, irreparable damage would occur to the habitat through overgrazing, which is not only depended upon by wild horses but by wildlife

(which include sensitive species), and permitted livestock. All multiple uses of the area would be impacted. Significant losses of wild horses in the Red Desert Complex of HMA's due to starvation and disease would have obvious consequences to the long-term viability of the herd. Irreparable damage to the resources, which would include primarily vegetative, soil and watershed resources, would have obvious impacts to the future of the Red Desert Complex of HMA's and all other uses of the resources, which depend upon them for survival.

This alternative would not be acceptable to the BLM nor most members of the public. The BLM realizes that some members of the public advocate "letting nature take its course", however allowing horses to die of dehydration and starvation would be inhumane treatment and would clearly indicate that an overpopulation of wild horses existed in the HMA. The Wild Free-Roaming Horse and Burro Act of 1971, as amended, mandates the Bureau to "*prevent the range from deterioration associated with overpopulation*", and "*remove excess horses in order to preserve and maintain a thriving natural ecological balance and multiple use relationships in that area*". Additionally, *Promulgated Federal Regulations at Title 43 CFR 4700.0-6 (a)* state "*Wild horses shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat*".

### **Alternative 3**

Under this action, impacts would be the same as Alternative 1, plus the associated impacts to studs being gelded. Approximately 60 studs would be castrated. Stud would have to be laid down and castrated. Prior to surgery feed should be withheld for 24 hours. BLM requires that a general anesthetic is used for all surgical procedures. The specific castration technique used would be a standard surgical technique used in veterinary medicine that includes the surgical removal of both testicles, which technique (open/closed, emasculator/Henderson tool/ligation, scrotal incision/removal etc.) used would be at the discretion of the veterinarian performing the procedure. Upon completion of the castration procedure studs would need to be penned separate and monitored to assure no ill effects would compromise their health and well being. Minor complications that could be expected (excessive swelling, excessive bleeding) should resolve spontaneously, we anticipate in 10-25% of cases, bleeding resolves within 24 hours, swelling is apparent at 24 hours and lasts for 5-7 days. Other moderate complications that could be expected include swelling or bleeding that doesn't resolve spontaneously, omental herniation and infection. These would be apparent between 1 and 7 days and would require treatment. It could be expected in 0-5% of cases. Serious complications that could be expected would be death and/or evisceration. These cannot be effectively treated and should be apparent within 48 hours and can be anticipated in 0-5% of cases. Tetanus vaccination will be provided following all surgical castration methods used. These castration risks would be similar if horses were removed and castrated in a facility in preparation for adoption or long term pasturing.

Gelding of the studs would likely create bachelor groups of geldings that would be non-reproducing. This procedure coupled with PZP would reduce the wild horse population within the Red Desert Complex and eventually reduce the number of animals removed at each gather.

## **3.2 Soils, Vegetation, Riparian Areas and Watershed**

### **Existing Situation**

Soils are quite varied throughout the HMA's. Due to the arid climate, many soils in this area generally lack high vegetative cover. The existing vegetative cover needs to remain in place to continue the geologic process of soil development. This cover prevents raindrops from directly impacting the soil surface, slows runoff and water and wind erosion.

### ***Lost Creek/Stewart Creek HMA***

Soils in the Stewart Creek and Lost Creek HMA are generally sandy loams to sandy clay loams, becoming clay loams to silty clays in flats, drainage bottoms and lakebeds in the Separation Flats area. Depth of soils ranges from very shallow on rims, to moderately deep to deep in most locations. Soils in the Separation Flats area and in other areas where water collects have high sodium (pH) levels. Vegetation is predominantly sagebrush with mixed grass and forb species. Wyoming big sagebrush is the principle sage species, but this gives way to basin big sagebrush on deep soils along drainages, black sagebrush on shallow rocky sites, and mountain big sagebrush at elevations above 7000 feet.

Other common species occurring in these communities include rabbitbrushes, winterfat, Indian ricegrass, needleandthread, bluebunch and western wheatgrass, mutton and little bluegrass, bottlebrush squirreltail, basin wildrye, Junegrass, threadleaf sedge, Hood's phlox, Hooker sandwort, buckwheat, buttercup, Indian paintbrush, mountain pea, bluebells, deathcamas, groundsel, bearded-tongue, various locoweeds and lupines. In Separation Flats there are extensive saline habitats dominated by greasewood, saltbush, and birdsfoot sagebrush. Grass species are similar to those already mentioned that are saline tolerant. There are fewer forbs species including biscuitroot, onions, kochia, glasswort and annuals. Prickly-pear cactus is common but not abundant, except on sandy fans adjacent to Bulls Creek and similar locations to the north that were used historically as lambing grounds in the spring.

There are a few scattered limber pines found on the lee side of Lost Soldier and Stratton Rims, with a few remnant aspen still present along upper Lost Soldier Creek. Riparian habitats occur along Lost Soldier Creek, Laundry Draw, Little Camp Creek, Stewart Creek, A & M Reservoir, Bulls Creek, Chicken Springs, Lost Soldier Creek, Laundry Draw, Kinch-McKinney Spring, Olson and Olson Reservoir, Battle Springs Flat, Lost Creek and Niland-Mud Springs. Common species encountered in these areas include Nebraska and beaked sedge, tufted hairgrass, Kentucky bluegrass, redtop, Baltic rush, meadow barley, inland saltgrass, plantain, arrowgrass and potentilla.

### ***Antelope Hills/Cyclone Rim HMA***

Major vegetation types within the area include sagebrush-grasslands, grasslands, greasewood flats, and saltbush flats. Major vegetative species include thickspike

wheatgrass, bluebunch wheatgrass, bottlebrush squirreltail, Indian ricegrass, needle and thread, prairie junegrass, threadleaf sedge, Sandberg bluegrass, aster, phlox, milkvetch, buckwheat, Indian paintbrush, big sagebrush, black sagebrush, Gardner saltbush, winterfat, rubber rabbitbrush, green rabbitbrush, shadscale, black greasewood, and spiny hopsage. Wild horses generally prefer perennial grass species including Sandberg bluegrass, needle and thread, and Indian ricegrass, as forage. Shrubs, including saltbush, black sagebrush, and winterfat are more important during winter conditions. There are invasive plants (weeds) in the HMA, most of them occurring in disturbed areas associated with mineral development and roads and pipelines. Invasive weeds seem to be increasing in variety. Canada thistle can be found infrequently along stream riparian areas as well as in wet meadows. Black henbane occurs along road ditches, but it does not invade undisturbed ground. There is great potential for the spread of white-top, Russian knapweed, leafy spurge, and tamarisk with increased traffic in the area.

Soils and vegetation are quite varied throughout the HMA. The Great Divide Basin is in a 7 to 9 inch annual precipitation zone. The remaining northern parts of the HMA lie in a 10 to 14 inch annual precipitation zone. There are different vegetation ground cover potentials between the two precipitation zones, with higher natural/geologic erosion rates, due to lower ground cover, in the Great Divide Basin.

Starting at the northern end of the HMA, in a narrow band nearest the Sweetwater River and in the Antelope Hills/Cyclone Rim, soils formed in alluvium derived primarily from metasedimentary rocks (i.e., schists, metagraywacke, iron formation, and andesite). Many soils here are shallow (<20 inches deep) and moderately deep (20 to 40 inches). There are also many springs and seeps associated with this geology. These medium textured soils usually contain quite a high percentage of angular coarse fragments. They are the highest altitude soils of the HMA with the highest precipitation, coldest annual soil temperatures, and the shortest growing season. Over the ages, they have accumulated the highest organic matter percentages in their top-soils compared to other soils in the HMA. They commonly support 10 to 14 inch precipitation zone gravelly, shallow loamy and loamy range sites.

Continuing south, roughly to Cyclone Rim, an east to west band of Miocene rock, a soft white tuffaceous sandstone, serves as a parent material source for these soils. These medium textured soils range from shallow to very deep (>60 inches). Often their surfaces are covered with gravel or angular fragments of sandstone or siltstone. They typically support 10 to 14 inch precipitation zone shallow sandy and sandy range sites.

Farther to the south, in the northern part of the Great Divide Basin, along Cyclone Rim, soils are derived from sedimentary rock of Wasatch Formation origin. Here the Wasatch Formation is comprised of variegated claystone and lenticular sandstone, which can be conglomeratic near the western side of the HMA. Here soils are typically medium textured, but can get heavy with clay in some locations. There are also some outcrops of badland. Most soils though are very deep and medium textured and support sandy range sites. They commonly support 7 to 9 inch precipitation zone sandy, shallow sandy, and

shallow loamy range sites. Some soils are also sodium affected, supporting either saline upland or saline lowland range sites.

### *Crooks Mountain HMA*

Major vegetation types within the area include sagebrush-grasslands, grasslands, greasewood flats, and saltbush flats. Major vegetative species include thickspike wheatgrass, bluebunch wheatgrass, bottlebrush squirreltail, Indian ricegrass, needle and thread, prairie junegrass, threadleaf sedge, Sandberg bluegrass, aster, phlox, milkvetch, buckwheat, Indian paintbrush, big sagebrush, black sagebrush, Gardner saltbush, winterfat, rubber rabbitbrush, green rabbitbrush, shadscale, black greasewood, and spiny hopsage. Wild horses generally prefer perennial grass species including Sandberg bluegrass, needle and thread, and Indian ricegrass, as forage. Shrubs, including saltbush, black sagebrush, and winterfat are more important during winter conditions. There are invasive plants (weeds) in the HMA, most of them occurring in disturbed areas associated with mineral development and roads and pipelines. Invasive weeds seem to be increasing in variety. Canada thistle can be found infrequently along stream riparian areas as well as in wet meadows. Just to the north of the Crooks Mountain HMA, along the Sweetwater River, can be found spotted, diffuse, and Russian knapweeds; leafy spurge also occurs in the Split Rock area. Black henbane in connection with oilfield disturbances and travel routes like the Happy Springs Road. The State Highway 287 right-of-way contains all three of the above mentioned knapweeds. This highway carries quite a bit of tourist traffic in the summer months and is a likely path for new weed infestations.

The Crooks Mountain HMA contains diverse kinds of soil that range from cold, sub-humid mountain soils to semiarid warm and semiarid cool soils. In the 10 to 14 inch precipitation zone, roughly at elevations below 8,000 feet north of Crooks Mountain, the soils formed in the Split Rock Formation's sandy, gravelly, and calcareous parent materials under a semiarid cool desert climate on fan aprons, fan piedmonts, and terraces. These soils can possess medium to coarse textures and possibly high percentages (>35%) of coarse fragments (gravel and cobble). These soils are well developed, usually deep, well drained, and typically have slopes of less than 15 percent. The coarse textures in many of these soils makes for low available water holding capacities. Surface water runoff is typically slow. Though water erosion can pose a threat to some of these soils, most of them are very susceptible to wind erosion.

Crooks Mountain is covered by a thick layer of giant boulder conglomerate. As a result, many of the soils here possess a large percentage of coarse fragments (i.e., gravels, cobbles, stones, and boulders). Elevations range from 7,500 to about 9,000 feet. Slopes typically vary from nearly level to very steep (0 to 75 percent slope). Soils here are well drained, but can be poorly drained in the less sloping areas on top of the mountain where a perched water table is commonly found under the lodgepole pine trees. Poorly drained soils also can be found along the creeks that originate on the mountain. Textures vary from loamy and cobbly, loamy, or loamy and gravelly. Water erosion is the dominant form of erosion on Crooks Mountain. Annual precipitation is 18 to 22 inches and the frost-free period is 40 to 60 days.

### *Green Mountain HMA*

Major vegetation types within the area include sagebrush-grasslands, grasslands, woodland, and riparian types. Major vegetative species include thickspike wheatgrass, bluebunch wheatgrass, bottlebrush squirreltail, Indian ricegrass, needle and thread, prairie junegrass, threadleaf sedge, Sandberg bluegrass, aster, phlox, milkvetch, buckwheat, Indian paintbrush, big sagebrush, black sagebrush, green rabbitbrush, winterfat, rubber rabbitbrush, green rabbitbrush, shadscale, and spiny hopsage. Wild horses generally prefer perennial grass species including Sandberg bluegrass, needle and thread, and Indian ricegrass, as forage. Shrubs, including saltbush, black sagebrush, and winterfat are more important during winter conditions. There are invasive plants (weeds) in the HMA, most of them occurring in disturbed areas associated with mineral development and roads and pipelines. Invasive weeds seem to be increasing in variety. Diffuse and possibly spotted knapweed occur along Willow Creek and on the slopes of Green Mountain. Canada thistle can be found infrequently along stream riparian areas as well as in wet meadows. The State Highway 287 right-of-way contains all of the knapweed species. This highway carries quite a bit of tourist traffic in the summer months and is a likely path for new weed infestations.

The Green Mountain HMA contains diverse kinds of soil that range from cold, sub-humid mountain soils to semi-arid warm and semi-arid cool soils and sand dunes. In the 10 – 14 inch precipitation zone, roughly at elevations below 8,000 feet north of Green Mountain and Whiskey Peak, the soils formed in the Split Rock formation's sandy, gravelly, and calcareous parent materials under a semi-arid cool desert climate on fan aprons, fan piedmonts and terraces. These soils can possess medium to coarse textures and possibly high percentages (>35%) of coarse fragments (gravel and cobble). These soils are well developed, usually deep, well drained, and typically have slopes of less than 15 percent. The coarse textures in many of these soils make for low available water holding capacities. Surface water runoff is typically slow. Water erosion can pose a threat to some of these soils and most of them are very susceptible to wind erosion.

The Owl Hills are located adjacent to the northeast flank of Green Mountain. Soils here are typically moderately deep (20 to 40 inches) or shallow (<20 inches) and a significant percentage of the area is granitic rock outcrop. These soils formed in residuum and slope alluvium derive dominantly from granite, gneiss, and schist. The soils are well drained, medium textured and contain significant amounts of coarse fragments (channers) typically in excess of 50 percent throughout their profiles. Permeability rates of the soils here are moderate (0.6 to 2.0 inches/hour), runoff is medium and available water holding capacities are low. The hazard of erosion by wind is slight and the hazard of erosion by water is severe.

Green Mountain and Whiskey Peak are covered by a thick layer of giant boulder conglomerate. As a result, many of the soils here possess a large percentage of coarse fragments (i.e., gravels cobbles, stones, and boulders). Elevations range from 7,500 feet to 9000 feet. Slopes typically vary from nearly level to very steep ( 0 to 75 percent slope).

Soils here are well drained, but can be poorly drained in the less sloping areas on top of Breen Mountain where a perched water table is commonly found under the lodgepole pine trees. Poorly drained soils also can be found along the creeks that originate on the mountains. Textures vary from loamy and cobbly, loamy, or loamy and gravelly. Water erosion is the dominate form of erosion of the Green Mountains.

To the south of the Green Mountains the Battle Spring formation gives rise to well drained loamy, gravelly, and sandy textured soils that range in depth from shallow (<20 inches) to very deep. They occur on nearly level to steep and very steep slopes. These soils formed on terraces, toe slopes, fan aprons, hills, ridges, and sand dunes. Wind erosion is the dominant form of erosion in the dune areas. West of the dunes both wind and water are important agents of erosion. Elevations in this area generally range from 5,700 to 8,000 feet. The annual precipitation for this part of the allotment is about 10 – 14 inches. A portion of this area lies in the 7 to 9 inch precipitation zone of the Great Divide Basin.

## **Wetlands and Riparian Zones**

### ***Lost Creek***

Riparian vegetation is not extensive within the HMA however it is a highly important resource for wildlife, wild horses, and livestock. Grazing management considerations often emphasize these areas as the most productive sites in the region. The Lost Creek HMA did not pass the riparian/wetland standards due primarily to the poor condition of springs and seeps caused by livestock and wild horse use. A large percentage of the riparian areas within the HMA are located on privately controlled lands. Several springs within the HMA have been fenced recently to exclude livestock and wild horse use. In most of these situations outside water sources have been provided for livestock, wildlife and wild horse use. A very important water source for wild horses is the Lost Creek riparian area. Lost Creek is an intermittent stream with a sandy stream bottom concealing a subterranean flow of water that often times persists through the summer months. There are also multiple wells providing watering opportunities during the summer months. Recently the Eagles Nest well has been fitted with solar panels to enable the well to run through the summer months. The well is located approximately 1 mile from the Lost Creek drainage and although it has been running for two summers the horses have not yet been watering there in large numbers. In addition, there are also a few reservoirs scattered throughout the HMA that hold limited water supplies. Very few of these support any riparian vegetation. An exception to this would be the Niland Springs riparian area. This is a unique and large spring system that is not heavily utilized by wild horses. The water present is highly saline forcing the riparian plants to be extremely saline tolerant.

### ***Stewart Creek***

Much of the riparian present within the Stewart Creek HMA has been fenced to exclude wild horse use due to the area not passing the riparian/wetland standards. These riparian pastures have been built to exclude wild horse use and only allow livestock grazing under more stringent regulations. The fencing is “wildlife friendly” allowing for Pronghorn Antelope to pass more easily as well as other large wildlife species. It is uncommon to find wild horses in these areas as the fencing limits their access. In most cases where the riparian pastures have been built, man-made watering

facilities have been installed in the general proximity and are usually in operation through-out the summer months. The one perennial stream that remains unfenced within the Stewart Creek HMA is the Lost Soldier Creek. Lost Soldier Creek has had water augmentation since 1990 transforming it from an intermittent stream to a perennial stream. In addition to this, there are multiple reservoirs scattered throughout the HMA that hold limited water supplies. Along Bull Springs Rim there are several reservoirs that provide reliable water for wild horses, livestock and wildlife. Very few of the reservoirs support riparian vegetation.

### ***Antelope Hills/Cyclone Rim***

Riparian vegetation is not extensive within the HMA, however, it is a highly important resource for wildlife, wild horses, and livestock. Grazing management considerations often emphasize these areas as the most productive sites in the region. It is estimated that there is less than 500 acres of riparian area and roughly 5 - 10 miles of stream side vegetation within the HMA. The springs and riparian vegetation within the area known as the “Granite Rocks” is highly important to both livestock and wild horses. There are also numerous springs and seeps found throughout the area. Severe resource degradation caused by livestock grazing and wild horses is currently occurring at some springs within the HMA.

### ***Crooks Mountain***

Riparian vegetation is limited within the HMA, however, it is a highly important resource for wildlife, wild horses, and livestock. Grazing management considerations often emphasize these areas as the most productive sites in the region. It is estimated that there is less than 300 acres of riparian area and roughly 4 - 7 miles of stream side vegetation within the HMA. There are also numerous springs and seeps found throughout the area. Severe resource degradation caused by livestock grazing and wild horses is currently occurring at some springs within the HMA.

### ***Green Mountain***

Riparian vegetation is not extensive within the HMA, however, it is a highly important resource for wildlife, wild horses, and livestock. Grazing management considerations often emphasize these areas as the most productive sites in the region. It is estimated that there is less than 2000 acres of riparian area and roughly 40 - 50 miles of stream side vegetation within the HMA. There are also numerous springs and seeps found throughout the area. Severe resource degradation caused by livestock grazing and wild horses is currently occurring at some springs within the HMA.

### **Environmental Impacts**

**Alternatives 1** - The catch, treat and release and limited removal of wild horses from the herd area would avoid potential over-utilization of forage and reduction in vegetative ground cover by maintaining the population within the AML established for the HMA.

Vegetation composition, cover, and vigor would improve or be maintained, especially near water sources. Potential competition for forage and water between wild horses, wildlife and livestock, and surface disturbing activity in and around water sources would be reduced. Quantity of forage would be increased. The increased vegetative cover would protect soils and reduce erosion of the surface soil layer.

Physical surface disturbance would occur at the trap sites due to the erection of the traps, trampling by horses, and vehicle traffic. When the horses are herded some vegetation would be disturbed. Extreme surface disturbance occurs within the paddocks of the trap due to the milling about by the horses; however, the total impacted area would be less than one quarter acre per trap site. The vegetation in these areas should recover quickly. Vehicles would damage vegetation, but staying on existing roads and trails minimizes the impact.

Maintaining wild horse populations at the established AML would produce no adverse cumulative impacts to vegetation, soils and watersheds.

**Alternative 2-** Currently, the Red Desert Complex is overall AML, in 2013 wild horse numbers will have significantly surpassed the high AML and increased use over the entire HMA would adversely impact soils and vegetation health, especially around the water locations. As native plant health deteriorates and plants are lost, soil erosion would increase. The shallow desert topsoil cannot tolerate much loss without losing productivity and thus the ability to establish native vegetation. Invasive non-native plant species would increase and invade new areas following increased soil disturbance and reduced native plant vigor and abundance. This would lead to both a shift in plant composition towards weedy species and an irreplaceable topsoil and productivity loss from erosion. These impacts would be cumulative over time. There would also be increased impacts to areas outside the HMA as horses move out in search of better forage.

**Alternative 3** Under this Alternative, the impacts associated with capture, removal and fertility treatments (PZP and gelding) operations are expected to be similar to the Proposed Action. Vegetation utilization would be similar to Alternative 1 with the exception that wild horse populations would be decreased with PZP and gelded wild horses returned to the HMAs. There would be less forage used by a stable, non-reproducing wild horse herd.

### ***3.3 Endangered, Threatened, Proposed, Candidate and BLM Wyoming Sensitive Species***

The following table shows the U.S. Fish and Wildlife Service (FWS) designated Endangered, Threatened, Proposed, and Candidate species potentially occurring in the Rawlins and Lander Field Offices. T&E conferencing has occurred with the FWS and the Lander and Rawlins FO (T&E Section 7 Consultation Project Name: Wild Horse Gathering Case/Project Number: DOI-BLM-WY-030-2009-0258-EA Date: August 13, 2009 Reviewed by: Tim Vosburgh & Mary Read) Informal conferencing with the USFWS will be required for the proposed project since the activities will be located in potential mountain plover habitat. Consultation will not be required for the Canada lynx, grizzly bear, black-footed ferret, blowout penstemon plant, Ute ladies'-tresses plant, Desert yellowhead and Critical Habitat, Colorado butterfly plant and Critical Habitat, Yellow-billed cuckoo, and Wyoming toad since the project will not be located in habitat for these species. In addition, the proposed project will not cause water depletions to the Platte River and Colorado River systems.

<i>Lander Field Office</i> <i>Listed Species</i>	<i>Present or habitat in project</i>	<i>Affect?</i>	<i>May affect, not likely to adversely affect</i>	<i>May affect, likely to adversely affect</i>	<i>Rationale</i>
	<i>Y/N/UNK</i>	<i>NO/MAY</i>	<i>Y/N</i>	<i>Y/N</i>	
<i>Mountain Plover</i> <i>Charadrius montanus</i>	<i>Y</i>	<i>MAY</i>	<i>Y</i>	<i>N</i>	<i>Habitat present; structures will not be built or used during the breeding season between April 10-July 10</i>
<i>Lynx canadensis</i> <i>Canada lynx (T)</i>	<i>N</i>	<i>NO</i>			<i>No suitable forested habitat present.</i>
<i>Ursos arctos</i> <i>Grizzly Bear</i>	<i>N</i>	<i>NO</i>			<i>No suitable habitat present</i>
<i>Mustela nigripes</i> <i>Black-footed ferret (E)</i>	<i>Y</i>	<i>NO</i>			<i>Insufficient prey base within the project area (see discussion).</i>
<i>Penstemon haydenii</i> <i>Blowout Penstemon (E)</i>	<i>Y</i>	<i>NO</i>			<i>No structures will be built nor will horses be herded through sand dunes.</i>
<i>Spiranthes diluvialis</i> <i>Ute ladies-tresses (T)</i>	<i>Y</i>	<i>NO</i>			<i>No structures will be built nor will horses be herded through riparian meadows.</i>
<i>Yermo xanthocephalus</i> <i>Desert yellowhead (T)</i>	<i>Y</i>	<i>NO</i>			<i>No structures will be built nor will horses be herded through the desert yellowhead site.</i>
<i>Critical Habitat</i> <i>Yermo xanthocephalus</i>	<i>N</i>	<i>NO</i>			<i>No population in the project area.</i>
<i>Platte River water depletion species (T&amp;E)</i>	<i>Y</i>	<i>NO</i>			<i>No water depletions will occur.</i>
<i>Lander Field Office</i> <i>Listed, Non-essential, Experimental Population</i>	<i>Present in project?</i>	<i>Affect?</i>	<i>Likely to jeopardize population</i>		<i>Rationale</i>
	<i>Y/N/UNK</i>	<i>NO/MAY</i>	<i>Y/N</i>		
<i>Canis lupus irremotus</i> <i>Gray wolf</i>	<i>UNK</i>	<i>NO</i>			<i>No established populations in project area.</i>
<i>Rawlins Field Office</i> <i>Listed Species</i>	<i>Present or habitat in project</i>	<i>Affect?</i>	<i>May affect, not likely to adversely affect</i>	<i>May affect, likely to adversely affect</i>	<i>Rationale</i>
	<i>Y/N/UNK</i>	<i>NO/MAY</i>	<i>Y/N</i>	<i>Y/N</i>	
<i>Mountain Plover</i> <i>Charadrius montanus</i>	<i>Y</i>	<i>MAY</i>	<i>Y</i>	<i>N</i>	<i>Habitat present; structures will not be built or used during the breeding season between April 10-July 10</i>
<i>Lynx canadensis</i> <i>Canada lynx (T)</i>	<i>N</i>	<i>NO</i>			<i>No suitable forested habitat present; migrate using riparian corridors. No structures will be built nor will horses be herded through riparian meadows.</i>
<i>Mustela nigripes</i> <i>Black-footed ferret (E)</i>	<i>Y</i>	<i>NO</i>			<i>No structures will be built nor will horses be herded through prairie dog towns.</i>
<i>Penstemon haydenii</i> <i>Blowout Penstemon (E)</i>	<i>N</i>	<i>NO</i>			<i>Habitat not present; no structures will be built nor will horses be herded through sand dunes.</i>

<i>Spiranthes diluvialis</i> <i>Ute ladies-tresses (T)</i>	Y	NO			<i>No structures will be built nor will horses be herded through riparian meadows.</i>
<i>Gaura neomexicana coloradensis</i> <i>Colorado butterfly plant</i>	N	NO			<i>Habitat not present; no structures will be built nor will horses be herded through riparian meadows.</i>
<i>Gaura neomexicana coloradensis</i> <i>Colorado butterfly plant</i> <i>Critical Habitat</i>	N	NO			<i>Habitat not present; no structures will be built nor will horses be herded through riparian meadows.</i>
<i>Platte River water depletion species (T&amp;E)</i>	Y	NO			<i>No water depletions will occur.</i>
<i>Colorado River water depletion species (T&amp;E)</i>	N	NO			<i>Habitat not present.</i>
<i>Coccyzus americanus</i> <i>Yellow-billed cuckoo</i>	N	NO			<i>Habitat not present; no structures will be built nor will horses be herded through cottonwood/willow riparian habitat.</i>
<i>Bufo baxteri</i> <i>Wyoming toad</i>	N	NO			<i>Habitat not present; distribution restricted to within 30 miles of Laramie, Wyoming.</i>
<i>Rawlins Field Office Listed, Non-essential, Experimental Population</i>	<i>Present in project?</i>	<i>Affect?</i>	<i>Likely to jeopardize population</i>	<i>Rationale</i>	
	Y/N/UNK	NO/MAY	Y/N		
<i>Mustela nigripes</i> <i>Black-footed ferret (E)</i> <i>Shirley Basin/Medicine Bow</i>	N	NO	NO		<i>No established populations in project area.</i>

## Environmental Impacts

**Alternatives 1** – In the Rawlins Field Office, the project will not be located within the Shirley Basin/Medicine Bow Black-footed Ferret Non-Essential Experimental Population. No suitable forested habitat is present for the Canada lynx and although lynx are known to use riparian corridors as migration habitat, no structures will be built nor will horses be herded through riparian habitat. Habitat is not present for the blowout penstemon plant or the Colorado butterfly plant or its designated Critical Habitat and no structures will be built nor will horses be herded through riparian habitats. Habitat is not present for the yellow-billed cuckoo and no structures will be built nor will horses be herded through cottonwood/willow riparian habitat. Habitat not present for the Wyoming toad and its distribution is restricted to within 30 miles of Laramie, Wyoming. There will be no water depletions from the Platte River and Colorado River system for the proposed project. Therefore, there will be **no effect** to these species as a result of implementing this project in the Rawlins Field Office.

In the Lander Field Office, no suitable forested habitat is present for the Canada lynx and no structures will be built nor will horses be herded through potential migration habitat (i.e. riparian corridors). There is no suitable habitat for the grizzly bear in the project area. Although gray wolf have been sighted in the project area there is no known established populations in the project area. Habitat is not present for the blowout penstemon plant or the desert yellowhead or its designated Critical Habitat. Like the Rawlins Field Office there will be no water depletions from the Platte River. Therefore, there will be **no effect** to these species as a result of implementing this project in the Lander Field Office.

The black-footed ferret is considered one of the rarest and most endangered mammals in North America and receives full protection under the Endangered Species Act (ESA) of 1973 (P.L. 93-205). The close association of black-footed ferrets and prairie dogs is well documented. The ferrets rely on prairie dogs for both food and shelter. The original range of the black-footed ferret corresponded closely with the prairie dog, extending over the Great Plains area from southern Canada to the west Texas plains, and from east of the 100th. Meridian west to Utah and Arizona. Although prairie dogs may be found within the project area, the black-footed ferret requires large prairie dog colonies for survival. There are currently no colonies of sufficient size within the project area to support a ferret population. Consequently, there will be **no effect** to this species in the Lander Field Office. The Rawlins Field Office contains the Shamrock Hills Black-footed Ferret Complex; however, no structures will be built nor will horses be herded through prairie dog towns. Although the Shamrock Hill Black-Footed Ferret Complex is located within the wild horse gather area, there will not be any actual gathers within prairie dog towns within this complex; therefore, there will be **no effect** to this species as a result of implementing this project in the Rawlins Field Office.

The blowout penstemon plant is a member of the figwort family (Scrophulariaceae). The plant is a hairless perennial herb that grows one to two feet high. The blowout was listed as endangered under the Endangered Species Act on October 1, 1987. The blowout penstemon's habitat consists of sparsely vegetated, early successional, shifting sand dunes and blowout depressions created by wind. In Wyoming, it is often found on the lower half of steep, sandy slopes, deposited at the bases of sedimentary or granite mountains or ridges. The blowout penstemon plant is found most frequently in microsites that are zones of sand accumulation. The plant is a primary invader that does not persist when a blowout becomes completely vegetated. Wyoming populations occur at an elevation between 6660 and 7430 feet. Although there is some potential habitat for blowout penstemon in the Red Desert HMA, no populations have been found. Since no structures or activities associated with the proposed gather will occur in potential blowout penstemon habitat, there will be **no effect** to this species in the Lander and Rawlins Field Offices.

Due to its apparent global rarity and documented habitat loss, the Ute ladies tresses plant was listed as threatened in 1992. In 1993, the first population of Ute ladies tresses was discovered in Wyoming. Over

the next four years, three additional populations were found in Wyoming and new populations were discovered in Idaho, Montana, Nebraska and Washington. This plant is in the orchid family and is a perennial. Rangeland, it grows primarily on moist, sub-irrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers, or perennial streams at elevations between 1800-6800 feet. No populations of Ute ladies tresses are known to occur in Rawlins or Lander Field Offices. Since no structures or activities associated with the proposed gather will occur in Ute ladies' tresses habitat, there will be **no effect** to this species in the Lander and Rawlins Field Offices.

Naturally occurring and functioning wetland habitat communities in the Platte River Basin are important to a number of the federally listed threatened, endangered and candidate species which are known to occur within this region. Likewise, many other fish and wildlife species also are dependent upon these same wetland habitat communities for some or all of their life cycles. Historical reductions in the number of and area of wetland habitat communities within and outside of the Platte River Basin have contributed to declines in the diversity and abundance of wetland dependent fish and wildlife species. The US Fish and Wildlife Service (FWS) has determined that significant water depletions from anywhere in the Platte River Basin have direct and indirect effects on, interior least tern, piping plover, pallid sturgeon, Eskimo curlew and western prairie fringed orchid in Nebraska. No water depletions are associated with the proposed action. Consequently there will be **no effect** to any federally-listed species downstream in the Lander and Rawlins Field Offices. The BLM Wyoming Sensitive Species List for RFO and LFO shows the species that are likely to be present in the project area (see Appendix 4). No further discussion will occur for those species or their habitats not present in the project area.

The mountain plover has the potential to occur within the project area. On June 28, 2010 the U.S. Fish and Wildlife Service reinstated a proposal to list the mountain plover, a native bird of short-grass prairie and shrub-steppe landscapes, as a threatened species under the Endangered Species Act. Mountain plovers breed in the western Great Plains and Rocky Mountain States from the Canadian border to northern Mexico. Within the United States, most breeding occurs in Montana, Wyoming, and Colorado; fewer breeding birds occur in Kansas, Nebraska, New Mexico, Oklahoma, Texas, and Utah. Mountain plovers winter in California, southern Arizona, Texas and Mexico. While California's Sacramento, San Joaquin, and Imperial Valleys are believed to support the greatest number of wintering mountain plovers, relatively little is known about their winter range use in other areas. Unlike other plovers, mountain plovers are not found near water, and will only inhabit areas with short grass or bare ground. The mountain plover is a small bird about the size of a killdeer. It is light brown above, with a lighter-colored breast, but lacks the contrasting dark breastbelt common to many other plovers. During the breeding season, it has a white forehead and a dark line between the beak and eye which contrasts with the dark crown. Although there is potential and known mountain plover habitat within the project area, wild horse trapping will not occur during their breeding season between April 10 and July 10; therefore, therefore the project will not jeopardize the continued existence of the mountain plover.

**Alternative 2** – Wild horse populations have few natural predators to limit their growth. If left unmanaged, their numbers will increase to the point of causing significant ecological damage in the project area. Although herbivory of listed plant species by animals such as wild horses is not usually considered a problem when sufficient forage is otherwise available, this could become an adverse impact if horse populations increase to near the carrying capacity of their environment.

### **3.4 Wildlife**

#### **Existing Situation**

Wildlife is an integral part of the environment in the area. The RFO and LFO are home to several hundred species of wildlife, including big game, fur bearers, birds (both migratory and year-round resident), amphibians, reptiles, and small mammals. Some species are not affected by this action since they occupy habitats that the action would avoid, such as riparian areas or cliff/steep slopes. Species in these types of habitats will not be addressed further in this document. Some species that are of special interest that could potentially be impacted by the proposed action or the no action alternative include big game (pronghorn antelope, mule deer and elk), and various birds species (raptors, greater sage-grouse, and neo-tropical migrants).

Mule deer, pronghorn antelope and elk all have some degree of dietary overlap with wild horses (Stephenson 1982 and Meeker 1982), with competition greatest with elk. Wild horses also compete with these big game species for water resources and space. The HMA's consists of yearlong, winter-yearlong, and crucial winter range for both mule deer and pronghorn antelope. There is also some spring-summer-fall habitat for pronghorn in the HMAs. Elk habitat is officially classified by the Wyoming Game and Fish Department as "out", meaning "these areas, while a part of a herd unit, do not contain enough animals to be important habitat, or the habitats are of limited importance to the species." However, in recent years elk numbers in the Lost Creek, Stewart Creek and Antelope Hills/ Cyclone Rim areas have been increasing and elk are now occupying the HMA's year round in numbers great enough to support harvest by hunting. In the Green Mountain HMA and the Crooks Mountain HMA, there is an Area of Critical Environmental Concern (ACEC) for winter and crucial winter-yearlong elk habitat and spring-summer-fall and winter-yearlong moose habitat.

Neo-tropical migratory birds include species such as ferruginous hawks, mountain plover, sage thrasher, northern shrike, etc. Some of these species are on the BLM Wyoming Sensitive Species List (See Appendix, 4). Habitat requirements vary by species. Neo-tropical birds migrate to warmer climates and generally are not present in this area in the winter.

There are primarily six (6) priority vegetative habitat types within the HMA's that comprise the bulk of the wildlife use and needs. Upland sagebrush stands, upland grasslands, floodplain shrub stands, saline uplands and riparian areas. The preferred upland sagebrush stands are typically  $\geq 10\%$  canopy cover sagebrush with a healthy understory composition of herbaceous and forb species. These stands are particularly important to wintering big game and wintering and nesting sage grouse, as well as numerous other sagebrush obligate passerines like the sage thrasher, sage sparrow, and Brewer's sparrow. The upland grasslands typically comprise  $\leq 10\%$  sagebrush canopy cover with the predominant vegetation being grasses with some component of forbs. These sites can be important foraging areas for mule deer, pronghorn, and sage grouse, particularly in the spring and summer when diets shift from shrubs to grasses and forbs. Sage grouse depend on these more open grasslands during brood rearing when they are foraging on both forbs and insects. Like the sagebrush stands, a complex diversity of plant species in the grasslands is advantageous because it provides for an extended green-up period, and this equates to an increase in protein intake. The floodplain shrub stands provide mule deer both valuable cover and forage. Rabbitbrush, greasewood, sagebrush, as well as some cottonwood and willow are valuable forage species, particularly in the fall and winter. These shrub stands also provide much needed forbs in the spring and early summer.

Other vegetative communities provided within the HMA that are important to wildlife species are the saline upland sites, and riparian areas associated with reservoirs and seeps. The saline

uplands provide nesting and foraging habitat for mountain plover. The saltbush component of these sites can be important forage for pronghorn and mule deer at times. Riparian areas and their associated aquatic and wetland vegetation provide forage and cover to waterfowl and some passerines. These wet areas with succulent vegetation and abundant insects are also important foraging areas for sage grouse broods, particularly during late brood rearing when most other upland sites have dried up and vegetation has cured out.

All of the above habitat types can be vulnerable to improper grazing management, by both wild horses and livestock. If grazing is managed with the objectives of maintaining or improving species composition, structural diversity, and plant vigor, the valuable components of these vegetative habitats should remain sustainable for the wildlife species that depend upon them. Communities most valuable and most at risk in terms of importance to wildlife are the upland sagebrush stands and the floodplain shrub stands. Over-utilization of either the sagebrush canopy or the grass/forb understory would decrease both production and diversity of the entire community.

### **Environmental Impacts**

**Alternatives 1 & 3**– Under these alternatives, the horses left on the range would have adequate forage, water, and space. Wildlife species would be able to live in a natural ecological balance within the HMA and adjacent to it. Improved quality and increased quantity of forage would help to obtain or maintain objective wildlife populations as defined by the Wyoming Game and Fish Department.

Wildlife populations in areas where excess wild horses are gathered could be disrupted for a short time during the gathering operations. Once gathering operations cease, these effects would stop. The short-term effects are a result of human presence and the noise of the helicopter which may cause wildlife to seek cover in areas away from gathering routes. The timing of gathering operations may overlap big game (deer and elk) hunting season in the project area resulting in movement of big game from certain areas. This may result in hunter discontent regarding gathering operations. However, large game species should return to the area within a few days. Capture activities would not cause abandonment of normal habitat areas. There would be no long-term adverse effect on wildlife.

BLM data and past experience show that removal of excess horses from areas of wild horse concentration would improve habitat conditions for wildlife. This effect would be most pronounced around water sources and would benefit both game and non-game wildlife. Maintaining wild horse populations at AML through the removal of excess wild horses enables wildlife populations to utilize the forage that would otherwise be used by the excess wild horses. No adverse cumulative impacts to wildlife are anticipated.

**Alternative 2** – The Red Desert Complex is over AML. In 2013 wild horse numbers will have significantly surpassed the high AML and increased use over the HMAs would adversely impact soils and vegetation health, especially around water locations. At these levels, range conditions would deteriorate significantly. Due to the lack of large predators to limit population growth in the HMA, wild horse numbers would eventually exceed the carrying capacity of the HMA and adjacent areas. Competition for water sources and forage resources would increase between wildlife species, specifically pronghorn and mule deer. Inter specific competition over time could affect pronghorn and mule deer, especially in crucial winter ranges. Large game species may be displaced over time and population levels and overall health of the herds would diminish.

Under this alternative, wildlife species may be impacted from deteriorated range condition if vegetation required for nesting, specifically residual grasses within and adjacent to sagebrush pockets, becomes depleted. Under this alternative, raptors would not be impacted by wild horses and implementation of management practices. The impacts described above would be cumulative over time.

### ***3.5 Heritage Resources***

#### **Existing Situation**

Only a small fraction of the land surface within the Red Desert HMA Complex has been inventoried for cultural resources. Prehistoric sites known to exist within the HMAs include open camps and lithic scatters. Many more of these are expected to be found as inventories continue to be done. Historic sites known to exist include trash dumps, trails, roads, and structures associated with early settlement and commerce, or with the local ranching industry. Many more historic sites are also expected to be found as inventories continue to be done. Additionally, stone circle sites, rock alignments, rock art and other sites potentially sensitive to Native American Tribes may occur in the area. Cultural Resource Program support for the wild horse capture would consist of file search (Class I) and/or intensive field (Class III) inventories, and, if necessary, mitigation of impacts at the locations of the horse trap prior to horse capture. Support includes consultation with the Wyoming State Historic Preservation Office according to the Wyoming State Protocol agreement of the BLM's National Cultural Resources Programmatic Agreement.

#### **Environmental Impacts**

**Alternatives 1 & 3** – Direct or indirect impacts to cultural resources are not anticipated to occur from implementation of Alternative 1 or 3. All gather sites and temporary holding facilities would be surveyed at the Class III level for cultural resources prior to construction. The RFO and LFO archeologists would review all proposed and previously used gather sites and temporary holding facility locations to determine if these have had a Class III cultural resources inventory, and/or if a new inventory is required. If cultural resources are encountered at proposed gather sites or temporary holding facilities, those locations would not be utilized unless they could be modified to avoid or mitigate adverse impacts to significant cultural resource site(s).

Within the HMA, where Class III inventories have not been or would not be conducted, impacts to historic properties are limited to trampling. Naturally, fewer horses would result in lesser potential impacts to historic properties.

**Alternative 2** – At the present time, a determination of no action would not adversely affect historic properties. However, a substantial increase in the number of horses over time may adversely affect historic properties by trampling.

## **3.6 Livestock Grazing**

### **Existing Situation**

The rangeland management program includes 5 grazing allotments within the HMAs currently under deferred or rest rotation grazing systems with use periods of spring, summer, fall and winter (Appendix 6). Water for livestock and wild horses is mainly available from springs and reservoirs during late winter to early summer. Throughout the summer, spring flow and reservoir storage diminish. By the late part of the grazing season most water resources become dry, thus causing some excessive use in and around perennial riparian areas.

### ***Alternative 1 & 3***

Livestock could be present in the HMAs during the gather. Added stress to livestock would occur when the helicopter is in the area. This would put an additional burden on the livestock operator to ensure his cattle are out of the area, but impacts would be slight and only for a short time per trap site (up to five days).

Maintaining wild horse numbers within AMLs would result in slight to moderate wild horse forage utilization levels over a four year period. Overlap between wild horse and livestock use areas would be limited; therefore, areas where livestock graze could make progress toward meeting Standards for Rangeland Health.

### ***Alternative 2***

Under this Alternative wild horse numbers would increase. Competition between wild horses and livestock would occur. Wild horses would dominate watering locations and limit livestock's ability to water as needed.

## **3.7 Recreation**

### **Existing Situation**

#### **Recreation Resources**

The primary recreation resources in the proposed project area are the public lands managed by the BLM. These opportunities are primarily dispersed activities including hunting, fishing, hiking, camping, OHV use, mountain biking, pleasure driving, and wildlife viewing. Opportunities for developed recreation in the recreation analysis are not present. Another popular dispersed recreation destination is the Continental Divide National Scenic Trail (CDNST). The CDNST is approximately 3,100-miles long from Canada to Mexico through the states of Montana, Idaho, Wyoming, Colorado, and New Mexico. While most use along the CDNST consists of day and thru hiking, limited mountain biking and horseback riding also occurs. For the 2007 use season, BLM recorded approximately 189 visits along the CDNST. For the 2008 use season, BLM recorded approximately 673 visits along the trail (RMIS 2008). Within the RFO, the CDNST is managed as a Special Recreation Management Area (SRMA). The 1/4 mile wide corridor of the CDNST SRMA is managed as a significant recreational resource to maintain or enhance a diversity of recreational opportunities and benefits while providing trail users opportunities to view the diverse topographic, geographic, vegetative, wildlife, and scenic

phenomena that characterize the CDNST and observe human uses of natural resources (RMP 2008).

## **Visual Resource Management (VRM)**

In the Rawlins Field Office the proposed action includes lands in two different Visual Resource Management (VRM) classes: Class III, and Class IV. The management objective of VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. The management objective of VRM Class IV is to provide for activities that require major modifications to the existing character of the landscape. The level of change to the characteristic landscape can be high and may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic elements.

## **Lands with Wilderness Characteristics (LWC)**

### **Regulatory Framework**

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

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

The Wilderness Act further states areas with wilderness characteristics "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." These are commonly referred to as supplemental values and are not required to be present. On December 22, 2010 Secretary of the Interior Ken Salazar, signed Secretarial Order 3310 Protecting Wilderness Characteristics on Lands Managed by the Bureau of Land Management. The Order provides direction to the BLM regarding its obligation to maintain wilderness resource inventories on a regular and continuing basis for public lands under its jurisdiction. It further directs the BLM to protect wilderness characteristics through land use planning and project-level decisions unless the BLM determines in accordance with this Order, that impairment of wilderness characteristics is appropriate and consistent with other applicable requirements of law and other resource management considerations.

## **Study Methods**

The BLM's 1979 wilderness inventory found wilderness character was not present on BLM-administered lands within the project area. The original Land with Wilderness Characteristics analysis was accomplished as three separate units: Cyclone Rim (Wy-030-405), Seven Lakes (Wy-030-409), and Stewart Creek (Wy-030-406). In accordance with BLM Manual 6303, an evaluation of 2009 aerial photography verified that little change has occurred to change the original evaluation for LWCs in the Cyclone Rim or Stewart Creek analysis areas. Portions of the Seven Lakes analysis area is not clearly without wilderness characteristics however the proposed project may be conducted in a manner that will not impair wilderness characteristics and is in conformance with the existing land use plan.

## **Environmental Impacts**

### ***Alternative 1***

Wildlife could also be more wary of human disturbance and would be more difficult to view and hunt over the short term.

Gather activities would limit hunting success and disturb the quality of the outdoor experience for up to five days in each HMA. Hunters seeking mule deer and elk, upland game, and furbearers would be affected. Because gather activities could increase mule deer and elk sensitivity to human activity, hunters may have more difficulty locating animals for up to a week following gather activities.

With the exception of when aerial operations are occurring during the gather, there would be no impacts expected to other recreation opportunities in these areas. Short term impacts to recreation as a result of the proposed project would be minimal. There are no long term impacts expected as a result of the proposed action. OHV use generally occurs on existing roads unless game is being retrieved.

### ***Alternative 2***

An AML gather would occur under this Alternative at a later date and outdoor hunting opportunities would not be impacted until this time.

### ***Alternative 3***

The impacts associated with capture, removal and fertility control (PZP and gelding) operations are expected to be similar to the proposed action. Wild horse populations would be decreased with PZP and gelded wild horses returned to the HMAs. The same number of wild horses would be available for viewing after the gather and in subsequent years.

## ***3.8 Energy Development***

### **Existing Situation**

#### **Mining**

At the present time, there numerous areas of uranium exploration and development within the project area of the Wild Horse HMAs. The Lost Creek HMA would likely be most strongly

influenced by activity as it contains the furthest along uranium development, and the only operable uranium mill in the State of Wyoming. BLM received a 43 CFR 3809 Plan of Operations for a proposed uranium mining operation titled Lost Creek In Situ Recovery (ISR) Project. The Lost Creek ISR Project is located near the southern boundary of the GMCA in T. 25 N., R. 92 W. and T 25 N. R. 93 W. and consists of approximately 4,250 acres, all within sage-grouse Core area.

There are four active leks within two miles from the permit area and another lek near a main road which could be subject to increased traffic volume as a result of project construction and operations. Under the proposed plan no more than 324 acres would be subject to actual surface disturbance, although, the close proximity of the individual disturbances tallied under the proposed plan of operation and the associated infrastructure, noise and human disturbance that would occur in conjunction with this project would increase the functional loss of sage-grouse habitat to include nearly the entire project area (i.e. 4,250 acres). The Lost Creek ISR site provides high quality sage-grouse habitat, including winter habitat, with proximity to higher elevation habitat to the north (Naugle et al., 2006; WGFD, 2003). Local sage-grouse populations will continue to be monitored and research on local populations will continue in conjunction with this ISR project (M. Holleran, pers. comm.) Although BLM has not approved the project, it is considered to be more likely than not to be approved in some form including with mitigation of adverse impacts to greater sage-grouse.

Further north between the Crooks Mountain and Green Mountain Titan Uranium has started an application to reopen the uranium mine in the Sheep Mountain area near Crooks Creek. Titan has started reclamation activities of historic mining disturbance with beneficial impacts to soils, water, vegetation and riparian resources. The Sheep Mountain Project, located about seven miles south of Jeffrey City, at approximately T28 North, Range 92 West in Sections 20, 21,22, 27, 28, 29, and 32 as well as 791 acres on state and private lands. A total of 3,606 acres are in the project; approximately 61% are on public lands. The mine is not in Core Area because of historic disturbance but is located right next to it. The nearest lek is approximately 5 miles away. There are several uranium properties located near the edge or between the Antelope Hills and the Stewart Creek HMAs. Uranium One has been authorized to conduct exploratory drilling operations for uranium resources on two properties know as the JAB site and the Antelope site (i.e. collectively known as JAB-Antelope) within GMCA in T. 26 N. R. 93 W. and T 26 N. and R. 94 W., respectively. Five leks were monitored in the Antelope survey area with one lek located inside the project area itself (Harrier lek). One additional lek was found within the JAB project area (Arapahoe lek). The total surface disturbance associated with JAB-Antelope is approximately 550 acres which includes drill sites and roads, all of which is within sage-grouse Core Area. Directly west in the Steward Creek HMA is the Twin Buttes project which is under exploration not to exceed 5 acres of un reclaimed disturbance. Further west along the edge of the Antelope Hills HMA is the Bison Bison uranium exploration project which is on standby status as of 2009. The disturbance at this site is limited to 5 acres or less.

It is not possible to foresee if these exploratory activities will result in a mining development. Uranium mines must be permitted by the WDEQ and are evaluated for conformity with the Core Area strategy including limits on surface disturbance.

## **Wind and Other Renewables**

As of February 2011, all met tower applications which may have been located near the HMAs have been withdrawn, and as a result, there are no wind farms or met tower projects proposed in this allotment. Met tower applications to conduct wind energy research on 13,128 acres of BLM surface in the LFO portion of the HMAs are pending. Approximately 136,000 acres of BLM surface within the RFO portion of the HMAs is also being considered for site testing and monitoring. Of the eight met tower applications in the RFO, five have been authorized and three are pending. The Governor's 2010 E.O states that wind energy development should not be conducted in Core Areas. There is currently no full field wind energy development within HMAs. Wind energy development in the HMAs is speculative given the distance from transmission lines and the Core Area strategy limitations.

## **Oil and Gas**

Existing and reasonably foreseeable oil and gas development within or near the HMAs includes the Bison Basin, Sheep Creek, Jack Morrow Hills (JMH), Continental Divide-Creston (CDC) along with other smaller, scattered projects. JMH and CDC have the highest potential for significant oil and gas development within the area. In the JMH, however; there are only 33 active oil and gas wells on four units and 3 applications for permit to drill on one of the units within the JMH project area at the current time. At the present time, the CDC Environmental Impact Statement (EIS) for future gas and oil development is being prepared. Other gas and oil development is occurring around the Hay Reservoir within the Lost Creek HMA. This development was analyzed under the Hay Reservoir EIS.

## **Environmental Impacts**

**Alternatives 1, 2 and 3** – is in compliance with Executive Order 13212, which directs the BLM to consider the President's National Energy Policy and adverse impacts the alternatives may have on energy development. There is no impact to energy development anticipated under these alternatives: to the extent that wild horse populations consume forage, additional impacts by wild horses and other animals (livestock and wildlife) would tend to make reclamation more difficult. Reclamation of soil disturbing activities are more difficult in this area due to extreme weather factors such as wind and limited precipitation. The impact to vegetation as well as soil and water discussed above would also impact reclamation. Thus, Alternative 1, in which the population would grow more slowly, would have less of an impact than Alternative 2.

## ***3.9 Cumulative Impacts***

Cumulative impacts are impacts on the environment, which result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively major or problematic actions taking place over a period of time.

The area affected by the Proposed Action and Alternatives is the Red Desert HMA Complex. Please refer to the Red Desert HMA Complex Map (Appendix 2) which displays the HMA boundaries. Past, proposed and reasonably foreseeable actions that may have similar effects to the Red Desert HMA Complex wild horse population would include past wild horse gathers and future wild horse gathers. Numerous gathers have been completed in the past and future gathers would be scheduled on a two year

gather cycle associated with a catch, treat and release program. Over time, as wild horse population levels are maintained within an acceptable management range, a thriving natural ecological balance would be achieved and maintained. Cumulative effects that may result would include continued improvement of the range condition and riparian-wetland condition. Cumulative beneficial effects from implementation of the Proposed Action to wildlife, the wild horse population and domestic livestock would occur as forage availability and quality is maintained and improved. Water quality and riparian habitat would also continually improve. The opportunity for cumulative beneficial effects decreases for Alternative 2.

Adverse cumulative impacts on natural resources would occur depending on which alternative is selected. Adverse cumulative impacts increase under Alternative 2, since the wild horse population is higher. Adverse cumulative impacts would include periodic over utilization of vegetative resources, which would result in decreased vegetative density, plant vigor, seed production, seedling establishment, and forage production. This may result in periodic decreases of the ecological status of plant communities.

Adverse cumulative impacts on natural resources for Alternative 2, No Action, would include continued over utilization of vegetative resources which would result in decreased vegetative density, plant vigor, seed production, seedling establishment, forage production, and a potential increase of non-native species to new areas in the HMA. Continued over use of the vegetative community would result in a loss of ecological status of the plant communities which may take decades to restore. Decreased vegetative density would result in an increase of bare ground, which may lead to increased erosion, increased negative impacts to stream banks and riparian habitat condition. The U.S. Fish and Wildlife Service determined that listing the Greater Sage-Grouse under the Endangered Species Act was warranted but precluded by higher priority workloads therefore the Greater Sage-Grouse is a candidate species. With continued over use on upland sage-grouse habitat, a negative adverse cumulative impact to this species would occur. Wildlife, migratory birds, and wild horses would all be negatively affected by these adverse cumulative impacts to natural resources.

Based upon these considerations, the effects of other existing and reasonably foreseeable future activities included in the Proposed Action, would not cause a major affect to the environment. Alternative 2, No Action, may cause a major impact to the environment.

There would be no known adverse cumulative impacts to any of the resources analyzed in this document as a result of the Proposed Action. Adverse cumulative impacts to vegetation, soils and riparian habitat would occur as a result of selecting Alternative 2, No Action.

The HMAs contain a variety of resources and support a variety of uses. There are a number of other BLM conducted and authorized activities ongoing in and adjacent to the HMAs. Any alternative course of wild horse management has the opportunity to affect and be affected by those activities. Most of those activities depend in one way or another on the maintenance of a healthy landscape. The cumulative impacts of Alternatives 1 would be to maintain a thriving natural ecological balance and preserve the multiple use relationship among all resources within and surrounding the Red Desert HMA complex. The cumulative impacts of Alternative 2 would be that a thriving natural ecological balance would not be maintained, and the multiple use relationship within the Red Desert HMA complex would not be preserved. Cumulative impacts to the long-term viability of the horse herds would be monitored through genetic marker analysis in accordance with the Standard Operation Procedures (Appendix 1).

## **Residual Impacts**

Under Alternative 3, gelding would not be reversible and the horses would be non-reproductive.

## **4.0 Consultation and Coordination**

The Bureau of Land Management is responsible for obtaining public input on proposed actions within the wild horse program. Public input has been solicited for several actions proposed since the establishment of the Stewart Creek, Lost Creek, Antelope Hills, Crooks Mountain and Green Mountain HMA.

On February 28, 2011 the BLM issued a Scoping Statement for the proposed Red Desert Complex Wild Horse Herd Management Areas Population Management Action consisting of a catch, treat and release program. This Scoping Statement was sent to all individuals and groups that expressed interest to the Lander and Rawlins Field Offices, neighboring livestock permittees, and various state and federal agencies. The Scoping Statement was also posted on the BLM Wyoming web page.

The BLM received approximately 2,000 comment letters or emails from individuals, organizations, and agencies following the issuance of the Red Desert Complex Wild Horse Gather Plan Scoping Letter. The majority of these approximately 2,000 letters or emails were one form letter. All comment letters were reviewed, considered and resulted in approximately 6 unique substantive comments. Substantive comments were incorporated in the EA as appropriate. Comments that were not substantive are on file and can be reviewed at the Lander or Rawlins Field Offices. Comments were received from the general public, organizations and agencies.

In accordance with 43 CFR 4740.1(b), a formal statewide hearing regarding the use of helicopters for the roundup of wild horses in Wyoming is held each year. The public is provided an opportunity to discuss concerns and questions with BLM staff. Extensive public scoping was conducted prior to and during the preparation of the Evaluation of Wild Horse Herd Areas, Green Mountain Grazing EIS and the Rawlins and Lander RMPs, and the Consent Decree agreement with the State of Wyoming which established the current decisions regarding the management of these HMAs. Several public meetings were held in the Lander area. Numerous comments were received regarding these HMAs, and were incorporated in the Evaluations, RMPs and EIS.

## 5.0 List of Preparers

Following is a list of preparers and reviewers for this Environmental Assessment:

### **Lander Field Office**

Scott Fluor, Wild Horse and Burro Specialist – Team Lead  
John Kaminsky – Assistant Field Manager, Minerals  
Tim Vosburgh, Wildlife Biologist, BLM  
John Likins, Rangeland Management Specialist, BLM  
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Krystal Hazen-McCreary, Archeologist, BLM  
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Rubel Vigil Jr., Assistant Field Manager – Resources, BLM

### **Rawlins Field Office**

Melanie Mirati, Wild Horse and Burro Specialist, BLM – Team Lead  
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Susan Foley, Soil Scientist, BLM  
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### **Wyoming State and District Offices**

June Wendlandt – Wyoming State Wild Horse Program Lead, WSO  
Jim Wolf – Resource Advisor, Wind River/Big Horn Basin District  
Jake Vialpando – Resource Advisor, High Desert District

### **National Program Office**

Joe Stratton – NPO Science and Research Coordinator – Elm Creek, Nebraska  
Zachary Reichold, Senior Wild Horse and Burro Specialist, NPO

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## APPENDIX 1

### Standard Operating Procedures for Wild Horse Gathers

Gathers would be conducted by utilizing contractors from the Wild Horse Gathers-Western States Contract, or BLM personnel. The following procedures for gathering and handling wild horses would apply whether a contractor or BLM personnel conduct a gather. For helicopter gathers conducted by BLM personnel, gather operations will be conducted in conformance with the *Wild Horse and Burro Program Aviation Management Handbook* (January 2009).

Prior to any gathering operation, the BLM will provide for a pre-capture evaluation of existing conditions in the gather area(s). The evaluation will include animal conditions, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with wilderness boundaries, the location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. The evaluation will determine whether the proposed activities will necessitate the presence of a veterinarian during operations. If it is determined that a large number of animals may need to be euthanized or capture operations could be facilitated by a veterinarian, these services would be arranged before the capture would proceed. The contractor will be apprised of all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

Trap sites and temporary holding sites will be located to reduce the likelihood of injury and stress to the animals, and to minimize potential damage to the natural resources of the area. These sites would be located on or near existing roads whenever possible.

The primary capture methods used in the performance of gather operations include:

1. Helicopter Drive Trapping. This capture method involves utilizing a helicopter to herd wild horses into a temporary trap.
2. Helicopter Assisted Roping. This capture method involves utilizing a helicopter to herd wild horses or burros to ropers.
3. Bait Trapping. This capture method involves utilizing bait (e.g., water or feed) to lure wild horses into a temporary trap.

The following procedures and stipulations will be followed to ensure the welfare, safety and humane treatment of wild horses in accordance with the provisions of 43 CFR 4700.

## **A. Capture Methods used in the Performance of Gather Contract Operations**

1. The primary concern of the contractor is the safe and humane handling of all animals captured. All capture attempts shall incorporate the following:

All trap and holding facilities locations must be approved by the Contracting Officer's Representative (COR) and/or the Project Inspector (PI) prior to construction. The Contractor may also be required to change or move trap locations as determined by the COR/PI. All traps and holding facilities not located on public land must have prior written approval of the landowner.

2. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors. Under normal circumstances this travel should not exceed 10 miles and may be much less dependent on existing conditions (i.e. ground conditions, animal health, extreme temperature (high and low), etc.).
3. All traps, wings, and holding facilities shall be constructed, maintained and operated to handle the animals in a safe and humane manner and be in accordance with the following:
  - a. Traps and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches high for horses and 60 inches for burros, and the bottom rail of which shall not be more than 12 inches from ground level. All traps and holding facilities shall be oval or round in design.
  - b. All loading chute sides shall be a minimum of 6 feet high and shall be fully covered, plywood, metal without holes larger than 2"x4".
  - c. All runways shall be a minimum of 30 feet long and a minimum of 6 feet high for horses, and 5 feet high for burros, and shall be covered with plywood, burlap, plastic snow fence or like material a minimum of 1 foot to 5 feet above ground level for burros and 1 foot to 6 feet for horses. The location of the government furnished portable fly chute to restrain, age, or provide additional care for the animals shall be placed in the runway in a manner as instructed by or in concurrence with the COR/PI.
  - d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, plastic snow fence, etc.) and shall be covered a minimum of 1 foot to 5 feet above ground level for burros and 2 feet to 6 feet for horses
  - e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking or sliding gates.
4. No modification of existing fences will be made without authorization from the COR/PI. The Contractor shall be responsible for restoration of any fence modification which he

has made.

5. When dust conditions occur within or adjacent to the trap or holding facility, the Contractor shall be required to wet down the ground with water.
6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or jennies with small foals, sick and injured animals, estrays or other animals the COR determines need to be housed in a separate pen from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal's age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the capture area(s). In areas requiring one or more satellite traps, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the COR.
7. The Contractor shall provide animals held in the traps and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Animals held for 10 hours or more in the traps or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. The contractor will supply certified weed free hay as required by Wyoming statute W.S. 11-5 –19.
8. An animal that is held at a temporary holding facility through the night is defined as a horse/burro feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.
9. It is the responsibility of the Contractor to provide security to prevent loss, injury or death of captured animals until delivery to final destination.
10. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if animals must be euthanized and provide for the destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.
11. Animals shall be transported to their final destination from temporary holding facilities as quickly as possible after capture unless prior approval is granted by the COR for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the COR. Animals shall not be held in traps and/or temporary holding facilities on days when there is no work being conducted except as specified by the COR. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays, unless prior

approval has been obtained by the COR. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours in any 24 hour period. Animals that are to be released back into the capture area may need to be transported back to the original trap site. This determination will be at the discretion of the COR/PI or Field Office horse specialist.

## **B. Capture Methods That May Be Used in the Performance of a Gather**

1. Capture attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary trap. If this capture method is selected, the following applies:
  - a. Finger gates shall not be constructed of materials such as "T" posts, sharpened willows, etc., that may be injurious to animals.
  - b. All trigger and/or trip gate devices must be approved by the COR/PI prior to capture of animals.
  - c. Traps shall be checked a minimum of once every 10 hours.
2. Capture attempts may be accomplished by utilizing a helicopter to drive animals into a temporary trap. If the contractor selects this method the following applies:
  - a. A minimum of two saddle-horses shall be immediately available at the trap site to accomplish roping if necessary. Roping shall be done as determined by the COR/PI. Under no circumstances shall animals be tied down for more than one half hour.
  - b. The contractor shall assure that foals shall not be left behind, and orphaned.
3. Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor, with the approval of the COR/PI, selects this method the following applies:
  - a. Under no circumstances shall animals be tied down for more than one hour.
  - b. The contractor shall assure that foals shall not be left behind, or orphaned.
  - c. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.

## **C. Use of Motorized Equipment**

1. All motorized equipment employed in the transportation of captured animals shall be in compliance with appropriate State and Federal laws and regulations applicable to the humane transportation of animals. The Contractor shall provide the COR/PI, if

requested, with a current safety inspection (less than one year old) for all motorized equipment and tractor-trailers used to transport animals to final destination.

2. All motorized equipment, tractor-trailers, and stock trailers shall be in good repair, of adequate rated capacity, and operated so as to ensure that captured animals are transported without undue risk or injury.
3. Only tractor-trailers or stock trailers with a covered top shall be allowed for transporting animals from trap site(s) to temporary holding facilities, and from temporary holding facilities to final destination(s). Sides or stock racks of all trailers used for transporting animals shall be a minimum height of 6 feet 6 inches from the floor. Single deck tractor-trailers 40 feet or longer shall have at least two (2) partition gates providing at least three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing at least two (2) compartments within the trailer to separate the animals. Compartments in all tractor-trailers shall be of equal size plus or minus 10 percent. Each partition shall be a minimum of 6 feet high and shall have a minimum 5 foot wide swinging gate. The use of double deck tractor-trailers is unacceptable and shall not be allowed.
4. All tractor-trailers used to transport animals to final destination(s) shall be equipped with at least one (1) door at the rear end of the trailer which is capable of sliding either horizontally or vertically. The rear door(s) of tractor-trailers and stock trailers must be capable of opening the full width of the trailer. Panels facing the inside of all trailers must be free of sharp edges or holes that could cause injury to the animals. The material facing the inside of all trailers must be strong enough so that the animals cannot push their hooves through the side. Final approval of tractor-trailers and stock trailers used to transport animals shall be held by the COR/PI.
5. Floors of tractor-trailers, stock trailers and loading chutes shall be covered and maintained with wood shavings to prevent the animals from slipping as much as possible during transport.
6. Animals to be loaded and transported in any trailer shall be as directed by the COR/PI and may include limitations on numbers according to age, size, sex, temperament and animal condition. The following minimum square feet per animal shall be allowed in all trailers:
  - 11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer);
  - 8 square feet per adult burro (1.0 linear foot in an 8 foot wide trailer);
  - 6 square feet per horse foal (.75 linear foot in an 8 foot wide trailer);
  - 4 square feet per burro foal (.50 linear feet in an 8 foot wide trailer).
7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any brand and/or inspection services required for the captured animals.
8. If the COR/PI determines that dust conditions are such that the animals could be

endangered during transportation, the Contractor will be instructed to adjust speed.

#### **D. Treatment of Injured or Sick; Disposition of Terminal Animals**

The contractor would restrain sick or injured animals if treatment is necessary. A veterinarian may be called to make an assessment & recommendation. Destruction would be done by the most humane method available. Authority for humane destruction of wild horses is provided by the Wild Free-Roaming Horse and Burro Act of 1971, Section 3(b)(2)(A), 43 CFR 4730.1, BLM Manual 4730 - Destruction of Wild Horses and Burros and Disposal of Remains, and is in accordance with BLM policy as expressed in Instructional Memorandum No. 98-141.

The Authorized Officer would determine if injured animals must be destroyed and provide for destruction of such animals. The contractor may be required to dispose of the carcasses as directed by the Authorized Officer.

The carcasses of the animals that die or must be destroyed as a result of any infectious, contagious, or parasitic disease would be disposed of by burial to a depth of at least 5 feet. If burial is not an option then carcasses may be taken to the nearest landfill or disposed of on the range where scavengers would benefit.

The carcasses of the animals that must be destroyed as a result of age, injury, lameness, or non-contagious disease or illness would be disposed of by removing them from the capture site or holding corral and placing them in an inconspicuous location to minimize visual impacts. Carcasses would not be placed in drainages regardless of drainage size or downstream destination.

#### **D. Safety and Communications**

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the capture of wild horses utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.
  - a. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or COR/PI violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the Contractor will be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or his/her representative.
  - b. The Contractor shall obtain the necessary FCC licenses for the radio system
  - c. All accidents occurring during the performance of any task order shall be

immediately reported to the COR/PI.

2. Should the contractor choose to utilize a helicopter the following will apply:
  - a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.
  - b. Fueling operations shall not take place within 1,000 feet of animals.

### **G. Site Clearances**

No personnel working at gather sites may excavate, remove, damage, or otherwise alter or deface or attempt to excavate, remove, damage or otherwise alter or deface any archaeological resource located on public lands or Indian lands.

Prior to setting up a trap or temporary holding facility, BLM will conduct all necessary clearances (archaeological, T&E, etc). All proposed site(s) must be inspected by a government archaeologist. Once archaeological clearance has been obtained, the trap or temporary holding facility may be set up. Said clearance shall be arranged for by the COR, PI, or other BLM employees.

Gather sites and temporary holding facilities would not be constructed on wetlands or riparian zones.

### **H. Animal Characteristics and Behavior**

Releases of wild horses would be near available water. If the area is new to them, a short-term adjustment period may be required while the wild horses become familiar with the new area.

### **I. Public Participation**

Opportunities for public viewing (i.e. media, interested public) of gather operations will be made available to the extent possible; however, the primary considerations will be to protect the health, safety and welfare of the animals being gathered and the personnel involved. The public must adhere to guidance from the on-site BLM representative. It is BLM policy that the public will not be allowed to come into direct contact with wild horses or burros being held in BLM facilities. Only authorized BLM personnel or contractors may enter the corrals or directly handle the animals. The general public may not enter the corrals or directly handle the animals at anytime or for any reason during BLM operations.

## **J. Responsibility and Lines of Communication**

### **Contracting Officer's Representative/Project Inspector**

Scott Fluor – Lander Field Office

Melanie Mirati – Rawlins Field Office

The Contracting Officer's Representatives (CORs) and the project inspectors (PIs) have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. The Lander and Rawlins Assistant Field Managers for Resources and Lander and Rawlins Field Managers will take an active role to ensure the appropriate lines of communication are established between the field, Field Office, State Office, National Program Office, and BLM Holding Facility offices. All employees involved in the gathering operations will keep the best interests of the animals at the forefront at all times.

All publicity, formal public contact and inquiries will be handled through the Assistant Field Managers for Renewable Resources and Field Office Public Affairs. These individuals will be the primary contact and will coordinate with the COR/PI on any inquiries.

The COR will coordinate with the contractor and the BLM Corrals to ensure animals are being transported from the capture site in a safe and humane manner and are arriving in good condition.

The contract specifications require humane treatment and care of the animals during removal operations. These specifications are designed to minimize the risk of injury and death during and after capture of the animals. The specifications will be vigorously enforced.

Should the Contractor show negligence and/or not perform according to contract stipulations, he will be issued written instructions, stop work orders, or defaulted.

## **14. Glossary**

**Appropriate Management Level** - The number of wild horses and burro which can be sustained within a designated herd management area which achieves and maintains a thriving natural ecological balance keeping with the multiple use management concept for the area.

**Authorized Officer** - An employee of the BLM to whom has been delegated the authority to perform the duties described in these Standard Operating Procedures. See BLM Manual 1203 for explanation of delegation of authority.

**Animal Unit Month (AUM)** – A standardized unit of measurement of the amount of forage necessary for the sustenance of one animal unit for 1 month; also, a unit of measurement that represents the privilege of grazing one animal unit for 1 month.

**Animal Unit (AU)** – A standardized unit of measurement for range livestock or wildlife. Generally, one mature (1,000-pound) cow or its equivalent, based on an average daily forage consumption of 26 pounds of dry matter per day.

**Census** - The primary monitoring technique used to maintain a current inventory of wild horses and burros on given areas of the public lands. Census data are derived through direct visual counts of animals using a helicopter.

**Contracting Officer (CO)** - Is the individual responsible for an awarded contract who deals with claims, disputes, negotiations, modifications and payments. Appoints CORs and PIs.

**Contacting Officers Representative (COR)** - Acts as the technical representative for the CO on a contract. Ensures that all specifications and stipulations are met. Reviews the contractor's progress, advises the CO on progress, problems, costs, etc. Is responsible for review, approval, and acceptance of services.

**Evaluation** - A determination based on studies and other data that are available as to if habitat and population objectives are or are not being met and where an overpopulation of wild horses and burros exists and whether actions should be taken to remove excess animals.

**Excess Wild Horses or Burros** - Wild free-roaming horses or burros which have been removed from public lands or which must be removed to preserve and maintain a thriving ecological balance and multiple-use relationship.

**Genetically Viable** - Fitness of a population as represented by its ability to maintain the long-term reproductive capacity of healthy, genetically diverse members.

**Health Assessment** - Evaluation process based on best available studies data to determine the current condition of resources in relation to potential or desired conditions.

**Healthy Resources** - Resources that meet potential or desired conditions or are improving toward meeting those potential or desired conditions.

**Herd Area** - The geographical area identified as having been used by wild horse and burro populations in 1971, at the time of passage of the Wild Free-roaming Horse and Burro Act.

**Herd Management Area** - The geographical area as identified through the land use planning process established for the long-term management of wild horse and burro populations. The boundaries of the herd management area may not be greater than the area identified as having been used by wild horse and burro populations in 1971, at the time of passage of the Wild Free-roaming Horse and Burro Act.

**Invasive Weeds** - Introduced or noxious vegetative species which negatively impact the ecological balance of a geographical area and limit the areas potential to be utilized by authorized uses.

**Metapopulation (complex)** - A population of wild horses and burros comprised of two or more smaller, interrelated populations that are linked by movement or distribution within a defined geographical area.

**Monitoring** - Inventory of habitat and population data for wild horses and burros and associated resources and other authorized rangeland uses. The purpose of such inventories is to be used during evaluations to make determinations as to if habitat and population objectives are or are not being met and where an overpopulation of wild horses and burros exists and whether actions should be taken to remove excess animals.

**Multiple Use Management** - A combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals watershed, domestic livestock, wild horses, wild burros, wildlife, and fish, along with natural, scenic, scientific, and historical values.

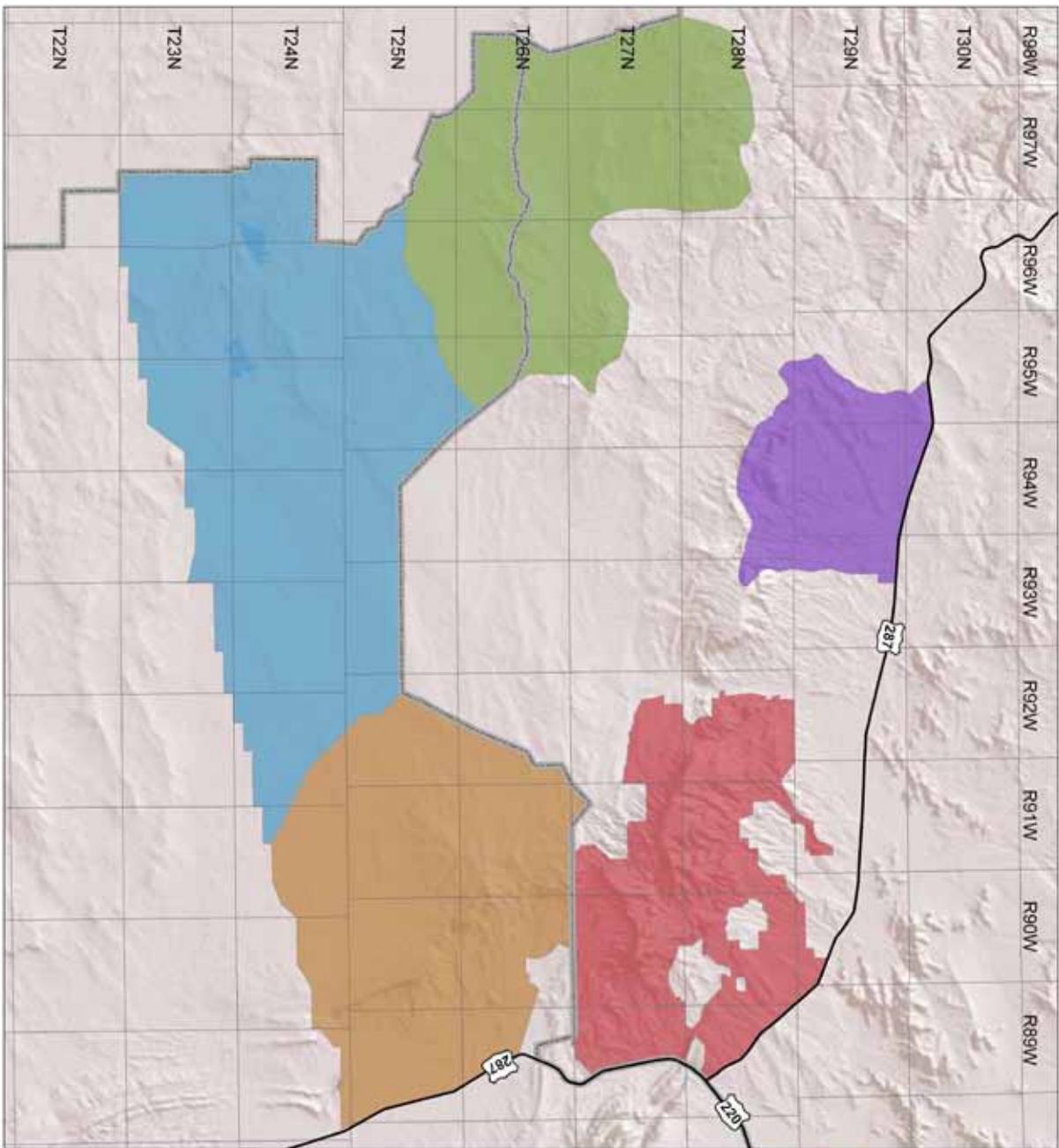
**Project Inspector** - Coordinates with the COR assigned to a contract to support his/her responsibility for review, approval, and acceptance of services.

**Research** - Science based inquiry, investigation or experimentation aimed at increasing knowledge about wild horses and burros conducted by accredited universities or federal government research organizations with the active participation of BLM wild horse and burro professionals.

**Science Based Decision Making** - Issuance of decisions affecting wild horses and burros, associated resources and other authorized rangeland uses incorporating best available habitat and population data and in consultation with the public.

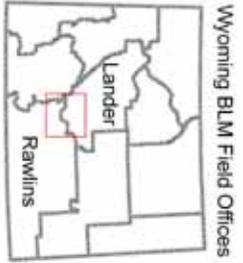
**Studies** - Science based investigation of specific aspects of wild horse and burro habitat or populations in supplement to established monitoring. These investigations would not be established following rigid experimental protocols and could include drawing blood on animals to study genetics, disease and general health issues and population dynamics such as reproduction and mortality rates and general behavior.

**Thriving Natural Ecological Balance** - An ecological balance requires that wild horses and burros and other associated animals be in good health and reproducing at a rate that sustains the population, the key vegetative species are able to maintain their composition, production and reproduction, the soil resources are being protected, maintained or improved, and a sufficient amount of good quality water is available to the animals.



**Appendix 2  
Red Desert Complex**

- Field Office Boundary
- Antelope Hills
- Crooks Mountain
- Green Mountain
- Lost Creek
- Stewart Creek



No warranty is made by the Bureau of Land Management (BLM) for use of the data for purposes not intended by BLM.

### **Appendix 3**

## **Standard Operating Procedures for Fertility Control Treatment**

The following management and monitoring requirements are part of the Proposed Action:

- The 22 month pelleted PZP vaccine would be administered by trained BLM personnel.
- The fertility control drug is administered with two separate injections: (1) a liquid dose of PZP is administered using an 18 gauge needle primarily by hand injection; (2) the pellets are preloaded into a 14 gauge needle. These are loaded on the end of a trocar (dry syringe with a metal rod) which is loaded into the jabstick which then pushes the pellets into the breeding mares being returned to the range. The pellets and liquid are designed to release the PZP over time similar to a time release cold capsule.
- Delivery of the vaccine would be as an intramuscular injection while the mares are restrained in a working chute. 0.5 cubic centimeters (cc) of the PZP vaccine would be emulsified with 0.5 cc of adjuvant (a compound that stimulates antibody production) and loaded into the delivery system. The pellets would be loaded into the jabstick for the second injection. With each injection, the liquid and pellets would be propelled into the left hind quarters of the mare, just below the imaginary line that connects the point of the hip and the point of the buttocks.
- All treated mares will be freeze-marked with two 3.5-inch letters on the left hip for treatment tracking purposes. The only exception to this requirement is that each treated mare can be clearly and specifically identified through photographs or markings. This step is to enable researchers to positively identify the animals during the research project as part of the data collection phase.
- At a minimum, estimation of population growth rates using helicopter or fixed wing surveys will be conducted the year preceding any subsequent gather. During these surveys it is not necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of mares).
- Population growth rates of herds selected for intensive monitoring will be estimated every year post-treatment using helicopter or fixed wing surveys. During these surveys it is not necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of mares). If during routine HMA field monitoring (on-the-ground), if data on mare to foal ratios can be collected, these data should also be shared with the NPO for possible analysis by the USGS.
- A PZP Application Data sheet will be used by the field applicators to record all the pertinent data relating to identification of the mare (including a photograph if the mares are not freeze-marked) and date of treatment. Each applicator will submit a PZP

Application Report and accompanying narrative and data sheets will be forwarded to the NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at the field office.

A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, disposition of any unused PZP, the number of treated mares by HMA, fieldoffice, and state along with the freeze-mark applied by HMA.

**APPENDIX 4  
BLM WYOMING STATE DIRECTOR'S SENSITIVE SPECIES LIST  
(ANIMALS AND PLANTS) FOR LANDER & RAWLINS FIELD OFFICE**

Species Common Name	Scientific Name	Habitat	May be present in project (Y/N)	Rationale
<b>MAMMALS</b>				
Myotis, Long-eared	<i>Myotis evotis</i>	Conifer and deciduous forests, caves and mines	Y	No habitat conversions are expected to occur.
Myotis, Fringed (Rawlins FO only)	<i>Myotis thysanodes</i>	Conifer forests, woodland chaparral, caves and mines	Y	No habitat conversions are expected to occur.
Bat, Spotted	<i>Euderma maculatum</i>	Cliffs over perennial water, basin-prairie shrub	Y	No habitat conversions are expected to occur.
Bat, Townsend's Big-eared	<i>Corynorhinus townsendii</i>	Forests, basin-prairie shrub, caves and mines	Y	No habitat conversions are expected to occur.
Wyoming Pocket Gopher	<i>Thomomys clusius</i>	Sidehills and ridgetops, cushion plant communities in otherwise sagebrush dominated habitat	Y	No habitat conversions are expected to occur.
Prairie Dog, White-tailed	<i>Cynomys leucurus</i>	Basin-prairie shrub, grasslands	Y	No habitat conversions are expected to occur. Capture pens and herding will not take place in prairie dog towns.
Prairie Dog, Black-tailed	<i>Cynomys ludovicianus</i>	Basin-prairie shrub, grasslands	N	No known or potential habitat.
Fox, Swift	<i>Vulpes velox</i>	Grasslands	Y	No habitat conversions are expected to occur.
Preble's Meadow Jumping Mouse (Rawlins FO only)	<i>Zapus hudsonius preblei</i>	Riparian habitat and upland hiburnaculae	N	No known or potential habitat.
Rabbit, Pygmy	<i>Brachylagus idahoensis</i>	Basin-prairie and riparian shrub	Y	No habitat conversions are expected to occur.
Bear, Grizzly (Lander FO only)	<i>Ursus arctos</i>	Forests with interspersed meadows and grasslands.	N	No known populations in project area.
<b>BIRDS</b>				
Eagle, Bald	<i>Haliaeetus leucocephalus</i>	Lakes, rivers and other large water bodies suitable for foraging with large trees for nesting and roosting.	N	No known populations in project area.
Ibis, White-faced	<i>Plegadis chihi</i>	Marshes, wet meadows	Y	Roundups will not occur during nesting season.
Plover, Mountain	<i>Charadrius montanus</i>	Shortgrass prairie/sparse vegetation	Y	Roundups will not occur during nesting season.

Species Common Name	Scientific Name	Habitat	May be present in project (Y/N)	Rationale
Swan, Trumpeter	<i>Cygnus buccinator</i>	Lakes, ponds, rivers	Y	Roundups will not occur during nesting season.
Goshawk, Northern	<i>Accipter gentilis</i>	Conifer and deciduous forests	Y	Roundups will not occur during nesting season.
Hawk, Ferruginous	<i>Buteo regalis</i>	Basin-prairie shrub, grassland, rock outcrops	Y	Inventory will be conducted prior to surface disturbing activity. Seasonal stipulation to protect nesting birds will be applied if necessary.
Falcon, Peregrine	<i>Falco peregrinus</i>	Tall cliffs	Y	Roundups will not occur during nesting season.
Sage-grouse, Greater	<i>Centrocercus urophasianus</i>	Basin-prairie shrub, mountain-foothill shrub	Y	Roundups will not occur during nesting season.
Sharp-tailed grouse, Columbian (Rawlins FO only)	<i>Tympanuchus phasianellus columbianus</i>	Grasslands	N	No known or potential habitat
Curlew, Long- billed	<i>Numenius americanus</i>	Grasslands, plains, foothills, wet meadows	Y	Roundups will not occur during nesting season.
Owl, Burrowing	<i>Athene cunicularia</i>	Grasslands, basin-prairie shrub	Y	No habitat conversions are expected to occur. Capture pens and herding will not take place in prairie dog towns.
Thrasher, Sage	<i>Oreoscoptes montanus</i>	Basin-prairie shrub, mountain-foothill shrub	Y	Roundups will not occur during nesting season.

Shrike, Loggerhead	<i>Lanius ludovicianus</i>	Basin-prairie shrub, mountain-foothill shrub	Y	Roundups will not occur during nesting season.
Sparrow, Brewer's	<i>Spizella breweri</i>	Basin-prairie shrub	Y	Roundups will not occur during nesting season.
Sparrow, Sage	<i>Amphispiza billineata</i>	Basin-prairie shrub, mountain-foothill shrub	Y	Roundups will not occur during nesting season.
FISH				
Trout, Yellowstone Cutthroat	<i>Oncorhynchus clarki bowyeri</i>	Yellowstone drainage, small mountain streams and large rivers	N	No suitable habitat present.
Roundtail Chub (Rawlins FO only)	<i>Gila robusta robusta</i>	Muddy Creek/Little Snake River	N	No suitable habitat present.
Flannelmouth Sucker (Rawlins FO only)	<i>Catostomus latipinnis</i>	Muddy Creek/Little Snake River	N	No suitable habitat present.
Bluehead Sucker (Rawlins FO only)	<i>Catostomus discobolus</i>	Muddy Creek/Little Snake River	N	No suitable habitat present.
Hornyhead Chub (Rawlins FO only)	<i>Nocomis biguttatus</i>	East flank of Laramie Range	N	No suitable habitat present.
REPTILES				
AMPHIBIANS				
Frog, Northern Leopard	<i>Rana pipiens</i>	Beaver ponds, permanent water in plains and foothills	Y	Capture pens will not be places in riparian areas.
Spadefoot, Great	<i>Spea</i>	Spring seeps, permanent	Y	Capture pens will not be places in riparian areas.

Basin	<i>intermontana</i>	and temporary waters		
Toad, Boreal (Northern Rocky Mountain population)	<i>Bufo boreas boreas</i>	Pond margins, wet meadows, riparian areas	Y	Capture pens will not be placed in riparian areas.
Frog, Spotted (Lander FO only)	<i>Ranus pretiosa (lutiventris)</i>	Ponds, sloughs, small streams	Y	Capture pens will not be places in riparian areas.
PLANTS				
Meadow Pussytoes (Lander FO only)	<i>Antennaria arcuata</i>	Moist, hummocky meadows, seeps or springs surrounded by sage/grasslands 4,950-7,900'	Y	Capture pens will not be places in riparian areas. (Model shows no potential habitat on Rawlins FO side)
Porter's Sagebrush (Lander FO only)	<i>Artemisia porteri</i>	Sparsely vegetated badlands of ashy or tufaceous mudstone & clay slopes 5,300-6,500'	Y	A survey for sensitive species will be conducted before locations for capture pens are approved. (Model shows no potential habitat on Rawlins FO side)
Dubois Milkvetch (Lander FO only)	<i>Astragalus gilviflorus var. purpureus</i>	Barren shale, badlands, limestone, & redbed slopes & ridges 6,900-8,800'	N	No suitable habitat present.

Cedar Rim Thistle	<i>Cirsium aridum</i>	Barren, chalky hills, gravelly slopes, & fine textured, sandy-shaley draws 6,700-7,200'	Y	A survey for sensitive species will be conducted before locations for capture pens are approved. Model shows potential habitat present in project area.
Owl Creek Miner's Candle (Lander FO only)	<i>Cryptantha subcapitata</i>	Sandy-gravelly slopes & desert ridges on sandstones of the Winds River Formation 4,700-6,000'	N	No suitable habitat present.
Fremont Bladderpod (Lander FO only)	<i>Lesquerella fremontii</i>	Rocky limestone slopes & ridges 7,000-9,000'	Y	A survey for sensitive species will be conducted before locations for capture pens are approved. (Model shows no potential habitat on Rawlins FO side)
Beaver Rim Phlox (Lander FO only)	<i>Phlox pungens</i>	Sparsely vegetated slopes on sandstone, siltstone, or limestone substrates 6,000-7,400'	Y	A survey for sensitive species will be conducted before locations for capture pens are approved. (Model shows no potential habitat on Rawlins FO side)
Rocky Mountain Twinpod (Lander FO only)	<i>Physaria saximontana var. saximontana</i>	Sparsely vegetated rocky slopes of limestone, sandstone or clay 5,600-8,300'	Y	A survey for sensitive species will be conducted before locations for capture pens are approved. (Model shows no potential habitat on Rawlins FO side)
Persistent Sepal Yellowcress	<i>Rorippa calycina</i>	Riverbanks & shorelines, usually on sandy soils near high-H <sup>2</sup> O line	Y	Model shows potential habitat, however capture pens will not be placed in riparian areas.
Shoshonea (Lander FO only)	<i>Shoshonea pulvinata</i>	Shallow, stony calcareous soils of exposed limestone outcrops, ridgetops, & talus slopes 5,900-9,200'	Y	A survey for sensitive species will be conducted before locations for capture pens are approved. (Model shows no potential habitat on Rawlins FO side)
Barneby's Clover (Lander FO only)	<i>Trifolium barnebyi</i>	Ledges, crevices, & seams on reddish-cream Nugget Sandstone outcrops 5,600-6,700'	Y	A survey for sensitive species will be conducted before locations for capture pens are approved. (Model shows no potential habitat on Rawlins FO side)
Many-stemmed Spider-flower (Rawlins FO only)	<i>Cleome multicaulis</i>	Semi-moist, open saline banks of shallow ponds, lakes with Baltic rush & bulrush 5,900 feet	N	Model shows no potential habitat present in project area.
Laramie columbine	<i>Aquilegia</i>	Crevices of granite	N	Model shows no potential habitat present in project area.

(Rawlins FO only)	<i>laramiensis</i>	boulders & cliffs at 6,400-8,000 feet in elevation		
Trelease's racemose milkvetch (Rawlins FO only)	<i>Astragalus racemosus var treleasei</i>	Barren hills and washes of clay, shale, limestone, or sandstone at 6,500-8,200 feet in elevation	N	Model shows no potential habitat present in project area.
Weber's scarlet gilia (Rawlins FO only)	<i>Ipomopsis aggregata spp. weberi</i>	Openings in coniferous forests & scrub oak woodlands at 8,500-9,600 feet in elevation	N	Model shows no potential habitat present in project area.
Gibbens' beardtongue (Rawlins FO only)	<i>Penstemon gibbensii</i>	Sparsely vegetated shale or sandy-clay slopes at 5,500-7,700 feet in elevation	N	Model shows no potential habitat present in project area.
Laramie False Sagebrush (Rawlins FO only)	<i>Sphaeromeria simplex</i>	Cushion plant communities on rocky limestone ridges & gentle slopes at 7,500 – 8,600 feet in elevation	N	Model shows no potential habitat present in project area.



## **APPENDIX 5: WILD HORSE POPULATION MODELING**

### **Population Model Overview**

WinEquus is a program used to simulate the population dynamics and management of wild horses created by Stephen H. Jenkins of the Department of Biology, University of Nevada at Reno. For further information about this model, you may contact Stephen H. Jenkins at the Department of Biology/314, University of Nevada, Reno, NV 89557.

Detailed information is provided within the WinEquus program available at <http://unr.edu/homepage/jenkins>, and will provide background about the use of the model, the management options that may be used, and the types of output that may be generated.

The population model for wild horses was designed to help BLM evaluate various management strategies that might be considered for a particular area. The model uses data on average survival probabilities and foaling rates of horses to project population growth for up to 20 years. The model accounts for year-to-year variation in these demographic parameters by using a randomization process to select survival probabilities and foaling rates for each age class from a distribution of values based on these averages. This aspect of population dynamics is called environmental stochasticity, and reflects the fact that future environmental conditions that may affect wild horse population's demographics can't be established in advance. Therefore each trial with the model will give a different pattern of population growth. Some trials may include mostly "good" years, when the population grows rapidly; other trials may include a series of several "bad" years in succession. The stochastic approach to population modeling uses repeated trials to project a range of possible population trajectories over a period of years, which is more realistic than predicting a single specific trajectory.

The model incorporates both selective removal and fertility treatment as management strategies. A simulation may include no management, selective removal, fertility treatment, or both removal and fertility treatment. Wild horse and burro specialists can specify many different options for these management strategies such as the schedule of gathers for removal or fertility treatment, the threshold population size which triggers a gather, the target population size following a removal, the ages and sexes of horses to be removed, and the effectiveness of fertility treatment.

To run the program, one must supply an initial age distribution (or have the program calculate one), annual survival probabilities for each age-sex class of horses, foaling rates for each age class of females, and the sex ratio at birth. Sample data are available for all of these parameters. Basic management options must also be specified.

### **Population Modeling – Red Desert HMA Complex**

To complete the population modeling for the Red Desert HMA Complex, version 1.40 of the WinEquus program, created April 2, 2002, was utilized.

### **Objectives of Population Modeling**

Review of the data output for each of the simulations provided many useful comparisons of the possible outcomes for each alternative. Some of the questions that need to be answered through the modeling include:

- Do any of the Alternatives “crash” the population?
- What effect does fertility control have on population growth rate?
- What effects do the different alternatives have on the average population size?

- What effects do the different alternatives have on the genetic health of the herd?

**Population Data, Criteria, and Parameters utilized for Population Modeling**

Initial age structure for the 2011 herd was developed from age structure data collected during the 2009 HMA complex gather. The following table shows the proposed age structure that was utilized in the population model for the Proposed Action and Alternatives:

**Initial Age Structure (2009 Gather)**

<b>Age Class</b>	<b>Females</b>	<b>Males</b>
<b>Foal</b>	100	132
<b>1</b>	9	18
<b>2</b>	64	64
<b>3</b>	87	91
<b>4</b>	52	35
<b>5</b>	58	23
<b>6</b>	23	10
<b>7</b>	34	21
<b>8</b>	22	20
<b>9</b>	14	14
<b>10-14</b>	45	86
<b>15-19</b>	27	34
<b>20+</b>	11	42
<b>Total</b>	<b>546</b>	<b>590</b>

All simulations used the survival probabilities, foaling rates, and sex ratio at birth that was supplied with the WinEquus population model for the Garfield HMA

**Sex ratio at Birth:**

42% Females  
58% Males

The following percent effectiveness of fertility control was utilized in the population modeling for Alternative I & Alternative 3:

**Year 1: 94%, Year 2: 82%, Year 3: 68%**

The following table displays the removal parameters utilized in the population model for the Proposed Action & Alternative 3:

### Removal Criteria

<i>Age</i>	<i>Percentages for Removals</i>	
	<b>Females</b>	<b>Males</b>
Foal	100%	100%
1	100%	100%
2	0%	0%
3	0%	0%
4	0%	0%
5	0%	0%
6	0%	0%
7	0%	0%
8	0%	0%
9	0%	0%
10-14	0%	0%
15-19	0%	0%
20+	0%	0%

The following table displays the contraception parameters utilized in the population model for the Proposed Alternative & Alternative 3:

### Contraception Criteria (Alternative I)

<b>Age</b>	<b>Percentages for Fertility Treatment</b>
Foal	100%
1	100%
2	100%
3	100%
4	100%
5	100%
6	100%
7	100%
8	100%
9	100%
10-14	100%
15-19	100%
20+	100%

**Population Modeling Criteria**

The following summarizes the population modeling criteria utilized for the Proposed Action Alternative & Alternative 3:

- Starting Year: 2011
- Initial gather year: 2011
- Gather interval: regular intervals of two years
- Gather for fertility treatment regardless of population size: Yes
- Continue to gather after reduction to treat females: Yes
- Sex ratio at birth: 58% males
- Percent of the population that can be gathered: 80%
- Minimum age for long term holding facility horses: Not Applicable
- Foals are not included in the AML
- Simulations were run for 10 years with 100 trials each

The following table displays the population modeling parameters utilized in the model:

**Population Modeling Parameters**

<b>Modeling Parameter</b>	<b>Proposed Action Alternative (Remove to Mid Limit of Management Range &amp; Fertility Control)</b>	<b>No Action Alternative (Remove to Lower Limit of Management Range Every 4yrs &amp; No Fertility Control)</b>	<b>Alternative 3 (Remove to Mid Limit of Management Range with Fertility Control &amp; Castration of 60 Studs)</b>
Management by removal and fertility control	Yes	No	Yes
Management by removal only	No	Yes	No
Threshold Population Size for Gathers	NA	NA	NA
Target Population Size Following Gathers	602	480	602
Gather for fertility control regardless of population size	Yes	No	Yes
Gathers continue after removals to treat additional females	Yes	No	Yes
Effectiveness of Fertility Control: year 1	94%	N/A	94%
Effectiveness of Fertility Control: year 2	82%	N/A	82%
Effectiveness of Fertility Control: year 3	68%	N/A	68%

## ***Results of WinEquus Population Modeling***

Population modeling was completed for the proposed action and alternative. One hundred trials were run, simulating population growth and herd demographics to determine the projected herd structure for the next four years, or prior to the next gather. The computer program used simulates the population dynamics of wild horses. It was written by Dr. Stephen H. Jenkins, Department of Biology, University of Nevada, Reno, under a contract from the National Wild Horse and Burro Program of the Bureau of Land Management and is designed for use in comparing various management strategies for wild horses.

To date, one herd has been studied using the 2-year PZP vaccine. The Clan Alpine study, in Nevada, was started in January 2000 with the treatment of 96 mares. The test resulted in fertility rates in treated mares of 6% year one and 18% year two.

### **Interpretation of the Model**

The estimated population of 827 wild horses in the Red Desert HMA complex was based on an August 2010 census, and was used in the population modeling. Year one is the baseline starting point for the model, and reflects wild horse numbers immediately prior to the gather action. In this population modeling, year one would be 2011. Year two would be exactly one year in time from the original action, and so forth for years three, four, and five, etc. Consequently, at year eleven in the model, exactly ten years in time would have passed. In this model, year eleven is 2021. This is reflected in the Population Size Modeling Table by “Population sizes in ten years” and in the Growth Rate Modeling Table by “Average growth rate in 10 years”. Growth rate is averaged over ten years in time, while the population is predicted out the same ten years to the end point of year eleven. The Full Modeling Summaries contain tables and graphs directly from the modeling program.

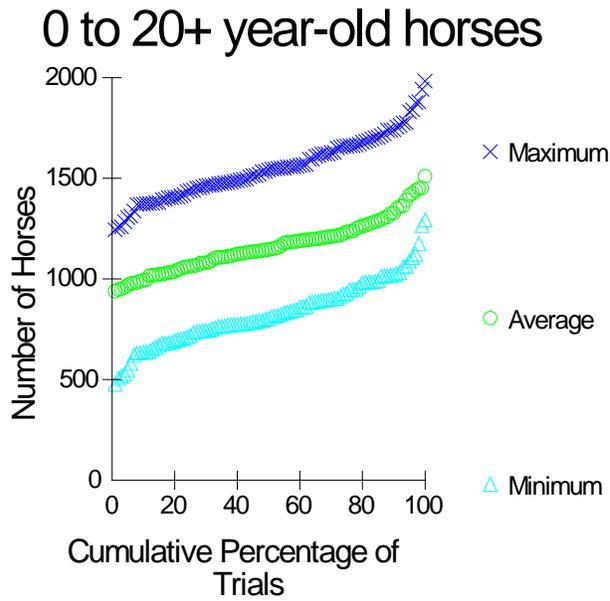
The initial herd size, sex ratio and age distribution for 2011 was structured by the WinEquus Population Model using data from the horses gathered and released during the 2009 gather. This initial population data was then entered into the model and the model was used to predict various outcomes of the two alternatives for comparison purposes.

### **Results – Proposed Action – Removal to 602 horses with Fertility Control**

The parameters for the population modeling were:

1. gather every two years for fertility treatment regardless of population size
2. foals are not included in AML
3. percent to gather 80
4. two years between gathers
5. number of trials 100
6. number of years 10
7. initial calendar year 2011
8. initial population size 827
9. population size after gather 602
10. implement selective removal criteria
11. fertility control Yes

*Population Size and Modeling Graph and Table (Gather & Fertility Control)*

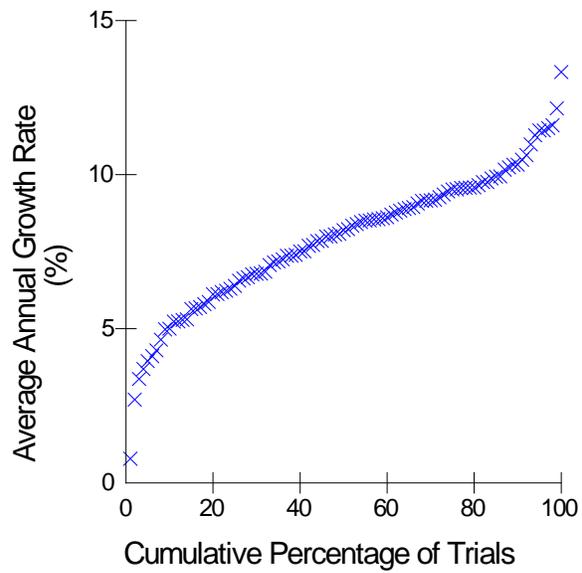


Population Sizes in 11 Years\*

	Minimum	Average	Maximum
Lowest Trial	476	938	1244
10th Percentile	636	994	1373
25th Percentile	726	1063	1440
Median Trial	808	1146	1543
75th Percentile	938	1235	1660
90th Percentile	1022	1337	1748
Highest Trial	1293	1511	1983

\* 0 to 20+ year-old horses

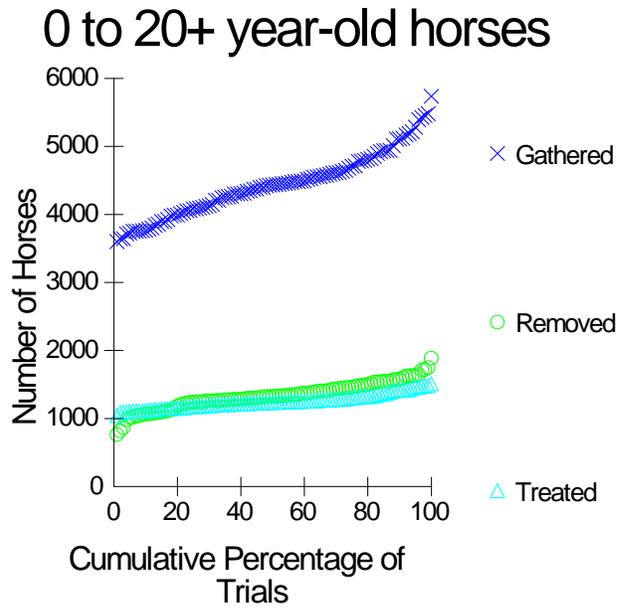
***Growth Rate Modeling Graph and Table (Gather & Fertility Control)***



**Average Growth Rate in 10 Years**

Lowest Trial	0.8
10th Percentile	5.1
25th Percentile	6.5
Median Trial	8.2
75th Percentile	9.5
90th Percentile	10.4
Highest Trial	13.3

*Gathered, Removed & Treated Graph and Table (Gather & Fertility Control)*



Totals in 11 Years\*

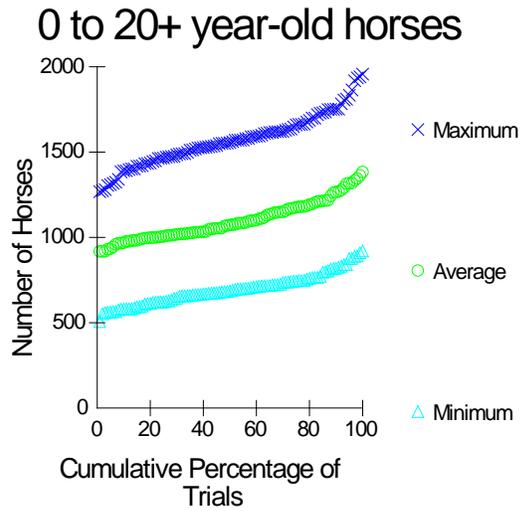
	Gathered	Removed	Treated
Lowest Trial	3601	765	1045
10th Percentile	3775	1068	1118
25th Percentile	4082	1238	1174
Median Trial	4435	1324	1236
75th Percentile	4711	1464	1304
90th Percentile	5116	1586	1416
Highest Trial	5735	1886	1509

## **Results – Alternative 2 – Removal at Four Years to 480 horses with No Fertility Control**

The parameters for the population modeling were:

1. gather every four years to maintain population within AML.
2. foals are not included in AML
3. percent to gather 80
4. four years between gathers
5. number of trials 100
6. number of years 10
7. initial calendar year 2011
8. initial population size 827
9. population size after gather 480
10. implement selective removal criteria
11. fertility control No

**Population Size and Modeling Graph and Table (Gather & Remove Only)**

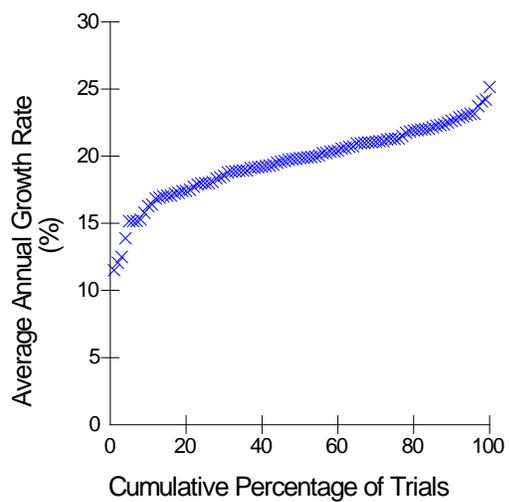


**Population Sizes in 11 Years\***

	Minimum	Average	Maximum
Lowest Trial	507	917	1268
10th Percentile	580	972	1390
25th Percentile	624	1007	1468
Median Trial	688	1074	1558
75th Percentile	746	1178	1660
90th Percentile	822	1267	1752
Highest Trial	921	1383	1957

\* 0 to 20+ year-old horses

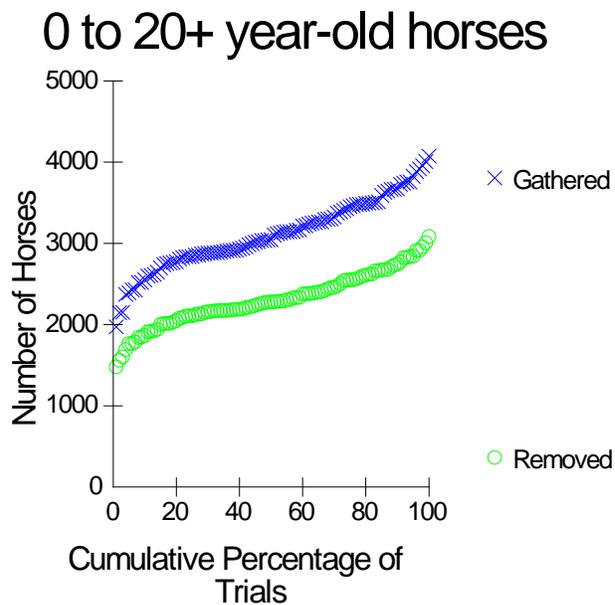
*Growth Rate Modeling Graph and Table (Gather & Remove Only)*



Average Growth Rate in 10 Years

Lowest Trial	11.5
10th Percentile	16.3
25th Percentile	18.0
Median Trial	19.9
75th Percentile	21.3
90th Percentile	22.7
Highest Trial	25.2

*Gathered and Removed Graph and Table (Gather & Removal Only)*



Totals in 11 Years\*

	Gathered	Removed
Lowest Trial	1972	1479
10th Percentile	2574	1887
25th Percentile	2846	2114
Median Trial	3073	2278
75th Percentile	3457	2550
90th Percentile	3697	2756
Highest Trial	4074	3082

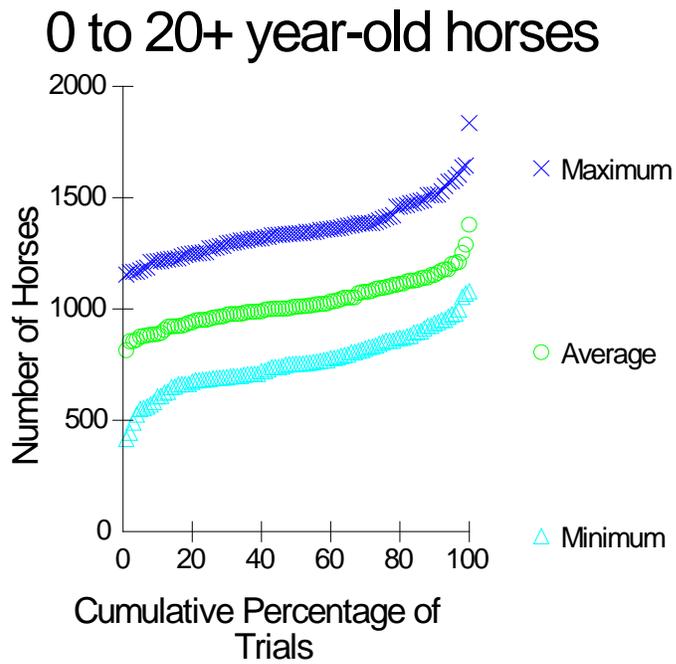
\* 0 to 20+ year-old horses

## **Results – Alternative 3 – Removal to 602 horses with Fertility Control & Castration**

The parameters for the population modeling were:

1. gather every two years for fertility treatment regardless of population size
2. foals are not included in AML
3. percent to gather 80
4. two years between gathers
5. number of trials 100
6. number of years 10
7. initial calendar year 2011
8. initial population size 827
9. population size after gather 542 (542 was used to express the actual breeding population, the total population would be 602 with 60 stallions being castrated & released as geldings)
10. implement selective removal criteria
11. fertility control Yes

*Population Size and Modeling Graph and Table (Gather, Fertility Control & Castration)*

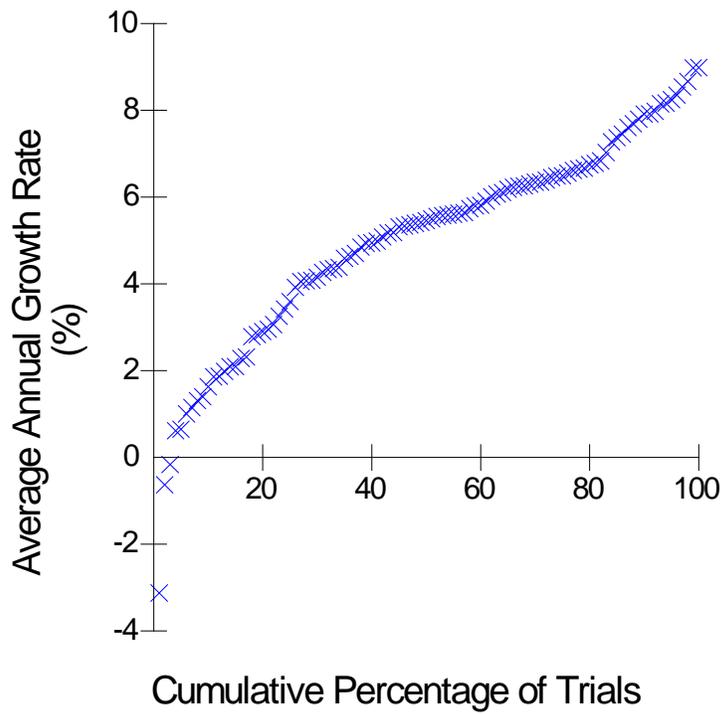


Population Sizes in 11 Years\*

	Minimum	Average	Maximum
Lowest Trial	417	814	1154
10th Percentile	608	889	1214
25th Percentile	686	958	1272
Median Trial	754	1010	1340
75th Percentile	854	1096	1408
90th Percentile	938	1157	1513
Highest Trial	1079	1378	1835

\* 0 to 20+ year-old horses

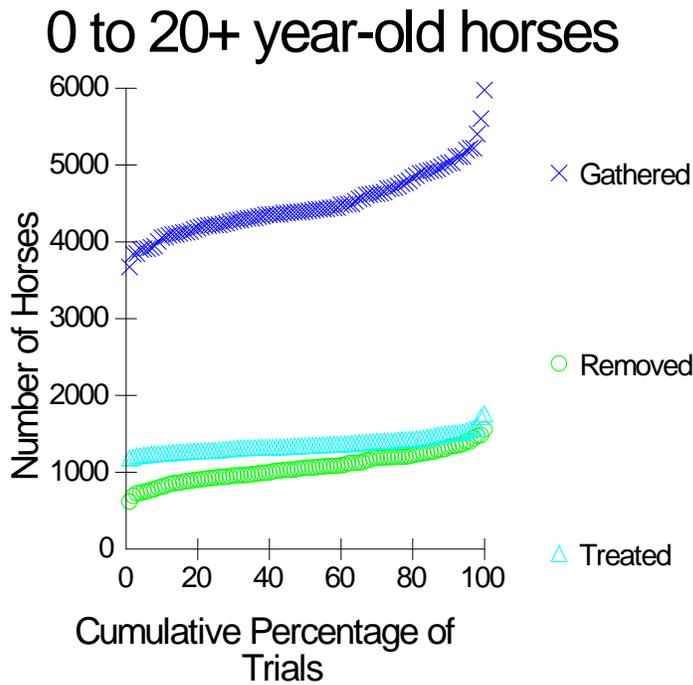
*Growth Rate Modeling Graph and Table (Gather, Fertility Control & Castration)*



Average Growth Rate in 10 Years

Lowest Trial	-3.1
10th Percentile	1.7
25th Percentile	3.8
Median Trial	5.5
75th Percentile	6.5
90th Percentile	7.9
Highest Trial	9.0

*Gathered, Removed & Treated Graph and Table (Gather, Fertility Control & Castration)*



Totals in 11 Years\*

	Gathered	Removed	Treated
Lowest Trial	3672	618	1185
10th Percentile	4060	816	1245
25th Percentile	4222	934	1286
Median Trial	4401	1058	1348
75th Percentile	4716	1200	1416
90th Percentile	5028	1333	1505
Highest Trial	5975	1557	1758

\* 0 to 20+ year-old horses

This table compares the projected population growth for the proposed action and the alternatives at the end of the ten-year simulation. The population averages are from the median trial.

<b>Modeling Statistic</b> Red Desert HMA Complex	<b>Proposed Action Alternative</b> -	<b>No Action Alternative – Gather on Four Year Cycle, No Fertility Control Treatment</b>	<b>Alternative 3 -</b>
<b>Population in Year One</b>	602	480	542
<b>Median Growth Rate</b>	<b>8.2%</b>	<b>19.9%</b>	<b>5.5%</b>
<b>Average Population</b>	1146	1074	1010
<b>Lowest Average Population</b>	938	917	814
<b>Highest Average Population</b>	1543	1558	1378
<b>Lowest Number Removed</b>	<b>765</b>	<b>1479</b>	<b>618</b>
<b>Median Number Removed</b>	<b>1324</b>	<b>2278</b>	<b>1058</b>
<b>Highest Number Removed</b>	<b>1886</b>	<b>3082</b>	<b>1557</b>

## APPENDIX 6

### Summary of Permitted Livestock AUMS's by Allotment by HMA

**Table1. Allotment and Permitted Livestock Animal Unit Months (AUM)**

<b>HMA</b>	<b>Allotment Name</b>	<b>Permitted Cattle AUM</b>	<b>Permitted Sheep AUM</b>
Stewart Creek	Stewart Creek	8,432	0
Antelope Hills, Lost Creek	Cyclone Rim	15,553	11,739
Green Mt., Antelope Hills & Crooks Mt.	Green Mountain	35,910	11,451
Green Mt.	Whiskey Peak	5,451	2,294
	Total Permitted AUM:	65,346	25,484

An AUM is defined by the Rawlins RMP as a standardized unit of measurement of the amount of forage necessary for the sustenance of one animal unit for 1 month. An animal unit month being defined as generally one mature (1,000-pound) cow or its equivalent, based on an average daily forage consumption of 26 pounds of dry matter per day.